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PRODUCT PORTFOLIO

DAIKIN	• Residential & Light Commercial Heating & A/C • Ductless Split A/C & H/P • VRV • IAQ	*www.northamerica-daikin.com*
COPELAND	• Commercial Refrigeration • Condensing Units & Compressors	*climate.emerson.com*
Tecumseh	• Compressors • Parts • Indoor and Outdoor Condensing Units	*www.tecumseh.com*
Chemours	• Refrigerants	*www.chemours.com*
BOHN	• Commercial Refrigeration & Air Handlers • Supermarket Specialists	*www.heatcraftrpd.com*
KeepRite Refrigeration	• Commercial Refrigeration & Air Handlers • Heat Reclaim	*www.k-rp.com*
RefPlus	• Custom Refrigeration Products • Dry Coolers	*www.refplus.com*
REGAL	• Replacement Motors	*www.regalbeloit.com*
MARS Delivering Confidence	• Motors and Replacement Parts	*www.marsdelivers.com*
ALLTEMP a Diversitech company	• Motors and Replacement Parts	*www.alltemp.ca*
SPORLAN	• Expansion Valves • Driers • Heat Reclaim Valves • Liquid Level Controls	*www.parker.com*
Hoshizaki America, Inc.	• Ice Machines • Commercial & Under Counter Freezers & Coolers • Pizza & Sandwich Prep Tables	*www.hoshizakiamerica.com*
Johnson Controls	• Temperature/Pressure Controls	*www.johnsoncontrols.com*
Nu-Calgon Wholesaler, Inc.	• Chemicals • Insulation Products • Oils • Everpure Water Filters	*www.nucalgon.com*
QUANTECH	• Chillers	*www.quantech-hvac.com*
KE2 thermsolutions	• Defrost Termination Controllers	*www.ke2therm.com*
THERMOLEC	• Plenum Heaters • Electric Boilers • Steam Humidifiers • Custom Duct Heaters	*www.thermolec.com*
STELPRO	• Electric Furnaces	*www.stelpro.com*
Comfort-Aire	• Window A/C • Water Source H/P	*www.comfort-aire.com*

ALLIED Commercial	• Commercial Rooftops	*www.allied-commercial.com*
AIREASE Built for life. Yours.	• Residential Heating & A/C	*www.airease.com*
Ducane AIR CONDITIONING AND HEATING	• Residential Heating & A/C	*www.ducanehvac.com*
Bitzer	• Compressors • Condensing units • Receivers	*www.bitzer.de/ca/en/*
FRIEDRICH	• PTAC • Window A/C • Dehumidifiers • Portable A/C	*www.friedrich.com*
nu-air	• Residential & Commercial ERVs & HRVs	*www.nu-airventilation.com*
Advanced Distributor Products	• Evaporators • Air Handlers • Unit Heaters	*www.adpnow.com*
REZNOR	• Make Up Air • Unit Heaters	*www.reznorhvac.com*
Honeywell	• Thermostats • Controls • IAQ • Zoning	*www.honeywell.com*
YELLOW JACKET	• HVAC/R Service Tools & Instruments	*www.yellowjacket.com*
Milwaukee	• Power Tools • Hand Tools	*www.milwaukeetool.com*
FLUKE	• Clamp Meters • Multimeters • Thermometers	*www.fluke.com*
INFICON	• HVAC/R Service Tools & Instruments	*www.inficon.com*
JB	• HVAC/R Service Tools & Instruments	*www.jbind.com*
Robertshaw	• Electronic Controls • Timers, Switches	*www.robertshaw.com*
TurboTorch	• HVAC/R Service Tools & Instruments	*www.esabna.com/us/en/products/brands/turbotorch/index.cfm*
THERMOPLUS AIR INC.	• Water Cooled A/C & H/P • Console Models • Condensing Units	*www.thermoplus.com*
SANUVOX	• UV Air Purifiers	*www.sanuvox.com*
NORBEC	• Walk-in Coolers & Freezers	*www.norbec.com*
infrasave	• Radiant Heaters	*www.infrasave.com*

REFRIGERANTS

Refrigerant	Container	Net Weight (kg)	Deposit (net)	LIST
R448A (N40)	SRC Cylinder	10.9 45.4	120.00 200.00	POE
R449A (XP40)	SRC Cylinder	13.5	120.00	POE
R407A	SRC Cylinder	11.3	120.00 200.00	POE
R407C	SRC Cylinder	13.2 52.2	120.00 200.00	POE
R407F	SRC Cylinder	11.3	120.00	POE
R508 (SUVA 95)	Cylinder	4.5	130.00	POE
R22	SRC Cylinder	13.6 58.0	120.00 200.00	POE
R404A (HP62)	SRC Cylinder	10.9 45.4	120.00 200.00	POE
R507 (AZ50)	SRC Cylinder	11.3 45.4	120.00 200.00	POE
R410A (AZ20)	SRC Cylinder	11.3 45.4	120.00 200.00	POE
R437A (MO49)	SRC Cylinder	13.6 58.0	120.00 200.00	POE
R422A (MO79)	SRC Cylinder	14.9	120.00	POE
R438A (MO99)	SRC Cylinder	11.35 49.9	120.00 200.00	POE

WALK-IN BOX MANUFACTURING REQUIREMENT

What is considered a walk-in cooler or freezer (WICF)?

- Any walk-in structure intended for storing food goods below 0 degrees Celsius (Freezer) or between 0 and 13 degrees Celsius (Cooler)
- The square footage of the WICF unit is under 3,000 sq. ft.
- The WICF unit is not intended for lab, research or environmental usage.

Main impact for our customers:

- Minimum R Value for cooler and freezer panels will be as follows:

Panel	Minimum R value* required	Panel thickness needed to meet the requirement
Cooler temperature panels	25	4 inches
Freezer temperature panels	32	

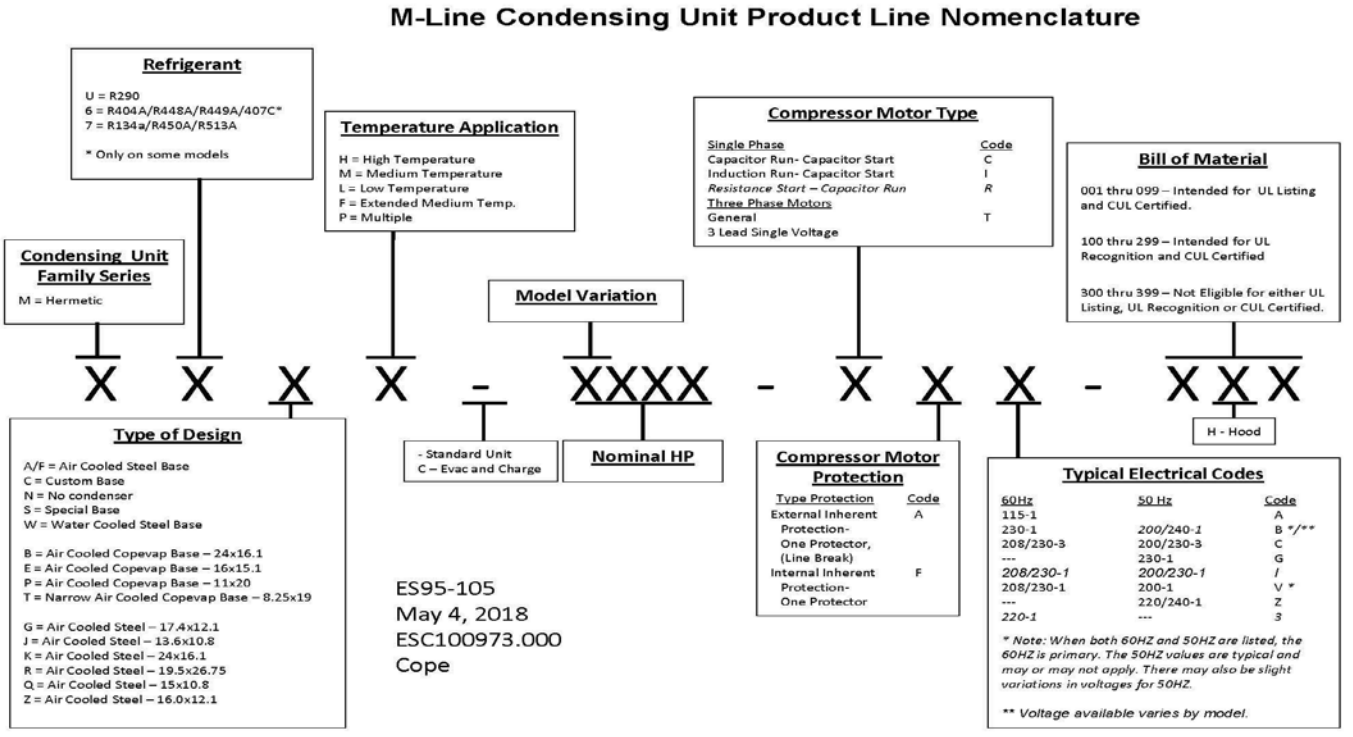
- WICF door energy consumption must not exceed certain values

Manufacturer's Energy Efficiency Build Requirements for refrigeration system equipment

Equipment class	Minimum AWEF (Btu/W-h)*	Compliance date: equipment manufactured starting on...
Dedicated Condensing System—Medium, Indoor	5.61	January 1, 2020
Dedicated Condensing System—Medium, Outdoor	7.60	January 1, 2020
Dedicated Condensing System—Low, Indoor with a Net Capacity (q_{net}) of:		
< 6,500 Btu/h	$9.091 \times 10{-}5 \times q_{net} + 1.81$	July 10, 2020
≥ 6,500 Btu/h	2.40	
Dedicated Condensing System—Low, Outdoor with a Net Capacity (q_{net}) of:		
< 6,500 Btu/h	$6.522 \times 10{-}5 \times q_{net} + 2.73$	
≥ 6,500 Btu/h	3.15	
Unit Cooler—Medium	9.00	
Unit Cooler—Low with a Net Capacity (q_{net}) of:		
< 15,500 Btu/h	$1.575 \times 10{-}5 \times q_{net} + 3.91$	
≥ 15,500 Btu/h	4.15	

**Where q_{net} is net capacity as determined in accordance with §431.304 and certified in accordance with 10 CFR part 429.*

M-LINE CONDENSING UNITS



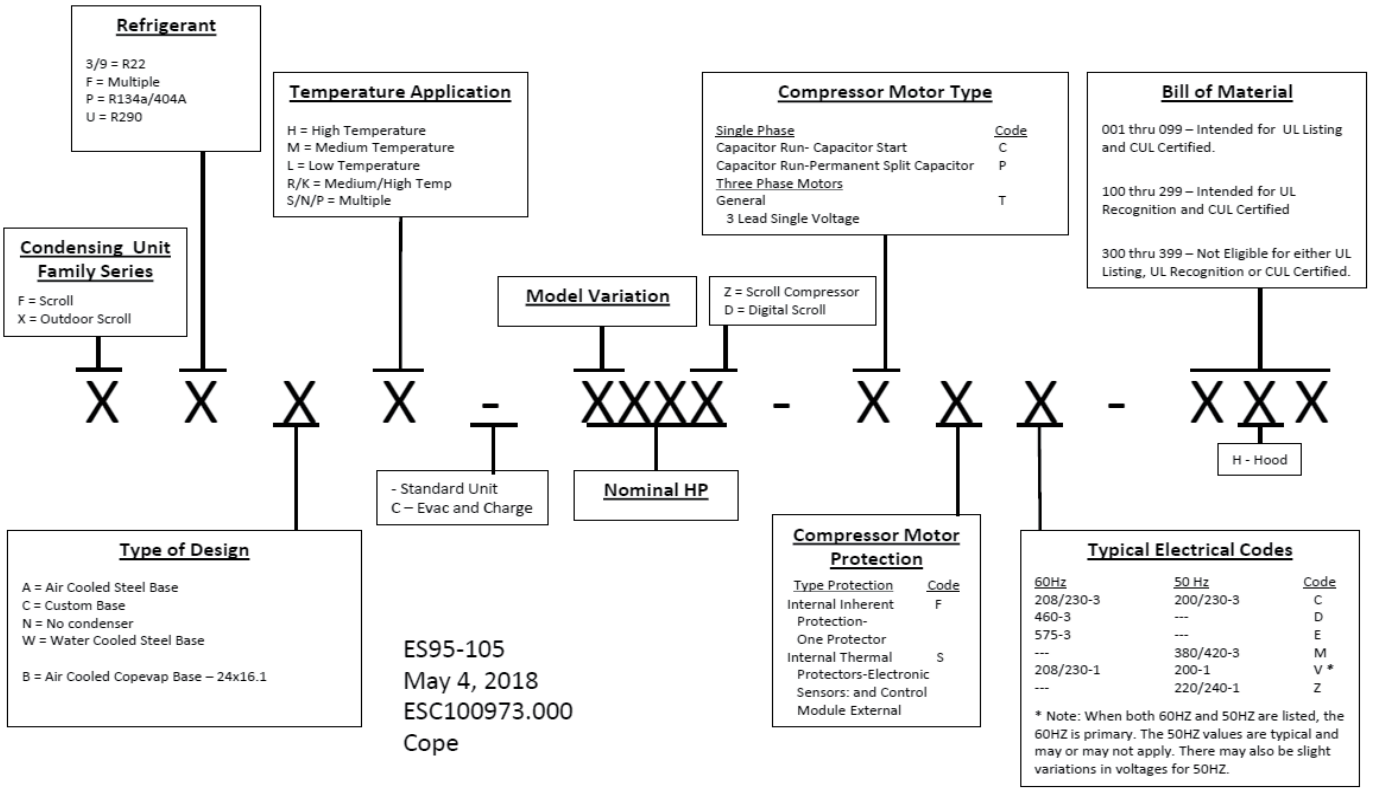
Features	Steel Base Standard BOMs				Condensate Base Standard BOMs						R-290 Units
	Air Cooled		Water Cooled	Dual Fan	E-Base		T-Base		B/P Bases		
	177	179	020	072	103	111	108	118	177	179	173
Receiver W/ Valve	X		X	X	X			X	X		
Suction Valve	X	X	X	X	X	X			X	X	
Liquid Base Valve		X				X				X	
Fan Guard	X	X		X			X	X	X	X	X
End Covers				X			X	X			X
Conduit			X	X							
Power Cord	X	X			X	X	X	X	X	X	X
Pressure Control (EUC) Adjustable Low, Fixed High			X	X							
Filter Drier	X	X		X					X	X	X
Moisture Indicator	X			X					X		
Water Valve			X								
UL Listed			X	X							
UL Recognized	X	X			X	X	X	X	X	X	X

Optional BOMs						
	020	028*	212	072	078*	272
Receiver W/ Valve	X	X	X	X	X	X
Suction Valve	X	X	X	X	X	X
Fan Guard	X	X	X	X	X	X
End Covers	X	X	X	X	X	X
Power Cord						
Filter Drier				X	X	X
Moisture Indicator				X	X	X
Pressure Control (EUC) Adjustable Low, Fixed High	X			X		
Conduit	X	X	X	X	X	X
UL Listed	X	X		X	X	
UL Recognized			X			X

*** Units with a compressor RLA under 6A do not require pressure controls for UL listing. xx8 will identify units under 6A that are listed, but do not have pressure controls.**

F-LINE CONDENSING UNITS

Scroll Condensing Unit Product Line Nomenclature



ES95-105
May 4, 2018
ESC100973.000
Cope

BOM	Options																UL	
	Receiver W/ Valve	Suction Valve	Liquid Base Valve	Fan Guard	End Covers	Conduit	Power Cord	Accumulator	Fan Cycling	Pressure Controls	Filter Drier	Moisture Indicator	Solenoid Valve	Crankcase Heater	Head Pressure Control Valve	Water Valve	CoreSense	Listed	Recognized
Air Cooled																			
071*	X	X		X	X	X		X	X	X	X	X		X				X	
072	X	X		X	X	X				X	X	X						X	
075	X	X		X	X	X		X^		X	X	X		X	X			X	
Water Cooled																			
020	X	X				X				X				X		X		X	

* -071 BOM not available on all models. See Climate.Emerson.com/OPI for available models.
^ Accumulator available on dual fan units only.

All information in this catalog is for reference only and subject to change without notice. Please visit Climate.Emerson.com/OPI for a complete listing of all available models, and updated information.
For AWEF compliant models, see catalog section 2020ECT-1_AWEF

M-LINE AIR COOLED CONDENSING UNITS

Air Cooled													
					Refrigerant Connections^		Receiver Capacity* (Lbs @ 90% Volume)						
Unit Model	Compressor	Length	Width	Height	Liquid	Suction	R-134a	R-407C	R-448/449	R-513	MCA	Max Over-current Protection	Ship Weight
M6GL-H079-CFA	RFT26C1E	18.86	14.34	11.79	3/8	1/2		1.4	1.4		15.1	20	60
M6GL-H079-CAV	RFT26C1E	18.86	14.34	11.79	3/8	1/2		1.4	1.4		9	15	68
M6GP-H064-CAA	RST45C1E	18.86	14.34	11.79	3/8	1/2		1.4	1.4		14.8	20	42
M6GP-H064-CAV	RST45C1E	18.86	14.34	11.79	3/8	1/2		1.4	1.4		7.6	15	68
M6GP-H074-CFA	RST55C1E	18.86	14.34	11.79	3/8	1/2		1.4	1.4		20.5	30	86
M6GP-H074-CAV	RST55C1E	18.86	14.34	11.79	3/8	1/2		1.4	1.4		9.5	15	62
M6GP-H090-CAV	RST64C1E	18.82	14.34	12.29	3/8	1/2		1.4	1.4		12.3	20	42
M6GP-H090-CFA	RST64C1E	18.82	14.34	12.29	3/8	1/2		1.4	1.4		20	30	70
M6JL-0021-IAA	AFE08C4E	14.10	11.45	11.37	1/4	3/8		1.4	1.4		5.5	15	46
M6JL-H023-IAA	AFE08C4E	14.11	11.45	11.37	1/4	3/8		1.4	1.4		5.5	15	
M6JL-H030-IAA	AFE11C4E	14.11	11.45	11.37	1/4	3/8		1.4	1.4		5.9	15	43
M6JL-H048-IAA	AFE17C4E	14.39	11.57	11.37	1/4	3/8		1.4	1.4		10.4	15	39
M6JL-H048-IAV	AFE17C4E	14.39	11.57	11.37	1/4	3/8		1.4	1.4		5.6	15	
M6JL-H052-IAA	AFE20C5E	14.40	11.45	11.37	1/4	3/8		1.4	1.4		8.5	15	
M6JM-0017-IAA	ASE12C4E	14.10	11.45	11.37	1/4	3/8		1.4	1.4		5.7	15	39
M6JM-H020-IAA	ASE12C4E	14.11	11.45	11.37	1/4	3/8		1.4	1.4		5.7	15	52
M6JM-H023-IAA	ASE14C4E	14.11	11.45	11.37	1/4	3/8		1.4	1.4		6.7	15	52
M6JM-H028-IAA	ASE20C4E	14.11	11.45	11.37	1/4	3/8		1.4	1.4		8.2	15	50
M6JM-H035-IAA	ASE28C5E	14.39	11.57	11.37	1/4	3/8		1.4	1.4		9.7	15	50
M6JM-H035-IAV	ASE28C5E	14.39	11.57	11.37	1/4	3/8		1.4	1.4		5.6	15	50
M6JM-H043-IAA	ASE39C5E	14.40	11.45	11.37	1/4	3/8		1.4	1.4		13.2	20	40
M6KL-0123-CFV	RFT42C1E	24.00	16.39	13.08	3/8	1/2		3.1	3		11.2	15	103
M6KP-0075-CFA	RST55C1E	24.00	16.41	13.08	3/8	1/2		3.1	3		20.8	30	96
M6KP-0075-CAV	RST55C1E	24.00	16.39	13.08	1/4	1/2		3.1	3		9.7	15	85
M6KP-0092-CAV	RST64C1E	24.00	16.39	13.08	1/4	1/2		3.1	3		12.4	20	72
M6KP-0092-CFA	RST64C1E	24.00	16.39	13.08	3/8	1/2		3.1	3		20.3	30	84
M6KP-0095-CFV	RST70C1E	24.00	16.39	13.08	3/8	5/8		3.1	3		10.8	15	62
M6KP-0102-CAV	RST64C1E	24.00	18.42	16.16	3/8	1/2		5.3	5.1		12.7	20	60
M6KP-0102-CFA	RST64C1E	24.00	18.30	16.16	3/8	1/2		5.3	5.1		20.7	30	75
M6KP-0112-CFV	RST70C1E	24.00	18.45	16.16	3/8	5/8		5.3	5.1		11	15	62
M6KP-0112-TAC	RST70C1E	24.00	18.33	16.16	3/8	5/8		5.3	5.1		8.3	15	42
M6KP-0127-CFV	RST80C1E	24.00	18.45	16.16	3/8	5/8		5.3	5.1		13	20	103
M6KP-0127-TAC	RST80C1E	24.00	18.33	16.16	3/8	5/8		5.3	5.1		8.5	15	60
M6KP-0142-CFV	RST97C1E	24.00	18.45	16.16	3/8	5/8		5.3	5.1		13.9	20	97
M6KP-0142-TAC	RST97C1E	24.00	18.33	16.16	3/8	5/8		5.3	5.1		8.9	15	101
M6QM-H049-CAV	ASE39C5E	15.66	12.01	11.37	1/4	3/8		1.4	1.4		7.7	15	60
M6QM-H049-IAA	ASE39C5E	15.67	12.12	11.37	1/4	3/8		1.4	1.4		13.4	20	55
M6ZL-0031-IAA	AFE11C4E	16.17	13.38	11.73	1/4	3/8		1.4	1.4		6.1	15	43
M6ZL-0042-IAA	AFE14C5E	16.51	12.68	11.73	1/4	3/8		1.4	1.4		8.4	15	59
M6ZL-0042-IAV	AFE14C5E	16.51	12.68	11.73	1/4	3/8		1.4	1.4		4.4	15	62
M6ZL-0055-IAA	AFE20C5E	16.51	12.68	11.73	1/4	3/8		1.4	1.4		8.8	15	60
M6ZL-0055-IAV	AFE20C5E	16.51	12.68	11.73	1/4	3/8		1.4	1.4		6	15	53
M6ZL-0078-IAV	RFT26C1E	17.36	13.55	11.75	3/8	1/2		1.4	1.4		8.6	15	39
M6ZM-0025-IAV	ASE20C4E	16.51	12.68	11.73	1/4	3/8		1.4	1.4		4.4	15	45
M6ZM-0032-IAA	ASE24C5E	16.51	12.68	11.73	1/4	3/8		1.4	1.4		8.6	15	45
M6ZM-0038-IAA	ASE28C5E	16.51	12.68	11.73	1/4	3/8		1.4	1.4		9.9	15	46
M6ZM-0038-IAV	ASE28C5E	16.51	12.68	11.73	1/4	3/8		1.4	1.4		5.6	15	42
M6ZM-0048-IAA	ASE39C5E	16.51	12.68	11.73	1/4	3/8		1.4	1.4		13.4	20	61
M6ZM-H026-CAA	ASE20C4E	16.52	12.79	11.71	1/4	3/8		1.4	1.4		7.8	15	64
M6ZM-H054-CAV	ASE39C5E	16.58	12.79	11.71	1/4	3/8		1.4	1.4		7.7	15	75
M6ZP-0053-IAA	RST45C1E	17.36	13.52	11.75	3/8	1/2		1.4	1.4		14	20	70
M6ZP-0053-IAV	RST45C1E	17.36	13.55	11.75	3/8	1/2		1.4	1.4		7.2	15	42
M6ZP-H059-CAV	RST45C1E	17.36	13.45	11.75	3/8	1/2		1.4	1.4		7.2	15	85

M-LINE AIR COOLED CONDENSING UNITS

Air Cooled													
					Refrigerant Connections^		Receiver Capacity* (Lbs @ 90% Volume)						
Unit Model	Compressor	Length	Width	Height	Liquid	Suction	R-134a	R-407C	R-448/449	R-513	MCA	Max Over-current Protection	Ship Weight
M7GH-H057-CFA	RRT64C1E	18.86	14.34	11.79	3/8	1/2	1.5			1.5	15.5	20	62
M7GP-H066-CFA	RFT18C1E	18.82	14.34	12.29	3/8	1/2	1.5			1.5	13.8	20	72
M7JH-0012-IAA	ARE13C4E	14.10	11.45	11.37	1/4	3/8	1.5			1.5	5.9	15	35
M7JH-0014-IAA	ARE17C4E	13.91	11.46	9.61	1/4	3/8	1.5			1.5	6.2	15	35
M7JH-0018-IAA	ARE25C4E	14.10	11.45	11.37	1/4	3/8	1.5			1.5	6.8	15	40
M7JH-H020-IAA	ARE25C4E	14.11	11.45	11.37	1/4	3/8	1.5			1.5	6.8	15	
M7JH-H024-IAA	ARE29C4E	14.11	11.45	11.37	1/4	3/8	1.5			1.5	5.5	15	42
M7JH-H029-IAA	ARE35C5E	14.39	11.57	11.37	1/4	3/8	1.5			1.5	9.3	15	90
M7JP-0020-IAA	AFF07C1E	14.37	12.11	11.38	1/4	3/8	1.5			1.5	5.9	15	60
M7JP-0029-IAA	AFF10C1E	14.37	12.11	11.38	1/4	3/8	1.5			1.5	4.9	15	67
M7KH-0060-CFA	RRT64C1E	24.00	16.39	13.08	1/4	1/2	3.3			3.2	15.8	20	85
M7KH-0060-CAV	RRT64C1E	24.00	16.39	13.08	1/4	1/2	3.3			3.2	9.2	15	
M7KH-0064-CAV	RRT73C1E	24.00	16.39	13.08	1/4	1/2	3.3			3.2	11.8	15	86
M7KH-0075-CFA	RRT81C1E	24.00	16.27	13.08	1/4	5/8	3.3			3.2	18.3	25	62
M7KH-0075-CFV	RRT81C1E	24.00	16.39	13.08	3/8	5/8	3.3			3.2	9.3	15	86
M7KH-0086-CFA	RRT10K1E	24.00	16.39	13.08	3/8	5/8	3.3			3.2	19	30	90
M7KH-0086-CFV	RRT10K1E	24.00	16.39	13.08	3/8	5/8	3.3			3.2	11.2	15	62
M7KH-0096-CFA	RRT10K1E	24.00	18.30	16.16	3/8	5/8	5.7			5.4	19.4	30	111
M7ZH-0031-IAA	ARE35C5E	16.51	12.68	11.73	1/4	3/8	1.5			1.5	9.5	15	48
M7ZH-0041-IAA	ARE48C5E	16.51	12.68	11.73	1/4	3/8	1.5			1.5	10.9	15	62
M7ZH-0045-IAA	ARE54C5E	16.51	12.68	11.73	1/4	3/8	1.5			1.5	12.5	20	
M7ZH-0045-IAV	ARE54C5E	16.51	12.68	11.73	1/4	3/8	1.5			1.5	6.9	15	
M7ZH-H046-IAA	RRT62C1E	17.45	13.46	11.71	3/8	1/2	1.5			1.5	12.8	20	42
M7ZH-H046-IAV	RRT62C1E	17.45	13.46	11.71	3/8	1/2	1.5			1.5	6	15	24
M7ZH-H055-CFA	RRT64C1E	17.36	13.45	11.75	3/8	1/2	1.5			1.5	14.6	20	65
M7ZH-H055-CAV	RRT64C1E	17.36	13.45	11.75	3/8	1/2	1.5			1.5	8.6	15	65
M7ZH-H067-CFA	RRT81C1E	17.31	13.82	12.29	3/8	5/8	1.5			1.5	17.1	25	73
M7ZH-H067-CFV	RRT81C1E	17.31	13.81	12.29	3/8	5/8	1.5			1.5	8.7	15	
M7ZP-0041-IAA	AFE12C4E	16.51	12.68	11.73	1/4	3/8	1.5			1.5	9	15	53
M7ZP-H062-CFA	RFT18C1E	17.32	13.82	12.29	3/8	1/2	1.5			1.5	13	20	63

Chassis Sizes

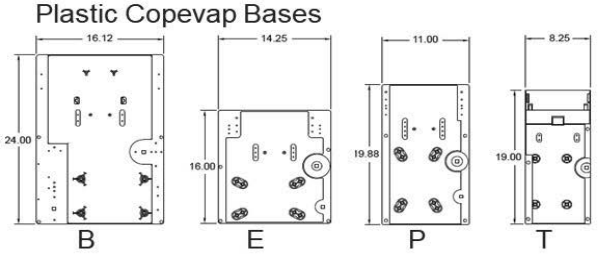
M X X X - XXXX - X X X - XXX

C = Custom Base
W = Water Cooled Steel Base

B = Air Cooled Copevap Base – 24x16.1
E = Air Cooled Copevap Base – 16x15.1
P = Air Cooled Copevap Base – 11x20
T = Narrow Air Cooled Copevap Base – 8.25x19

H = Narrow Metal – 16.8x6.9
G = Air Cooled Steel – 17.4x12.1
J = Air Cooled Steel – 13.6x10.8
K = Air Cooled Steel – 24x16.1
R = Air Cooled Steel – 19.5x26.75
Q = Air Cooled Steel – 15x10.8
Z = Air Cooled Steel – 16.0x12.1

Plastic Copevap Bases



Steel Bases



M-LINE AIR COOLED CONDENSING UNITS

Copeland M-Line Air Cooled Condensing Units
Medium Temp & High Temp

Medium - High Temp / Air Cooled			90° Ambient										
Nominal HP	Model	Refrigerant	BTU/Hr SST, 40°F RG (65°F RG in Bold and Blue Highlight)										
			-5	0	5	10	15	20	25	30	35	40	45
1/8	M7JH-0012	R-134a		**604**	**695**	**794**	**902**	**1020**	**1150**	**1280**	**1430**	**1590**	**1750**
		R-513		**669**	**760**	**858**	**963**	**1080**	**1200**	**1330**	**1470**	**1620**	**1770**
	M7JH-0014	R-134a		**748**	**855**	**970**	**1100**	**1230**	**1380**	**1530**	**1700**	**1870**	**2060**
		R-513		**829**	**934**	**1050**	**1170**	**1300**	**1430**	**1580**	**1730**	**1900**	**2070**
1/5	M6JM-0017	R-407C		876	989	1110	1240	1380	1530	1690			
		R-448A / R-449A	792	907	1030	1160	1290	1430	1590	1740			
	M7JH-0018	R-134a		**1020**	**1160**	**1310**	**1470**	**1640**	**1820**	**2020**	**2230**	**2450**	**2690**
		R-513		**1130**	**1260**	**1400**	**1550**	**1710**	**1890**	**2070**	**2260**	**2460**	**2670**
	M6JM-H020	R-407C		916	1050	1200	1370	1550	1740	1960			
		R-448A / R-449A	815	952	1100	1250	1420	1590	1780	1970			
	M7JH-H020	R-134a		**1070**	**1230**	**1390**	**1570**	**1760**	**1970**	**2190**	**2430**	**2680**	**2960**
		R-513		**1190**	**1350**	**1510**	**1680**	**1870**	**2070**	**2290**	**2510**	**2760**	**3020**
1/4	M6JM-H023	R-448A / R-449A	1010	1160	1320	1490	1670	1870	2070	2300			
	M7JH-H024	R-134a		**1300**	**1450**	**1630**	**1830**	**2050**	**2290**	**2540**	**2810**	**3090**	**3390**
		R-513		**1440**	**1600**	**1770**	**1960**	**2170**	**2400**	**2640**	**2890**	**3160**	**3430**
	M6ZM-0025	R-448A / R-449A		1530	1760	1990	2220	2460	2720	3010			
	M6ZM-H026	R-407C		**1550**	**1740**	**1980**	**2260**	**2570**	**2900**	**3240**	**3570**	**3870**	**4150**
		R-448A / R-449A	1330	1520	1730	1970	2230	2510	2810	3110			
	M6JM-H028	R-407C		1500	1720	1960	2220	2500	2810	3150			
		R-448A / R-449A		1510	1730	1940	2150	2370	2600	2860			
	M7JH-H029	R-134a		**1450**	**1640**	**1860**	**2100**	**2360**	**2640**	**2930**	**3240**	**3570**	**3920**
		R-513		**1560**	**1770**	**2010**	**2260**	**2530**	**2810**	**3100**	**3400**	**3710**	**4020**
1/3	M7ZH-0031	R-134a		**1480**	**1680**	**1910**	**2160**	**2430**	**2720**	**3030**	**3360**	**3710**	**4080**
		R-513		**1600**	**1820**	**2060**	**2330**	**2610**	**2910**	**3230**	**3550**	**3890**	**4230**
	M6ZM-0032	R-448A / R-449A	1470	1670	1900	2140	2410	2690	2990	3320			
	M6JM-H035	R-407C				3460	3790	4180	4610	5070			
		R-448A / R-449A	1800	1940	2120	2360	2640	2970	3340	3760			
	M6ZM-0038	R-448A / R-449A	1850	1990	2190	2440	2750	3110	3520	3990			
1/2	M7ZH-0041	R-134a		**1980**	**2260**	**2570**	**2890**	**3240**	**3600**	**3980**	**4380**	**4800**	**5230**
		R-513		**2200**	**2450**	**2740**	**3060**	**3390**	**3750**	**4120**	**4510**	**4900**	**5300**
	M6JM-H043	R-407C					4710	5060	5400				
		R-448A / R-449A	2450	2530	2750	3070	3450	3850	4250	4620			
	M7ZH-0045	R-134a		**2210**	**2530**	**2870**	**3230**	**3610**	**4010**	**4420**	**4860**	**5300**	**5760**
		R-513		**2380**	**2730**	**3090**	**3470**	**3850**	**4250**	**4650**	**5050**	**5450**	**5840**
	M7ZH-H046	R-134a	**2100**	**2380**	**2690**	**3030**	**3400**	**3790**	**4210**	**4640**	**5090**	**5550**	**6020**
		R-513	**2290**	**2570**	**2880**	**3230**	**3610**	**4020**	**4440**	**4870**	**5310**	**5750**	**6190**
	M6ZM-0048	R-407C				4830	5250	5700	6170	6640			
		R-448A / R-449A	2520	2630	2890	3240	3670	4120	4580	5000			
	M6QM-H049	R-407C					4790	5130	5480				
		R-448A / R-449A	2470	2560	2790	3110	3500	3900	4310	4670			
	M6ZP-0053	R-407C			2700	3070	3470	3910	4360	4840			
		R-448A / R-449A	2280	2610	2960	3320	3720	4140	4590	5070			
	M6ZM-H054	R-448A / R-449A	2450	2830	3220	3610	3990	4370	4730	5070			
	M7ZH-H055	R-134a		**2830**	**3150**	**3510**	**3900**	**4310**	**4760**	**5230**	**5730**	**6240**	**6780**
		R-513		**2990**	**3330**	**3710**	**4100**	**4530**	**4970**	**5430**	**5920**	**6410**	**6920**
1/2+	M7GH-H057	R-134a		**2950**	**3300**	**3690**	**4120**	**4590**	**5090**	**5630**	**6200**	**6800**	**7430**
		R-513		**3150**	**3530**	**3940**	**4390**	**4870**	**5380**	**5930**	**6510**	**7110**	**7750**
	M6ZP-H059	R-407C			2920	3320	3760	4230	4730	5250			
		R-448A / R-449A	2370	2720	3090	3510	3950	4420	4930	5460			
	M7KH-0060	R-134a		**2970**	**3330**	**3720**	**4160**	**4640**	**5160**	**5710**	**6300**	**6930**	**7580**
		R-513		**3180**	**3570**	**3990**	**4440**	**4930**	**5460**	**6030**	**6630**	**7270**	**7930**
	M7ZP-H062	R-134a	2930	3310	3710	4110	4510	4930	5350	5780			
		R-513	3250	3680	4120	4560	5010	5470	5940				
	M6GP-H064	R-407C		2670	3050	3480	3960	4480	5040	5640			
		R-448A / R-449A	2460	2830	3240	3690	4180	4710	5290	5900			
	M7KH-0064	R-134a	**2850**	**3290**	**3760**	**4250**	**4770**	**5310**	**5890**	**6490**	**7130**	**7800**	**8490**
		R-513	**3040**	**3510**	**3990**	**4500**	**5040**	**5590**	**6170**	**6780**	**7400**	**8050**	**8710**
	M7GP-H066	R-134a	3060	3470	3890	4330	4780	5240	5710	6200			
		R-513	3370	3820	4290	4760	5250	5750	6260				
	M7ZH-H067	R-134a	**2890**	**3240**	**3690**	**4210**	**4800**	**5420**	**6070**	**6730**	**7400**	**8070**	**8720**
		R-513	**3000**	**3300**	**3730**	**4250**	**4850**	**5500**	**6180**	**6880**	**7600**	**8310**	

M-LINE AIR COOLED CONDENSING UNITS

Copeland M-Line Air Cooled Condensing Units
Medium Temp & High Temp

Medium - High Temp / Air Cooled			90° Ambient										
Nominal HP	Model	Refrigerant	BTU/Hr SST, 40°F RG (65°F RG in Bold and Blue Highlight)										
			-5	0	5	10	15	20	25	30	35	40	45
3/4	M6GP-H074	R-407C		3200	3680	4190	4730	5310	5920	6560			
		R-448A / R-449A	3020	3440	3910	4440	5030	5660	6340	7060			
	M6KP-0075	R-407C		**3370**	**3860**	**4380**	**4950**	**5550**	**6190**	**6870**	**7580**	**8330**	**9120**
		R-448A / R-449A	3040	3460	3940	4490	5090	5740	6430	7170			
	M7KH-0075	R-134a	**3060**	**3480**	**4000**	**4600**	**5270**	**5980**	**6720**	**7470**	**8230**	**8980**	**9700**
		R-513	**3180**	**3550**	**4050**	**4660**	**5340**	**6080**	**6850**	**7650**	**8450**	**9240**	**9990**
1	M7KH-0086	R-134a	**3840**	**4430**	**5040**	**5660**	**6290**	**6940**	**7610**	**8300**	**9010**	**9750**	**10500**
		R-513	**3980**	**4520**	**5110**	**5730**	**6370**	**7050**	**7760**	**8490**	**9240**	**10000**	**10800**
	M6GP-H090	R-407C			4790	5410	6060	6750	7470	8220			
		R-448A / R-449A	4020	4530	5090	5680	6310	6990	7720	8500			
	M6KP-0092	R-407C			4830	5470	6140	6850	7600	8380			
		R-448A / R-449A	4040	4570	5140	5740	6400	7100	7860	8670			
	M6KP-0095	R-407C			4900	5560	6230	6940	7670	8440			
		R-448A / R-449A	3990	4580	5180	5810	6460	7140	7830	8530			
	M7KH-0096	R-134a	**4060**	**4690**	**5370**	**6090**	**6870**	**7690**	**8550**	**9450**	**10400**	**11400**	**12400**
		R-513	**4210**	**4820**	**5480**	**6190**	**6960**	**7770**	**8640**	**9560**	**10500**	**11600**	**12600**
	M6KP-0102	R-407C		4580	5270	6020	6840	7720	8660	9680			
		R-448A / R-449A	4340	4950	5600	6330	7120	8000	8960	10000			
1 1/4	M6KP-0112	R-407C		4650	5370	6120	6930	7780	8710	9700			
		R-448A / R-449A	4500	5160	5860	6610	7410	8250	9140	10100			
	M6KP-0127	R-407C		5350	6170	7030	7940	8910	9950	11100			
		R-448A / R-449A	5180	5940	6760	7620	8540	9490	10500	11500			
1 1/2	M6KP-0142	R-407C		6030	6940	7900	8910	9990	11100	12400			
		R-448A / R-449A	5810	6620	7490	8410	9360	10300	11400	12400			

Copeland M-Line Air Cooled Condensing Units
Low Temp

Low Temp / Air Cooled			90° Ambient									
Nominal HP	Model	Refrigerant	BTU/Hr SST, 40°F RG 90° Ambient									
			-30	-25	-20	-15	-10	-5	0	5	10	15
1/5	M7JP-0020	R-134a		524	614	714	825	946	1080	1220	1380	1540
		R-513		546	633	729	832	944	1060	1190	1320	1470
	M6JL-0021	R-448A / R-449A		615	692	785	891	1010	1140	1270	1410	1560
1/4	M6JL-H023	R-448A / R-449A		609	698	804	926	1060	1210	1380	1550	1730
1/3	M7JP-0029	R-134a		783	919	1070	1230	1410	1600	1810	2020	2260
		R-513		815	949	1090	1250	1410	1580	1760	1950	2150
	M6JL-H030	R-448A / R-449A		710	812	935	1080	1230	1410	1590	1790	1990
	M6ZL-0031	R-448A / R-449A		710	814	940	1080	1250	1430	1620	1830	2040
1/3+	M7ZP-0041	R-134a		1020	1190	1380	1600	1850	2120	2400	2710	3030
		R-513		1110	1290	1510	1750	2010	2300	2610	2940	3290
	M6ZL-0042	R-448A / R-449A		1040	1180	1350	1530	1730	1950	2190	2440	2700
1/2	M6JL-H048	R-448A / R-449A		1140	1300	1490	1700	1930	2180	2430	2700	2960
	M6JL-H052	R-448A / R-449A		1350	1560	1790	2040	2300	2590	2880	3170	3460
	M6ZP-0053	R-448A / R-449A					1970	2280	2610	2960	3320	3720
	M6ZL-0055	R-448A / R-449A		1380	1590	1840	2110	2400	2710	3030	3360	3700
1/2+	M6ZP-H059	R-448A / R-449A					2050	2370	2720	3090	3510	3950
	M7ZP-H062	R-134a		1460	1820	2180	2550	2930	3310	3710	4110	4510
		R-513		1630	2020	2430	2840	3250	3680	4120	4560	5010
	M6GP-H064	R-448A / R-449A					2120	2460	2830	3240	3690	4180
	M7GP-H066	R-134a		1520	1890	2270	2650	3060	3470	3890	4330	4780
		R-513		1680	2090	2500	2930	3370	3820	4290	4760	5250
3/4	M6GP-H074	R-448A / R-449A					2680	3020	3440	3910	4440	5030
	M6KP-0075	R-448A / R-449A					2690	3040	3460	3940	4490	5090
	M6ZL-0078	R-448A / R-449A	1400	1620	1890	2200	2550	2930	3330	3770	4210	
	M6GL-H079	R-448A / R-449A	1520	1770	2070	2420	2820	3260	3740	4250	4800	
1	M6GP-H090	R-448A / R-449A						4020	4530	5090	5680	6310
	M6KP-0092	R-448A / R-449A					3550	4040	4570	5140	5740	6400
	M6KP-0095	R-448A / R-449A					3440	3990	4580	5180	5810	6460
	M6KP-0102	R-448A / R-449A					3790	4340	4950	5600	6330	7120
1 1/4	M6KP-0112	R-448A / R-449A					3890	4500	5160	5860	6610	7410
	M6KL-0123	R-448A / R-449A	2660	2900	3270	3720	4250	4840	5460	6110	6780	
	M6KP-0127	R-448A / R-449A					4470	5180	5940	6760	7620	8540
1 1/2	M6KP-0142	R-448A / R-449A					5040	5810	6620	7490	8410	9360

M-LINE AIR COOLED CONDENSING UNITS

Copevap M-Line Air Cooled Condensing Units
Medium Temp & High Temp

Medium - High Temp / Air Cooled			90° Ambient										
Nominal HP	Model	Refrigerant	BTU/Hr SST, 40°F RG (65°F RG in Bold and Blue Highlight)										
			-5	0	5	10	15	20	25	30	35	40	45
1/8	M7PH-0012	R-134a		**630**	**727**	**832**	**948**	**1070**	**1210**	**1360**	**1520**	**1700**	**1890**
		R-513		**701**	**799**	**905**	**1020**	**1150**	**1280**	**1430**	**1590**	**1760**	**1950**
	M7TH-0012	R-134a		**626**	**721**	**825**	**939**	**1060**	**1200**	**1350**	**1500**	**1680**	**1860**
		R-513		**695**	**791**	**896**	**1010**	**1130**	**1270**	**1410**	**1570**	**1730**	**1910**
1/6	M7PH-0015	R-134a		**781**	**895**	**1020**	**1150**	**1300**	**1460**	**1630**	**1820**	**2010**	**2230**
		R-513		**869**	**984**	**1110**	**1240**	**1390**	**1540**	**1710**	**1890**	**2080**	**2280**
	M7TH-0015	R-134a		**775**	**887**	**1010**	**1140**	**1290**	**1440**	**1610**	**1790**	**1980**	**2190**
		R-513		**861**	**974**	**1100**	**1230**	**1370**	**1520**	**1680**	**1860**	**2040**	**2240**
	M7EH-H016	R-134a		**790**	**906**	**1030**	**1170**	**1320**	**1480**	**1660**	**1850**	**2050**	**2270**
		R-513		**879**	**996**	**1120**	**1260**	**1410**	**1570**	**1750**	**1930**	**2130**	**2340**
1/5	M6EM-0020	R-407C		927	1060	1210	1360	1540	1730	1930			
		R-448A / R-449A	815	952	1100	1250	1420	1590	1780	1970			
	M6PM-0020	R-407C		921	1050	1190	1340	1510	1690	1880			
		R-448A / R-449A	815	952	1100	1250	1420	1590	1780	1970			
	M6TM-0020	R-407C		911	1040	1170	1320	1490	1660	1840			
		R-448A / R-449A	806	939	1080	1230	1390	1560	1740	1930			
	M7EH-0020	R-134a		**1070**	**1230**	**1390**	**1570**	**1760**	**1970**	**2190**	**2430**	**2680**	**2960**
		R-513		**1190**	**1350**	**1510**	**1680**	**1870**	**2070**	**2290**	**2510**	**2760**	**3020**
	M7PH-0020	R-134a		**1070**	**1230**	**1390**	**1570**	**1760**	**1970**	**2190**	**2430**	**2680**	**2960**
		R-513		**1190**	**1350**	**1510**	**1680**	**1870**	**2070**	**2290**	**2510**	**2760**	**3020**
	M7TH-0020	R-134a		**1060**	**1210**	**1370**	**1550**	**1730**	**1940**	**2150**	**2390**	**2640**	**2900**
		R-513		**1180**	**1330**	**1490**	**1660**	**1840**	**2030**	**2240**	**2460**	**2700**	**2950**
	M7TP-0020	R-134a	987	1130	1280	1450	1630	1820	2030				
		R-513	983	1110	1250	1390	1550	1710	1890				
	M7EP-0021	R-134a	997	1140	1300	1470	1650	1850	2060				
		R-513	994	1120	1260	1410	1570	1740	1920				
	M7PP-0021	R-134a	997	1140	1300	1470	1650	1850	2060				
		R-513	994	1120	1260	1410	1570	1740	1920				
	M6TM-0022	R-448A / R-449A	995	1150	1300	1470	1640	1830	2030	2240			
1/4	M6EM-0023	R-448A / R-449A	1010	1160	1320	1490	1670	1870	2070	2300			
	M6PM-0023	R-448A / R-449A	1010	1160	1320	1490	1670	1870	2070	2300			
	M7TH-0023	R-134a		**1280**	**1440**	**1610**	**1800**	**2020**	**2250**	**2490**	**2750**	**3020**	**3300**
		R-513		**1420**	**1570**	**1740**	**1930**	**2130**	**2350**	**2580**	**2820**	**3070**	**3330**
	M7EH-0024	R-134a		**1300**	**1450**	**1630**	**1830**	**2050**	**2290**	**2540**	**2810**	**3090**	**3390**
		R-513		**1440**	**1600**	**1770**	**1960**	**2170**	**2400**	**2640**	**2890**	**3160**	**3430**
	M7PH-0024	R-134a		**1300**	**1450**	**1630**	**1830**	**2050**	**2290**	**2540**	**2810**	**3090**	**3390**
		R-513		**1440**	**1600**	**1770**	**1960**	**2170**	**2400**	**2640**	**2890**	**3160**	**3430**
1/3	M6TM-0027	R-404A	1410	1610	1800	1990	2170	2360	2550	2760			
		R-407C		911	1040	1170	1320	1490	1660	1840			
		R-448A / R-449A	1220	1440	1650	1840	2040	2240	2450	2690			
	M7TH-0028	R-134a		**1430**	**1620**	**1830**	**2070**	**2320**	**2590**	**2870**	**3170**	**3490**	**3830**
		R-513		**1530**	**1740**	**1970**	**2220**	**2480**	**2750**	**3030**	**3310**	**3600**	**3900**
	M7EH-0029	R-134a		**1450**	**1640**	**1860**	**2100**	**2360**	**2640**	**2930**	**3240**	**3570**	**3920**
		R-513		**1560**	**1770**	**2010**	**2260**	**2530**	**2810**	**3100**	**3400**	**3710**	**4020**
	M7PH-0029	R-134a		**1450**	**1640**	**1860**	**2100**	**2360**	**2640**	**2930**	**3240**	**3570**	**3920**
		R-513		**1560**	**1770**	**2010**	**2260**	**2530**	**2810**	**3100**	**3400**	**3710**	**4020**
	M6PM-0030	R-448A / R-449A	1440	1640	1850	2070	2320	2580	2860	3160			
	M6EM-H032	R-448A / R-449A	1310	1490	1700	1930	2180	2450	2730	3020			
	M7EP-0032	R-134a	1530	1740	1980	2230	2500	2790	3100				
		R-513	1530	1720	1930	2160	2390	2640	2900				
	M7PP-0032	R-134a	1530	1740	1980	2230	2500	2790	3100				
		R-513	1530	1720	1930	2160	2390	2640	2900				
	M7TP-0032	R-134a	1500	1710	1940	2190	2450	2730	3030				
		R-513	1500	1690	1900	2110	2340	2580	2830				
	M7PP-0034	R-134a	1750	2000	2260	2550	2850	3180	3520				
		R-513	1750	1980	2210	2460	2730	3000	3290				

M-LINE AIR COOLED CONDENSING UNITS

Copevap M-Line Air Cooled Condensing Units
Medium Temp & High Temp

Medium - High Temp / Air Cooled			90° Ambient									
Nominal HP	Model	Refrigerant	BTU/Hr SST, 40°F RG (65°F RG in Bold and Blue Highlight)									
			-5	0	5	10	15	20	25	30	35	40	45
1/3+	M7EP-H036	R-134a	1800	2050	2330	2630	2950	3290	3650				
		R-513	1800	2030	2280	2540	2810	3110	3410				
	M7EH-0037	R-134a		**1930**	**2200**	**2490**	**2800**	**3120**	**3450**	**3800**	**4170**	**4540**	**4930**
		R-513		**2070**	**2370**	**2680**	**2990**	**3320**	**3650**	**3980**	**4310**	**4640**	**4960**
	M7PH-0038	R-134a		**1930**	**2200**	**2490**	**2800**	**3120**	**3450**	**3800**	**4170**	**4540**	**4930**
		R-513		**2070**	**2370**	**2680**	**2990**	**3320**	**3650**	**3980**	**4310**	**4640**	**4960**
	M6EM-H040	R-448A / R-449A	1880	1950	2140	2420	2750	3120	3520	3910			
	M7PH-0042	R-134a		**2140**	**2450**	**2770**	**3110**	**3460**	**3830**	**4210**	**4590**	**4980**	**5380**
		R-513		**2300**	**2630**	**2970**	**3320**	**3670**	**4020**	**4370**	**4710**	**5030**	**5340**
	M7EH-H044	R-134a		**2310**	**2630**	**2960**	**3310**	**3670**	**4050**	**4450**	**4870**	**5300**	**5760**
		R-513		**2430**	**2770**	**3110**	**3470**	**3830**	**4210**	**4600**	**5010**	**5430**	**5870**
1/2	M6EM-H051	R-448A / R-449A	2500	2610	2860	3210	3620	4060	4500	4910			
1/2+	M7BH-0060	R-134a	**2620**	**2970**	**3360**	**3790**	**4260**	**4760**	**5290**	**5860**	**6440**	**7060**	**7690**
		R-513	**2800**	**3160**	**3570**	**4020**	**4500**	**5010**	**5550**	**6120**	**6700**	**7300**	**7910**
	M6BP-0064	R-407C		2680	3060	3500	3990	4520	5090	5700			
		R-448A / R-449A	2460	2840	3260	3710	4210	4750	5340	5970			
3/4	M6BP-0075	R-407C		3220	3700	4220	4770	5360	5990	6660			
		R-448A / R-449A	3040	3460	3940	4490	5090	5740	6430	7170			
	M7BH-0075	R-134a	**3060**	**3480**	**4000**	**4600**	**5270**	**5980**	**6720**	**7470**	**8230**	**8980**	**9700**
		R-513	**3180**	**3550**	**4050**	**4660**	**5340**	**6080**	**6850**	**7650**	**8450**	**9240**	**9990**
1	M6BP-0092	R-407C			4830	5470	6140	6850	7600	8380			
		R-448A / R-449A	4040	4570	5140	5740	6400	7100	7860	8670			
	M6BP-0106	R-407C			5560	6290	7030	7800	8590	9410			
		R-448A / R-449A	4580	5200	5850	6520	7230	7960	8720	9500			

Extended Medium & Low Temp

Low Temp / Condensate Base			90° Ambient									
Nominal HP	Model	Refrigerant	BTU/Hr SST, 40°F RG (65°F RG in Bold and Blue Highlight)									
			-30	-25	-20	-15	-10	-5	0	5	10	15
1/5	M6TL-0018	R-448A / R-449A		418	478	552	638	735	843	960	1090	1220
	M7TP-0020	R-134a		544	638	743	859	987	1130	1280	1450	1630
		R-513		565	656	756	865	983	1110	1250	1390	1550
	M7EP-0021	R-134a		548	643	749	867	997	1140	1300	1470	1650
		R-513		569	661	762	873	994	1120	1260	1410	1570
	M7PP-0021	R-134a		548	643	749	867	997	1140	1300	1470	1650
		R-513		569	661	762	873	994	1120	1260	1410	1570
	M6TL-0022	R-448A / R-449A		605	692	796	917	1050	1200	1360	1520	1700
1/4	M6PL-0023	R-448A / R-449A		609	698	804	926	1060	1210	1380	1550	1730
1/3	M6TL-0029	R-448A / R-449A		703	804	925	1060	1220	1380	1560	1750	1950
	M6EL-0030	R-448A / R-449A		710	812	935	1080	1230	1410	1590	1790	1990
	M6PL-0030	R-448A / R-449A		710	812	935	1080	1230	1410	1590	1790	1990
	M7EP-0032	R-134a		834	982	1150	1330	1530	1740	1980	2230	2500
		R-513		868	1010	1170	1340	1530	1720	1930	2160	2390
	M7PP-0032	R-134a		834	982	1150	1330	1530	1740	1980	2230	2500
		R-513		873	1020	1180	1350	1540	1740	1960	2180	2430
	M7TP-0032	R-134a		824	969	1130	1310	1500	1710	1940	2190	2450
		R-513		857	999	1150	1320	1500	1690	1900	2110	2340
	M7PP-0034	R-134a		964	1130	1320	1530	1750	2000	2260	2550	2850
		R-513		1000	1170	1350	1550	1750	1980	2210	2460	2730
1/3+	M7EP-H036	R-134a		984	1160	1350	1560	1800	2050	2330	2630	2950
		R-513		1020	1190	1380	1580	1800	2030	2280	2540	2810
	M6TL-0040	R-448A / R-449A		1020	1150	1310	1480	1670	1870	2080	2300	2530
	M6EL-0041	R-448A / R-449A		1030	1170	1330	1500	1700	1900	2120	2360	2600
	M6PL-0041	R-448A / R-449A		1030	1170	1330	1500	1700	1900	2120	2360	2600
1/2	M6TL-0051	R-448A / R-449A		1330	1520	1750	1990	2240	2510	2790	3070	3350
	M6EL-0052	R-448A / R-449A		1350	1540	1740	1970	2210	2460	2730	3000	3270
	M6PL-0052	R-448A / R-449A		1350	1540	1740	1970	2210	2460	2730	3000	3270
1/2+	M6EL-0060	R-448A / R-449A		1610	1860	2130	2420	2720	3030	3360	3690	4020
	M6PL-0060	R-448A / R-449A		1560	1790	2050	2340	2640	2960	3290	3630	3980
	M6BP-0064	R-407C							2680	3060	3500	3990
		R-448A / R-449A					2120	2460	2840	3260	3710	4210
3/4	M6BP-0075	R-407C							3220	3700	4220	4770
		R-448A / R-449A					2690	3040	3460	3940	4490	5090
1	M6BP-0092	R-407C								4830	5470	6140
		R-448A / R-449A					3550	4040	4570	5140	5740	6400
	M6BP-0106	R-407C								5560	6290	7030
		R-448A / R-449A						4580	5200	5850	6520	7230
1 1/4	M6BL-0123	R-448A / R-449A	2660	2900	3270	3720	4250	4840	5460	6110	6780	

M-LINE AIR COOLED CONDENSING UNITS

Copevap M-Line Air Cooled Condensing Units

Copevap															
					Refrigerant Connections^		Receiver Capacity* (Lbs @ 90% Volume)								
Unit Model	Compressor	Length	Width	Height	Liquid	Suction	R-134a	R-407C	R-448/449	R-450	R-513	MCA	Max Over-current Protection	Ship Weight
M6BL-0123-CFA	RFT42C1E	24.00	16.29	13.64	3/8	1/2			3			21.4	30	
M6BL-0123-CFV	RFT42C1E	24.00	16.29	13.64	3/8	1/2			3			11.2	15	
M6BP-0064-CAA	RST45C1E	24.00	16.69	13.64	3/8	1/2		3.1	3			15.1	20	
M6BP-0064-CAV	RST45C1E	24.00	16.69	13.64	3/8	1/2		3.1	3			7.5	15	
M6BP-0075-CFA	RST55C1E	24.00	16.69	13.64	3/8	1/2		3.1	3			20.8	30	76
M6BP-0075-CAV	RST55C1E	24.00	16.69	13.64	3/8	1/2		3.1	3			9.7	15	
M6BP-0092-CAV	RST64C1E	24.00	16.72	13.64	3/8	1/2		3.1	3			12.4	20	
M6BP-0092-CFA	RST64C1E	24.00	16.29	13.64	3/8	1/2		3.1	3			20.3	30	78
M6BP-0106-CFV	RST80C1E	24.00	16.29	13.64	3/8	5/8		3.1	3			12.8	20	78
M6EL-0030-IAA	AFE11C4E	16.00	14.25	10.52	1/4	3/8			1.4			5.9	15	
M6EL-0041-IAA	AFE14C5E	16.00	14.25	10.52	1/4	3/8			1.4			8.2	15	
M6EL-0052-IAA	AFE20C5E	16.00	14.25	10.52	1/4	3/8			1.4			8.5	15	38
M6EL-0060-CAA	AFE23C5E	16.00	14.25	10.47	1/4	3/8			1.4			10	15	
M6EM-0020-IAA	ASE12C4E	16.00	14.25	10.52	1/4	3/8			1.4			5.7	15	
M6EM-0023-IAA	ASE14C4E	16.00	14.25	10.52	1/4	3/8			1.4			6.7	15	
M6EM-H032-CAA	ASE20C4E	16.06	15.12	11.75	1/4	3/8			1.4			7.8	15	52
M6EM-H040-IAA	ASE28C5E	16.06	15.12	11.75	1/4	3/8			1.4			9.9	15	50
M6EM-H051-IAA	ASE39C5E	16.06	15.12	11.75	1/4	3/8			1.4			13.4	20	
M6PL-0023-IAA	AFE08C4E	19.88	11.06	10.65	1/4	3/8			1.4			5.5	15	
M6PL-0030-IAA	AFE11C4E	19.88	11.06	10.65	1/4	3/8			1.4			5.9	15	
M6PL-0041-IAA	AFE14C5E	19.88	11.06	11.16	1/4	3/8			1.4			8.2	15	48
M6PL-0052-IAA	AFE20C5E	19.88	11.06	11.16	1/4	3/8			1.4			8.5	15	46
M6PL-0060-CAV	AFE23C5E	19.88	11.36	10.65	1/4	3/8			1.4			5.8	15	
M6PM-0020-IAA	ASE12C4E	19.88	11.06	10.65	1/4	3/8		1.4	1.4			5.7	15	67
M6PM-0023-IAA	ASE14C4E	19.88	11.06	10.65	1/4	3/8			1.4			6.7	15	62
M6PM-0030-IAA	ASE24C5E	19.88	11.06	11.16	1/4	3/8			1.4			8.4	15	44
M6TL-0018-IAA	AFE06C4E	19.00	9.41	10.53	1/4	5/16			1.4			4.5	15	
M6TL-0022-IAA	AFE08C4E	19.00	9.41	10.53	1/4	5/16			1.4			5.5	15	33
M6TL-0029-IAA	AFE11C4E	19.00	9.41	10.53	1/4	5/16			1.4			5.9	15	36
M6TL-0040-IAA	AFE14C5E	19.00	9.41	10.53	1/4	5/16			1.4			8.2	15	
M6TL-0051-IAA	AFE20C5E	19.00	9.41	10.53	1/4	5/16			1.4			8.5	15	
M6TM-0020-IAA	ASE12C4E	19.00	9.41	10.53	1/4	5/16			1.4			5.7	15	35
M6TM-0022-IAA	ASE14C4E	19.00	9.41	10.53	1/4	5/16			1.4			6.7	15	35
M6TM-0027-IAA	ASE20C4E	19.00	9.41	10.53	1/4	5/16			1.4			8.2	15	38
M7BH-0060-CFA	RRT64C1E	24.00	16.69	13.64	3/8	1/2	3.3			3.2	3.2	15.8	20	
M7BH-0060-CAV	RRT64C1E	24.00	16.69	13.64	3/8	1/2	3.3			3.2	3.2	9.2	15	
M7BH-0075-CFA	RRT81C1E	24.00	16.29	13.64	3/8	5/8	3.3			3.2	3.2	18.3	25	82
M7BH-0075-CFV	RRT81C1E	24.00	16.29	13.64	3/8	5/8	3.3			3.2	3.2	9.3	15	
M7EH-0020-IAA	ARE25C4E	16.00	14.25	10.52	1/4	3/8	1.5			1.5	1.5	6.8	15	
M7EH-0024-IAA	ARE29C4E	16.00	14.25	10.52	1/4	3/8	1.5			1.5	1.5	5.5	15	62
M7EH-0029-IAA	ARE35C5E	16.00	14.25	10.52	1/4	3/8	1.5			1.5	1.5	9.3	15	41
M7EH-0037-IAA	ARE48C5E	16.00	14.25	10.52	1/4	3/8	1.5			1.5	1.5	10.7	15	
M7EH-H016-IAA	ARE17C4E	16.06	15.12	11.75	1/4	3/8	1.5			1.5	1.5	6.4	15	
M7EH-H044-IAA	RRT62C1E	16.62	15.27	11.75	1/4	1/2	1.5			1.5	1.5	12.8	20	55
M7EH-H053-IFA	RRT64C1E	16.26	15.62	11.75	1/4	1/2	1.5			1.5	1.5	14.6	20	45
M7EP-0021-IAA	AFF07C1E	16.00	14.25	10.52	1/4	3/8	1.5			1.5	1.5	5.9	15	42
M7EP-0032-IAA	AFF10C1E	16.00	14.25	10.52	1/4	3/8	1.5			1.5	1.5	4.9	15	
M7EP-H036-IAA	AFF13C1E	16.43	15.12	11.75	1/4	3/8	1.5			1.5	1.5	11.5	15	
M7PH-0012-IAA	ARE13C4E	19.88	11.06	10.65	1/4	3/8	1.5			1.5	1.5	5.9	15	
M7PH-0015-IAA	ARE17C4E	19.88	11.06	10.65	1/4	3/8	1.5			1.5	1.5	5.9	15	
M7PH-0020-IAA	ARE25C4E	19.88	11.06	10.65	1/4	3/8	1.5			1.5	1.5	6.8	15	66
M7PH-0024-IAA	ARE29C4E	19.88	11.06	10.65	1/4	3/8	1.5			1.5	1.5	5.5	15	66
M7PH-0029-IAA	ARE35C5E	19.88	11.06	11.16	1/4	3/8	1.5			1.5	1.5	9.3	15	40
M7PH-0038-IAA	ARE48C5E	19.88	11.06	11.16	1/4	3/8	1.5			1.5	1.5	10.7	15	
M7PH-0042-IAA	ARE54C5E	19.88	11.06	11.16	1/4	3/8	1.5			1.5	1.5	12.3	20	36
M7PP-0021-IAA	AFF07C1E	19.90	11.06	11.69	1/4	3/8	1.5			1.5	1.5	5.9	15	
M7PP-0032-IAA	AFF10C1E	19.90	11.06	11.69	1/4	3/8	1.5			1.5	1.5	4.9	15	52
M7PP-0034-IAA	AFF13C1E	19.90	11.06	11.69	1/4	3/8	1.5			1.5	1.5	11.3	15	
M7TH-0012-IAA	ARE13C4E	19.00	9.41	10.53	1/4	5/16	1.5			1.5	1.5	5.9	15	35
M7TH-0015-IAA	ARE17C4E	19.00	9.41	10.53	1/4	5/16	1.5			1.5	1.5	5.9	15	33
M7TH-0020-IAA	ARE25C4E	19.00	9.41	10.53	1/4	5/16	1.5			1.5	1.5	6.8	15	36
M7TH-0023-IAA	ARE29C4E	19.00	9.41	10.53	1/4	5/16	1.5			1.5	1.5	5.5	15	67
M7TH-0028-IAA	ARE35C5E	19.00	9.41	10.53	1/4	5/16	1.5			1.5	1.5	9.3	15	56
M7TP-0020-IAA	AFF07C1E	19.34	9.41	10.53	1/4	5/16	1.5			1.5	1.5	5.9	15	38
M7TP-0032-IAA	AFF10C1E	19.34	9.41	10.53	1/4	5/16	1.5			1.5	1.5	4.9	15	

^Connections listed for -177 (B and P Chassis), -103 (E Chassis), and -118 (T Chassis) BOMs. See OPI for connections for other specific BOMs

*Reciever capacity applies only to units with receivers. See BOM Matrix for included components.

M-LINE WATER COOLED CONDENSING UNITS

Copeland M-Line Water Cooled Condensing Units
Medium Temp & High Temp

Medium Temp - High Temp / Water Cooled																	
Nom. HP	Model	Refrigerant	BTU/H at 105° condensing, 75° water inlet - evaporator temp (°F), 40°F RG (65°F RG in Bold and Blue Highlight)												Water flow (GPM) @evap temp (°F)		
			-10	-5	0	5	10	15	20	25	30	35	40	45	0	25	45
1/5	M6WH-0021	R-448A/449A		795	940	1100	1270	1450	1650	1860					0.1	0.3	
1/4	M6WH-0023	R-448A/449A		1000	1170	1350	1540	1750	1980	2230					0.2	0.3	
	M7WH-0026	R-134a			**1270**	**1430**	**1620**	**1840**	**2090**	**2360**	**2660**	**2990**	**3340**	**3710**	0.2	0.3	0.5
		R-513			**1420**	**1590**	**1780**	**2000**	**2240**	**2510**	**2810**	**3140**	**3480**	**3860**	0.2	0.3	0.5
	M7WH-0033	R-134a			**1430**	**1640**	**1880**	**2150**	**2440**	**2760**	**3110**	**3490**	**3900**	**4340**	0.2	0.4	0.6
		R-513			**1550**	**1780**	**2040**	**2330**	**2650**	**2990**	**3350**	**3740**	**4160**	**4600**	0.2	0.4	0.6
	M6WH-0025	R-407C			**1420**	**1480**	**1700**	**1950**	**2210**	**2510**	**2830**				0.2	0.4	
		R-448A/449A	**983**	**1240**	**1480**	**1730**	**1980**	**2240**	**2520**	**2830**	**3180**				0.2	0.4	
1/3	M6WH-0036	R-448A/449A	1280	1480	1710	1960	2240	2550	2880	3250	3650				0.2	0.4	
	M7WH-0040	R-134a			1700	1950	2240	2550	2890	3270	3670	4100	4560	5040	0.2	0.5	0.7
		R-513			1910	2170	2450	2760	3110	3480	3880	4300	4760	5240	0.3	0.5	0.7
1/2	M7WH-0049	R-134a			2030	2330	2670	3040	3460	3920	4410	4940	5510	6120	0.3	0.6	0.9
		R-513			2390	2710	3070	3460	3900	4370	4890	5450	6040	6680	0.4	0.6	0.9
	M6WH-0043	R-448A/449A		1920	2030	2270	2610	3020	3490	3990					0.3	0.5	
	M7WH-0050	R-134a		**2060**	**2350**	**2700**	**3100**	**3540**	**4030**	**4560**	**5140**	**5760**	**6420**	**7120**	0.3	0.6	1
		R-450		**1830**	**2100**	**2410**	**2760**	**3150**	**3590**	**4060**	**4580**	**5130**	**5720**	**6340**	0.3	0.6	0.9
		R-513		**2260**	**2570**	**2930**	**3350**	**3820**	**4330**	**4890**	**5500**	**6150**	**6840**	**7570**	0.4	0.7	1
	M6WH-0050	R-448A/449A	**2270**	**2280**	**2460**	**2760**	**3170**	**3640**	**4160**	**4690**	**5200**				0.3	0.6	
1/2+	M7WH-0056	R-134a		**2410**	**2780**	**3190**	**3660**	**4170**	**4740**	**5360**	**6020**	**6740**	**7510**	**8340**	0.4	0.8	1.1
		R-513		**2650**	**3030**	**3470**	**3960**	**4500**	**510**	**5740**	**6450**	**7200**	**8000**	**8860**	0.4	0.8	1.2
3/4	M7WM-0075	R-134a		**3770**	**4410**	**5110**	**5870**	**6700**	**7580**	**8530**	**9520**	**10600**	**11700**	**12800**	0.6	1.1	1.6
		R-513		**3920**	**4540**	**5230**	**5980**	**6800**	**7690**	**8660**	**9710**	**10800**	**12100**	**13400**	0.7	1.2	1.7

Extended Medium & Low Temp

Low - Extended Medium Temp / Water Cooled																		
Rated HP	Model	Refrigerant	BTU/H at 105° condensing, 75° water inlet - evaporator temp (°F), 40°F RG (65°F RG in Bold and Blue Highlight)													Water flow (GPM) @evap temp (°F)		
			-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	-25	-10	10
1/4	M6WL-0025	R-448A/449A		588	679	789	917	1060	1220	1400	1600	1810				0.1	0.1	0.2
1/3	M6WL-0033	R-448A/449A		691	797	926	1080	1250	1440	1650	1880	2120				0.1	0.2	0.3
1/3+	M6WL-0040	R-448A/449A		1020	1180	1350	1550	1770	2010	2280	2570	2900				0.2	0.2	0.4
1/2	M6WL-0051	R-448A/449A		1260	1460	1700	1980	2290	2630	2980	3360	3750				0.2	0.3	0.5
1/2+	M6WF-0056	R-407C							2420	2510	2930	3400	3920	4510	5140			0.5
		R-448A/449A					2150	2500	2890	3330	3830	4390	5030	5740	6540		0.3	0.6
	M6WL-0067	R-448A/449A	1470	1720	2040	2410	2840	3330	3870	4470	5130					0.3	0.4	0.7
3/4	M6WF-0075	R-407C							3490	4050	4670	5350	6100	6930	7840			0.6
		R-448A/449A					2640	3070	3560	4100	4710	5410	6190	7060	8050		0.4	0.7
	M6WL-0075	R-407C							4000	4200	4880	5620	6440	7350	8350			0.7
		R-448A/449A					3720	4300	4930	5630	6420	7300	8280	9390	10600		0.6	0.9
1	M6WF-0106	R-407C							4310	4520	5230	6010	6860	7800	8840			0.8
		R-448A/449A					3520	4070	4720	5470	6310	7250	8270	9400	10600		0.5	0.9
	M6WL-0105	R-407C							5080	5340	6190	7100	8080	9150	10300			0.9
		R-448A/449A					4330	5060	5830	6660	7560	8510	9540	10600	11800		0.7	1.1
1 1/4	M6WF-0125	R-407C							4360	4580	5320	6100	6940	7860	8870			0.8
		R-448A/449A					3630	4270	4960	5690	6480	7320	8220	9170	10200		0.6	0.9
	M6WF-0126	R-407C							5080	5340	6190	7100	8080	9150	10300			0.9
		R-448A/449A					4420	5180	6000	6900	7860	8890	9990	11100	12400		0.7	1.1

M-LINE WATER COOLED CONDENSING UNITS

Copeland M-Line Water Cooled Condensing Units

Copevap															
					Refrigerant Connections^		Receiver Capacity* (Lbs @ 90% Volume)								
Unit Model	Compressor	Length	Width	Height	Liquid	Suction	R-134a	R-407C	R-448/449	R-450	R-513	MCA	Max Over-current Protection	Ship Weight
M6WF-0056-IAA	RST45C1E	18.30	12.87	9.99	3/8	1/2			1.4			13.1	20	68
M6WF-0056-IAV	RST45C1E	18.30	12.87	9.99	3/8	1/2			1.4			6.6	15	65
M6WF-0075-CFA	RST55C1E	24.23	16.10	11.85	3/8	1/2			1.4			18.8	30	75
M6WF-0075-CAV	RST55C1E	24.23	16.10	11.85	3/8	1/2			1.4			8.5	15	78
M6WF-0106-CAV	RST64C1E	24.23	16.10	11.85	3/8	1/2			5.1			11.3	20	91
M6WF-0125-CFV	RST70C1E	24.24	16.10	13.20	3/8	5/8			5.1			9.6	15	79
M6WF-0125-TAC	RST70C1E	24.24	16.10	13.20	3/8	5/8			5.1			6.9	15	85
M6WF-0126-CFV	RST80C1E	24.24	16.10	13.20	3/8	5/8			5.1			11.6	20	86
M6WF-0126-TAC	RST80C1E	24.24	16.10	13.20	3/8	5/8			5.1			7.1	15	85
M6WH-0021-IAA	ASE12C4E	18.18	12.88	9.35	1/4	3/8			1.4			5	15	47
M6WH-0023-IAA	ASE14C4E	18.18	12.88	9.35	1/4	3/8			1.4			6	15	48
M6WH-0025-IAA	ASE20C4E	18.18	12.88	9.35	1/4	3/8			1.4			7.5	15	49
M6WH-0036-IAA	ASE24C5E	18.18	12.88	9.80	1/4	3/8			1.4			7.8	15	42
M6WH-0036-IAI	ASE24C5E	18.18	12.88	9.80	1/4	3/8			1.4			4.1	15	
M6WH-0043-IAA	ASE28C5E	18.18	12.88	10.22	1/4	3/8			1.4			9	15	46
M6WH-0043-IAV	ASE28C5E	18.18	12.88	10.22	1/4	3/8			1.4			5	15	
M6WH-0050-CAA	ASE32C5E	18.18	12.97	9.92	1/4	3/8			1.4			9.4	15	42
M6WH-0050-CAV	ASE32C5E	18.18	12.88	10.65	1/4	3/8			1.4			5.6	15	43
M6WL-0025-IAA	AFE08C4E	24.00	16.41	9.73	1/4	3/8			1.4			5.5	15	
M6WL-0033-IAA	AFE11C4E	24.00	16.41	9.73	1/4	3/8			1.4			5.9	15	65
M6WL-0040-IAA	AFE14C5E	24.00	16.41	10.23	1/4	3/8			1.4			8.2	15	67
M6WL-0051-IAA	AFE17C4E	24.00	16.41	10.18	1/4	3/8			1.4			10.4	15	
M6WL-0067-CFA	RFT26C1E	24.00	16.41	11.87	3/8	1/2			1.4			14	20	75
M6WL-0075-CFA	RST64C1E	24.00	16.41	11.87	3/8	1/2			1.4			18.9	30	
M6WL-0075-IAV	RST64C1E	24.00	16.41	10.46	3/8	1/2			1.4			11.8	20	80
M6WL-0105-CFV	RST80C1E	24.00	16.43	12.47	3/8	5/8			5.1			12.2	20	64
M6WL-0105-TAC	RST80C1E	24.00	16.43	12.47	3/8	5/8			5.1			7.7	15	87
M7WH-0026-IAA	ARE29C4E	18.18	12.88	9.35	1/4	3/8	1.5			1.5	1.5	4.9	15	41
M7WH-0033-IAA	ARE35C5E	18.18	12.88	9.80	1/4	3/8	1.5			1.5	1.5	8.6	15	46
M7WH-0033-IAI	ARE35C5E	18.18	12.88	9.80	1/4	3/8	1.5			1.5	1.5	3.8	15	
M7WH-0040-IAA	ARE40C4E	18.18	12.88	9.80	1/4	3/8	1.5			1.5	1.5	8.8	15	50
M7WH-0049-IAV	ARE51C4E	18.18	12.88	9.80	1/4	3/8	1.5			1.5	1.5	6.1	15	70
M7WH-0050-IAA	RRT62C1E	18.31	12.87	9.59	3/8	1/2	1.5			1.5	1.5	11.9	20	61
M7WH-0050-IAV	RRT62C1E	18.31	12.87	9.59	3/8	1/2	1.5			1.5	1.5	5.4	15	57
M7WH-0056-IFA	RRT64C1E	18.30	12.87	9.99	3/8	1/2	1.5			1.5	1.5	13.8	20	59
M7WH-0056-IAV	RRT64C1E	18.30	12.87	9.99	3/8	1/2	1.5			1.5	1.5	8	15	63
M7WM-0075-CFA	RRT10K1E	24.24	16.10	13.20	3/8	5/8	1.5			1.5	1.5	17	30	81
M7WM-0075-CFV	RRT10K1E	24.24	16.10	13.20	3/8	5/8	1.5			1.5	1.5	10	15	82

*Reciever capacity applies only to units with receivers. See BOM Matrix for included components.

M-LINE COMPETITVE CROSS

M-Line Competitive Cross

Nom. HP	Tecumseh		Danfoss		Embraco		Old Copeland			New Copeland		
	Model Number	Btu/h	Model Number	Btu/h	Model Numbe	Btu/h	Model Number	Compressor	Btu/h	Model Number	Compressor	Btu/h
LT R-404A -10°F Evap/90°F Ambient												
1/4	AE2410Z-AA1AGB	890					M4TL-H025-IAA-*18	AFE08C4E-IAA	860	M6TL-0022-IAA-118	AFE08C4E-IAA	927
	AE2410Z-AA1ASC	910					M4FL-H025-IAA-*	AFE08C4E-IAA	876	M6JL-H023-IAA-177	AFE08C4E-IAA	936
							M4FL-0025-IAA-072	AFB09C3E	872	M6JL-0021-IAA-078	AFE08C4E-IAA	872
1/3	AE2415Z-AA1ASC	1380	UCHC0025RWB000B	1350			M4FL-0033-IAA-103	AFE11C3E-IAA	1390	M6ZM-0032-IAA-177	ASE24C5E-IAA	1340
	AE2415Z-AA1ASS	1380	UCHC0025R*B	1350			M4FL-0033-IAA-111	AFE11C3E-IAA	1390	M6ZM-0032-IAA-179	ASE24C5E-IAA	1340
1/2							M4FL-0040-IAA-103	AFE13C3E	2040	M6JL-H048-IAA-177	AFE17C4E-IAA	1940
							M4FL-0040-IAV-103	AFE13C3E	2040	M6JL-H048-IAV-177	AFE17C4E-IAV	1940
	AJA2423ZAADG	2254	LCHC0050RWB000B	2500	UT2155GK-	2330	M4FL-H051-IAA-103	AFE17C4E-IAA	2150	M6JL-H052-IAA-177	AFE20C5E-IAA	2240
	AJA2423ZAADC	2254										
3/4	AKA2430ZAADS	3003	LCHC0060UWC000B	3050			M4FL-0067-CFA-111	AFT26C1E-CFA	3290	M6ZL-H078-CFA-179	RFT26C1E-CFA	
	AKA2430ZAADC	3003	LCHC0060UWC000B	3050			M4FL-0067-CFA-103	AFT26C1E-CFA	3290	M6ZL-H078-CFA-177	RFT26C1E-CFA	
							M4FL-0067-CFV-103	AFT26C1E-CFV	3290	M6GP-H074-CAV-177	RST55C1E-CAV	3070
1	AJB2439ZAADG	3898	LCHC0075UWC000B	3900			M4FF-0080-CFA-212	RST64C1E-CFA	3880	M6KP-0092-CFA-177	RST64C1E-CFA	4050
	AWA2448ZXDXC	4838	LCHC0100UWD000N	5350						M6KL-0123-CFV-072	RFT42C1E-PFV	4900
1 1/2	AWA2464ZXDXC	6450								FFAP-A17Z-CFV-072	ZS11KAE-PFV	6680
2	AWA2479ZXDXC	7871								FFAP-A20Z-CFV-072	ZS13KAE-PFV	7650
	AVA2510ZXNXC	9999								FFAP-A30Z-CFV-072	ZS19KAE-PFV	10400
MT R-404A 25°F Evap/90°F Ambient												
1/5	AE4425Z-AA1AGK	1500					M4TM-H020-IAA-*08	ASE12C4E-IAA	1580	M6TM-0020-IAA-108	ASE12C4E-IAA	1830
	AE4425Z-AA1ASC	1950								M6ZM-0021-IAA-177	ASE12C4E-IAA	1950
1/4	AE4430Z-AA1AXC	2170	UCGC0025R*B	2150			M4FH-0025-IAA-103	ASE19C3E-IAA	2430	M6JM-H023-IAA-177	ASE14C4E-IAA	2180
	AE4430Z-AA1AGC	2170					M4TM-H020-IAA-*18	ASE12C4E-IAA	1580	M6TM-0020-IAA-118	ASE12C4E-IAA	2180
	AE4430Z-AA1AGK	2170					M4TM-H020-IAA-*08	ASE12C4E-IAA	1580	M6TM-0020-IAA-108	ASE12C4E-IAA	2180
	AE4440Z-AA1ASC	2590	UCHC0025RWB000B	2650	UNE6187Z	2576				M6JM-H028-IAA-177	ASE20C4E-IAA	2730
1/3	AKA9430ZAADG	3401	UCHC0033RWB000B	3250	UFI12HBX	3263	M4FH-A036-IAA-103	ASE24C3E-IAA	3370	M6JM-H035-IAA-177	ASE28C5E-IAA	3390
1/2							M4FH-0050-CAA-103	ASE32C3E-CAA	4380	M6QM-H049-IAA-272	ASE39C5E-IAA	4250
							M4FH-0050-CAV-103	ASE32C3E-CAV	4380	M6QM-H049-CAV-078	ASE39C5E-CAV	4250
	AKA9442ZNADG	5162					M4FF-0050-IAV-212	RST45C1E-IAV	4660	M6ZP-0053-IAV-177	RST45C1E-IAV	4980
	AKA9442ZAADG	5162					M4FF-0050-IAA-212	RST45C1E-IAA	4660	M6ZP-0053-IAA-177	RST45C1E-IAA	4980
3/4	AKA9457ZNADG	6367								M6GP-H074-CAV-177	RST55C1E-CAV	6550
	AKA9463ZAADG	6969	UCHC0050RWB000B	7500			M4FF-0075-CAA	RST55C1E-CAA	6660	M6KP-0075-CFA-177	RST55C1E-CFA	6660
	AKA9463ZNADG	6969	UCHC0075U*N	7500			M4FF-0075-CAV	RST55C1E-CAV	6660	M6KP-0075-CAV-177	RST55C1E-CAV	6660
1	AJA7480ZNADG	8448	HCHC0100U*N	9000						M6KP-0095-CFV-177	RST70C1E-PFV	8310
	AJA7480ZNADC	8448										
	AJA7494ZXDXC	10279								M6RP-H126-CFV-072‡	RST97C1E-PFV	10500
	AWA7512ZXDXC	13142								FFAP-A17Z-CFV-072	ZS11KAE-PFV	12100
	AWA7512ZXTXC	13142	HCZC0150UWF300Q	12270						FFAP-A17Z-TFC-072	ZS11KAE-TF5	12100
2	AWA9518ZXTXM									FFAP-A30Z-TFC-072	ZS19KAE-TF5	19300
3	AVA7523ZXTXC	24781								FFAP-A32Z-TFC-072	ZS21KAE-TF5	24800
LT R-134a -10°F Evap/90°F Ambient												
1/4	AE2410Y-AA1ASC	910			UF10HBX	960				M7QP-H022-IAA-078	AFF07C1E-IAA	874
1/3	AE2413Y-AA1BSC	1310			UFI12HBX	1362				M7JP-H032-IAA-078	AFF10C1E-IAA	1330
1/2	AJA2423YAADG	2321					M2FF-0056-CFA-212	RFT18C1E-PFA	2580	M7GP-H066-CFA-177	RFT18C1E-PFA	2650
										M7KH-0060-CFA-177	RRT64C1E-CFA	2300
MT R-134a 25°F Evap/90°F Ambient												
1/4							M2FH-0026-IAA-103	ARE27C3E-IAA	2080	M7QH-H021-IAA-078	ARE25C4E-IAA	1980
1/3							M2FH-A033-IAA-103	ARE37C3E-IAA	2620	M7JH-H029-IAA-177	ARE35C5E-IAA	2640
1/2							M2FH-0049-IAA-103	ART51C1E-IAA	3600	M7ZH-0041-IAA-177	ARE48C5E-IAA	3750
	AKA7437YAADG	4080	UCGC0050R*	4250			M2FH-A050-IAA-103	RRT62C1E-IAA	4060	M7ZH-0046-IAA-177	RRT62C1E-IAA	4210
	AJA7455YAADG	6116	HCGC0075UWC000B	7150			M2FH-0056-IAA-103	ART64C1E-IAA	4630	M7KH-0064-CAA-177	RRT73C1E-CAA	5890
	AJA7455YNADG	6116					M2FH-0056-IAV-103	ART64C1E-IAV	4630	M7KH-0064-CAV-177	RRT73C1E-CAV	5890
	AJA7455YNADC	6116								M7KH-0064-CAV-177	RRT73C1E-CAV	5890
HT R-134a 45°F Evap/90°F Ambient												
1/5	AE3425Y-AA1ASK	2696	UCGC0020RWA000B	2700	UM65HHR	2600	M2FH-0026-IAA	ARE27C3E-IAA	2940	M7JH-0018-IAA-179	ARE25C4E-IAA	2690
1/4	AE4430Y-AA1ASB	3080	UCGC0025RWB000B	3100			M2FH-0025-IAA	ARE27C3E-IAA	2850	M7JH-H020-IAA-177	ARE25C4E-IAA	2960
	AE4430Y-AA1ASC	3080	UCGC0025RWB000B	3100			M2FH-0025-IAA	ARE27C3E-IAA	2850	M7JH-H020-IAA-177	ARE25C4E-IAA	2960
	AE4430Y-AA1ASK	3080	UCGC0025R*B	3100			M2FH-0025-IAA	ARE27C3E-IAA	2850	M7JH-H020-IAA-179	ARE25C4E-IAA	2960
	AE4430Y-AA1ASS	3080	UCGC0025R*B	3100			M2FH-0025-IAA	ARE27C3E-IAA	2850	M7JH-H020-IAA-179	ARE25C4E-IAA	2960
	AE4430Y-AA1AGB	3080								M7TH-0020-IAA-118	ARE25C4E-IAA	2900
1/3	AE4440Y-AA1ASB	3650	HCGC0033RWB000B	4450	UNE6187Z	4371	M2FH-A033-IAA	ARE37C3E-IAA	3820	M7JH-H024-IAA-177	ARE29C4E-IAA	3390
	AE4440Y-AA1ASC	3650	HCGC0033RWB000B	4450	UNE6187Z	4371	M2FH-A033-IAA	ARE37C3E-IAA	3820	M7JH-H024-IAA-177	ARE29C4E-IAA	3390
	AE4440Y-AA1ASK	3650	HCGC0033R*B	4450	UNE6187Z	4371	M2FH-A033-IAA	ARE37C3E-IAA	3820	M7JH-H024-IAA-179	ARE29C4E-IAA	3390
	AE4440Y-AA1ASS	3650	HCGC0033R*B	4450	UNE6187Z	4371	M2FH-A033-IAA	ARE37C3E-IAA	3820	M7JH-H024-IAA-179	ARE29C4E-IAA	3390
	AE4440Y-AA1AGK	3650								M7TH-0028-IAA-108	ARE35C5E-IAA	3830
	AE4440Y-AA1AGB	3650								M7TH-0028-IAA-118	ARE35C5E-IAA	3830
	AE4440Y-AA1AGC	3650								M7TH-0028-IAA-118	ARE35C5E-IAA	3830
1/2	AE4450Y-AA1ADC	5005			UNE6210Z	4989	M2CH-H049-CAA	ARE51C4E-CAA	5260	M7ZH-0045-IAA-177	ARE54C5E-IAA	5760
	AE4450Y-AA1ADS	5005			UNE6210Z	4989	M2CH-H049-CAA	ARE51C4E-CAA	5260	M7ZH-0045-IAA-179	ARE54C5E-IAA	5760
	AKA4457YAADG	5665	UCGC0050R*B	6150	UT6213ZA	5892	M2FH-H048-CAA	ARE51C4E-CAA	5440	M7ZH-0045-IAA-177	ARE54C5E-IAA	5760
	AKA4457YAADC	5665	UCGC0050R*B	6150	UT6213ZA	5892	M2FH-H048-CAA	ARE51C4E-CAA	5440	M7ZH-0045-IAA-177	ARE54C5E-IAA	5760
	AKA4457YAADK	5665	UCGC0050R*B	6150	UT6213ZA	5892	M2FH-H048-CAA	ARE51C4E-CAA	5440	M7ZH-0045-IAA-179	ARE54C5E-IAA	5760
	AKA4457YAADS	5665	UCGC0050R*B	6150	UT6213ZA	5892	M2FH-H048-CAA	ARE51C4E-CAA	5440	M7ZH-0045-IAA-179	ARE54C5E-IAA	5760
	AKA4457YNADG	5665								M7ZH-0045-IAV-177	ARE54C5E-IAV	5760
	AKA4472YAADG	7187	HCGC0055UWC000B	7350	UT6215ZC	6704				M7ZH-H055-CFA-177	RRT64C1E-CFA	7050
3/4	AJA4480YAADG	7550	HCGC0055UWC000B	7350	UT6217E	7683				M7KH-0060-CFA-177	RRT64C1E-CFA	7690
	AJA4480YNADG	7550	HCGC0055UWC000B	7350						M7KH-0060-CAV-177	RRT64C1E-CAV	7690
1	AJA4512YXDXC	12200	HCGC0075UWC000B	11200						FFAP-A17Z-CFV-072	ZS11KAE-PFV	13100

The recommended cross applies at the conditions listed. Review the operating envelope of the recommended unit to confirm operation at the specific required conditions.

* Specific configuration not identified. Multiple options may be available.

‡ Physical dimension differences. Check available space.

F-LINE AIR COOLED CONDENSING UNITS

Copeland F-Line Air Cooled Condensing Units
Medium Temp & High Temp

Medium - High Temp / Air Cooled			90° Ambient										
Nominal HP	Model	Refrigerant	BTU/Hr SST, 40°F RG (65°F RG in Bold and Blue Highlight), 5°F Subcooling										
			-5	0	5	10	15	20	25	30	35	40	45
3/4	FFAM-A08Z	R-134a			2800	3200	3640	4130	**4770**	**5340**	**5950**	**6620**	**7320**
		R-407A	3560	3950	4420	4950	5550	6200	**7040**	**7820**	**8640**	**9520**	**10400**
		R-448A / R-449A	3600	4060	4570	5120	5720	6360	**7160**	**7880**	**8650**	**9450**	**10300**
1	FFAM-A10Z	R-134a			3440	3920	4460	5030	**5740**	**6400**	**7120**	**7880**	**8690**
		R-407A	4120	4720	5360	6050	6770	7530	**8460**	**9290**	**10100**	**11000**	**11900**
		R-448A / R-449A	4240	4780	5370	6010	6710	7460	**8410**	**9250**	**10100**	**11100**	**12000**
	FPAK-010Z	R-134a		4020	4520	5060	5620	6230	**7100**	**7810**	**8570**	**9370**	**10200**
1 1/4	FFAM-A12Z	R-134a			4090	4640	5270	5960	**6810**	**7600**	**8440**	**9340**	**10300**
		R-407A	4960	5730	6520	7330	8160	9010	**10000**	**10900**	**11900**	**12800**	**13700**
		R-448A / R-449A	5100	5720	6420	7190	8030	8930	**10100**	**11100**	**12200**	**13300**	**14400**
	FPAK-012Z	R-134a		4730	5300	5920	6560	7250	**8250**	**9060**	**9910**	**10800**	**11700**
	FPAK-013Z	R-134a		6640	7470	8360	9300	10300	**11800**	**13000**	**14200**	**15600**	**17000**
1 1/2	FFAP-A15Z	R-134a	3680	4210	4790	5420	6100	6810	**7700**	**8540**	**9430**	**10400**	**11400**
		R-407A	6010	6700	7430	8220	9070	9990	**11200**	**12200**	**13400**	**14700**	**16100**
		R-448A / R-449A	5490	6130	6810	7560	8390	9310	**10500**	**11700**	**13000**	**14400**	**15900**
		R-134a	3680	4210	4790	5410	6100	6810	**7700**	**8530**	**9430**	**10400**	**11400**
		R-407A	6010	6700	7430	8220	9070	9990	**11200**	**12200**	**13400**	**14700**	**16100**
		R-448A / R-449A	5440	6110	6820	7610	8470	9420	**10700**	**11800**	**13100**	**14400**	**15900**
	FPAK-015Z	R-134a		7410	8330	9310	10300	11500	**13100**	**14300**	**15700**	**17200**	**18700**
1 3/4	FFAP-A17Z	R-134a	4400	5030	5720	6440	7210	8030	**9080**	**10000**	**11100**	**12200**	**13400**
		R-407A	7090	7890	8740	9650	10600	11700	**13000**	**14300**	**15600**	**17100**	**18600**
		R-448A / R-449A	6560	7310	8110	8990	9950	11000	**12400**	**13800**	**15200**	**16800**	**18500**
		R-134a	4400	5030	5720	6440	7210	8030	**9080**	**10000**	**11100**	**12200**	**13400**
		R-407A	7090	7890	8740	9650	10600	11700	**13000**	**14300**	**15600**	**17100**	**18600**
		R-448A / R-449A	6510	7290	8130	9050	10100	11200	**12600**	**13900**	**15400**	**16900**	**18600**
2	FFAP-A20Z	R-134a	5020	5750	6530	7390	8280	9230	**10400**	**11500**	**12700**	**14000**	**15400**
		R-407A	8150	9080	10100	11100	12300	13500	**15100**	**16500**	**18100**	**19800**	**21600**
		R-448A / R-449A	7510	8370	9300	10300	11400	12700	**14300**	**15900**	**17500**	**19400**	**21400**
		R-134a	5020	5750	6530	7390	8280	9230	**10400**	**11500**	**12700**	**14000**	**15400**
		R-407A	8150	9080	10100	11100	12300	13500	**15100**	**16500**	**18100**	**19800**	**21600**
		R-448A / R-449A	7620	8530	9460	10400	11500	12700	**14200**	**15700**	**17300**	**19200**	**21200**
	FPAK-020Z	R-134a		10000	11300	12600	14000	15500	**17700**	**19500**	**21400**	**23400**	**25600**
2 1/4	FFAP-A22Z	R-134a	6060	6930	7870	8910	10000	11300	**12800**	**14200**	**15700**	**17400**	**19100**
		R-407A	9330	10600	11900	13400	14900	16600	**18700**	**20700**	**22800**	**25100**	**27500**
		R-448A / R-449A	9120	10200	11300	12600	14000	15600	**17600**	**19600**	**21800**	**24200**	**26800**
		R-134a	6060	6930	7870	8910	10000	11300	**12800**	**14200**	**15700**	**17400**	**19100**
		R-407A	9960	11100	12400	13700	15100	16700	**18700**	**20500**	**22600**	**24800**	**27200**
		R-448A / R-449A	9040	10200	11400	12700	14100	15800	**17800**	**19800**	**21900**	**24200**	**26800**
3	FFAP-A30Z	R-134a	6840	7820	8880	10000	11300	12700	**14400**	**15900**	**17600**	**19400**	**21300**
		R-407A	11200	12500	13800	15300	16900	18600	**20800**	**22900**	**25100**	**27600**	**30200**
		R-448A / R-449A	10300	11600	12900	14300	15800	17400	**19600**	**21700**	**24100**	**26700**	**29600**
		R-134a	7140	8120	9190	10300	11600	12900	**14600**	**16100**	**17700**	**19500**	**21300**
		R-407A	11200	12500	13800	15300	16900	18600	**20800**	**22900**	**25100**	**27600**	**30200**
		R-448A / R-449A	10300	11600	12900	14200	15700	17400	**19600**	**21700**	**24100**	**26700**	**29700**
3 1/4	FFAP-A32Z	R-134a	9190	10500	11900	13400	15000	16700	**18900**	**20900**	**23100**	**25400**	**27800**
		R-407A	14500	16100	17900	19700	21700	23900	**26600**	**29200**	**31900**	**34900**	**38100**
		R-448A / R-449A	14100	15900	17800	19800	21900	24100	**26900**	**29300**	**31800**	**34500**	**37200**
4	FPAK-039Z	R-134a		11300	12800	14300	16000	17800	**22500**	**24800**	**27200**	**29800**	**32600**
	FFAP-A40Z	R-134a	10200	11700	13200	15000	16900	18900	**21500**	**23800**	**26300**	**29000**	**31900**
		R-407A	15500	17600	19800	22200	24800	27700	**31100**	**34400**	**37900**	**41700**	**45700**
		R-448A / R-449A	15600	17400	19400	21700	24200	26800	**30200**	**33300**	**36700**	**40300**	**44100**
4 1/4	FFAP-A42Z	R-134a	12700	14500	16400	18600	20800	23200	**26300**	**29100**	**32100**	**35300**	**38800**
		R-407A	20600	23000	25500	28100	31000	34200	**38100**	**41900**	**45900**	**50000**	**55000**
		R-448A / R-449A	19800	22400	25100	28000	31000	34200	**38100**	**41700**	**45400**	**49300**	**53500**
5	FFAP-050Z	R-134a	12300	13900	15700	17600	19600	21800	**24600**	**27200**	**30000**	**32900**	**36100**
		R-407A	18800	21200	23800	26600	29500	32600	**36300**	**39700**	**43100**	**46600**	**50000**
		R-448A / R-449A	22300	25300	28600	32100	35800	39700	**44500**	**48700**	**53000**	**57500**	**61500**
6	FFAP-060Z	R-134a	14300	16100	18200	20400	22800	25400	**28700**	**31700**	**35000**	**38400**	**42100**
		R-407A	21600	24300	27200	30300	33600	37100	**41400**	**45200**	**49100**	**53000**	**57500**
		R-448A / R-449A	26300	29800	33500	37500	41700	46100	**51500**	**56500**	**61500**	**66500**	**71500**

F-LINE AIR COOLED CONDENSING UNITS

Copeland F-Line Air Cooled Condensing Units
Extended Medium Temp & Low Temp

Medium - High Temp / Air Cooled			90°F Ambient														
Nom. HP	Model	Refrigerant	Capacity (BTU/Hr) @SST, 40°F RG, 5°F Subcooling														
			-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30
1	FFAL-010Z	R-407A	1780	1990	2230	2500	2810	3150	3550	3990	4490	5050	5670				
		R-448A / R-449A	1840	2080	2330	2620	2930	3290	3690	4140	4650	5230	5870				
1 1/4	FFAL-013Z	R-407A	2210	2470	2810	3210	3680	4220	4820	5480	6200	6980	7820				
		R-448A / R-449A	2280	2580	2940	3360	3850	4390	4990	5650	6360	7130	7940				
	FFAL-014Z	R-407A	2090	2380	2730	3150	3620	4160	4740	5390	6080	6830	7620				
		R-448A / R-449A	2630	3020	3470	3980	4560	5200	5890	6640	7440	8300	9200				
1 1/2	FFAL-015Z	R-134a	1970	2280	2620	3000	3430	3900	4420	5000	5630	6320	7070	7890	8770	9720	10700
		R-407A	3180	3730	4300	4910	5580	6300	7070	7890	8760						
		R-448A / R-449A	3380	3870	4400	4970	5580	6250	6960	7720	8550	9420	10400	11300	12400	13500	
	FFAP-A15Z	R-407A				3470	4100	4720	5350	6010	6700	7430	8220	9070	9990	**11200**	**12200**
		R-448A / R-449A				3130	3730	4310	4890	5490	6130	6810	7560	8390	9310	**10500**	**11700**
1 3/4	FFAL-017Z	R-407A	3340	3910	4500	5120	5780	6500	7280	8120	9050	10100	11200				
		R-448A / R-449A	4130	4800	5480	6190	6960	7790	8690	9700	10800	12100	13400				
	FFAP-A17Z	R-407A				4110	4850	5580	6320	7090	7890	8740	9650	10600	11700	**13000**	**14300**
		R-448A / R-449A				3870	4490	5120	5800	6510	7290	8130	9050	10100	11200	**12600**	**13900**
2	FFAL-020Z	R-134a	2470	2860	3290	3770	4310	4910	5570	6310	7110	8000	8970	10000	11200	12400	13800
		R-448A / R-449A	4860	5820	6750	7670	8600	9560	10600	11600	12800	14100	15500	17000	18700	20500	
	FFAP-A20Z	R-407A				4720	5560	6410	7260	8150	9080	10100	11100	12300	13500	**15100**	**16500**
		R-448A / R-449A				4310	5120	5910	6700	7510	8370	9300	10300	11400	12700	**14300**	**15900**
2 1/4	FFAL-022Z	R-407A	4650	5460	6340	7310	8380	9590	10900	12500	14200						
		R-407C	3050	3660	4250	4830	5440	6110	6850	7700	8690	9820	11100				
		R-448A / R-449A	5420	6320	7240	8200	9220	10300	11500	12700	14100	15500	17100	18800	20700	22700	
	FFAP-A22Z	R-407A				5170	6110	7110	8180	9330	10600	11900	13400	14900	16600	**18700**	**20700**
		R-448A / R-449A				5170	6170	7140	8110	9120	10200	11300	12600	14000	15600	**17600**	**19600**
2 1/2	FFAL-026Z	R-407A	5530	6170	7030	8060	9230	10500	11800	13100	14400						
		R-448A / R-449A	6850	7770	8800	9930	11200	12600	14100	15700	17400	19300	21300	23400	25600	27900	
3	FFAL-030Z	R-134a	3970	4570	5240	6000	6860	7810	8870	10000	11300	15000	16800	18700	20700	22800	25100
		R-407A	6390	7080	8000	9110	10400	11800	13400	15000	16700						
		R-448A / R-449A	8320	9120	10200	11400	12800	14500	16200	18200	20300	22500	24800	27200	29800	32400	
	FFAP-A30Z	R-407A				6440	7600	8760	9940	11200	12500	13800	15300	16900	18600	**20800**	**22900**
		R-448A / R-449A				4850	6370	7750	9040	10300	11600	12900	14300	15800	17400	**19600**	**21700**
3 1/4	FFAP-A32Z	R-407A				8390	9900	11400	12900	14500	16100	17900	19700	21700	23900	**26600**	**29200**
		R-448A / R-449A				7820	9290	10800	12400	14100	15900	17800	19800	21900	24100	**26900**	**29300**
4	FFAL-040Z	R-134a	4720	5420	6220	7130	8140	9270	10500	11900	13400	15000	16700	18600	20600	22700	25000
		R-407A	7850	8640	9670	10900	12400	14000	15800	17800	19800						
		R-448A / R-449A	9470	10700	12100	13700	15500	17400	19500	21700	24000	26500	29100	31800	34600		
	FFAP-A40Z	R-407A				8510	10100	11800	13600	15500	17600	19800	22200	24800	27700	**31100**	**34400**
		R-448A / R-449A				10300	11300	12600	14000	15600	17400	19400	21700	24200	26800	**30200**	**33300**
4 1/4	FFAP-A42Z	R-407A				11900	14000	16200	18400	20600	23000	25500	28100	31000	34200	**38100**	**41900**
		R-448A / R-449A				10900	12900	15100	17400	19800	22400	25100	28000	31000	34200	**38100**	**41700**
5	FFAL-050Z	R-134a	5710	6600	7580	8670	9880	11200	12700	14200	16000	17800	19800	22000	24300	26700	29300
		R-407A	9400	10400	11600	13100	14800	16700	18700	20900	23200						
		R-448A / R-449A	11800	13300	15000	16800	18800	20900	23200	25600	28100	30700	33400				
	FFAP-050Z	R-407A				11200	12700	14500	16500	18800	21200	23800	26600	29500	32600	**36300**	**39700**
		R-448A / R-449A					15000	17100	19500	22300	25300	28600	32100	35800	39700	**44500**	**48700**
6	FFAP-060Z	R-407A				12900	14700	16800	19100	21600	24300	27200	30300	33600	37100	**41400**	**45200**
		R-407C					14800	16800	19100	21600	24300	27200	30400	33600	37100	**41200**	**45000**
		R-448A / R-449A					18100	20400	23200	26300	29800	33500	37500	41700	46100	**51500**	**56500**

F-LINE AIR COOLED CONDENSING UNITS

Copeland F-Line Air Cooled Condensing Units

Copevap															
					Refrigerant Connections^		Receiver Capacity* (Lbs @ 90% Volume)								
Unit Model	Compressor	Length	Width	Height	Liquid	Suction	R-134a	R-407C	R-448/449	R-450	R-513	MCA	Max Over-current Protection	Ship Weight
FFAL-010Z-CFV-072	ZF03KAE	24.86	18.75	17.73	3/8	7/8	5.7	4.9	5.3	5.3	5.1	9	15	119
FFAL-010Z-TFC-072	ZF03KAE	24.86	18.75	17.73	3/8	7/8	5.7	4.9	5.3	5.3	5.1	6.5	15	117
FFAL-013Z-CFV-072	ZF04KAE	24.86	18.75	17.73	3/8	7/8	5.7	4.9	5.3	5.3	5.1	10.7	15	122
FFAL-013Z-TFC-072	ZF04KAE	24.86	18.75	17.73	3/8	7/8	5.7	4.9	5.3	5.3	5.1	9.7	15	119
FFAL-014Z-CFV-072	ZF05KAE	24.86	18.75	17.73	3/8	7/8	5.7	4.9	5.3	5.3	5.1	12.3	15	118
FFAL-014Z-TFC-072	ZF05KAE	24.86	18.75	17.73	3/8	7/8	5.7	4.9	5.3	5.3	5.1	10.8	15	116
FFAL-015Z-CFV-072	ZF06K4E	24.86	18.82	17.16	3/8	7/8	5.7	4.9	5.3	5.3	5.1	18.4	30	127
FFAL-015Z-TFC-072	ZF06K4E	24.86	18.82	17.16	3/8	7/8	5.7	4.9	5.3	5.3	5.1	13	20	124
FFAL-015Z-TFD-072	ZF06K4E	24.86	18.82	17.16	3/8	7/8	5.7	4.9	5.3	5.3	5.1	6.3	15	88
FFAL-017Z-CFV-072	ZF07KAE	24.86	18.75	17.73	3/8	7/8	5.7	4.9	5.3	5.3	5.1	18.8	30	117
FFAL-017Z-TFC-072	ZF07KAE	24.86	18.75	17.73	3/8	7/8	5.7	4.9	5.3	5.3	5.1	12.2	15	116
FFAL-020Z-CFV-071	ZF08K4E	25	34.06	19.29	3/8	7/8	13.1	11.2	12.1	12.1	11.7	23.3	35	218
FFAL-020Z-TFC-071	ZF08K4E	25	34.06	19.29	3/8	7/8	13.1	11.2	12.1	12.1	11.7	14.9	20	307
FFAL-022Z-CFV-071	ZF09K4E	25	34.06	19.29	3/8	7/8	13.1	11.2	12.1	12.1	11.7	24.2	35	224
FFAL-022Z-TFC-071	ZF09K4E	25	34.06	19.29	3/8	7/8	13.1	11.2	12.1	12.1	11.7	16.7	20	212
FFAL-026Z-CFV-071	ZF11K4E	34.06	25	19.29	3/8	7/8	13.1	11.2	12.1	12.1	11.7	28.8	45	219
FFAL-026Z-TFC-071	ZF11K4E	25	34.06	19.29	3/8	7/8	13.1	11.2	12.1	12.1	11.7	20.6	30	212
FFAL-030Z-CFV-071	ZF13K4E	25	34.06	20.01	3/8	7/8	13.1	11.2	12.1	12.1	11.7	36.3	60	243
FFAL-030Z-TFC-071	ZF13K4E	25	34.06	20.01	3/8	7/8	13.1	11.2	12.1	12.1	11.7	21.6	30	237
FFAL-040Z-CFV-071	ZF15K4E	25	34.06	20.01	3/8	7/8	13.1	11.2	12.1	12.1	11.7	42.6	70	86
FFAL-040Z-TFC-071	ZF15K4E	25	34.06	20.01	3/8	7/8	13.1	11.2	12.1	12.1	11.7	29.6	45	246
FFAL-050Z-TFC-071	ZF18K4E	25	34.06	20.01	3/8	7/8	13.1	11.2	12.1	12.1	11.7	32.7	50	256
FFAM-A08Z-CFV-072	ZB06KAE	24.12	18.33	16.45	3/8	7/8	5.7	4.9	5.3	5.3	5.1	8.9	15	
FFAM-A08Z-TFC-072	ZB06KAE	24.12	18.33	16.45	3/8	7/8	5.7	4.9	5.3	5.3	5.1	7	15	
FFAM-A10Z-TFC-072	ZB07KAE	24.12	18.33	16.45	3/8	7/8	5.7	4.9	5.3	5.3	5.1	7.6	15	
FFAM-A12Z-CFV-072	ZB08KAE	24.12	18.33	16.45	3/8	7/8	5.7	4.9	5.3	5.3	5.1	11.4	15	
FFAM-A12Z-TFC-072	ZB08KAE	24.12	18.33	16.45	3/8	7/8	5.7	4.9	5.3	5.3	5.1	8	15	
FFAP-A15Z-CFV-072	ZS09KAE	24.1	18.42	16.62	3/8	7/8	13.1	11.2	12.1	12.1	11.7	13.9	20	
FFAP-A15Z-TFC-072	ZS09KAE	24.1	18.42	16.62	3/8	7/8	13.1	11.2	12.1	12.1	11.7	11.4	15	
FFAP-A17Z-CFV-072	ZS11KAE	24.1	18.42	16.62	3/8	7/8	13.1	11.2	12.1	12.1	11.7	17.2	25	
FFAP-A17Z-TFC-072	ZS11KAE	24.1	18.42	16.62	3/8	7/8	13.1	11.2	12.1	12.1	11.7	7	15	
FFAP-A20Z-CFV-072	ZS13KAE	34.06	25.02	18.88	3/8	7/8	13.1	11.2	12.1	12.1	11.7	16.8	25	
FFAP-A20Z-TFC-072	ZS13KAE	34.06	25.02	18.88	3/8	7/8	13.1	11.2	12.1	12.1	11.7	13.9	20	
FFAP-A22Z-CFV-072	ZS15KAE	34.06	25.06	19.03	3/8	7/8	13.1	11.2	12.1	12.1	11.7	22.4	35	
FFAP-A22Z-TFC-072	ZS15KAE	34.06	25.06	19.03	3/8	7/8	13.1	11.2	12.1	12.1	11.7	16.1	20	
FFAP-A30Z-CFV-072	ZS19KAE	34.06	25.06	19.03	3/8	7/8	13.1	11.2	12.1	12.1	11.7	25.3	10	
FFAP-A30Z-TFC-072	ZS19KAE	34.06	25.06	19.03	3/8	7/8	13.1	11.2	12.1	12.1	11.7	19.9	30	
FFAP-A32Z-CFV-072	ZS21KAE	34.06	25.06	18.88	3/8	1 1/8	13.1	11.2	12.1	12.1	11.7	31.8	50	
FFAP-A32Z-TFC-072	ZS21KAE	34.06	25.06	18.88	3/8	1 1/8	13.1	11.2	12.1	12.1	11.7	21.8	30	
FFAP-A40Z-CFV-072	ZS26KAE	44.06	28.26	26.65	1/2	1 1/8	21.8	18.7	20.2	20.2	19.5	33.1	50	
FFAP-A40Z-TFC-072	ZS26KAE	44.06	28.26	26.65	1/2	1 1/8	21.8	18.7	20.2	20.2	19.5	23	30	
FFAP-A42Z-CFV-072	ZS33KAE	44.06	28.26	26.65	1/2	1 1/8	21.8	18.7	20.2	20.2	19.5	38.9	60	
FFAP-A42Z-TFC-072	ZS33KAE	44.06	28.26	26.65	1/2	1 1/8	21.8	18.7	20.2	20.2	19.5	31.5	50	
FFAP-050Z-CFV-071	ZS38KAE	28.2	44.1	26.8	1/2	1 1/8	21.5	18.4	20.3	20.2		43.4	70	320
FFAP-050Z-TFC-071	ZS38KAE	28.29	44.06	26.62	1/2	1 1/8	21.5	18.4	20.3	20.2		30.4	45	362
FFAP-060Z-TFC-071	ZS45K4E	28.29	44.06	26.62	1/2	1 1/8	21.5	18.4	20.3	20.2		33.5	50	320
FPAK-010Z-CFV-072	ZS09KAE	24	17.06	16.62	3/8	5/8	7.5	6.4	7.1	7	6.8	13.7	20	101
FPAK-010Z-TFC-072	ZS09KAE	24	17.06	16.62	3/8	5/8	7.5	6.4	7.1	7	6.8	11.2	15	100
FPAK-010Z-TFD-072	ZS09KAE	24	17.06	16.62	3/8	5/8	7.5	6.4	7.1	7	6.8	5.5	15	104
FPAK-012Z-CFV-072	ZS11KAE	24	17.06	16.62	3/8	5/8	7.5	6.4	7.1	7	6.8	16.9	25	103
FPAK-012Z-TFC-072	ZS11KAE	24	17.06	16.62	3/8	5/8	7.5	6.4	7.1	7	6.8	14.2	20	104
FPAK-012Z-TFD-072	ZS11KAE	24	17.06	16.62	3/8	5/8	7.5	6.4	7.1	7	6.8	6.2	15	104
FPAK-013Z-CFV-072	ZS15KAE	24.14	18.33	16.62	3/8	7/8	7.5	6.4	7.1	7	6.8	21	35	114
FPAK-013Z-TFC-072	ZS15KAE	24.14	18.33	16.62	3/8	7/8	7.5	6.4	7.1	7	6.8	14.7	20	112
FPAK-013Z-TFD-072	ZS15KAE	24.14	18.33	16.62	3/8	7/8	7.5	6.4	7.1	7	6.8	8.4	15	150
FPAK-015Z-CFV-072	ZS19KAE	24.14	18.33	16.62	3/8	7/8	7.5	6.4	7.1	7	6.8	23.9	40	112
FPAK-015Z-TFC-072	ZS19KAE	24.14	18.33	16.62	3/8	7/8	7.5	6.4	7.1	7	6.8	18.5	30	117
FPAK-015Z-TFD-072	ZS19KAE	24.14	18.33	16.62	3/8	7/8	7.5	6.4	7.1	7	6.8	9.7	15	119
FPAK-020Z-CFV-071	ZS21KAE	25	34.1	19	3/8	7/8	13	11.2	12.3	12.2	11.8	31.8	50	215
FPAK-020Z-TFC-071	ZS21KAE	25.06	34.03	18.88	3/8	1 1/8	13	11.2	12.3	12.2	11.8	21.8	30	207
FPAK-039Z-CFV-071	ZS29KAE	25.2	34.1	19	3/8	7/8	13	11.2	12.3	12.2	11.8	35.4	50	220
FPAK-039Z-TFC-071	ZS29KAE	25.1	34.06	18.87	3/8	1 1/8	13	11.2	12.3	12.2	11.8	28.4	45	220

*Not all available models are listed. Please visit Climate.Emerson.com/OPI to see all available models.

F-LINE WATER COOLED CONDENSING UNITS

Copeland F-Line Water Cooled Condensing Units
Medium Temp & High Temp

Medium Temp - High Temp / Water Cooled														
Nom. HP	Model	Refrigerant	BTU/H at 105°Condensing, 75° Water Inlet - Evaporator Temp (°F), Capacities rated at 40°F return gas (65° return gas for capacities in bold), 5°F subcooling										Water flow (GPM) @evap temp (°F)		
			0	5	10	15	20	25	30	35	40	45	0	25	45
1 1/2	FFWP-015Z	R-134a	4070	4620	5220	5870	6590	**7620**	**8500**	**9460**	**10500**	**11600**	0.57	0.96	1.4
		R-407A	6630	7410	8250	9170	10200	**12000**	**13300**	**14700**	**16300**	**18300**	0.9	1.4	2.1
		R-448A/449A	6120	6880	7710	8640	9670	10800					0.9		
1 3/4	FFWP-017Z	R-134a	4850	5510	6230	7010	7870	**9090**	**10100**	**11300**	**12500**	**13900**	0.67	1.15	1.67
		R-407A	7920	8850	9850	11000	12200	**14300**	**15900**	**17600**	**19500**	**21800**	1.1	1.7	2.5
		R-448A/449A	7360	8260	9270	10400	11600	13000					1		
2	FFWP-020Z	R-134a	5540	6290	7110	8010	8990	**10400**	**11600**	**12900**	**14300**	**15900**	0.77	1.32	1.91
		R-407A	9050	10100	11300	12500	13900	**16300**	**18100**	**20100**	**22200**	**24900**	1.2	2	2.8
		R-448A/449A	8610	9630	10700	11900	13300	14800					1.2		
2 1/4	FFWP-022Z	R-134a	6680	7590	8570	9650	10800	**12500**	**14000**	**15600**	**17300**	**19100**	0.92	1.57	2.28
		R-407A	10900	12200	13600	15100	16700	**19700**	**21800**	**24200**	**26800**	**30000**	1.5	2.3	3.4
		R-448A/449A	10100	11400	12800	14300	16000	17900					1.4		
3	FFWP-030Z	R-134a	7540	8560	9680	10900	12200	**14100**	**15800**	**17500**	**19500**	**21600**	1.05	1.75	2.53
		R-407A	12300	13700	15300	17000	18900	**22200**	**24600**	**27300**	**30200**	**33800**	1.7	2.6	3.8
		R-448A/449A	11600	13000	14400	16100	17900	19900					1.6		
3 1/4	FFWP-032Z	R-134a	10100	11500	13000	14600	16400	**19000**	**21200**	**23600**	**26200**	**29000**	1.35	2.33	3.4
		R-407A	15600	17700	19900	22300	25000	**28600**	**31800**	**35300**	**39100**	**43200**	2.1	3.5	5
		R-448A/449A	16500	18700	21100	23600	26400	29300					2.2		
4	FFWP-040Z	R-134a	11600	13200	14900	16800	18900	**21000**	**23500**	**26100**	**29000**	**32200**	1.54	2.56	3.79
		R-407A	17400	19600	22100	24800	27700	**32700**	**36400**	**40400**	**44700**	**49900**	2.4	3.9	5.6
		R-448A/449A	17600	19900	22400	25200	28300	31600					2.4		
4 1/4	FFWP-042Z	R-134a	14000	15800	17900	20200	22600	**26100**	**29200**	**32500**	**36100**	**40000**	1.86	3.21	4.67
		R-407A	22800	25800	29000	32600	36400	**41700**	**46400**	**51500**	**57000**	**63500**	3	5	7.1
		R-448A/449A	23100	26200	29500	33100	36900	41100					3.1		
5	FFWP-050Z	R-134a	16000	18100	20400	23000	25800	**30800**	**34300**	**38100**	**42300**	**47200**	2.1	3.79	5.69
		R-407A	26100	29500	33300	37300	41500	46000					3.5		
		R-448A/449A	26800	30600	34800	39200	43900	48800					3.6		

Superheat restrictions apply. See AE bulletin 4-1387 for full compressor operating envelope.

Low Temp

Low Temp / Water Cooled												
Rated HP	Model	Refrigerant	BTU/H at 105°Condensing, 75° Water Inlet - Evaporator Temp (°F), Capacities rated at 40°F return gas, 5°F subcooling								Water Flow (GPM) At Evaporator Temp (°F)		
			-30	-25	-20	-15	-10	-5	0	5	-25	-10	5
1 1/2	FFWP-015Z	R-407A		3330	3960	4590	5240	5910	6630	7410	0.5	0.8	1
		R-448A/449A		3220	3720	4250	4820	5440	6120	6880	0.5	0.7	1
1 3/4	FFWP-017Z	R-407A		3980	4720	5480	6250	7060	7920	8850	0.6	0.9	1.2
		R-448A/449A		3910	4490	5120	5800	6540	7360	8260	0.6	0.9	1.1
2	FFWP-020Z	R-407A		4540	5390	6250	7140	8060	9050	10100	0.7	1	1.4
		R-448A/449A		3690	4760	5750	6700	7650	8610	9630	0.7	1	1.3
2 1/4	FFWP-022Z	R-407A		5470	6500	7540	8610	9720	10900	12200	0.8	1.2	1.6
		R-448A/449A		5320	6150	7030	7980	9010	10100	11400	0.8	1.2	1.6
3	FFWP-030Z	R-407A		6180	7340	8510	9710	11000	12300	13700	1	1.4	1.8
		R-448A/449A		4790	6310	7710	9020	10300	11600	13000	0.8	1.3	1.8
3 1/4	FFWP-032Z	R-407A		7160	8680	10300	11900	13700	15600	17700	1.2	1.7	2.4
		R-448A/449A		7460	9080	10800	12600	14500	16500	18700	1.2	1.8	2.5
4	FFWP-040Z	R-407A		7940	9640	11400	13300	15200	17400	19600	1.2	1.7	2.4
		R-448A/449A		10000	11100	12300	13800	15600	17600	19900	1.5	1.9	2.6
4 1/4	FFWP-042Z	R-407A		10400	12700	15000	17400	20000	22800	25800	1.7	2.4	3.4
		R-448A/449A		10400	12700	15100	17600	20300	23100	26200	1.7	2.5	3.4
5	FFWP-050Z	R-407A		13400	15200	17500	20000	22900	26100	29500	2	2.8	3.9
		R-448A/449A		13400	15200	17500	20200	23300	26800	30600	2.1	2.9	4

Superheat restrictions apply. See AE bulletin 4-1387 for full compressor operating envelope.

F-LINE WATER COOLED CONDENSING UNITS

Copeland F-Line Water Cooled Condensing Units

Copevap															
					Refrigerant Connections^		Receiver Capacity* (Lbs @ 90% Volume)								
Unit Model	Compressor	Length	Width	Height	Liquid	Suction	R-134a	R-404A	R-407C	R-448/449	R-450	R-513	MCA	Max Over-current Protection	Ship Weight
FFWP-015Z-CFV-020	ZS09KAE-PFV	24	16.1	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	12.5	20	107
FFWP-015Z-TFC-020	ZS09KAE-TF5	24	16.1	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	10	15	107
FFWP-015Z-TFD-020	ZS09KAE-TFD	24	16.1	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	4.8	15	107
FFWP-017Z-CFV-020	ZS11KAE-PFV	24	16.1	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	15.8	25	105
FFWP-017Z-TFC-020	ZS11KAE-TF5	16.9	24	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	13	20	105
FFWP-017Z-TFD-020	ZS11KAE-TFD	16.9	24	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	5.4	15	105
FFWP-020Z-CFV-020	ZS13KAE-PFV	16.9	24	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	15	25	101
FFWP-020Z-TFC-020	ZS13KAE-TF5	16.9	24	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	12.1	20	107
FFWP-020Z-TFD-020	ZS13KAE-TFD	16.9	24	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	6	15	107
FFWP-022Z-CFV-020	ZS15KAE-PFV	16.9	24	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	19.6	35	105
FFWP-022Z-TFC-020	ZS15KAE-TF5	24	16.1	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	13.3	20	106
FFWP-022Z-TFD-020	ZS15KAE-TFD	24	16.1	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	6.8	15	106
FFWP-030Z-CFV-020	ZS19KAE-PFV	16.1	24.1	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	22.5	40	105
FFWP-030Z-TFC-020	ZS19KAE-TF5	16.1	24.1	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	17.1	30	75
FFWP-030Z-TFD-020	ZS19KAE-TFD	16.1	24.1	16.6	3/8	7/8	13	12.9	11.2	12.3	12.2	11.8	8.1	15	106
FFWP-032Z-CFV-020	ZS21KAE-PFV	27.2	21.5	18.2	3/8	1 1/8	13	12.9	11.2	12.3	12.2	11.8	29	50	171
FFWP-032Z-TFC-020	ZS21KAE-TF5	27.2	21.5	18.2	3/8	1 1/8	13	12.9	11.2	12.3	12.2	11.8	19	30	168
FFWP-032Z-TFD-020	ZS21KAE-TFD	27.2	21.5	18.2	3/8	1 1/8	13	12.9	11.2	12.3	12.2	11.8	8.6	15	168
FFWP-040Z-CFV-020	ZS26KAE-PFV	21	27.5	21.1	1/2	1 1/8	21.5	21.2	18.4	20.3	20.2		29.5	50	191
FFWP-040Z-TFC-020	ZS26KAE-TF5	21	27.5	21.1	1/2	1 1/8	21.5	21.2	18.4	20.3	20.2		19.4	30	191
FFWP-040Z-TFD-020	ZS26KAE-TFD	21	27.5	21.1	1/2	1 1/8	21.5	21.2	18.4	20.3	20.2		8.6	15	195
FFWP-042Z-CFV-020	ZS33KAE-PFV	27.2	21.6	21.1	1/2	1 1/8	21.5	21.2	18.4	20.3	20.2		35.3	60	197
FFWP-042Z-TFC-020	ZS33KAE-TF5	27.2	21.6	21.1	1/2	1 1/8	21.5	21.2	18.4	20.3	20.2		27.9	50	198
FFWP-042Z-TFD-020	ZS33KAE-TFD	21	27.5	21.1	1/2	1 1/8	21.5	21.2	18.4	20.3	20.2		12.5	20	220
FFWP-050Z-CFV-020	ZS38K4E-PFV	27.5	21.7	21.1	1/2	1 1/8	21.5	21.2	18.4	20.3	20.2		39.8	70	220
FFWP-050Z-TFC-020	ZS38K4E-TF5	27.5	21.7	21.1	1/2	1 1/8	21.5	21.2	18.4	20.3	20.2		26.8	45	209
FFWP-050Z-TFD-020	ZS38K4E-TFD	27.5	21.7	21.1	1/2	1 1/8	21.5	21.2	18.4	20.3	20.2		12	20	209
FFWP-050Z-TFE-020	ZS38K4E-TFE	27.5	21.7	21.1	1/2	1 1/8	21.5	21.2	18.4	20.3	20.2		9.9	15	0

*Not all available models are listed. Please visit Climate.Emerson.com/OPI to see all available models.

X-LINE OUTDOOR CONDENSING UNITS

X-Line Outdoor Condensing Units

The Copeland Scroll™ Outdoor Condensing Unit (X-Line Series) for commercial refrigeration applications offers c-store operators the greatest energy efficiency, performance and flexibility available in a standard condensing unit.



Features & Benefits



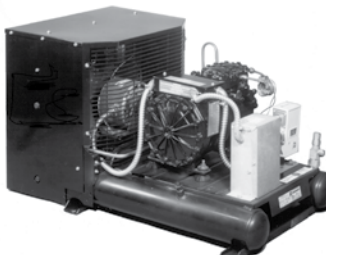
- Copeland Scroll Compressor Variable Speed Fan Motor
- Advanced Diagnostics and Protection Features
- Factory Installed EK Filter Drier and HMI Moisture Indicator
- Slim Profile Design and Light Weight
- Reliability
- High Energy Efficiency
- Low Sound & Vibration
- Faster Troubleshooting Warranty Reduction
- Fewer Leaks, Reduced Callbacks, Lower Installation Costs, Increased Equipment Reliability, Lower Warranty
- Application Flexibility

For More Product Details, Specification And Pricing, Please Contact Your Local Branch.

C, D & E-LINE

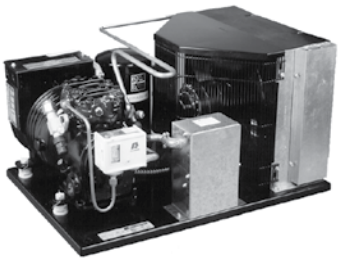
C-LINE FEATURES:

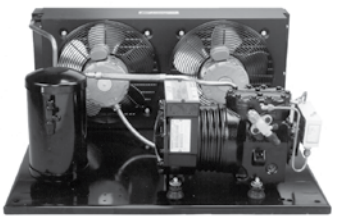
- LARGE RECEIVERS
- FAN GUARD
- BX CONDUIT
- PRESSURE SWITCH
- 3 SERVICE VALVES
- RECEIVER MOUNTED



D & E-LINE FEATURES:

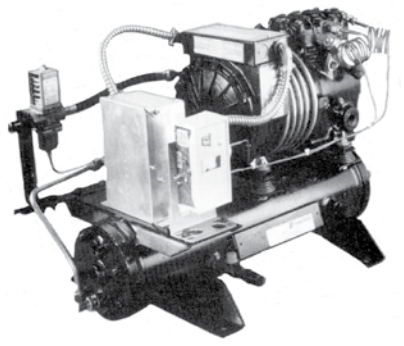
- RECEIVER
- FAN GUARD
- BX CONDUIT
- PRESSURE SWITCH
- 3 SERVICE VALVES





W-LINE

W-LINE FEATURES:



- 5 TO 15% IMPROVED EFFICIENCY
- UL LISTED AND CSA APPROVED
- RIGID CONDENSER / RECEIVER BASE ASSEMBLY
- ALL CONDENSERS ARE MECHANICALLY OR CHEMICALLY CLEANABLE
- LOW TEMPERATURE SINGLE STAGE REFRIGERANT COOLED UNITS AVAILABLE WITH AUXILIARY FAN (PROVIDED ON -050 MODELS)
- DESIGNED FOR RACK INSTALLATIONS
- INHERENT, INTERNAL THERMOSTAT OR SOLID STATE MOTOR PROTECTION ON ALL MODELS
- LARGE PUMPDOWN CAPACITY
- EXHAUSTIBLE FUSIBLE PLUGS ON ALL 3/4 HP THROUGH 10 HP MODELS AND PRESSURE RELIEF VALVES ON ALL 15 HP THROUGH 40 HP MODELS
- DUAL PRESSURE CONTROL MOUNTED AND WIRED
- WATER VALVE PROVIDED
- WIRING ENCLOSED IN METALLIC CONDUIT
- SENTRONIC OIL PRESSURE
  - ELIMINATES CAPILLARY TUBE PROBLEMS
  - ELECTRONIC SENSING OF OIL PRESSURE
- OIL PRESSURE SAFETY CONTROL MOUNTED ON ALL MODELS 5 HP AND ABOVE

For More Product Details, Specification And Pricing, Please Contact Your Local Branch.

WATER COOLED CONDENSING UNITS

SEMI-HERMETIC - W-LINE

High/Medium Temperature
3/4 H.P. to 3 H.P.

Capacity Data

Unit Model Number	Ref.	HP	Capacity (BTU/Hr) at 75° Inlet Water - Evaporator Temp (0°F)									LIST		
			-5°F	0°F	5°F	10°F	15°F	20°F	25°F	30°F	35°F	230/1	230/3	460/3
W2WM-0075	22	0.75	3680	4260	4880	5550	6290	7110	8040					
WJWM-0075	404A	0.75	3140	3670	4270	4940	5660	6450	7280				10,154.00	
W2WH-0075	22	0.75		3450	3980	4570	5230	5960	6750	7610	8550			
WTWH-0075	134a	0.75		3370	3910	4510	5160	5860	6620	7440	8330	10,135.00		
W3WM-0100	22	1		5730	6700	7750	8890	10100	11400					
WJWM-0100	404A	1	4890	5650	6410	7210	8090	9090	10260				10,240.00	
W2WH-0100	22	1		5050	5800	6640	7570	8590	9700	10900	12200			
WTWH-0100	134a	1		4140	4890	5700	6580	7540	8580	9730	11000		10,173.00	
WJWM-0152	404A	1.5	5860	6470	7650	8640	9740	11000	12400					
W2WH-0151	22	1.5		6390	7270	8310	9510	10900	12300	14000	15700			
WTWH-0151	134a	1.5		5960	7040	8210	9470	10900	12400	14000	15800			
W3WM-0201	22	2	7260	8690	10200	11700	13400	15100	17000					
WJWM-0202	404A	2	8440	9750	11000	12300	13800	15400	17400				11,368.00	
WJWM-0203	404A	2	10000	11600	13300	15100	17100	19200	21600				13,829.00	
WTWH-A201	134a	2		8360	9880	11500	13300	15200	17300	19700	22200		14,405.00	
												115/1	230/3	460/3
W2WH-0201	22	2		2960	5420	7890	10400	13000	15700	18600	21600			13,764.00

Physical/Electrical Data

Unit Model Number	Comp Model	Overall Dimensions (in.)			Connecting Lines		Base Mounting Centers		Condenser Water		Min Circuit Ampacity/ Max Fuse Size"						Pump Down Cap. (lbs)	Ship Wt. (lbs.)
		L	W	H	Liquid Line (in.)	Suction Line (in.)	L	W	In	Out	230-1-60		230-3-60		460-3-60			
W2WM-0075	KWE2-0075	28.6	14.5	17.0	3/8 F	5/8 F	14	13	3/8 MPT	1/2 FPT	6.8	15	4	15			26	166
WJWM-0075	KWNB-007E	28.6	14.5	17.0	3/8 F	5/8 F	14	12	3/8 MPT	1/2 FPT	6.8	15	4	15			23	174
W2WH-0075	KWN2-0075	28.6	14.5	17.0	3/8 F	5/8 F	14	13	3/8 MPT	1/2 FPT	7.6	15	4	15			26	166
WTWH-0075	KWMB-007E	28.6	14.5	17.0	3/8 F	5/8 F	14	13	3/8 MPT	21/2 FPT	9	15	6	15			27	178
W3WM-0100	KWM2-0100	28.6	14.5	17.0	3/8 F	5/8 F	14	13	3/8 MPT	1/2 FPT	9.4	15	6	15	4	15	26	170
WJWM-0100	KWRB-010E	28.6	14.5	17.0	3/8 F	5/8 F	14	12	3/8 MPT	1/2 FPT			5	15			23	209
W2WH-0100	KWR2-0100	28.6	14.5	17.5	3/8 F	5/8 F	14	13	3/8 MPT	1/2 FPT	9.3	15	5	15	3	15	14	170
WTWH-0100	KWJA-011E	27.3	14.5	17.5	3/8 F	5/8 F	14	13	3/8 MPT	21/2 FPT	9	15	6	15			14	176
WJWM-0152	KWGB-010E	34.8	14.5	17.0	3/8 F	7/8 S	18	13	3/8 MPT	1/2 FPT			6	15			28	178
W2WH-0151	KWGB-0150	34.8	14.5	17.0	3/8 F	7/8 S	18	13	3/8 MPT	1/2 FPT	12	20	7	15	3	15	28	225
WTWH-0151	KWLB-015E	34.8	14.5	17.0	3/8 F	7/8 S	18	13	3/8 MPT	21/2 FPT	12	20	8	15			33	220
W3WM-0201	KWKB-0200	34.8	14.5	17.7	3/8 F	7/8 S	18	13	3/8 MPT	1/2 FPT	13.3	20	9	15	4	15	35	225
WJWM-0202	KWKB-021E	34.8	14.5	17.7	3/8 F	7/8 S	18	13	3/8 MPT	1/2 NPT			9	15			31	225
WJWM-0203	ERCA-021E	34.8	14.5	20.4	3/8 F	7/8 S	18	13	1/2 NPT	1/2 NPT			11	15	4	15	31	270
W2WH-0201	ERA2-0200	34.0	14.5	20.4	3/8 F	7/8 S	18	13	1/2 NPT	1/2 NPT	13	20	8	15	4	15	32	294
WTWH-A201	EAVB-021E	35.3	14.5	20.4	3/8 F	7/8 S	18	13	1/2 NPT	1/2 NPT	19	30	10	15	5	15	36	311

Performance Data at 105° Ambient – Subcooling 5°F; Return Gas Temp. 65°F; Cond. Water Inlet Temp. 85°F; Water Temp Difference 10°F

WATER COOLED CONDENSING UNITS

SEMI-HERMETIC - W-LINE

High/Medium Temperature
3 H.P. to 40 H.P.

Capacity Data

Unit Model Number	Ref.	HP	Capacity (BTU/Hr) at 75° Inlet Water - Evaporator Temp (0°F)									LIST		
			-5°F	0°F	5°F	10°F	15°F	20°F	25°F	30°F	35°F	230/1	230/3	460/3
WJWM-0300	404A	3	14800	17000	19400	22000	24800	27800	31200				16,544.00	
W2WH-0300	22	3		14800	17100	19700	22400	25500	28800	32400	36200			
WTDH-0301	134a	3		19600	22700	26100	29700	33700	38100	42900	48100			
W3DD-0504	22	5		23100	27000	31300	35800	40800	46100	51900	58100			
WJDM-0502	404A	5	22500	25800	29500	33600	38100	43100	48500	0				
WTDH-0601	134a	6		24500	28300	32500	37100	42200	47700	53700	60400			
W3DD-0752	22	7.5	33000	39400	46100	53100	60400	68200	76500	85400	95000			
WJDM-0751	404A	7.5	41300	46600	52500	58900	66000	73700	82100					
WTDH-0751	134a	7.5		34600	40100	46100	52500	59600	67300	75800	85000			
W3DD-1003	22	10				75990	85930	96610	108090	120430	133700			
WJDM-1001	404A	10	58100	65600	73700	82600	92200	102800	114200					
W3DD-1502	22	15				102930	116170	130360	145600	161970	179560			
WJDM-1501	404A	15	79700	89800	100900	113100	126400	140900	156800					
W3DD-2002	22	20		84800	96500	109400	123700	139400	156600	175600	196400			
WJDM-2001	404A	20	80900	92200	104900	118800	133900	150200	167800					
W3DD-2502	22	25				142900	160200	178800	198900	220700	244500			
WJDM-2501	404A	25	106100	119600	135000	152200	171000	191300	212900					
W3DD-3002	22	30		129000	147100	167200	189200	213200	239100	266800	296300			
WJDM-3001	404A	30	125900	143000	161900	182600	205100	229600	256000					
W3DD-3502	22	35				209000	235300	263500	293900	326800	362500			
W3DD-4001	22	40		199200	225300	253700	284500	317900	353900	392600	434100			
WJDM-4000	404A	40	192000	216500	243300	272700	304500	339000	375900					

Physical/Electrical Data

Unit Model Number	Comp Model	Overall Dimensions (in.)			Connecting Lines		Base Mounting Centers		Condenser Water		Min Circuit Ampacity/ Max Fuse Size"						Pump Down Cap. (lbs)	Ship Wt. (lbs.)
		L	W	H	Liquid Line (in.)	Suction Line (in.)	L	W	In	Out	230-1-60		230-3-60		460-3-60			
WJWM-0300	ERFA-031E	30.0	17.0	24.0	1/2 F	1-18 S	18	16	1-1/4 FPT	1-1/4 FPT			16	25	7	15	35	326
W2WH-0300	ERF1-0310	30.0	17.0	24.0	1/2 F	1-1/8 S	18	16	1-1/4 FPT	1-1/4 FPT	21.3	35	15	25	8	15	41	330
WTDH-0301	2DF3F16KE	39.9	17.0	28.0	1/2 F	1-1/8 S	25	16	1-1/4 FPT	1-1/4 FPT			21	35	10	15	69	492
W3DD-0504	2DC3-0500	39.9	17.0	28.0	1/2 F	1-3/8 S	25	16	1-1/4 FPT	1-1/4 FPT					13	20	70	514
WJDM-0502	2DL3-050E	40.0	17.0	28.0	1/2 F	1-3/8 S	25	16	1-1/4 FPT	1-1/4 FPT			28	50	13	20	59	501
WTDH-0601	2DA3F23KE	39.9	17.0	28.0	1/2 F	1-3/8 S	25	16	1-1/4 FPT	1-14 FPT					13	20	69	511
W3DD-0752	2DA3R89K0	46.0	17.0	38.6	5/8 F	1-3/8 S	25	16	1-1/4 FPT	1-1/4 FPT			40	70	18	30	129	564
WJDM-0751	2DA3R89KE	46.0	17.0	38.6	5/8 F	1-3/8 S	25	16	1-1/4 FPT	1-1/4 FPT			40	70	18	30	112	590
WTDH-0751	3DB3F33KE	46.0	17.0	30.7	5/8 F	1-3/8 S	25	16	1-1/4 FPT	1-1/4 FPT					20	35	130	634
W3DD-1003	3DB3A1000	52.0	17.0	30.6	7/8 S	1-3/8 S	38	16	1-1/4 FPT	1-1/4 FPT			55	90	25	45	144	708
WJDM-1001	3DB3R12ME	52.0	17.0	30.6	7/8 S	1-3/8 S	38	16	1-1/4 FPT	1-1/4 FPT			55	90	25	45	125	670
W3DD-1502	3DS3R17M0	52.0	18.0	32.6	1-1/8 S	1-5/8 S	38	16	1-1/2 FPT	1-1/2 FPT			80	125	36	60	202	935
WJDM-1501	3DS3A150E	52.0	18.0	32.6	1-1/8 S	1-5/8 S	38	16	1-1/2 FPT	1-1/2 FPT			75	125	36	60	175	935
W3DD-2002	4DA3R18M0	64.0	20.2	34.3	1-1/8 S	1-5/8 S	38	16	2 FPT	2 FPT					41	70	258	1160
WJDM-2001	4DA3R18ME	64.0	20.1	34.2	1-1/8 S	1-5/8 S	38	16	2 FPT	2 FPT			83	125	41	70	224	1000
W3DD-2502	4DH3R22M0	64.5	20.5	34.3	1-1/8 S	1-5/8 S	38	16	2 FPT	2 FPT			103	175	51	90	247	1233
WJDM-2501	4DH3R22ME	64.5	20.5	34.3	1-1/8 S	1-5/8 S	38	16	2 FPT	2 FPT			103	175	51	90	214	1070
W3DD-3002	4DJ3R28M0	64.5	20.5	34.3	1-1/8 S	2-1/8 S	38	16	2 FPT	2 FPT			18	20	59	100	247	1160
WJDM-3001	4DJ3R28ME	64.5	20.5	34.3	1-1/8 S	2-1/8 S	38	16	2 FPT	2 FPT			118	200	59	100	214	1073
W3DD-3502	6DH3A3500	77.5	22.4	34.0	1-1/8 S	2-1/8 S	38	18	2-1/2 FPT	2-1/2 FPT					67	110	291	1357
W3DD-4001	6DJ3A4000	89.5	21.4	36.0	1-5/8 S	2-1/8 S	38	18	2-1/2 FPT	2-1/2 FPT					89	150	293	1522
WJDM-4000	6DJ3A400E	89.5	21.4	36.0	1-5/8 S	2/18 S	38	18	2-1/2 FPT	2-1/2 FPT			178	300	89	150	252	1150

Performance Data at 105° Ambient – Subcooling 5°F; Return Gas Temp. 65°F; Cond. Water Inlet Temp. 85°F; Water Temp Difference 10°F

WATER COOLED CONDENSING UNITS

W-LINE

Low Temperature
1 H.P. to 27 H.P.

Capacity Data

Unit Model Number	Ref.	HP	Capacity (BTU/Hr) at 75° Inlet Water - Evaporator Temp (0°F)									LIST		
			-40°F	-35°F	-30°F	-25°F	-20°F	-15°F	-10°F	-5°F	0°F	230/1	230/3	460/3
WJWL-0100	404A	1	2300	2800	3360	3980	4660	5420	6250	7170	8180		10,173.00	
WJWL-0151	404A	2	3450	4200	5020	5920	6900	7960	9130	10410	11800		11,949.00	
WJWL-A201	404A	2	4440	5460	6580	7810	9170	10700	12300	14100	16100		14,413.00	
WJDL-0302	404A	3	9950	12100	14400	17000	19800	22900	26300	30100	34200		18,563.00	
WJDL-0401	404A	4	12360	14900	17660	20700	24020	27660	31640	36000	40760			
WJDL-0603	404A	6	18090	21350	24950	28920	33280	38060	43300	49020	55260			
WJDL-0751	404A	8	21470	25470	29750	34390	39440	44980	51090	57810	65240			
WJDL-0901	404A	9	26180	30920	36130	41850	48130	55040	62620	70920	80010			
WJDL-1001	404A	10	29850	35220	41090	47500	54480	62050	70250	79120	88680			
WJDL-1501	404A	15	41400	49300	57400	65800	74800	84400	94800	106600	119600			
WJDL-2201	404A	22	48100	57900	68100	78700	89900	101800	114700	128600	143600			
WJDL-2701	404A	27	59500	70700	83200	96900	121700	127800	145000	163400	183000			

Physical/Electrical Data

Unit Model Number	Comp Model	Overall Dimensions (in.)			Connecting Lines		Base Mounting Centers		Condenser Water		Min Circuit Ampacity/ Max Fuse Size"						Pump Down Cap. (lbs)	Ship Wt. (lbs.)
		L	W	H	Liquid Line (in.)	Suction Line (in.)	L	W	In	Out	230-1-60		230-3-60		460-3-60			
WJWL-0100	KWJA-0100E	27	15	18	3/8 F	5/8 F	14	13	3/8 MPT	1/2 FPT	8.6	15	6	15	3	15	12	177
WJWL-0151	KWLA-016E	35	15	17	3/8 F	7/8 S	18	13	3/8 MPT	1/2 FPT	12.4	20	8	15	4	15	28	218
WJWL-A201	EAVB-021E	35	15	20	3/8 F	7/8 S	18	13	1/2 NPT	1/2 NPT	19	30	10	15	5	15	31	314
WJDL-0302	2DF3F16KE	40	17	37	1/2 F	1-1/8 S	25	16	1-1/4 FPT	1-1/4 FPT	33.4	50	22	35	11	15	59	501
WJDL-0401	2DL3F20KE	40	17	37	1/2 F	1-3/8 S	25	16	1-1/4 FPT	1-1/4 FPT			34	50	14	20	59	513
WJDL-0603	3DA3A060E	46	17	39	5/8 F	1-3/8 S	25	16	1-1/4 FPT	1-1/4 FPT			39	60	18	30	112	651
WJDL-0751	3DB3F33KE	46	17	39	5/8 F	1-3/8 S	25	16	1-1/4 FPT	1-1/4 FPT			39	70	21	35	112	655
WJDL-0901	3DF3F40KE	52	17	39	7/8 S	1-3/8 S	38	16	1-1/4 FPT	1-1/4 FPT			50	80	22	35	125	500
WJDL-1001	3DS3A100E	52	17	39	7/8 S	1-3/8 S	38	16	1-14 FPT	1-1/4 FPT			53	90	24	40	125	743
WJDL-1501	4DL3A150E	52	19	38	1-1/8 S	1-5/8 S	38	16	1-1/2 FPT	1-1/2 FPT			67	110	34	50	153	865
WJDL-2201	4DT3F76KE	65	21	34	1-1/8 S	1-5/8 S	38	16	2 FPT	2 FPT			84	125	42	70	216	1123
WJDL-2701	6DL3A270E	65	22	43	1-1/8 S	2-1/8 S	38	16	2 FPT	2 FPT			102	175	51	90	216	1195

Performance Data at 105° Ambient – Subcooling 5°F; Return Gas Temp. 65°F; Cond. Water Inlet Temp. 85°F; Water Temp Difference 10°F

EMBRACO COMPRESSORS

R12 & R134A Refrigeration Compressors



Part #	Nominal HP	Volts	Application	LBP	HBP32	HBP46	LIST
EMI45ER1	1/8	115	LBP	485			**523.00**
EMI55ER1	1/6	115	LBP	570			**530.00**
FFC60BK	1/5+	115	L/M/HBP	756	2,790		**558.00**
FF8.5HBK	1/4	115	L/M/HBP	850	3,080		**635.00**
FF10BX1	1/4+	115	L/M/HBP - HST	915	3,200		**551.00**
FF11.5BKW	1/3	115	L/M/HBP	1,130	4,000		**965.00**
FFI12BKW	1/3+	115	L/M/HBP	1,350	4,600		**628.00**
FFI12BX	1/3+	115	L/M/HBP - HST	1,350	5,000		**698.00**
R134A							
EMIS30HHR1	1/10	115	L/M/HBP	340	1,480		**396.00**
EMI45HER	1/8	115	LBP	420			**544.00**
EM45HHR	1/8	115	L/M/HBP	420	1,775		**544.00**
EMI55HER	1/6	115	LBP	510			**558.00**
EMIS70HHR1	1/5	115	HBP		2,600		**645.00**
FF7.5HBK	1/5+	115	L/M/HBP	630	2,760		**635.00**
NEK6160Z1	1/4	115	HBP			2,884	**754.00**
FF8.5HBK	1/4	115	L/M/HBP	740	3,135		**635.00**
NE2121Z1	1/4	115	LBP	950			**852.00**
NEK6170Z1	1/4	115	HBP			3,340	**782.00**
FF10HBX	1/4+	115	L/M/HBP - HST	840	3,650		**600.00**
NEK6187Z1	1/3+	115	HBP			3,830	**810.00**
FFI12HBX	1/3+	115	L/M/HBP - HST	1,190	5,300		**733.00**
NEK6210Z1	1/2	115	HBP			5,178	**810.00**
NT6215Z1	1/2+	115	HBP		6,626	6,880	**980.00**
NT6217Z1	3/4+	115	HBP		7,460	7,564	**1,154.00**
NT6217Z2	3/4+	208-230	HBP		7,579	7,564	**1,154.00**
NJ6220Z1	1	115	HBP			10,169	**1,265.00**
NJ6220Z2	1	208-230	HBP			10,169	**1,265.00**
NJ6226Z2	1 1/4	208-230	HBP			11,130	**1,265.00**

Sound Blankets



Part #	Description	LIST
SBUHD	Universal fit for all compressors up to 42,000BTU. Fits all scroll and reciprocating compressors.	125.60
SBLHD	For large reciprocating compressors 42,000-150,000BTU. Fits Bristol H, Carlyle P/W, Copleand BR/CR/CT and Tecumseh AG/RK/SF	137.20
SBRHD	Just for reciprocating compressors from 5,000 to 42,000BTU. Fits Bristol H, Carlyle J, Copeland CR/CT/CV/JR/RE/RR, Tecumseh AB/AE/AH/AJ/AK/AV/AW and Toshiba TH	110.10
SBSHD	Just for scroll compressors including; Carlyle SC/SR and Hitachi. (for Copeland ZR scroll compressors use #SBUHD)	101.80

EMBRACO COMPRESSORS

R22 & R404A - Refrigeration Compressors



Part #	Nominal HP	Volts	Application	LBP	HBP32	HBP46	LIST
R22							
NE6210E1	1/2	115	HBP			4,640	**698.00**
NE9213E1	3/4	115	M/HBP			6,543	**894.00**
NE9213E2	3/4	208-230	M/HBP			6,543	**894.00**
T6217E1	3/4+	115	HBP			7,546	**1,235.00**
T6217E2	3/4+	208-230	HBP			7,546	**1,235.00**
T6220E1	1	115V	HBP			9,068	**3,267.00**
T6220E2	1	208-230	HBP			9.068	**3,267.00**
T7223G1	1	115	HBP		11,000		**3,350.00**
NJ7238E2	1 1/2	208-230	HBP			17,676	**2,129.00**
R404A							
NEK2125GK1	1/3+	115	LBP	1,458			**561.00**
NEK6181GK1	1/3+	115	MBP			4,389	**893.00**
NEK2134GK1	1/2	115	LBP	1,948			**579.00**
NEK6210GK1	1/2	115	MBP			5,355	**921.00**
NEK6210GK2	1/2	208-230	MBP			5,030	**921.00**
NEK2150GK1	1/2+	115	LBP	2,493			**633.00**
NT2168GKV1	3/4	115	LBP	3,008			**1,029.00**
NT2168GKV2	3/4	208-230	LBP	3,008			**1,466.00**
NT6217GKV1	3/4	115	MBP			7,356	**1,731.00**
NT2180GKV1	1	115	LBP	3,892			**1,176.00**
NT2180GKV2	1	208-230	LBP	3,892			**1,176.00**
NT6220GKV1	1	115	MBP			8,367	**1,850.00**
NT6220GKV2	1	208-230	MBP			9253	**1,850.00**
NT6222GKV1	1	115	MBP			11,276	**1,850.00**
NT6222GKV2	1	208-230	MBP			10,184	**1,850.00**
NJ9226GK2	1	208-230	MBP			12,653	**1,647.00**
NJ2192GK1	1 1/4	115	LBP	4,500			**1,197.00**
NJ2192GK2	1 1/4	208-230	LBP	4,500			**1,535.00**
NJ9232GK2	1 1/4	208-230	MBP			16,053	**1,815.00**
NJ2212GK1	1 1/2	115	LBP	5,444			**2,059.00**
NJ2212GJ2	1 1/2	208-230	LBP	5,710			**2,129.00**

Checkpoint Temp (F)

Temperature	LBP	HBP32	HBP46
EVAP	-10	45	45
COND	130	130	130
LIQ	90	90	115
AMB	90	90	95
SUCT	90	90	95

REFRIGERATION DUTY COMPRESSORS

COPELAND

Copeland A, R to New Model Cross Reference Guide

			Standard Application Rating Point (BTU/hr)				
Old Compressor	**Current compressor**	**Refrigerant**	**-25F SST / 105F SCT**	**20F SST / 105F SCT**	**20F SST / 120F SCT**	**45F SST / 105F SCT**	**45F SST / 130F SCT**
AFT22C1E-IAA	RFT22C1E-IAA	R404A	1555				
AFT26C1E-CFA	RFT26C1E-CAA	R404A	2040				
AFT26C1E-CFV	RFT26C1E-CAV	R404A	2040				
ARB21C3-IAA	ASE12C4-IAA	R22					2300
ARE36C3-IAA	ASE19C4-IAA	R22					3210
ART62C1E-IAA	RRT62C1E-IAA	R134A			3350		
ART62C1E-IAA	RRT62C1E-IAA	R134A					5790
ART62C1E-IAV	RRT62C1E-IAV	R134A					5700
ART64C1E-IAA	RRT64C1E-IAA	R134A				8340	
ART64C1E-IAA	RRT64C1E-IAA	R134A					6830
ART64C1E-IAV	RRT64C1E-IAV	R134A				8340	
ART64C1E-IAV	RRT64C1E-IAV	R134A					6830
ART69C1-IAA	RST40C1-IAA	R22					6090
ART69C1-IAV	RST40C1-IAV	R22					6090
RF18C2E-IAA	RFT18C1E-PFA	R134A			4920		
RF18C2E-IAA	RFT18C1E-PFA	R134A	1325				
RF42C1E-CAV	RFT42C1E-PFV	R404A	3290				
RF42C1E-CAV	RST80C1E-PFV	R404A	3050				
RR10K1E-CAV	RRT10K1E-PFV	R134A					10600
RR10K2E-CAA	RRT10K1E-PFA	R134A					10600
RR81C1E-IAA	RRT81C1E-PFA	R134A			5460		
RR81C1E-IAA	RRT81C1E-PFA	R134A					9310
RR81C1E-IAV	RRT81C1E-PFV	R134A			5460		
RR81C1E-IAV	RRT81C1E-PFV	R134A					9310
RR81C2E-IAA	RRT81C1E-PFA	R134A				11050	
RR81C2E-IAV	RRT81C1E-PFV	R134A				11050	
RR81C2E-IAV	RRT81C1E-PFV	R134A					9430
RRG4-0100-PAV	RST64C1-CAV	R22					11400
RS40C1E-IAA	RRT64C1E-IAA	R134A			4360		
RS43C1E-IAA	RST45C1E-IAA	R404A			4350		
RS43C1E-IAV	RST45C1E-IAV	R404A			4350		
RS43C2E-CAA	RST45C1E-CAA	R404A			4350		
RS43C2E-IAA	RST45C1E-IAA	R404A		5270			
RS43C2E-IAA	RST45C1E-IAA	R404A			4350		
RS43C2E-IAV	RST45C1E-IAV	R404A		5410			
RS43C2E-IAV	RST45C1E-IAV	R404A			4350		
RS47C2-IAA	RST55C1-CAA	R22				11000	
RS47C2-IAA	RST55C1-CAA	R22					9020
RS47C2-IAV	RST55C1-CAV	R22				11000	
RS47C2-IAV	RST55C1-CAV	R22					9020
RS54C2E-IAA	RRT10K1E-PFA	R134A		7590			
RS54C2E-IAA	RRT10K1E-PFA	R134A			6710		
RS54C2E-IAV	RRT10K1E-PFV	R134A		7590			
RS55C1E-PAA	RST55C1E-CAA	R404A			5460		
RS55C1E-PAV	RST55C1E-CAV	R404A			5460		
RS55C2E-CAA	RST55C1E-CAA	R404A		6580			
RS55C2E-CAA	RST55C1E-CAA	R404A			5460		
RS55C2E-CAV	RST55C1E-CAV	R404A		6580			
RS55C2E-CAV	RST55C1E-CAV	R404A			5460		
RS64C1E-CAA	RST64C1E-CFA	R404A			7010		
RS64C1E-CAV	RST64C1E-CAV	R404A			7210		
RS64C1E-CAV	RST64C1E-CAV	R404A	2470				
RS64C1E-IAV	RST64C1E-IAV	R404A			7010		
RS64C2E-CAA	RST64C1E-CFA	R404A	2470				
RS64C2E-CAV	RST64C1E-CAV	R404A		8530			
RS64C2E-CAV	RST64C1E-CAV	R404A			7010		
RS64C2E-IAV	RST64C1E-IAV	R404A			7010		
RS64C2E-IAV	RST64C1E-IAV	R404A	2470				
RS70C1E-PFV	RST70C1E-PFV	R404A		8740			
RS70C1E-PFV	RST70C1E-PFV	R404A			7500		
RS70C1E-TFC	RST70C1E-TA5	R404A		8740			
RS70C1E-TFC	RST70C1E-TA5	R404A			7500		
RS70C1-PFV	RST70C1-PFV	R22			7500		
RS70C1-PFV	RST70C1-PFV	R22					11700
RS70C1-TFC	RST70C1-TA5	R22			6980		
RS70C1-TFC	RST70C1-TA5	R22					11700
RS80C2E-CAV	RST80C1E-PFV	R404A		10300			
RS80C2E-CAV	RST80C1E-PFV	R404A			8580		
RS80C2E-CAV	RST80C1E-PFV	R404A	3080				
RS80C2E-TF5	RST80C1E-TA5	R404A			8580		
RS80C2E-TF5	RST80C1E-TA5	R404A	3080				
RS97C1E-CAV	RST97C1E-PFV	R404A			9940		
RS97C1E-CAV	RST97C1E-PFV	R404A	3580				
RS97C2E-CAV	RST97C1E-PFV	R404A			9940		

REFRIGERATION DUTY COMPRESSORS

SYSTEM PRO - R-22

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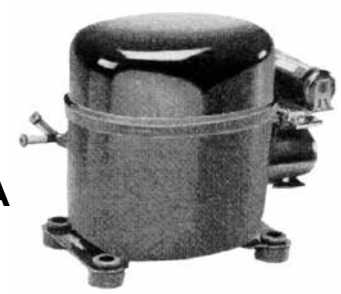

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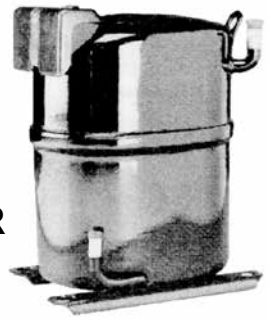

1/5 H.P. to 2 H.P.

Standard Model	CFH	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Start Capacitor #(014-)	Run Capacitor #(014-)	Relay Part # (040-)
			BTUH	Watts	Amps			
R-22 HIGH TEMP			20 / 120 / 65 / 120 / 95°F					
ARB21C3-IAA	37	115-1	1340	310	4.2	0053-18 *		
ARE36C3-IAA	59	115-1	2130	440	5.7	0053-01		0167-01 *
ARE36C3-SAA	59	115-1	2130	440	5.7			C401-82
ARE43C3-IAA	65	115-1	2430	500	5.9	0053-18 *		0167-01 *
ARE59C3-CAA	90	115-1	3550	640	5.7	0036-11	0064-10 *	0001-88
ARE59C3-CAV	90	208/230-1	3520	630	2.9	0061-20 *	0064-09 *	0001-71
ART69C1-IAA	108	115-1	4020	670	8.1	0038-10		0172-03 *
ART69C1-IAV	108	208/230-1	4020	670	3.9	0038-05		C411-79
ART82C1-CAA	129	115-1	4760	830	9.6	0036-20 *	0064-13 *	0166-37 *
ART82C1-CAV	129	208/230-1	4760	830	4.7	0008-70	0064-09 *	0166-27 *
RSE4-0075-IAA	135	115-1	5060	943	13.2	0061-22 *		0001-80
RSE4-0075-IAV	135	208/230-1	5060	943	6.6	0061-14 *		0001-54
ART97C1-PAA	152	115-1	5660	1010	11.9	0036-13	0064-11 *	0001-79
ART97C1-PAV	152	208/230-1	5660	1010	5.8	0036-13	0064-10 *	0001-68 *
RRG4-0100-PAA	161	115-1	6170	1050	9.8	0008-48	0064-05 *	0166-19 *
RRG4-0100-PAV	161	208/230-1	6170	1050	4.9	0008-72	0037-06	0001-54
RS70C1-PFV	175	208/230-1	7090	1110	5.1	0061-14 *	0064-05 *	0166-19 *
RS70C1-TFC	175	208/230-3	7370	1020	3.1			
RR14K1-PFV	196	208/230-1	8400	1270	5.9	0036-21 *	0064-05 *	0166-19 *
RR17K1-PFV	227	208/230-1	9950	1480	6.6	0061-20 *	0064-06 *	0001-79
RR17K1-TFC	227	208/230-3	10200	1420	4.4			

*** ROHS - Upgraded Parts**

Dimensional Summary

Unit Model Number	Cyl.	Overall Dimensions (in.)			Mounting Dimensions (in.)		Service Connections (in.)		Ship Weight (lbs)
		Length	Width	Height	Length	Width	Disch.	Suct.	
ARB21C3-IAA	1	10.50	6.00	7.60	6.50	4.00	1/4	5/16	24
ARE36C3-IAA	1	10.50	6.00	8.10	6.50	4.00	1/4	5/16	26
ARE36C3-SAA	1	10.50	6.00	8.10	6.50	4.00	1/4	5/16	26
ARE43C3-IAA	1	10.50	6.00	8.10	6.50	4.00	1/4	5/16	27
ARE59C3-CAA	1	10.50	6.00	8.60	6.50	4.00	1/4	5/16	25
ARE59C3-CAV	1	10.50	6.00	8.60	8.00	4.00	1/4	5/16	25
ART69C1-IAA	1	9.56	6.63	8.57	8.00	4.81	1/4	3/8	43
ART69C1-IAV	1	9.56	6.63	8.57	8.00	4.81	1/4	3/8	43
ART82C1-CAA	1	9.56	6.63	8.75	8.00	4.81	1/4	3/8	43
ART82C1-CAV	1	9.56	6.63	8.75	8.00	4.81	1/4	3/8	43
RSE4-0075-IAA	1	9.38	6.63	11.13	8.00	4.81	1/4	3/8	51
RSE4-0075-IAV	1	9.38	6.63	11.13	8.00	4.81	1/4	3/8	51
ART97C1-PAA	1	9.80	6.70	8.70	8.00	4.80	1/4	3/8	43
ART97C1-PAV	1	9.80	6.70	8.70	8.00	4.80	1/4	3/8	43
RRG4-0100-PAA	1	9.38	6.63	11.13	8.00	4.81	1/4	3/8	51
RRG4-0100-PAV	1	9.38	6.63	11.13	8.00	4.81	1/4	3/8	51
RS70C1-PFV	1	9.38	6.63	10.75	8.00	4.81	3/8	1/2	51
RS70C1-TFC	1	9.38	6.63	10.75	8.00	4.81	3/8	1/2	51
RR14K1-PFV	1	9.38	6.63	11.13	8.00	4.81	3/8	1/2	49
RR17K1-PFV	1	9.38	6.63	11.13	8.00	4.81	3/8	1/2	46
RR17K1-TFC	1	9.38	6.63	11.13	8.00	4.81	3/8	1/2	46

REFRIGERATION DUTY COMPRESSORS

SYSTEM PRO - R-134a



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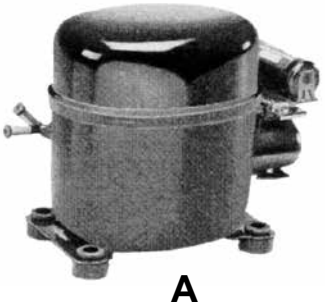

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1/6 H.P. to 3 H.P.

Standard Model	CFH	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Start Capacitor #(014-)	Run Capacitor #(014-)	Relay Part # (040-)
			BTUH	Watts	Amps			
R-134a HIGH TEMP			**45 / 130 / 65 / 130 / 95°F**					
ARB13C3E-IAA	37	115-1	1350	250	3.0	0053-18 *		0150-16 *
ARB13C3E-SAA	37	115-1	1350	250	3.0			0162-08 *
ARB17C3E-IAA	45	115-1	1680	320	3.6	0053-18 *		0150-15 *
ARB17C3E-SAA	45	115-1	1680	320	3.6			0162-11 *
ARE25C3E-IAA	59	115-1	2520	420	4.5	0053-18 *		0150-10 *
ARE25C3E-SAA	59	115-1	2520	420	4.5			0170-08 *
ARE27C3E-IAA	65	115-1	2730	460	5.1	0053-18 *		0167-02 *
ARE27C3E-SAA	65	115-1	2730	460	5.1			0167-02 *
ARE37C3E-IAA	90	115-1	3750	600	7.1	0053-18 *		0167-01 *
ARE37C3E-IAV	90	208/230-1	3790	590	3.4	0053-30 *		0167-04 *
ARE37C3E-SAA	90	115-1	3620	600	6.8			0167-01 *
ARE41C3-IAA	100	115-1	3950	660	7.5	0053-21 *		0167-06 *
ART51C1E-IAA	129	115-1	4880	830	9.1	0053-21 *		0171-04 *
ART51C1E-IAV	129	208/230-1	4880	830	4.5	0061-13 *		0163-02
ART62C1E-IAA	152	115-1	5880	970	11.5	0053-25 *		0150-11
ART62C1E-IAV	152	208/230-1	6100	960	5.4	0061-13 *		0171-02 *
ART64C1E-IAA	162	115-1	6400	1050	11.3	0053-09		0167-20 *
ART64C1E-IAV	162	208/230-1	6360	1070	6.0	0036-19 *		0171-02 *
RR81C1E-IAA	210	115-1	8070	1220	14.8	0061-17 *		0001-80
RR81C1E-IAV	210	208/230-1	8070	1220	7.4	0008-72		0166-19 *
RR10K1E-CAV	244	208/230-1	10000	1370	6.5	0061-14 *	0037-06	0001-54
CS27K3E-PFV	665	208/230-1	30100	3360	16.8	0006-13	0064-14 *	0001-64
CS27K3E-TF5	665	200/230-3	29700	3220	9.9			
CS27K3E-TFD	665	380/460-3	29700	3220	4.9			
CS33K3E-PFV	756	208/230-1	36500	4020	20.1	0006-13 *	0064-16 *	0166-27 *
CS33K3E-TF5	756	200/230-3	35300	3890	11.5			
CS33K3E-TFD	756	380/460-3	35300	3890	5.7			
R-134a MED TEMP			**20 / 120 / 40 / 120 / 95°F**					
RS40C1E-IAA	162	115-1	3990	836	10.6	0061-17 *		0001-62
RS40C1E-IAV	162	208/230-1	3990	836	5.3	0061-12 *		0088-03
RS54C1E-IAA	244	115-1	5400	1070	14.0	0061-22 *		0001-62
RS54C1E-IAV	244	208/230-1	5400	1070	7.0	0008-72		0166-19 *
R-134a EXT. MED TEMP			**20 / 120 / 40 / 120 / 95°F**					
AFB04C3E-SAA	46	115-1	370	160	2.4			0170-13 *
AFB05C3E-IAA	62	115-1	500	200	3.0	0053-21 *		0167-05 *
AFB05C3E-SAA	62	115-1	500	200	3.0			0167-05 *
AFE07C3E-IAA	69	115-1	710	250	4.2	0053-26 *		0167-01 *
AFE10C3E-IAA	90	115-1	940	300	4.9	0053-18 *		0150-11
AFT12C1E-IAA	140	115-1	1240	450	5.3	0053-21 *		0167-17 *
RF18C1E-IAA	201	115-1	1870	597	10.3	0061-22 *		0001-62
RF18C1E-IAV	201	208/230-1	1870	597	5.2	0008-72		0001-63

*** ROHS - Upgraded Parts**

REFRIGERATION DUTY COMPRESSORS
SYSTEM PRO - R-134a



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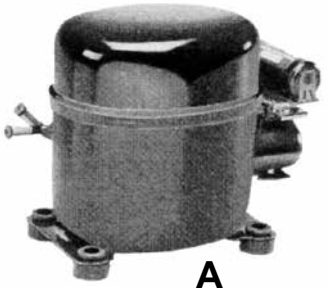
Dimensional Summary

Unit Model Number	Cyl.	Overall Dimensions (in.)			Mounting Dimensions (in.)		Service Connections (in.)		Ship Weight (lbs)
		Length	Width	Height	Length	Width	Disch.	Suct.	
ARB13C3E-IAA	1	10.50	6.00	7.00	6.50	4.00	1/4	5/16	23
ARB13C3E-SAA	1	10.50	6.00	7.00	6.50	4.00	1/4	5/16	23
ARB17C3E-IAA	1	10.50	6.00	7.60	6.50	4.00	1/4	5/16	22
ARB17C3E-SAA	1	10.50	6.00	7.60	6.50	4.00	1/4	5/16	22
ARE25C3E-IAA	1	10.50	6.00	7.60	6.50	4.00	1/4	5/16	26
ARE25C3E-SAA	1	10.50	6.00	7.60	6.50	4.00	1/4	5/16	26
ARE27C3E-IAA	1	10.50	6.00	7.60	6.50	4.00	1/4	5/16	22
ARE27C3E-SAA	1	10.50	6.00	7.60	6.50	4.00	1/4	5/16	22
ARE37C3E-IAA	1	10.50	6.00	8.10	6.50	4.00	1/4	5/16	32
ARE37C3E-IAV	1	10.50	6.00	8.10	6.50	4.00	1/4	5/16	32
ARE37C3E-SAA	1	10.50	6.00	8.10	6.50	4.00	1/4	5/16	32
ARE41C3E-IAA	1	10.50	6.00	8.60	6.50	4.00	1/4	5/16	30
ART51C1E-IAA	1	11.40	6.50	7.90	8.00	4.80	1/4	3/8	30
ART51C1E-IAV	1	11.40	6.50	7.90	8.00	4.80	1/4	3/8	30
ART62C1E-IAA	1	11.40	6.50	8.70	8.00	4.80	1/4	3/8	31
ART62C1E-IAV	1	11.40	6.50	8.70	8.00	4.80	1/4	3/8	31
ART64C1E-IAA	1	11.40	6.50	8.70	8.00	4.80	1/4	3/8	37
ART64C1E-IAV	1	11.40	6.50	8.70	8.00	4.80	1/4	3/8	37
RR81C1E-IAA	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RR81C1E-IAV	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RR10K1E-CAV	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
CS27K3E-PFV	2	9.44	9.28	15.06	7.50	7.50	1/2	3/4	72
CS27K3E-TF5	2	9.44	9.28	15.06	7.50	7.50	1/2	3/4	72
CS27K3E-TFD	2	9.44	9.28	15.06	7.50	7.50	1/2	3/4	72
CS33K3E-PFV	2	9.44	9.28	15.31	7.50	7.50	1/2	7/8	76
CS33K3E-TF5	2	9.44	9.28	15.31	7.50	7.50	1/2	7/8	76
CS33K3E-TFD	2	9.44	9.28	15.31	7.50	7.50	1/2	7/8	76
RS40C1E-IAA	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RS40C1E-IAV	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RS54C1E-IAA	1	10.75	6.63	10.75	8.00	4.81	3/8	1/2	51
RS54C1E-IAV	1	10.75	6.63	10.75	8.00	4.81	3/8	1/2	51
AFB04C3E-SAA	1	10.50	6.00	7.00	6.50	4.00	1/4	5/16	28
AFB05C3E-IAA	1	10.50	6.00	7.60	6.50	4.00	1/4	5/16	27
AFB05C3E-SAA	1	10.50	6.00	7.60	6.50	4.00	1/4	5/16	27
AFE07C3E-IAA	1	10.50	6.00	8.10	6.50	4.00	1/4	5/16	24
AFE10C3E-IAA	1	10.50	6.00	8.10	6.50	4.00	1/4	5/16	26
AFT12C1E-IAA	1	11.40	6.70	7.90	8.00	4.80	1/4	3/8	29
RF18C1E-IAA	1	10.75	6.63	10.75	8.00	4.81	3/8	1/2	52
RF18C1E-IAV	1	10.75	6.63	10.75	8.00	4.81	3/8	1/2	52

REFRIGERATION DUTY COMPRESSORS

SYSTEM PRO - R-404A



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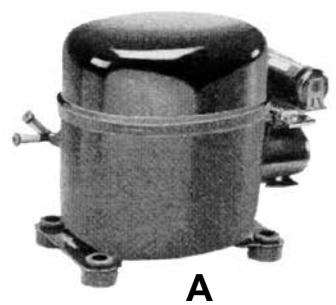
1/5 H.P. to 1-1/4 H.P.

Standard Model	CFH	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Start Capacitor #(014-)	Run Capacitor #(014-)	Relay Part # (040-)
			BTUH	Watts	Amps			
R-404A MED TEMP			**20 / 120 / 40 / 120 / 95°F**					
ASB12C3E-IAA	37	115-1	1250	340	4.3	0053-26 *		0167-19 *
ASB14C3E-IAA	45	115-1	1530	470	6.0	0053-18 *		0167-01 *
ASE19C3E-IAA	54	115-1	1850	520	6.1	0053-18 *		0150-20
ASE24C3E-IAA	65	115-1	2310	550	6.7	0053-18 *		0167-01 *
ASE24C3E-IAV	65	208/230-1	2500	560	3.2	0053-27 *		C411-73
ASE32C3E-CAA	90	115-1	3260	710	6.4	0061-20 *	0064-10 *	0001-88
ASE32C3E-CAV	90	208/230-1	3320	730	3.4	0036-19 *	0064-09 *	0001-53
AST40C1E-IAA	108	115-1	3610	890	10.2	0036-20 *		0172-03 *
AST40C1E-IAV	108	208/230-1	3610	890	5.4	0036-19 *		0171-02 *
AST45C1E-CAV	129	208/230-1	4230	1010	5.4	0061-16 *	0064-09 *	0166-27 *
AST45C1E-IAA	129	115-1	4230	1010	11.1	0036-20 *		0172-03 *
AST54C1E-CAV	129	208/230-1	5770	1150	6.5	0061-16 *	0064-09 *	0166-27 *
AST54C1E-CAA	152	115-1	5770	1150	12.0	0036-26 *	0064-11 *	0166-03 *
R-404A EXT. MED TEMP			**20 / 120 / 40 / 120 / 95°F**					
AFE11C3E-IAA	65	115-1				0053-18 *		0167-01 *
AFE13C3E-IAA	90	115-1				0053-21 *		0167-06 *
RS43C1E-CAA	113	115-1	4170	940	9.4	0061-06 *	0037-06	0001-62
RS43C1E-CAV	113	208/230-1	4170	940	5.6	0061-12 *	0037-04	0001-54
RS43C1E-IAA	113	115-1	4170	944	10.6	0061-06 *		0001-62
RS43C1E-IAV	113	208/230-1	4170	940	5.6	0061-12 *		0088-03
AFT22C1E-CFV	129	208/230-1				0036-19 *	0064-09 *	0166-39 *
AFT22C1E-IAA	129	115-1				0053-18 *		0172-00 *
RS55C2E-CAA	135	115-1	5220	1150	11.0	0006-13 *	0064-05 *	0166-19 *
AFT26C1E-CFA	152	115-1				0036-20 *	0064-11 *	0001-79
AFT26C1E-CFV	152	208/230-1				0036-19 *	0064-09 *	0001-53
RS55C1E-CAV	161	208/230-1	5410	1140	5.1	0008-72	0037-06	0001-54
RS55C1E-PAV	161	208/230-1	5410	1140	5.1	0008-72	0037-06	0001-54
RS64C1E-CAA	162	115-1	6460	1470	12.9	0061-20 *	0064-12 *	0166-02 *
RS64C1E-CAV	162	208/230-1	6450	1460	6.4	0008-61	0037-06	0001-54
RS64C1E-IAA	162	115-1	6460	1470	12.9	0008-66 *		0166-19 *
RS64C1E-IAV	162	208/230-1	6450	1460	8.6	0061-14 *		0001-63
RS64C1E-PAA	162	115-1	6460	1470	12.9	0061-20 *	0037-16 *	0166-02 *
AFT29C1E-CFA	166	115-1				0036-26 *	0064-11 *	0001-79
AFT29C1E-CFV	166	208/230-1				0036-19 *	0064-09 *	0001-53
RS70C1E-PFV	175	208/230-1	6980	1250	5.5	0061-14 *	0064-05 *	0166-19 *
RS70C1E-TFC	175	208/230-1	6800	1220	3.6			
RS80C1E-CAA	201	115-1	8170	1740	16.2	0036-19 *	0064-05 *	0166-19 *
RS80C1E-CAV	201	208/230-1	8410	1690	7.8	0006-13 *	0064-10 *	0001-54
RS80C1E-TF5	201	200/230-3	8440	1640	5.1			
RS86C1E-PFJ	210	265-1	8630	1660	6.6	0036-16 *	0064-11 *	0166-15 *
RS86C1E-PFV	210	208/230-1	8680	1620	7.5	0061-20 *	0064-06 *	0166-19 *
RS97C1E-CAV	245	208/230-1	9590	1940	9.7	0036-01	0064-11 *	0001-54
RS97C1E-TFC	245	208/230-3	9400	1890	6.3			

*** ROHS - Upgraded Parts**

REFRIGERATION DUTY COMPRESSORS
SYSTEM PRO - R-404A



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Dimensional Summary

Unit Model Number	Cyl.	Overall Dimensions (in.)			Mounting Dimensions (in.)		Service Connections (in.)		Ship Weight (lbs)
		Length	Width	Height	Length	Width	Disch.	Suct.	
ASB12C3E-IAA	1	10.50	6.00	7.60	6.50	4.00	1/4	5/16	25
ASB14C3E-IAA	1	10.50	6.00	7.60	6.50	4.00	1/4	5/16	43
ASE19C3E-IAA	1	10.50	6.00	7.60	6.50	4.00	1/4	5/16	26
ASE24C3E-IAA	1	10.50	6.00	8.10	6.50	4.00	1/4	5/16	27
ASE24C3E-IAV	1	10.50	6.00	8.10	6.50	4.00	1/4	5/16	27
ASE32C3E-CAA	1	9.40	6.00	8.60	6.50	4.00	1/4	5/16	25
ASE32C3E-CAV	1	9.40	6.00	8.60	6.50	4.00	1/4	5/16	25
AST40C1E-IAA	1	9.60	6.30	7.60	8.00	4.80	1/4	3/8	32
AST40C1E-IAV	1	9.60	6.30	7.60	8.00	4.80	1/4	3/8	32
AST45C1E-CAV									
AST45C1E-IAA									
AST54C1E-CAV	1	9.60	6.30	7.60	8.00	4.80	1/4	3/8	36
AST54C1E-CAA	1	9.60	6.30	7.60	8.00	4.80	1/4	3/8	36
AFE11C3E-IAA	1	10.50	6.00	8.10	6.50	4.00	1/4	5/16	25
AFE13C3E-IAA	1	10.50	6.00	8.60	6.50	4.00	1/4	5/16	28
AFT18C1E-IAA	1	11.40	6.70	8.70	8.00	4.80	1/4	3/8	33
RS43C1E-CAA	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RS43C1E-CAV	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RS43C1E-IAA	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RS43C1E-IAV	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
AFT22C1E-CFV	1	11.40	6.70	8.70	8.00	4.80	1/4	3/8	33
AFT22C1E-IAA	1	11.40	6.70	8.70	8.00	4.80	1/4	3/8	33
RS55C2E-CAA	1	10.75	6.63	10.75	8.00	4.81	3-3/4	1/2	54
AFT26C1E-CFA	1	11.40	6.70	8.70	8.00	4.80	1/4	3/8	36
AFT26C1E-CFV	1	11.40	6.70	8.70	8.00	4.80	1/4	3/8	36
RS55C1E-CAV	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RS55C1E-PAV	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RS64C1E-CAA	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RS64C1E-CAV	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RS64C1E-IAA	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RS64C1E-IAV	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
RS64C1E-PAA	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	51
AFT29C1E-CFA	1	11.40	6.70	8.70	8.00	4.80	1/4	3/8	36
AFT29C1E-CFV	1	11.40	6.70	8.70	8.00	4.80	1/4	3/8	36
RS70C1E-PFV	1	9.38	6.63	10.75	8.00	4.81	1/3	1/2	51
RS70C1E-TFC	1	9.38	6.63	10.75	8.00	4.81	1/3	1/2	51
RS80C1E-CAA	1	10.75	6.63	10.75	8.00	4.81	3/8	1/2	31
RS80C1E-CAV	1	10.75	6.63	10.75	8.00	4.81	3/8	1/2	51
RS80C1E-TF5	1	10.72	6.63	10.75	8.00	4.81	3/8	1/2	51
RS86C1E-PFJ	1	9.38	6.63	11.38	8.00	4.81	1/3	1/2	52
RS86C1E-PFV	1	9.38	6.63	11.38	8.00	4.81	1/3	1/2	52
RS97C1E-CAV	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	52
RS97C1E-TFC	1	10.75	6.63	11.25	8.00	4.81	3/8	1/2	52

REFRIGERATION DUTY COMPRESSORS

R404A



CF Low Temperature

Model	Volts / Phase	BTUH @ 110° Cond. -20° Evap	Replacement Parts		
			Start Capacitor MFD/Volts	Run Capacitor MFD/Volts	Relay Part # (040-)
CF04K6E-PFV-945^	208/230-1	3150	014-0061-04 * (145-174/220V)	014-0064-06 * (30/370V)	040-0166-15
CF04K6E-TF5-945	208/230-3	3150			
CF06K6E-PFV-945^	208/230-1	5460	014-0061-04 * (145-174/220V)	014-0064-06 * (30/370V)	040-0166-15
CF06K6E-TF5-945	208/230-3	5460			
CF09K6E-PFV-945^	208/230-1	8000	014-0036-20 * (145-174/250V)	014-0064-08 * (40/370V)	040-0166-15
CF09K6E-TF5-945	208/230-3	8000			
CF12K6E-PFV-945^	208/230-1	10700	014-0006-13 * (189-227/330V)	014-0064-14 * (40/370V)	040-0166-19
CF12K6E-TF5-945	208/230-3	10700			

^ Includes Capacitator & Relay Assembly *** ROHS - Upgraded Parts**

Dimensional Summary

Unit Model Number	Overall Dimensions (in.)			Mounting Dimensions (in.)			Tubing Orientation		
	Length	Width	Height	Length	Width	Wgt	Disch.	Suct.	Proc.
CF04K6E-PFV	10-9/32	9-3/32	TBD	7-1/2	7-1/2	TBD	3/8 EU	3/4 ST	3/8 EU
CF04K6E-TF5	10-9/32	9-3/32	TBD	7-1/2	7-1/2	TBD	3/8 EU	3/4 ST	3/8 EU
CF06K6E-PFV	10-9/32	9-3/32	13-5/16	7-1/2	7-1/2	76	3/8 EU	3/4 ST	3/8 EU
CF06K6E-TF5	10-9/32	9-3/32	13-5/16	7-1/2	7-1/2	76	3/8 EU	3/4 ST	3/8 EU
CF09K6E-PFV	10-9/32	9-3/32	13-13/16	7-1/2	7-1/2	78	1/2 EU	3/4 ST	3/8 EU
CF09K6E-TF5	10-9/32	9-3/32	13-13/16	7-1/2	7-1/2	78	1/2 EU	3/4 ST	3/8 EU
CF12K6E-PFV	10-9/32	9-3/32	TBD	7-1/2	7-1/2	TBD	TBD	TBD	TBD
CF12K6E-TF5	10-9/32	9-3/32	TBD	7-1/2	7-1/2	TBD	TBD	TBD	TBD

Copeland / Tecumseh Cross Reference

Model	Volts /Phase	RLA	BTUH	Amps
CF06K6E-PFV	**208/230-1**	**11.4**	**6690**	**8.0**
AHA2465ZXB	*230-1*	*10.7*	*6580*	*10.7*
AWA2460ZXD	*208/230-1*		*6300*	*8.2*
CF06K6E-PFV	**200/230-3**	**7.0**	**6360**	**5.3**
AHA2465ZXB	*208/230-3*	*6.0*	*6450*	*6.0*
AWA2460ZXD	*200/230-3*		*6000*	*5.6*
CF06K6E-PFV	**208/230-1**	**16.7**	**9800**	**11.2**
AHA2465ZXB	*208/230-1*	*14.2*	*9400*	*14.2*
AWA2460ZXD	*208/230-1*		*9500*	*11.4*
CF06K6E-PFV	**200/230-3**	**10.2**	**9620**	**7.6**
AHA2465ZXB	*208/230-3*	*8.1*	*9100*	*8.1*
AWA2460ZXD	*200/230-3*		*9100*	*7.4*

Rating Conditions (F): -10 Evap/120 Cond/40 Return Gas/120 Liquid/95 Ambient RLA = Rated Load Amps

CF Model Cross Reference Guide

Obsolete Model		Current Model	
Model	Description	Model	Description
CF04K6E-PFV-970		CF04K6E-PFV-945	Includes Capacitor & Relay Assembly
CF04K6E-PFV-979	Includes Capacitor & Relay Assembly		
CF04K6E-TF5-970		CF04K6E-TF5-945	
CF06K6E-PFV-970		CF06K6E-PFV-945	Includes Capacitor & Relay Assembly
CF06K6E-PFV-979	Includes Capacitor & Relay Assembly		
CF06K6E-TF5-970		CF06K6E-TF5-945	
CF06K6E-TFD-970		CF06K6E-TFD-945	
CF09K6E-PFV-970		CF09K6E-PFV-945	Includes Capacitor & Relay Assembly
CF09K6E-PFV-979	Includes Capacitor & Relay Assembly		
CF09K6E-TF5-970		CF09K6E-TF5-945	
CF09K6E-TFD-970		CF09K6E-TFD-945	
CF12K6E-PFV-970		CF12K6E-PFV-945	Includes Capacitor & Relay Assembly
CF12K6E-PFV-979	Includes Capacitor & Relay Assembly		
CF12K6E-TF5-970		CF12K6E-TF5-945	
CF12K6E-TFD-970		CF12K6E-TFD-945	

REFRIGERATION DUTY COMPRESSORS

COPELAWELD - HFC-134a

R-Line, RS-Line
-1/4 H.P. to 1 H.P.



R



RS

Standard Model	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Relay Part # (040-)
		BTUH	Watts	Amps	MFD	Volts	MFD	Volts	
HFC-134a HIGH TEMP		**45 / 130 / 65 / 130 / 95°F**							
RR81C2E-IAA	115-1	8070	1220	15.0	189-227(2)	220	-	-	0168-03 *
RR81C2E-IAV	208/230-1	8070	1220	7.5	64-77(2)	250	-	-	0166-19 *
RR10K1E-CAV	208/230-1	10000	1370	6.5	108-130(2)	220	15	370	0001-54

Standard Model	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Relay Part # (040-)
		BTUH	Watts	Amps	MFD	Volts	MFD	Volts	
HFC-134a MED TEMP		**20 / 120 / 40 / 120 / 95°F**							
RS40C2E-IAA	115-1	3990	836	10.6	189-227(2)	220	-	-	0168-00 *
RS40C2E-IAV	208/230-1	3990	836	5.3	43-52	220	-	-	0088-03
RS54C2E-IAA	115-1	5400	1070	13.8	270-324	165	-	-	0168-03 *
RS54C2E-IAV	208/230-1	5400	1070	6.9	64-77(2)	250	-	-	0168-01 *

Standard Model	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Relay Part # (040-)
		BTUH	Watts	Amps	MFD	Volts	MFD	Volts	
HFC-134a EXT MED TEMP		**-10 / 120 / 40 / 120 / 95°F**							
RF18C2E-IAA	115-1	1885	596	10.3	270-324	165	-	-	0168-03 *
RF18C2E-IAV	230-1	1885	596	5.2	88-106	220	-	-	0168-04 *

Note: Extended Medium Temp ("EM") is rated -25°F to +30°F. See Data Sheet.

*** ROHS - Upgraded Parts**

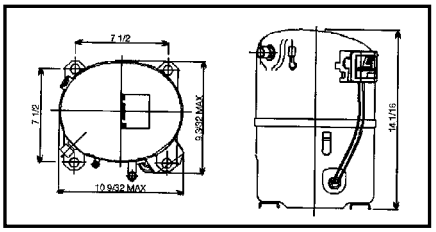
Standard Model	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Relay Part # (040-)
		BTUH	Watts	Amps	MFD	Volts	MFD	Volts	
HFC-404A EXT MED TEMP		**20 / 120 / 40 / 120 / 95°F**							
RS43C1E-CAA	115-1	4170	944	10.6	243-292	115	15	370	0166-21 *
RS43C2E-IAA	115-1	4170	944	10.6	243-292	115	-	-	0001-62
RS43C1E-CAV	208/230-1	4170	944	5.3	43-52	220	10	370	0166-14
RS43C1E-IAV	208/230-1	4170	944	5.3	43-52	220	-	-	0088-03
RS55C1E-PAA	115-1	5400	1140	10.3	124-149	220	25	370	0166-19 *
RS55C1E-CAV	208/230-1	5400	1140	5.2	64-77	250	15	370	0166-14
RS55C1E-PAV	208/230-1	5400	1140	5.2	64-77	250	15	370	0001-54
RS64C2E-CAA	115-1	6460	1470	12.9	72-86	330	30	440	0140-03
RS64C2E-IAA	115-1	6460	1470	12.9	108-130	220	-	-	0166-19 *
RS64C2E-PAA	115-1	6460	1470	12.9	72-86	330	30	440	0140-03
RS64C2E-CAV	208/230-1	6460	1470	6.4	88-106	220	15	370	0001-54
RS64C2E-IAV	208/230-1	6460	1470	6.4	108-130	220	-	-	0168-00
RS70C1E-PFV	208/230-1	6980	1250	5.5	108-130	220	25	370	0166-19 *
RS70C1E-TFC	208/230-3	6800	1220	3.6	-	-	-	-	
RS97C2E-CAA	115-1	9590	1940	19.4	145-174	220	35	370	0001-59
RS97C2E-CAV	208/230-1	9590	1940	9.7	88-106	250	25	440	0001-54
RS97C1E-TFC	208/230-3	9400	1890	6.3	-	-	-	-	

*** ROHS - Upgraded Parts**

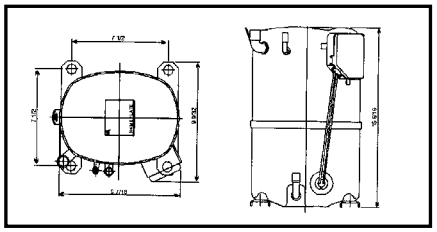
REFRIGERATION DUTY COMPRESSORS

COPELAWELD - HFC-404A, HFC-507

CS-Line



Typical CS*6 Family



Typical CS*3 Family



Standard Model	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Replacement Parts				
		BTUH	Watts	Amps	Start Capacitor		Run Capacitor		Relay Part # (040-)
					MFD	Volts	MFD	Volts	
HFC-404A EXT MED TEMP		**20 / 120 / 40 / 120 / 95°F**							
CS10K6E-PFV-945^	208/230-1	10100	1660	7.6	145-174	220	30	370	0166-19 *
CS10K6E-TF5-945	200/230-3	9800	1610	5.1	-	-	-	-	
CS12K6E-PFV-945^	208/230-1	12000	1930	8.8	145-174	220	30	370	0166-19 *
CS12K6E-TF5-945	200/230-3	11700	1860	5.8	-	-	-	-	
CS14K6E-PFV-945^	208/230-1	14100	2280	10.3	145-174	250	35	370	0166-15 *
CS14K6E-TF5-945	200/230-3	13800	2210	6.9	-	-	-	-	
CS14K6E-TFD-945	380/460-3	13800	2210	3.4	-	-	-	-	
CS18K6E-PFV-945^	208/230-1	18100	2780	13.0	145-174	250	35	370	0166-15 *
CS18K6E-TF5-945	200/230-3	17700	2690	8.7	-	-	-	-	
CS18K6E-TFD-945	460-3	17700	2690	4.4	-	-	-	-	
CS20K6E-PFV-945^	208/230-1	20000	3120	14.9	189-227	330	40	370	0166-15 *
CS20K6E-TF5-945	200/230-3	19600	3030	10.0	-	-	-	-	
CS20K6E-TFD-945	460-3	19600	3030	5.0	-	-	-	-	
CS27K6E-PFV-945^	208/230-1	26500	4420	20.3	189-227	330	40	440	0001-64
CS27K6E-TF5-945	200/230-3	26000	4290	13.1	-	-	-	-	
CS27K6E-TFD-945	460-3	26000	4290	6.6	-	-	-	-	
CS33K6E-PFV-956^	208/230-1	31600	5290	25.3	189-227	330	50	440	0166-27 *
CS33K6E-TF5-956	200/230-3	31200	5190	15.2	-	-	-	-	
CS33K6E-TFD-956	380/460-3	31200	5190	7.6	-	-	-	-	

^ Includes Capacitator & Relay Assembly *** ROHS - Upgraded Parts** **All models include mounting parts and crankcase heater**

CS Model Cross Reference Guide

Obsolete Model		Current Model	
Model	**Description**	**Model**	**Description**
CS10K6E-PFV-970		CS10K6E-PFV-945	Includes Capacitor & Relay Assembly
CS10K6E-PFV-979	Includes Capacitor & Relay Assembly		
CS10K6E-TF5-970		CS10K6E-TF5-945	
CS10K6E-TFD-970		CS10K6E-TFD-945	
CS12K6E-PFV-970		CS12K6E-PFV-945	Includes Capacitor & Relay Assembly
CS12K6E-PFV-979	Includes Capacitor & Relay Assembly		
CS12K6E-TF5-970		CS12K6E-TF5-945	
CS14K6E-PFV-970		CS14K6E-PFV-945	Includes Capacitor & Relay Assembly
CS14K6E-PFV-979	Includes Capacitor & Relay Assembly		
CS14K6E-TF5-970		CS14K6E-TF5-945	
CS14K6E-TFD-970		CS14K6E-TFD-945	
CS18K6E-PFV-970		CS18K6E-PFV-945	Includes Capacitor & Relay Assembly
CS18K6E-PFV-979	Includes Capacitor & Relay Assembly		
CS18K6E-TF5-970		CS18K6E-TF5-945	
CS18K6E-TFD-970		CS18K6E-TFD-945	
CS20K6E-PFV-970		CS20K6E-PFV-945	Includes Capacitor & Relay Assembly
CS20K6E-PFV-979	Includes Capacitor & Relay Assembly		
CS20K6E-TF5-970		CS20K6E-TF5-945	
CS20K6E-TFD-970		CS20K6E-TFD-945	
CS27K6E-PFV-970		CS27K6E-PFV-945	Includes Capacitor & Relay Assembly
CS27K6E-PFV-979	Includes Capacitor & Relay Assembly		
CS27K6E-TF5-970		CS27K6E-TF5-945	
CS27K6E-TFD-970		CS27K6E-TFD-945	
CS33K6E-PFV-970		CS33K6E-PFV-956	Includes Capacitor & Relay Assembly
CS33K6E-PFV-979	Includes Capacitor & Relay Assembly		
CS33K6E-TF5-970		CS33K6E-TF5-956	
CS33K6E-TFD-970		CS33K6E-TFD-956	
CS33K6E-TFE-970		CS33K6E-TFE-956	

REFRIGERATION & A/C DUTY COMPRESSORS

COPELAWELD - R-22



CR-Line
1-1/2 H.P. to 5 H.P.

Standard Model	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Relay Part # (040-)
		BTUH	Watts	Amps	MFD	Volts	MFD	Volts	
R-22 AIR COND.		**45 / 130 / 65 / 115 / 95°F**							
CRA1-0150-PFV	208/230-1	18300	1860	8.3	145-174	250	25	370	0166-15 *
CRB1-0175-PFV	208/230-1	19200	1950	8.7	145-174	250	25	370	0166-15 *
CRC2-0175-PFV	208/230-1	22600	2290	9.6	145-174	220	30	370	0001-56
CRD1-0200-TF5	200/230-3	23790	2457	7.0	-	-	-	-	
CRD1-0200-TFD	380/460-3	23790	2457	3.5	-	-	-	-	
CRD1-0200-PFV	208/230-1	24100	2440	10.8	145-174	250	35	370	0166-15 *
CRE1-0225-TF5	200/230-3	27050	2730	7.8	-	-	-	-	
CRE1-0225-TFD	380/460-3	27050	2730	3.9	-	-	-	-	
CRE2-0225-PFV	208/230-1	27800	2840	13.0	145-174	250	35	370	0166-15 *
CRF1-0250-TF5	200/230-3	28720	2968	8.4	-	-	-	-	
CRF1-0250-TFD	380/460-3	28720	2968	4.2	-	-	-	-	
CRF2-0250-PFV	208/230-1	29800	3050	14.0	145-174	250	35	370	0166-15 *
CRG3-0250-PFJ	265-1	32700	3240	12.6	145-174	250	35	440	0166-15 *
CRG3-0250-PFV	208/230-1	32700	3240	14.5	161-193	220	40	370	0001-54
CRG3-0250-TF5	200/230-3	32100	3120	9.1	-	-	-	-	-
CRG3-0250-TFD	380/460-3	32100	3120	4.6	-	-	-	-	-
CRH3-0275-PFJ	265-1	34300	3400	13.6	145-174	330	35	440	0166-15 *
CRH3-0275-PFV	208/230-1	34300	3400	15.6	189-227	330	40	370	0166-15 *
CRH3-0275-TF5	200/230-3	34000	3270	9.8	-	-	-	-	-
CRH3-0275-TFD	380/460-3	34000	3270	4.9	-	-	-	-	-
CRH3-0275-TFE	575-3	34000	3270	3.9	-	-	-	-	-
CRI3-0290-PFV	208/230-1	36500	3540	216.0	189-227	220	40	440	0001-54
CRI3-0290-TF5	200/230-3	36400	3470	7.8	-	-	-	-	-
CRI3-0290-TFD	380/460-3	36400	3470	3.9	-	-	-	-	-
CRJ3-0300-PFJ	265-1	37900	3740	14.9	189-227	220	35	440	0001-54
CRJ3-0300-PFV	208/230-1	37900	3740	17.1	189-227	220	35	440	0001-54
CRJ3-0300-TF5	200/230-3	37700	3690	10.8	-	-	-	-	-
CRJ3-0300-TFD	380/460-3	37700	3690	5.4	-	-	-	-	-
CRJ3-0300-TFE	575-3	37700	3690	4.3	-	-	-	-	-
CRK3-0325-PFJ	265-1	42100	4170	16.4	189-227	220	40	440	0001-64
CRK3-0325-PFV	208/230-1	42100	4170	18.8	189-227	330	40	440	0001-64
CRK3-0325-TF5	200/230-3	41600	4080	11.7	-	-	-	-	-
CRK3-0325-TFD	380/460-3	41600	4080	5.9	-	-	-	-	-
CRK3-0325-TFE	575-3	41600	4080	4.7	-	-	-	-	-
CRL3-0350-PFJ	265-1	47200	4720	18.9	189-227	330	40	440	0001-64
CRL3-0350-PFV	208/230-1	47200	4720	21.7	189-227	330	40	440	0001-64
CRL3-0350-TF5	200/230-3	47200	4580	13.2	-	-	-	-	-
CRL3-0350-TFD	380/460-3	47200	4580	6.6	-	-	-	-	-
CRL3-0350-TFE	575-3	47200	4580	5.3	-	-	-	-	-
CRM3-0400-PFV	208/230-1	53300	5380	25.2	189-227	330	50	440	0166-27 *
CRM3-0400-TF5	200/230-3	53500	5350	12.0	-	-	-	-	-
CRM3-0400-TFD	380/460-3	53500	5350	6.0	-	-	-	-	-
CRT5-0450-PFV	208/230-1	55300	5420	24.3	189-227	330	45	440	0166-27 *
CRT5-0450-TF5	200/230-3	55500	5390	15.1	-	-	-	-	-
CRT5-0450-TFD	380/460-3	55500	5390	7.6	-	-	-	-	-
CRT5-0450-TFE	575-3	55500	5390	6.0	-	-	-	-	-
CRP5-0450-PFV	208/230-1	58300	5760	25.8	189-227	330	45	440	0166-27 *
CRP5-0450-TF5	200/230-3	58600	5700	16.1	-	-	-	-	-
CRP5-0450-TFD	380/460-3	58600	5700	8.1	-	-	-	-	-
CRP5-0450-TFE	575-3	58600	5700	6.4	-	-	-	-	-
CRNQ-050E-PFV	208/230-1	62700	6270	28.0	270-324	330	55	440	0166-27 *
CRNQ-050E-TF5	200/230-3	63300	6270	17.7	-	-	-	-	-
CRNQ-050E-TFD	380/460-3	63300	6270	8.9	-	-	-	-	-
CRNQ-050E-TFE	575-3	63300	6270	7.1	-	-	-	-	-

*** ROHS - Upgraded Parts**

AIR CONDITIONING DUTY COMPRESSORS

COPELAWELD



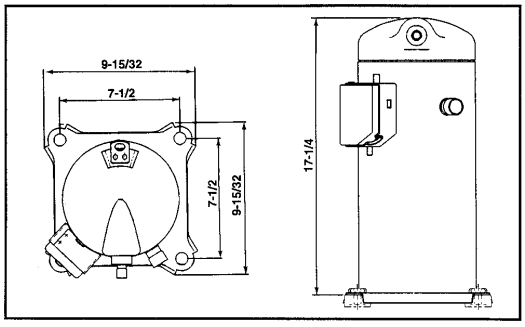
CRKQ-Optima
1-1/2 H.P. to 4 H.P.

Standard Model	Capacity	Voltage	EER	Amps	RLA	LRA	Start Cap	Run Cap	Relay
CR16K6E-PFV-875	15700	208/230-1	10.0	6.9	7.9	38.0	014-0006-16 *	014-0064-11 *	040-0166-15 *
CR18K6E-PFV-875	18300	208/230-1	9.8	8.8	9.0	41.0	014-0006-16 *	014-0064-11 *	040-0166-15 *
CR18K6E-TF5-875	18300	200/230-3	10.1	5.5	6.0	44.2			
CR20K6E-PFV-875	19800	208/230-1	10.0	8.9	10.1	54.0	014-0036-20 *	014-0064-06 *	040-0166-15 *
CR22K6E-PFV-875	21800	208/230-1	9.8	10.8	11.1	51.5	014-0006-16 *	014-0064-13 *	040-0001-87
CR24K6E-PFV-875	23900	208/230-1	9.8	14.7	13.5	70.5	014-0006-16 *	014-0064-13 *	040-0166-15 *
CR24K6E-TF5-875	23700	200/230-3	10.2	7.0	7.5	40.0			
CR24K6E-TFD-875	23700	460-3	tbd	tbd	3.7	25.0			
CR28K6E-PFV-875	27600	208/230-1	9.7	13.1	15.0	70.5	014-0006-16 *	014-0064-13 *	040-0166-15 *
CR28K6E-TF5-875	27200	200/230-3	10.3	8.0	8.8	60.5			
CR28K6E-TFD-875	27500	460-3	10.5	4.0	4.4	30.0			
CR30K6E-PFV-875	30000	208/230-1	9.7	14.1	15.0	78.0	014-0006-16 *	014-0064-13 *	040-0166-15 *
CR30K6E-TFD-875	29300	460-3	10.3	4.3	4.7	32.0			
CR32K6E-TFD-875	30700	208/230-1	9.5	15.3	17.0	83.0	014-0036-20 *	014-0064-13 *	040-0166-15 *
CR32K6E-TF5-875	31300	200/230-3	10.1	9.1	10.4	63.0			
CR32K6E-TFD-875	32000	460-3	10.3	4.5	5.0	32.0			
CR32K6E-PFV-875	32700	208/230-1	10.0	14.8	16.0	75.0	014-0006-13 *	014-0064-14 *	040-0001-54
CR32K6E-TF5-875	32000	208/230-3	10.0	9.3	10.6	69.0			
CR32K6E-TFD-875	32000	460-3	10.3	4.5	4.7	31.6			
CR34K6E-PFV-875	34000	208/230-1	10.1	15.3	16.7	84.0	014-0006-13 *	014-0064-14 *	040-0001-54
CR34K6E-TF5-875	33900	200/230-3	10.1	9.7	11.8	67.0			
CR34K6E-TFD-875	33500	460-3	10.0	4.8	5.4	29.2			
CR35K6E-PFV-875	36300	208/230-1	10.1	16.8	17.6	93.0	014-0006-13 *	014-0064-14 *	040-0001-54
CR35K6E-TF5-875	35200	208/230-3	10.2	10.0	12.4	68.0			
CR35K6E-TFD-875	35700	460-3	10.2	4.9	5.5	34.5			
CR38K6E-PFV-875	36800	208/230-1	10.1	17.4	18.5	100.0	014-0006-13 *	014-0064-08 *	040-0166-19 *
CR38K6E-TF5-875	36400	208/230-3	10.4	10.2	11.1	85.0			
CR38K6E-TFD-875	36400	460-3	10.4	5.1	5.6	39.0			
CR42K6E-PFV-875	41700	208/230-1	10.3	18.7	19.4	109.6	014-0006-13 *	014-0064-16 *	040-0166-27 *
CR42K6E-TF5-875	40700	200/230-3	10.2	11.5	13.1	80.0			
CR42K6E-TFD-875	41200	460-3	10.3	5.8	5.9	42.0			
CR47KQE-PFV-970	47500	208/230-1	10.4	22.0	24.6	132.0	014-0006-13 *	014-0064-15 *	040-0001-59
CR47KQE-TF5-970	47200	200/230-3	10.4	13.7	16.0	97.0			
CR47KQE-TFD-970	47200	460-3	10.4	6.9	8.2	50.0			
CR53KQE-PFV-970	53300	208/230-1	10.1	24.1	29.0	140.0	014-0006-13 *	014-0064-18 *	040-0001-59
CR53KQE-TF5-970	53200	200/230-3	10.1	16.0	18.0	107.0			
CR53KQE-TFD-970	53200	460-3	10.2	8.0	9.1	55.0			

*** ROHS - Upgraded Parts**

AIR CONDITIONING DUTY COMPRESSORS
COPELAWELD & SCROLL

ZR-Line





Standard Model	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Relay Part # (040-)
		BTUH	Watts	Amps	MFD	Volts	MFD	Volts	
AIR CONDITIONING		**45 / 130 / 65 / 115 / 95°F**							
ZR18K3E-PFV	208/230-1	18000	1730	8.0	-	-	25	370	
ZR18K1E-PFQ	265-1	18000	1730	6.9	-	-	25	440	
ZR22K3E-PFV(1)	208/230-1	22100	2010	9.0	-	-	40	370	
ZR22K3E-PFJ(1)	265-1	22100	2010	7.8	-	-	40	440	
ZR23K1E-PFV	208/230-1	22900	2100	9.6	-	-	30	370	
ZR23K1E-PFQ	265-1	22900	2100	8.3	-	-	30	440	
ZR24K3E-PFV(1)	208/230-1	24500	2230	10.0	-	-	40	370	
ZR26K1E-PFV	208/230-1	25800	2360	11.5	-	-	35	370	
ZR26K3E-PFV(1)	208/230-1	26200	2340	10.5	-	-	40	370	
ZR26K3E-PFJ(1)	265-1	26200	2340	9.1	-	-	40	440	
ZR28K1E-PFV	208/230-1	28200	2580	12.2	-	-	35	370	
ZR28K1E-PFQ	265-1	28200	2580	10.6	-	-	35	440	
ZR28K3E-PFV	208/230-1	28500	2560	11.5	-	-	45	370	
ZR28K3E-PFJ	265-1	28500	2560	10.0	-	-	45	440	
ZR28K3E-TF5	200/230-3	28500	2540	7.9	-	-	-	-	
ZR28K3E-TFD	460-3	28500	2540	4.0	-	-	-	-	
ZR30K3E-PFV	208/230-1	30500	2740	12.3	-	-	45	370	
ZR30K3E-TF5	200/230-3	30500	2720	8.3	-	-	-	-	
ZR30K3E-TFD	460-3	30500	2720	4.2	-	-	-	-	
ZR32K3E-PFV(1)	208/230-1	32000	2880	13.2	-	-	45	370	
ZR32K3E-TF5(1)	200/230-3	32000	2860	8.9	-	-	-	-	
ZR32K3E-TFD(1)	460-3	32000	2860	4.4	-	-	-	-	
ZR32K3E-TFE(1)	575-3	32000	2860	3.6	-	-	-	-	
ZR34K1E-PFV	208/230-1	33900	3030	13.9	-	-	35	440	
ZR34K1E-PFQ	265-1	33900	3030	12.1	-	-	35	440	
ZR34K3E-PFV	208/230-1	34000	3030	13.7	-	-	50	370	
ZR34K3E-PFJ	265-1	34000	3030	11.9	-	-	50	440	
ZR34K3E-TF5(1)	200/230-3	34000	2970	9.1	-	-	-	-	
ZR34K3E-TFD(1)	460-3	34000	2970	4.5	-	-	-	-	
ZR34K3E-TFE(1)	575-3	34000	2970	3.6	-	-	-	-	

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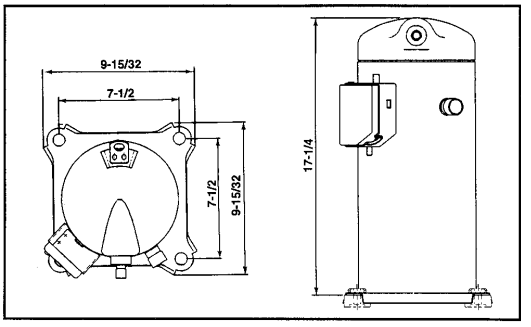
AIR CONDITIONING DUTY COMPRESSORS

SCROLL

ZR-Line





Standard Model	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Relay Part # (040-)
		BTUH	Watts	Amps	MFD	Volts	MFD	Volts	
AIR CONDITIONING (cont'd)		**45 / 130 / 65 / 115 / 95°F**							
ZR36K3E-PFV	208/230-1	36500	3260	14.9	-	-	50	370	
ZR36K3E-PFJ	265-1	36500	3260	12.9	-	-	50	440	
ZR36K3E-TF5	200/230-3	36500	3200	9.7	-	-	-	-	
ZR36K3E-TFD	460-3	36500	3200	4.8	-	-	-	-	
ZR36K3E-TFE	575-3	36500	3200	3.9	-	-	-	-	
ZR40K1E-PFV	208/230-1	39600	3540	17.4	-	-	35	440	
ZR40K3E-PFV	208/230-1	40000	3560	16.5	-	-	55	370	
ZR40K3E-PFJ	265-1	40000	3560	14.3	-	-	55	440	
ZR40K3E-TF5	200/230-3	40000	3500	10.7	-	-	-	-	
ZR40K3E-TFD	460-3	40000	3500	5.4	-	-	-	-	
ZR40K3E-TFE	575-3	40000	3500	4.3	-	-	-	-	
ZR42K3E-PFV	208/230-1	42000	3730	17.2	-	-	60	370	
ZR42K3E-PFJ	265-1	42000	3785	14.7	-	-	60	440	
ZR42K3E-TF5	200/230-3	42000	3680	11.1	-	-	-	-	
ZR42K3E-TFD	460-3	42000	3680	5.6	-	-	-	-	
ZR42K6E-TFE	575-3	42000	3680	4.4	-	-	-	-	
ZR46K3E-PFV	208/230-1	46100	4130	18.8	-	-	60	370	
ZR46K3E-TF5	200/230-3	46100	4100	11.8	-	-	-	-	
ZR46K3E-TFD	460-3	46100	4100	5.9	-	-	-	-	
ZR46K3E-TFE	575-3	46100	4100	4.7	-	-	-	-	
ZR49K3E-PFV	208/230-1	49200	4410	20.1	-	-	60	370	
ZR49K3E-TF5	200/230-3	49200	4350	12.6	-	-	-	-	
ZR49K3E-TFD	460-3	49200	4350	6.3	-	-	-	-	
ZR49K3E-TFE	575-3	49200	4350	5.0	-	-	-	-	
ZR54K3E-PFV	208/230-1	54200	4800	21.9	-	-	80	370	
ZR54K3E-TF5	200/230-3	53300	4790	13.8	-	-	-	-	
ZR54K3E-TFD	460-3	53300	4790	6.9	-	-	-	-	
ZR54K3E-TFE	575-3	53300	4790	5.5	-	-	-	-	
ZR57K3E-PFV	208/230-1	57500	5060	22.7	-	-	80	370	
ZR57K3E-TF5	200/230-3	57200	4910	14.5	-	-	-	-	
ZR57K3E-TFD	460-3	57200	4960	7.3	-	-	-	-	
ZR57K3E-TFE	575-3	57200	4960	5.8	-	-	-	-	
ZR61K3E-PFV	208/230-1	61200	5410	25.3	-	-	80	370	
ZR61K3E-TF5	200/230-3	61000	5290	15.4	-	-	-	-	
ZR61K3E-TFD	460-3	61000	5290	7.7	-	-	-	-	
ZR61K3E-TFE	575-3	61000	5290	6.2	-	-	-	-	
ZR68KCE-TF5	200/230-3	68500	5960	18.2	-	-	-	-	
ZR68KCE-TFD	460-3	68500	5960	9.1	-	-	-	-	
ZR68KCE-TFE	575-3	68500	5960	7.3	-	-	-	-	
ZR72KCE-TF5	200/230-3	72300	6280	18.9	-	-	-	-	
ZR72KCE-TFD	460-3	72300	6280	9.4	-	-	-	-	
ZR72KCE-TFE	575-3	72300	6280	7.6	-	-	-	-	
ZR11M3E-TWC	208/230-3	108000	9560	29.8	-	-	-	-	
ZR11M3E-TWD	460-3	108000	9560	14.9	-	-	-	-	
ZR11M3E-TWE	575-3	108000	9560	11.9	-	-	-	-	
ZR12M3E-TWC	208/230-3	125000	10960	33.4	-	-	-	-	
ZR12M3E-TWD	460-3	125000	10960	16.7	-	-	-	-	
ZR12M3E-TWE	575-3	125000	10960	13.4	-	-	-	-	

AIR CONDITIONING DUTY COMPRESSORS

COPELAND SCROLL

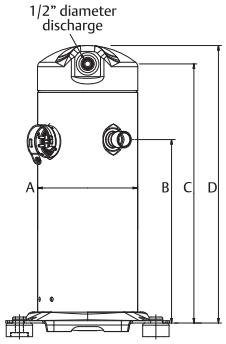
ZRK5E Compressor Cross Reference Guide

OBSOLETE MODEL	NEW MODEL	OBSOLETE MODEL	NEW MODEL	OBSOLETE MODEL	NEW MODEL
ZR16K5E-PFV-830	ZR16K5E-PFV-800	ZR32K5E-PFV-830	ZR32K5E-PFV-800	ZR42K5E-TF5-830	ZR42K5E-TF5-800
ZR18K5E-PFV-830	ZR18K5E-PFV-800	ZR32K5E-TFD-830	ZR32K5E-TFD-800	ZR44K5E-PFV-830	ZR44K5E-PFV-800
ZR21K5E-PFV-830	ZR21K5E-PFV-800	ZR32K5E-TFE-830	ZR32K5E-TFE-800	ZR48K5E-PFJ-830	ZR48K5E-PFJ-800
ZR21K5E-TFD-830	ZR21K5E-TFD-800	ZR32K5E-TF5-830	ZR32K5E-TF5-800	ZR48K5E-PFV-830	ZR48K5E-PFV-800
ZR21K5E-TF5-830	ZR21K5E-TF5-800	ZR38K5E-PFV-830	ZR38K5E-PFV-800	ZR48K5E-TFD-830	ZR48K5E-TFD-800
ZR25K5E-PFV-830	ZR25K5E-PFV-800	ZR38K5E-TFD-830	ZR38K5E-TFD-800	ZR48K5E-TFE-830	ZR48K5E-TFE-800
ZR25K5E-TFD-830	ZR25K5E-TFD-800	ZR38K5E-TFE-830	ZR38K5E-TFE-800	ZR48K5E-TF5-830	ZR48K5E-TF5-800
ZR25K5E-TF5-830	ZR25K5E-TF5-800	ZR38K5E-TF5-830	ZR38K5E-TF5-800	ZR54K5E-PFV-830	ZR54K5E-PFV-800
ZR28K5E-PFV-830	ZR28K5E-PFV-800	ZR42K5E-PFV-830	ZR42K5E-PFV-800	ZR54K5E-TFD-830	R54K5E-TFD-800
ZR28K5E-TFD-830	ZR28K5E-TFD-800	ZR42K5E-TFD-830	ZR42K5E-TFD-800	ZR54K5E-TFE-830	ZR54K5E-TFE-800
ZR28K5E-TF5-830	ZR28K5E-TF5-800	ZR42K5E-TFE-830	ZR42K5E-TFE-800	ZR54K5E-TF5-830	R54K5E-TF5-800

ZRK5E* Compressor Service Bill of Material: 800 Standard Stub Tube Service Compressor, Molded Plug Connection, Single Packed with Mounting Parts and Molded Plug.

Copeland Scroll® Service Compressor Specification Chart

Model	ARI Capacity Btu/hr	RLA Amps TF5/TFD	Run Cap. MFD/Volts	Diameter Inches (A)	Suction Height Inches (B)	Discharge Height Inches (C)	Height Inches (D)	Weight Lbs.	Suction Diameter Inches
ZR16K5E-PFV	15,500	9.3	30/370	5.5	10.1	14.2	15.3	47	3/4
ZR18K5E-PFV	18,000	10.7	30/370	5.5	10.1	14.2	15.3	47	3/4
ZR21K5E-PFV	21,000	12.0	35/370	5.5	10.1	14.2	15.3	47	3/4
ZR21K5E-TF5/D	21,000	8.6/4.3	N/A	5.5	10.1	14.2	15.3	45	3/4
ZR25K5E-PFV	25,300	15.0	40/370	5.5	10.1	14.2	15.3	50	3/4
ZR25K5E-TF5/D	25,300	8.9/4.6	N/A	5.5	10.1	14.2	15.3	48	3/4
ZR28K5E-PFV	28,400	15.7	45/370	5.5	10.1	14.2	15.3	50	3/4
ZR28K5E-TF5/D	28,400	11.1/5.7	N/A	5.5	10.1	14.2	15.3	48	3/4
ZR32K5E-PFV	32,600	17.1	50/370	5.5	10.1	14.2	15.3	50	3/4
ZR32K5E-TF5/D	32,600	12/6.4	N/A	5.5	10.1	14.2	15.3	49	3/4
ZR38K5E-PFV	38,000	21.4	55/370	6.5	11.1	15.4	16.4	64	7/8
ZR38K5E-TF5/D	38,000	13.6/6.4	N/A	6.5	11.1	15.4	16.4	60	7/8
ZR42K5E-PFV	42,200	22.1	55/370	6.5	11.1	15.4	16.4	68	7/8
ZR42K5E-TF5/D	42,200	14.3/6.4	N/A	6.5	11.1	15.4	16.4	61	7/8
ZR48K5E-PFV	48,200	24.3	60/440	6.5	11.1	15.4	16.4	72	7/8
ZR48K5E-TF5/D	48,200	17.1/7.9	N/A	6.5	11.1	15.4	16.4	68	7/8
ZR54K5E-PFV	53,500	28.2	80/370	6.5	11.1	15.4	16.4	73	7/8
ZR54K5E-TF5/D	53,500	17.1/7.9	N/A	6.5	11.1	15.4	16.4	69	7/8
ZR57K3E-PFV	58,000	32.1	80/370	7.3	11.68	16.13	18	90	7/8
ZR57K3E-TF5/D	58,500	19.3/9.1	N/A	7.3	11.68	16.13	18	85	7/8
ZR61K3E-PFV	62,000	32.1	80/370	7.3	11.68	16.13	18	90	7/8
ZR61K3E-TF5/D	62,000	19.3/9.1	N/A	7.3	11.68	16.13	18	85	7/8



Mounting pattern 7.5" x 7.5" (same as previous Copeland Scroll models)

Rotalock™ Kit Part Numbers			
		Adapter	Seal
Suction	3/4" to 1-1/4"-12	998-0034-01	020-0028-02
Suction	7/8" to 1-1/4"-12	998-0034-02	020-0028-02
Discharge	1/2" to 1"-14	998-0034-15	020-0028-00

Additional information

Copeland Scroll ZRK5 compressors are offered in an -800 bill-of-material option, such as ZR25K5-PFV-800, that includes the compressor with a 42 inch molded plug wiring harness, mounting parts and installation instructions.

Other available information includes:
A/C Compressor Product Guide (2008ECT-113)
ZRK5 Product Brochure (2009ECT-98)

For complete product details and additional information, visit **EmersonClimate.com** and select Online Product Information (OPI) or **CopelandScroll.com**.

AIR CONDITIONING DUTY COMPRESSORS

SCROLL - R410A

ZP



Model	Description R- 410A Scroll Compressors	Voltage	Connections Suct/Disch	Shipping Weight
ZP16K3E-PFV-930	Air Conditioning R-410A Nominal 16,000 BTU	208/230-1-60	3/4”x1/2”	66
ZP20K3E-PFV-930	Air Conditioning R-410A Nominal 20,000 BTU	208/230-1-60	3/4”x1/2”	66
ZP23K3E-PFV-930	Air Conditioning R-410A Nominal 23,000 BTU	208/230-1-60	3/4”x1/2”	66
ZP23K3E-TFD-930	Air Conditioning R-410A Nominal 23,000 BTU	460-3-60	3/4”x1/2”	66
ZP26K3E-PFV-930	Air Conditioning R-410A Nominal 26,000 BTU	208/230-1-60	3/4”x1/2”	66
ZP26K3E-TF5-930	Air Conditioning R-410A Nominal 26,000 BTU	200/230-3-60	3/4”x1/2”	66
ZP26K3E-TFD-930	Air Conditioning R-410A Nominal 26,000 BTU	460-3-60	3/4”x1/2”	66
ZP32K3E-PFV-930	Air Conditioning R-410A Nominal 32,000 BTU	208/230-1-60	3/4”x1/2”	72
ZP32K3E-TF5-930	Air Conditioning R-410A Nominal 32,000 BTU	200/230-3-60	3/4”x1/2”	72
ZP32K3E-TFD-930	Air Conditioning R-410A Nominal 32,000 BTU	460-3-60	3/4”x1/2”	72
ZP36K3E-PFV-930	Air Conditioning R-410A Nominal 36,000 BTU	208/230-1-60	3/4”x1/2”	72
ZP36K3E-TF5-930	Air Conditioning R-410A Nominal 36,000 BTU	200/230-3-60	3/4”x1/2”	72
ZP36K3E-TFD-930	Air Conditioning R-410A Nominal 36,000 BTU	460-3-60	3/4”x1/2”	72
ZP38K3E-PFV-930	Air Conditioning R-410A Nominal 38,000 BTU	208/230-1-60	3/4”x1/2”	72
ZP38K3E-TF5-930	Air Conditioning R-410A Nominal 38,000 BTU	200/230-3-60	3/4”x1/2”	72
ZP41K3E-PFV-930	Air Conditioning R-410A Nominal 41,000 BTU	208/230-1-60	3/4”x1/2”	80
ZP41K3E-TF5-930	Air Conditioning R-410A Nominal 41,000 BTU	200/230-3-60	3/4”x1/2”	80
ZP41K3E-TFD-930	Air Conditioning R-410A Nominal 41,000 BTU	460-3-60	3/4”x1/2”	80
ZP44K3E-PFV-930	Air Conditioning R-410A Nominal 44,000 BTU	208/230-1-60	3/4”x1/2”	80
ZP54K3E-PFV-950	Air Conditioning R-410A Nominal 54,000 BTU	208/230-1-60	7/8”x1/2”	90
ZP54K3E-TF5-950	Air Conditioning R-410A Nominal 54,000 BTU	200/230-3-60	7/8”x1/2”	90
ZP54K3E-TFE-950	Air Conditioning R-410A Nominal 54,000 BTU	575-3-60	7/8”x1/2”	90
ZP67K3E-TF5-950	Air Conditioning R-410A Nominal 67,000 BTU	200/230-3-60	7/8”x1/2”	95
ZP67K3E-TFD-950	Air Conditioning R-410A Nominal 67,000 BTU	460-3-60	7/8”x1/2”	95
ZP67K3E-TFE-950	Air Conditioning R-410A Nominal 67,000 BTU	575-3-60	7/8”x1/2”	95

Additional ZP Scroll (R-410A) Capacities Available To 385,000 BTU

AIR CONDITIONING DUTY COMPRESSORS

SUMMIT SCROLL - R-22

ZR
6 to 12 H.P.



ZR72KC

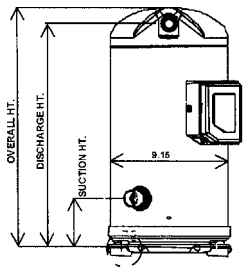


ZR94 - 144KC

Standard Model	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient				Amperage Rating		
		BTUH	Watts	Amps	EER	RLA	LRA	MCC
R-22		45 / 130 / 65 / 115 / 95°F						
ZR72KC-TF5	200/230-3	72300	6280	18.9	11.5	20.7	156.0	29.0
ZR72KC-TFD	460-3	72300	6280	9.4	11.5	10.0	70.0	14.0
ZR72KC-TFE	575-3	72300	6280	7.6	11.5	8.2	54.0	11.5
ZR84KC-TF5	230-3	84000	7300	22.8	11.5	28.6	196.0	40.0
ZR84KC-TFD	460-3	84000	7300	11.4	11.5	14.2	100.0	20.0
ZR84KC-TFE	575-3	84000	7300	9.1	11.5	9.7	90.0	13.5
ZR94KC-TF5	230-3	94000	8170	25.5	11.5	32.1	195.0	45.0
ZR94KC-TFD	460-3	94000	8170	12.8	11.5	16.4	95.0	23.0
ZR94KC-TFE	575-3	94000	8170	10.2	11.5	12.0	80.0	16.8
ZR108KC-TF5	230-3	108000	9390	29.5	11.5	33.6	225.0	47.0
ZR108KC-TFD	460-3	108000	9390	14.8	11.5	17.3	114.0	24.2
ZR108KC-TFE	575-3	108000	9390	11.8	11.5	13.5	80.0	18.9
ZR125KC-TF5	230-3	125000	10870	32.7	11.5	42.0	239.0	58.9
ZR125KC-TFD	460-3	125000	10870	16.4	11.5	19.2	125.0	26.9
ZR125KC-TFE	575-3	125000	10870	13.1	11.5	13.8	80.0	19.3
ZR144KC-TF5*	230-3	144000						
ZR144KC-TFD*	460-3	144000						
ZR144KC-TFE*	575-3	144000						

Copeland Scroll Cross Reference

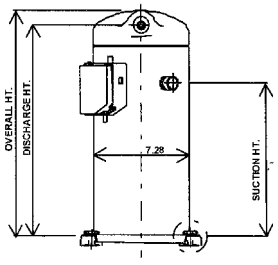
Copeland	Bristol	Maneurop	Tecumseh	Trane
ZR72KC	H26A72	MT72	SFA5572E	CRHH062
ZR94KC	H2BG094	MT90	SFA5594E	CRHH075
ZR108KC	H2BG104	MT100	SFA5611E	CRHH083
ZR125KC	H2BG124	MT125	SFA5612E	CRHL100
ZR144KC	H25G144		SFA5615E	



ZR(94-144)KC

Height Comparison - Scroll Models

Model	Overall Height (inches)	Suction Height (inches)	Disch. Height (inches)
ZR72KC	17-1/4	11-3/4	16-1/8
ZR94KC	18-3/4	3-3/4	17-1/2
ZR108KC	21	4-13/16	19-3/4
ZR125KC	21	4-13/16	9-3/4
ZR144KC*			



ZR72KC

REFRIGERATION DUTY COMPRESSORS

SCROLL - R-404A

ZS & ZF-Line

Standard Model	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Amperage Rating		
		BTUH	Watts	Amps	RLA	LRA	MCC
R-404A MED TEMP (LIQUID INJECTION)		**20 / 120 / 65 / 120 / 95°F**					
ZF09K4E-TF5	200/230-3	21180	2960	9.0	11.1	77.0	15.5
ZF09K4E-TFD	460-3	21180	2960	4.5	5.7	39.0	8.0
ZF09K4E-TFE	575-3	21180	2960	3.6	4.3	31.0	6.0
ZF11K4E-TF5	200/230-3	26220	3700	11.0	13.6	88.0	19.0
ZF11K4E-TFD	460-3	26220	3700	5.5	7.1	44.0	10.0
ZF11K4E-TFE	575-3	26220	3700	4.4	5.0	34.0	7.0
ZF13K4E-TF5	200/230-3	30510	4270	12.3	15.0	99.0	21.0
ZF13K4E-TFD	460-3	30510	4270	6.2	8.2	49.5	11.5
ZF13K4E-TFE	575-3	30510	4270	4.9	6.8	40.0	9.5
ZF15K4E-TF5	200/230-3	37400	5170	15.1	21.4	123.0	30.0
ZF15K4E-TFD	460-3	37400	5170	7.6	9.6	62.0	13.5
ZF15K4E-TFE	575-3	37400	5170	6.0	7.8	50.0	11.0
ZF18K4E-TF5	200/230-3	44960	6280	19.2	20.7	156.0	33.5
ZF18K4E-TFD	460-3	44960	6280	9.6	10.0	70.0	13.0
ZF33K4E-TWC	208/230-3	76910	11480	34.5	43.6	255.0	61.0

Standard Model	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Amperage Rating		
		BTUH	Watts	Amps	RLA	LRA	MCC
R-404A EXT MED TEMP (NO INJECTION)		**20 / 120 / 65 / 120 / 95°F**					
ZS21K4E-TF5	200/230-3	20930	2890	8.9	11.1	77.0	15.0
ZS21K4E-TFD	460-3	20930	2890	4.5	5.7	39.0	8.0
ZS21K4E-TFE	575-3	20930	2890	3.6	4.3	31.0	6.0
ZS26K4E-TF5	200/230-3	26000	3550	10.6	13.6	88.0	19.0
ZS26K4E-TFD	460-3	26000	3550	5.3	7.1	44.0	10.0
ZS26K4E-TFE	575-3	26000	3550	47.2	5.0	34.0	7.0
ZS30K4E-TF5	200/230-3	30000	4070	11.8	15.0	99.0	21.0
ZS30K4E-TFD	460-3	30000	4070	5.9	8.2	49.5	11.5
ZS30K4E-TFE	575-3	30000	4070	4.7	6.8	40.0	9.5
ZS38K4E-TF5	200/230-3	36940	5170	15.1	21.4	123.0	30.0
ZS38K4E-TFD	460-3	36940	5170	7.6	9.6	62.0	13.5
ZS38K4E-TFE	575-3	36940	5170	6.0	7.8	50.0	11.0
ZS45K4E-TF5	200/230-3	44550	6110	18.7	20.7	156.0	33.5
ZS45K4E-TFD	460-3	44550	6110	9.4	10.0	70.0	13.0
ZS75K4E-TWC	208/230-3	76650	11280	34.0	43.6	255.0	61.0

Standard Model	Volts / Phase	Conditions (°F): Evap/Cond/Return Gas/Liquid/Ambient			Amperage Rating		
		BTUH	Watts	Amps	RLA	LRA	MCC
R-404A LOW TEMP		**-25 / 105 / 65 / 105 / 95°F**					
ZF09K4E-TF5	200/230-3	9300	2070	7.1	9.6	77.0	13.5
ZF09K4E-TFD	460-3	9300	2070	3.6	5.0	39.0	7.0
ZF09K4E-TFE	575-3	9300	2070	2.8	3.9	31.0	5.5
ZF11K4E-TF5	200/230-3	11500	2580	8.5	12.1	88.0	17.0
ZF11K4E-TFD	460-3	11500	2580	4.3	6.4	44.0	9.0
ZF11K4E-TFE	575-3	11500	2580	3.4	4.6	34.0	6.5
ZF13K4E-TF5	200/230-3	13200	3020	9.3	13.2	99.0	18.5
ZF13K4E-TFD	460-3	13200	3020	4.7	7.1	49.5	10.0
ZF13K4E-TFE	575-3	13200	3020	3.7	5.7	40.0	8.0
ZF15K4E-TF5	200/230-3	16400	3560	11.3	18.9	123.0	26.5
ZF15K4E-TFD	460-3	16400	3560	5.7	8.9	62.0	12.5
ZF15K4E-TFE	575-3	16400	3560	4.5	6.4	50.0	9.0
ZF18K4E-TF5	200/230-3	19500	4320	14.9	21.8	156.0	30.5
ZF18K4E-TFD	460-3	19500	4320	7.5	8.9	70.0	12.5
ZF33K4E-TWC	208/230-3	33100	7630	25.7	43.6	255.0	61.0

Note: Average performance of these compressors is slightly different with R-507 (AZ-50) versus R-404A data shown. Capacity and mass flow are approximately 3% higher. Watts and amps are approximately 2% higher. Refer to R-404A data sheets. Separate performance data for R-507 will not be published.

REFRIGERATION & A/C DUTY COMPRESSORS

COPELAMETIC R12, R22, R502

1/4 to 3 H.P.

K



E



L



Specifications (Air-Cooled)

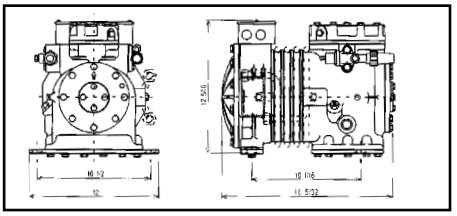
Standard Model	Nom. H.P.	Cyls.	60 Hertz Application		Bore (in)	Stroke (in)	CFH @ 1750 R.P.M.	Oil Charge (Fl. Oz)		Overall Dimensions (in.)			Base Mounting Centers (in)		Discharge Shut-Off Valve (in)	Suction Shut-Off Valve (in)
			R-12	R-502				Initial	Recharge	L	W	H	L	W		
KAE*-0050	1/2	2	M		1-1/2	5/8	134.2	24	20	14	8	10-11/16	8-3/16	6-3/8	3/8 FL	1/2 FL
KAG*-0050	1/2	2	XL		1-7/16	15/16	184.9	24	20	14	8	10-11/16	8-3/16	6-3/8	3/8 FL	1/2 FL
KAH*-0050	1/2	2	L		1-1/2	15/16	201.0	24	20	14	8	10-11/16	8-3/16	6-3/8	3/8 FL	1/2 FL
KAM*-0050	1/2	2	L		1-3/8	15/16	169.0	24	20	14	8	10-11/16	8-3/16	6-3/8	3/8 FL	1/2 FL
KAN*-0050	1/2	2	H	L	1-3/8	5/8	112.8	24	20	14	8	10-11/16	8-3/16	6-3/8	3/8 FL	1/2 FL
KAA*-0075	3/4	2	XL		1-11/16	15/16	255.0	24	20	14	8	10-11/16	8-3/16	6-3/8	3/8 FL	5/8 FL
KAJ*-0075	3/4	2	L		1-9/16	15/16	218.4	24	20	14	8	10-11/16	8-3/16	6-3/8	3/8 FL	5/8 FL
KAM*0075	3/4	2	H	L	1-3/8	15/16	169.0	24	20	14	8	10-11/16	8-3/16	6-3/8	3/8 FL	5/8 FL
KAG*0075	3/4	2	M		1-7/16	15/16	184.9	24	20	14	8	10-11/16	8-3/16	6-3/8	3/8 FL	5/8 FL
KAJ*-0100	1	2	H	L	1-9/16	15/16	218.4	24	20	14	8	10-11/16	8-3/16	6-3/8	1/2 FL	5/8 FL
KAK*-0100	1	2	M		1-11/16	15/16	255.0	24	20	14	8	10-11/16	8-3/16	6-3/8	1/2 FL	5/8 FL
KAL*-0100	1	2	L		1-7/8	15/16	313.0	24	20	14	8	10-11/16	8-3/16	6-3/8	1/2 FL	5/8 FL
KAT*-0100	1	2	XL		1-7/8	1-5/32	389.0	24	20	14	8	10-11/16	8-3/16	6-3/8	1/2 FL	5/8 FL
KAL*-0150	1-1/2	2	H	L	1-7/8	15/16	313.0	24	20	14-3/8	8	10-11/16	8-3/16	6-3/8	1/2 FL	7/8 SWT
KAT*-0150	1-1/2	2	M		1-7/8	1-5/32	389.0	24	20	14-3/8	8	10-11/16	8-3/16	6-3/8	1/2 FL	7/8 SWT
EAA*-0150	1-1/2	2		L	1-3/4	1-5/32	339.0	80	72	16-1/8	12	13-3/4	10-1/16	10-1/2	1/2 FL	7/8 SWT
EAB*-0150	1-1/2	2	M		1-7/8	1-5/32	389.0	80	72	16-1/8	12	13-3/4	10-1/16	10-1/2	1/2 FL	7/8 SWT
EAC*-0150	1-1/2	2	H		1-3/4	1-5/32	339.0	80	72	16-1/8	12	13-3/4	10-1/16	10-1/2	1/2 FL	7/8 SWT
EAJ*-0150	1-1/2	2	XL		1-15/16	1-3/8	492.4	80	72	16-1/8	12	13-3/4	10-1/16	10-1/2	1/2 FL	7/8 SWT
EAV*0150	1-1/2	2	L		2	1-5/32	442.0	80	72	16-1/8	12	13-3/4	10-1/16	10-1/2	1/2 FL	7/8 SWT
EAD*-0200	2	2		L	1-7/8	1-5/32	389.0	80	72	16-1/8	12	13-3/4	10-1/16	10-1/2	1/2 FL	7/8 SWT
EAL*-0200	2	2	M		2	1-3/8	524.0	80	72	16-1/8	12	13-3/4	10-1/16	10-1/2	1/2 FL	7/8 SWT
EAV*-0200	2	2	H	L	2	1-5/32	442.0	80	72	16-1/8	12	13-3/4	10-1/16	10-1/2	1/2 FL	7/8 SWT
3AH*0200	2	2	L		2-1/4	1-3/8	664.2	96	88	18	13-3/8	12-23/32	11-5/8	11	1/2 FL	7/8 SWT
3AJ*-0200	2	2	L		2-1/8	1-3/8	593.2	96	88	18	13-3/8	12-23/32	11-5/8	11	1/2 FL	7/8 SWT
3AB*0310	3	2		L	2	1-3/8	524.0	96	88	18-1/32	13-3/8	15-5/8	11-5/8	11	5/8 FL	1-1/8 SWT
LAC*-0310	3	2	M	XL	2-7/16	1-7/16	815.0	96	88	18-1/32	13-3/8	15-5/8	11-5/8	11	5/8 FL	1-1/8 SWT
LAH*-0310	3	2	H	L	2-1/4	1-7/16	698.0	96	88	18-1/32	13-3/8	15-5/8	11-5/8	11	5/8 FL	1-1/8 SWT
LAL*-0310	3	2	M		2-3/8	1-7/16	775.0	96	88	18-1/32	13-3/8	15-5/8	11-5/8	11	5/8 FL	1-1/8 SWT
LAM*-0310	3	2	L		2-7/16	1-11/16	952.0	96	88	18-1/32	13-3/8	15-5/8	11-5/8	11	5/8 FL	1-1/8 SWT

- KAL/KAT-1-1/2 HP models include positive displacement oil pump.
- All air-cooled models except LAC, LAH, LAM available with copper tube water coil around body for water-cooled application. Change "A" in model code to "W" when ordering compressor with water coil. Example: Change HAF*-0025 to HWF*-0025

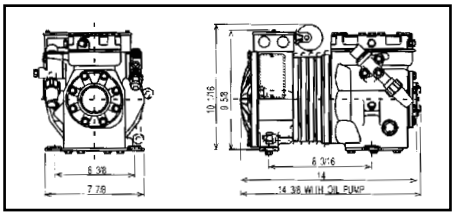
REFRIGERATION & A/C DUTY COMPRESSORS

COPELAMETIC R12, R22, R502

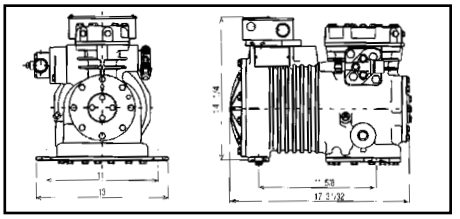
1/4 to 3 H.P.



Typical EA Family



Typical K Family



Typical L Family

Electrical Data (Air-Cooled)

Standard Model	Net Weight lbs.	Shipping Weight lbs.	Electrical Data					
			115-1-60	208-1-60	230-1-60	208/230-3-60	460-3-60	575-3-60
KAE*-0050	81	83	IAA	IAH	IAB	TAC		
KAG*-0050	81	83	IAA	IAH	IAB	TAC		
KAH*-0050	81	83						
KAM*-0050	81	83	IAA	IAH	IAB	TAC		
KAN*-0050	81	83	IAA	IAH	IAB	TAC		
KAA*-0075	89	91	IAA	IAH	IAB	TAC		
KAJ*-0075	89	91	IAA	IAH	IAB	TAC		
KAM*-0075	89	91	IAA	IAH	IAB	TAC		
KAG*-0075	89	91	IAA	IAH	IAB	TAC		
KAJ*-0100	89	91	CAA	CAH	CAB	TAC	TAD	
KAK*-0100	89	91	CAA	CAH	CAB	TAC	TAD	
KAL*-0100	89	91	CAA	CAH	CAB	TAC	TAD	
KAT*-0100	89	91	CAA	CAH	CAB	TAC	TAD	
KAL*-0150	94	96		CAH	CAB	TAC	TAD	
KAT*-0150	94	96		CAH	CAB	TAC	TAD	
EAA*-0150	152	162		CAH	CAB	TAC	TAD	TAE
EAB*-0150	152	162		CAH	CAB	TAC	TAD	TAE
EAC*-0150	152	162		CAH	CAB	TAC	TAD	TAE
EAJ*-0150	152	162		CAH	CAB	TAC	TAD	TAE
EAV*-0150	152	162		CAH	CAB	TAC	TAD	TAE
EAD*-0200	155	165		CAH	CAB	TAC	TAD	TAE
EAL*-0200	158	168		CAH	CAB	TAC	TAD	TAE
EAV*-0200	158	168		CAH	CAB	TAC	TAD	TAE
3AH*-0200	177	187		CAH	CAB	TAC	TAD	TAE
3AJ*-0200	177	187		CAH	CAB	TAC	TAD	TAE
3AB*-0310	179	189			CAB	TAC	TAD	TAE
LAC*-0310	210	221			CAB	TAC	TAD	TAE
LAH*-0310	210	221			CAB	TAC	TAD	TAE
LAL*-0310	210	221			CAB	TAC	TAD	TAE
LAM*-0310	210	221			CAB	TAC	TAD	TAE

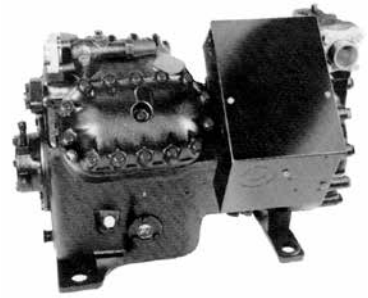
- All compressors may be operated at ±10% of nameplate voltage.
- All three phase models listed as 60 hertz are also rated 50 hertz as follows:
  except model 9TH*-1015-THD/TLD and 9TK*-0505-TFD.
  208/230-3-60 50 hertz is 200/220-3-50
  460-3-60 50 hertz is 380/400-3-50
  575-3-60 50 hertz is 500-3-50

Motor protection:
Second character of Electrical Code indicates:
A - Single External Inherent
F - Internal Inherent, Line Break
H - Internal Thermostats and Two Supplementary Protectors
L - Internal Thermostats and Three Supplementary Protectors
S - Internal Sensor, Solid State

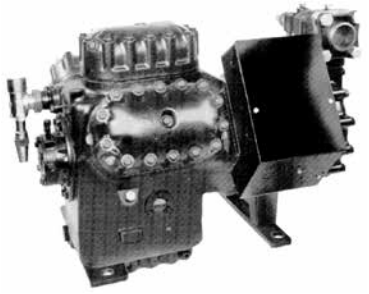
REFRIGERATION & A/C DUTY COMPRESSORS

COPELAMETIC R12, R22, R502

2 to 40 H.P.



4R



6R

Specifications (Refrigerant-Cooled)

Standard Model	Nom. H.P.	Cyls.	60 Hertz Application			Bore (in)	Stroke (in)	CFH @ 1750 R.P.M.	Oil Charge (Fl. Oz)		Overall Dimensions (in.)			Base Mounting Centers (in)		Discharge Shut-Off Valve (in)	Suction Shut-Off Valve (in)
			R-12	R-22	R-502				Initial	Recharge	L	W	H	L	W		
ERA*-0200	2	2		H		1-3/4	1-5/32	339	80	72	16-1/8	12	13-3/4	10-1/16	10-1/2	5/8 FL	7/8 SWT
ERC*-0200	2	2		M	M	1-3/4	1-5/32	339	80	72	16-1/8	12	13-3/4	10-1/16	10-1/2	5/8 FL	7/8 SWT
ERJ*-0200	2	2	H			1-15/16	1-3/8	492		72	16-1/8	12	13-3/4	10-1/16	10-1/2	5/8 FL	7/8 SWT
ERF*-0310	3	3		H	M	1-7/8	1-3/8	460	80	72	17-1/8	12	13-3/4	10-1/16	10-1/2	5/8 FL	1-1/8 SWT
NRB*-0310	3	3	H			2-1/4	1-7/16	698	80	72	20-15/16	13	16-3/8	11-5/8	11	5/8 FL	1-1/8 SWT
NRD*-0310	3	3	M		L	2-7/16	1-7/16	815	80	72	20-15/16	13	16-3/8	11-5/8	11	5/8 FL	1-1/8 SWT
NRN*-0310	3	3	L			2-3/16	2-1/8	970	80	72	20-15/16	13	16-3/8	11-5/8	11	5/8 FL	1-1/8 SWT
3RA*-0310	3	3		M	M	2-3/16	1-3/8	628	96	88	18	13	13-23/32	11-5/8	11	5/8 FL	1-1/8 SWT
3RK*-0310	3	3	H			2-5/16	1-3/8	701	96	88	18	13	13-23/32	11-5/8	11	5/8 FL	1-1/8 SWT
NRB*-0400	4	2		H		2-1/4	1-7/16	698	80	72	19-13/16	13	16-3/8	11-5/8	11	5/8 SWT	1-1/8 SWT
MRA*-0500	5	2	M		L	2-1/2	1-13/16	1080	112	96	22-1/8	13	17-29/32	11-5/8	11	7/8 SWT	1-3/8 SWT
MRF*-0500	5	2	H			2-1/2	1-13/16	1080	112	96	22-1/8	13	17-29/32	11-5/8	11	7/8 SWT	1-3/8 SWT
MRB*-0500	5	2	M		XL	2-5/8	1-13/16	1191	112	96	22-1/8	13	17-29/32	11-5/8	11	7/8 SWT	1-3/8 SWT
NRA*-0500	5	2		H		2-7/16	1-7/16	815	80	72	19-13/16	13	16-3/8	11-5/8	11	5/8 SWT	1-1/8 SWT
NRM*-0500	5	2		M	M	2-3/16	2-1/8	970	80	72	20-15/16	13	16-3/8	11-5/8	11	5/8 SWT	1-1/8 SWT
9RA*0505	5	3	M			2-3/16	2	1375	144	128	26-11/16	14	18-1/4	15	12	7/8 SWT	1-3/8 SWT
9RB*-0505	5	3	L			2-3/8	2	1620	144	128	26-11/16	14	18-1/4	15	12	7/8 SWT	1-3/8 SWT
9RJ*-0505	5	3	L			2-3/16	2	1375	144	128	26-11/16	14	18-1/4	15	12	7/8 SWT	1-3/8 SWT
MRH*-0760	7-1/2	2		H	M	2-9/16	1-13/16	1136	112	96	23	13	17-29/32	11-5/8	11	1-1/8 SWT	1-3/8 SWT
9RJ*-0765	7-1/2	3		M	M / L	2-3/16	2	1375	144	128	26-11/16	14	18-1/4	15	12	1-1/8 SWT	1-3/8 SWT
9RB*-0765	7-1/2	3	M		L	2-3/8	2	1620	144	128	26-11/16	14	18-1/4	15	12	1-1/8 SWT	1-3/8 SWT
9RC*-0765	7-1/2	3	H			2-3/8	2	1620	144	128	26-11/16	14	18-1/4	15	12	1-1/8 SWT	1-3/8 SWT
9RS*-0765	7-1/2	3	M		L	2-7/16	2-1/2	2120	144	128	26-11/16	14	18-1/4	15	12	1-1/8 SWT	1-3/8 SWT
9RC*-1015	10	3		H	M	2-3/8	2	1620	144	128	26-1/2	14	18-1/2	15	12	1-1/8 SWT	1-3/8 SWT
9RS*-1015	10	3	H		L	2-7/16	2-1/2	2120	144	128	26-1/2	14	18-1/2	15	12	1-1/8 SWT	1-3/8 SWT
4RA*-1000	10	4	H		L	2-1/2	2	2380	168	152	25-3/16	18-9/16	18-29/32	15	12	1-1/8 SWT	1-5/8 SWT
6RA*-1000	10	6	L			2-1/2	2	3580	184	168	28-1/8	20-1/8	17-29/32	15	12	1-3/8 SWT	1-5/8 SWT
9RS*-1505	15	3		H	M	2-7/16	2-1/2	2120	144	128	28-3/8	14	18-1/2	15	12	1-1/8 SWT	1-5/8 SWT
4RH*-1500	15	4	H			2-11/16	2-3/16	3020	136	120	25-3/16	18-15/16	19-3/32	15	12	1-1/8 SWT	1-5/8 SWT
4RL*-1500	15	4			L	2-11/16	2-3/16	3020	136	120	26-23/32	18-15/16	28-19/32	15	12	1-1/8 SWT	1-5/8 SWT
4RA*-2000	20	4		H	M	2-1/2	2	2380	136	120	25-3/16	18-9/16	18-29/32	15	12	1-1/8 SWT	1-5/8 SWT
6RA*-2000	20	6	H		L	2-1/2	2	3580	160	144	29-3/16	20-1/8	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RH*-2000	20	6	H			2-11/16	2-3/16	4530	160	144	29-3/16	20-1/2	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
4RH*2500	25	4		H	M	2-11/16	2-3/16	3020	152	136	26-5/32	18-15/16	19-3/32	15	12	1-1/8 SWT	2-1/8 SWT
6RL*-2500	25	6			L	2-11/16	2-3/16	4530	160	144	29-5/16	20-1/2	30-5/32	15	12	1-3/8 SWT	2-1/8 SWT
4RJ1-3000	30	4		H	M	2-15/16	2-3/16	3603	152	136	26-29/32	19-13/16	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
4RJ2-3000	30	4		H	M	2-15/16	2-3/16	3603	234	218	26-29/32	19-13/16	21-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RA*-3000	30	6		H	M	2-1/2	2	3580	160	144	29-3/16	20-1/8	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RT*-3000	30	6			L	2-15/16	2-3/16	5404	242	226	29-5/16	20-1/2	30-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RH*-3500	35	6		H	M	2-11/16	2-3/16	4530	160	144	29-15/16	20-1/2	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RJ*-4000	40	6		H	M	2-15/16	2-3/16	5404	242	226	29-15/16	21-5/8	21-5/32	15	12	1-3/8 SWT	2-1/8 SWT

Temp. Range

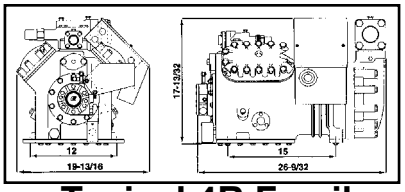
High Temp (45°F Max; 0°F Min)	H
Med Temp (25°F Max; -5°F Min)	M
Low Temp (-5°F Max; -40°F Min)	L
Extra Low Temp (-20°F Max; -40°F Min)	XL
Two Stage (see compressor spec. sheet)	T

Individual compressor models may vary in application temperature range. See individual compressor specification sheet for details. Auxiliary forced air cooling required at evaporation temperatures below 0°F. Models with oil pump require oil pressure safety control. The following models have oil pump: NR, MR, 9R, 4R, 6R.

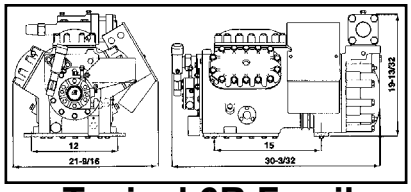
REFRIGERATION & A/C DUTY COMPRESSORS

COPELAMETIC R12, R22, R502

2 to 40 H.P.



Typical 4R Family



Typical 6R Family

Electrical Data (Refrigerant-Cooled)

Standard Model	Elec. Notes	Net Weight lbs.	Shipping Weight lbs.	Electrical Data				
				230-1-60	208/230-3-60	208/230-3/60 460-3-60	460-3-60	575-3-60
ERA*-0200		160	170	CAB	TAC		TAD	TAE
ERC*-0200		160	170	CAB	TAC		TAD	
ERJ*-0200	1	160	170	CAB	TAC		TAD	TAE
ERF*-0310		177	187	CAB	TAC		TAD	TAE
NRB*-0310		216	232	CFB	TFC		TFD	TFE
NRD*-0310	2	216	232	CFB	TFC		TFD	TFE
NRN*-0310		216	232	CFB	TFC		TFD	TFE
3RA*-0310		177	187	CAB	TAC		TAD	
3RK*-0310		185	193	CAB	TAC		TAD	TAE
NRB*-0400		231	240	CFB	TFC		TFD	
MRA*-0500		269	286	CFB	TFC		TFD	TFE
MRF*-0500	2	269	286	CFB	TFC		TFD	TFE
MRB*-0500		269	286		TFC		TFD	TFE
NRA*-0500		231	248	CFB	TFC		TFD	TFE
NRM*-0500		231	248	CFB	TFC		TFD	TFE
9RA*-0505		309	323	CFB	TFC		TFD	TFE
9RB*-0505		309	323	CFB	TFC		TFD	TFE
9RJ*-0505		309	323	CFB	TFC		TFD	TFE
MRH*-0760		281	298		TFC		TFD	TFE
9RJ*-0765	2	318	332		TFC		TFD	TFE
9RB*-0765		318	332		TFC		TFD	TFE
9RC*-0765	2	318	332		TFC		TFD	TFE
9RS*-0765		333	348		TFC		TFD	TFE
9RC*-1015	3	345	359		TLC		TLD	TLE
9RS*-1015	2, 3	345	359		TLC		TLD	TLE
4RA*-1000		369	400			TSK		TSE
6RA*-1000		415	440			TSK		TSE
9RS*-1505	3	365	379		TLC		TLD	TLE
4RH*-1500		407	429			TSK		TSE
4RL*-1500		407	429			TSK		TSE
4RA*-2000		394	411			TSK		TSE
6RA*-2000		425	450			TSK		TSE
6RH*-2000		430	451			TSK		TSE
4RH*-2500		415	437			TSK		TSE
6RL*-2500		460	482			TSK		TSE
4RJ1-3000		470	495			TSK		TSE
4RJ2-3000		505	530			TSK		TSE
6RA*-3000		475	496			TSK		TSE
6RT*-3000		500	525			TSK		TSE
6RH*-3500		484	507			TSK		TSE
6RJ*-4000	4	535	560			TSN		TSE

Electrical Notes:

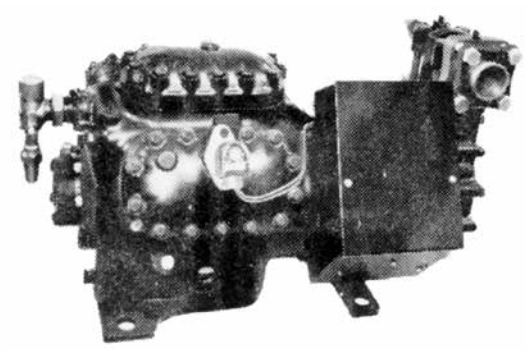
1. ERJ2-0200-CAH available for 208-1-60, CAS available for 220-1-50
2. Dual Cycle 200-3-50/60 available. Use TFU electrical code. Non-U.L.
3. TLC, TLD, TLE Electrical Code has three leg motor protection to meet U.L. requirements for primary single phasing. Also available with two leg motor protection as THC, THD or THE.
4. TSN electrical code is 230/460-3-60
5. All TSK, TSN, FSM, FSR, FSD and FSY motors are designed for either part winding or across the line start at the lower rated voltage and across the line start only at the higher rated voltage

- Auxiliary fan cooling standard on following low temperature models:
  4RL*-1500 6RL*-2500 6RT*-3000
- Auxiliary fan cooling is available as optional item on following low temperature models for evaporating temperatures below 0°F:
  NRD*-0310NRN*-0310MRA*-0500 MRB*-0500
  9RB*-0505 9RJ*-0505 9RJ*-0765 9RB*-0765
  9RS*-0765 9RS*-1015 4RA*-1000 6RA*-1000
  6RA*-2000
- Patented crankcase venting system to insure positive oil return to crankcase
- Positive displacement reversing type oil pump with oil inlet screen on NR, MR, 9R, 4R and 6R models.
- Solid state motor protection on all 4R/6R models. Also on all MR and 9R part winding start models.

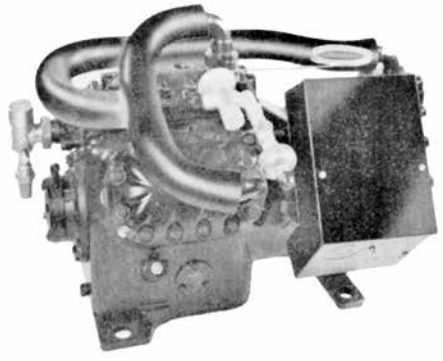
REFRIGERATION & A/C DUTY COMPRESSORS

COPELAMETIC R12, R22, R502

5 to 40 H.P.



Capacity Controlled Models



Two Stage Models

Specifications (Capacity Control Models)

Standard Model	Nom. H.P.	Cyls.	60 Hertz Application		Bore (in)	Stroke (in)	CFH @ 1750 R.P.M.	Oil Charge (Fl. Oz)		Overall Dimensions (in.)			Base Mounting Centers (in)		Discharge Shut-Off Valve (in)	Suction Shut-Off Valve (in)
			R-12	R-22				Initial	Recharge	L	W	H	L	W		
9RP*-0765	7-1/2	3	H		2-3/8	2	1620	144	128	25-5/8	14-13/16	23-7/8	15	12	7/8 SWT	1-3/8 SWT
9RP*-1015	10	3		H	2-3/8	2	1620	144	128	26-1/2	14-13/16	23-7/8	15	12	1-1/8 SWT	1-3/8 SWT
4RE*-1000	10	4	H		2-1/2	2	2380	168	152	25-3/16	18-9/16	18-29/32	15	12	1-1/8 SWT	1-5/8 SWT
9RT*-1505	15	3		H	2-7/16	2-1/2	2120	144	128	27-3/8	14-13/16	23-7/8	15	12	1-1/8 SWT	1-5/8 SWT
4RK*-1500	15	4	H		2-11/16	2-3/16	3020	136	120	25-3/16	18-15/16	19-3/32	15	12	1-1/8 SWT	1-5/8 SWT
4RE*-2000	20	4		H	2-1/2	2	2380	136	120	25-3/16	18-9/16	18-29/32	15	12	1-1/8 SWT	1-5/8 SWT
6RE*-2000[1]	20	6	H		2-1/2	2	3580	160	144	29-3/16	20-1/8	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RK*-2000[1]	20	6	H		2-11/16	2-3/16	4530	160	144	29-3/16	20-1/2	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RN*-2000[2]	20	6	H		2-1/2	2	3580	160	144	29-3/16	22-5/8	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RP*-2000[2]	20	6	H		2-11/16	2-3/16	4530	160	144	29-3/16	23	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
4RK*-2500	25	4		H	2-11/16	2-3/16	3020	152	136	26-5/32	18-15/16	19-3/32	15	12	1-1/8 SWT	2-1/8 SWT
4RR1-3000	30	4		H	2-15/16	2-3/16	3603	152	136	26-29/32	19-13/16	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
4RR2-3000	30	4		H	2-15/16	2-3/16	3603	234	218	26-29/32	19-13/16	21-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RE*-3000[1]	30	6		H	2-1/2	2	3580	160	144	29-3/16	20-1/8	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RN*-3000[2]	30	6		H	2-1/2	2	3580	160	144	29-3/16	22-5/8	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RK*-3500[1]	35	6		H	2-11/16	2-3/16	4530	160	144	29-15/16	20-1/2	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RP*-3500[2]	35	6		H	2-11/16	2-3/16	4530	160	144	29-15/16	23	19-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RR*-4000[1]	40	6		H	2-15/16	2-3/16	5404	242	226	29-15/16	21-5/8	21-5/32	15	12	1-3/8 SWT	2-1/8 SWT
6RS*-4000[2]	40	6		H	2-15/16	2-3/16	5404	242	226	29-15/16	24-1/8	21-5/32	15	12	1-3/8 SWT	2-1/8 SWT

Two-Stage Motor Specifications

Standard Model	Nom. H.P.	Cyls.	60 Hertz Application		Bore (in)	Stroke (in)	CFH @ 1750 R.P.M.	Oil Charge (Fl. Oz)		Overall Dimensions (in.)			Base Mounting Centers (in)		Discharge Shut-Off Valve (in)	Suction Shut-Off Valve (in)
			R-22	R-502				Initial	Recharge	L	W	H	L	W		
9TK*-0505	5	3	T	T	2-3/16	2	1375	144	128	24-7/8	14	20-7/8	15	12	7/8 SWT	1-3/8 SWT
9TL*-0765	7-1/2	3	T	T	2-3/8	2	1620	144	128	24-7/8	14	20-7/8	15	12	7/8 SWT	1-3/8 SWT
9TH*-1015	10	3	T	T	2-7/16	2-1/2	2120	144	128	25-3/4	14	20-7/8	15	12	7/8 SWT	1-3/8 SWT
6RB*-1000	10	6	T		2-1/2	2	3580	184	168	28-3/32	21-5/8	20-25/32	15	12	1-3/8 SWT	1-3/8 SWT
6RB*-2000	20	6		T	2-1/2	2	3580	160	144	28-3/32	21-5/8	20-25/32	15	12	1-3/8 SWT	1-3/8 SWT
6TM*-2000	20	6	T	T	2-11/16	2-3/16	4530	160	144	28-3/32	22	21	15	12	1-3/8 SWT	1-3/8 SWT

[1] Two Cylinder Unloading [2] Four Cylinder Unloading [3] Minimum Evaporating Temperature: +25°F

* Capacity Control Solenoid Valves are mounted on 9R Models, but shipped as loose items on 4R and 6R models. Sub-Coolers on Two Stage Models are shipped as loose items.

CO2 COMPRESSORS & SCROLLS

EMERSON

CO2 Compressors and Scrolls

Emerson CO2 technology leads the trend to efficiency. This refrigerant's non-ozone depleting, non-flammable and near-zero global warming potential properties create an ideal solution towards reducing your environmental footprint.The efficiency, reliability and liquid-handling advantage of Copeland Scrolls, coupled with Emerson Climate Technologies controls, components and transcritical compression architecture makes it ideal for exploiting the positive characteristics of CO2 refrigeration systems.

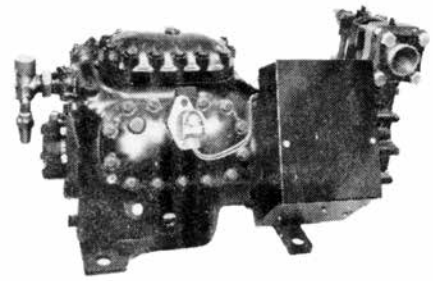


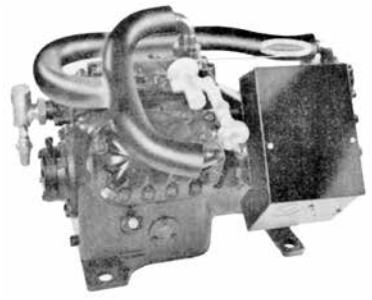
Part #	Description	LIST
CO2 Scroll Compressors		
ZO21K5E-TFD-969	Copeland CO2 Scroll Compressor 460 3 phase	3,189.00
ZO34K3E-(TF5/TFD/TFE)-969	Copeland CO2 Scroll Compressor (208/230-460-575) 3 phase	3,396.00
ZO45K3E-(TF5/TFD/TFE)-969	Copeland CO2 Scroll Compressor (208/230-460-575) 3 phase	3,625.00
ZO58K3E-(TF5/TFD/TFE)-969	Copeland CO2 Scroll Compressor (208/230-460-575) 3 phase	3,625.00
ZO88KCE-(TF5/TFD/TFE)-969	Copeland CO2 Scroll Compressor (208/230-460-575) 3 phase	4,176.00
ZO104KCE-(TF5/TFD/TFE)-969	Copeland CO2 Scroll Compressor (208/230-460-575) 3 phase	4,267.00
Digital CO2 Scroll Compressors		
ZOD34K3E-TFD969	Copeland CO2 Digital Scroll Compressor (208/230-460-575) 3 phase	4,313.00
ZOD104KCE-TFD969	Copeland CO2 Digital Scroll Compressor (208/230-460-575) 3 phase	4,956.00
CO2 Compressors		
4MTLS15ME-(FSD/TSE)-C89	COPELAND CO2 COMPRESSOR 460/3, 575/3	20,621.00
4MTLS11ME-(FSD/TSE)-C89	COPELAND CO2 COMPRESSOR 460/3, 575/3	17,254.00
4MTLS82KE-(FSD/TSE)-C89	COPELAND CO2 COMPRESSOR 460/3, 575/3	15,991.00

REFRIGERATION & A/C DUTY COMPRESSORS

COPELAMETIC R12, R22, R502

5 to 40 H.P.





Electrical Data (Capacity Control Models)

Standard Model	Elec. Notes	Net Weight lbs.	Shipping Weight lbs.	Electrical Data					Service List Price	Salvage List Price
				208/230-3-60	208/230-3/60 460-3-60	460-3-60	575-3-60	220/240-3-50		
9RP*-0765		327	344			TFD	TFE	FSR		
9RP*-1015	3	354	371	TLC	THD / THC	TLD	TLE	FSR		
4RA*-1000		374	405		TSK		TSE	FSR	12,793.00	
9RT*-1505	3	371	385	TLC	TSC / TFD / E	TLD	TLE	FSR	12,871.00	
4RK*-1500		412	431		TSK			FSR		
4RE*-2000		403	420		TSK		TSE	FSR	14,423.00	
6RE*-2000[1]		430	455		TSK		TSE	FSR	26,416.00	
6RK*-2000[1]		435	460		TSK		TSE	FSR		
6RN*-2000[2]		435	460		TSK		TSE	FSR		
6RP*-2000[2]		440	465		TSK		TSE	FSR		
4RK*-2500		427	449		TSK		TSE	FSR	16,074.00	
4RR1-3000		470	495		TSK		TSE	FSR	19,888.00	
4RR2-3000		470	495		TSK		TSE	FSR	19,888.00	
6RE*-3000[1]		479	502		TSK		TSE	FSR	24,477.00	
6RN*-3000[2]		479	502		TSK		TSE	FSR	24,477.00	
6RK*-3500[1]		496	519		TSK		TSE	FSR	25,752.00	
6RP*-3500[2]		506	529		TSK		TSE	FSR	24,604.00	
6RR*-4000[1]	4	541	566		TSN		TSE	FSR	27,403.00	
6RS*-4000[2]	4	538	563		TSN		TSE	FSR		

Two-Stage Motor Compressors Electrical Data

Standard Model	Elec. Notes	Net Weight lbs.	Shipping Weight lbs.	Electrical Data					Service List Price	Salvage List Price
				208/230-3-60	208/230-3/60 460-3-60	460-3-60	575-3-60	220/240-3-50		
9TK*-0505		340	357	TFC		TFD	TFE	FSR	13,216.00	
9TL*-0765		350	367	TFC		TFD		FSR	13,576.00	
9TH*-1015	3	358	375	TLC	TFC	TLD		FSR		
6RB*-1000		415	436		TSK			FSR		
6RB*-2000		420	441		TSK		TSE	FSR	26,416.00	
6TM*-2000		420	441		TSK		TSE	FSR		

Standard Capacity Control Solenoid Voltage is 208/240 VAC. 24 VAC, 120 VAC and 460 VAC also available.

- Compressor capacity can be modulated to match load demand
- Internal capacity control on 4R/6R
- External capacity control on 9R
- Multiple step unloading available on 6R
- Conversion kits available to allow interchangeability between standard and capacity control models.

- Two-stage manifold self contained on compressors
- Safe, efficient performance down to ultra-low temperatures
- Two to one displacement ratio
- Desuperheating expansion valve provides safe motor cooling at high compression ratios

REFRIGERATION DUTY COMPRESSORS

COPELAMETIC - R-22

H, K, E, 3, L & N

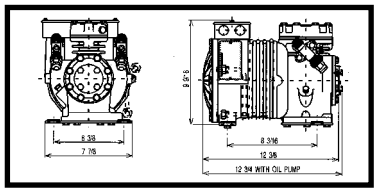
Standard Model	Volts / Phase	CFH	Conditions (°F): Evap/Cond/ Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Alternative Applications			Relay Part # (040-)	LIST
			BTUH	Watts	Amps	MFD	Volts	MFD	Volts	R-12	R-502	R-22		
HCFC-22 HIGH TEMP			**45 / 130 / 65 / 130 / 95°F**											
HAG2-0050-CAA	115-1	76.1	5410	640	6.0	400-480	110	10	370			MH	0001-22	3,816.00
HAG2-0050-CAV	208/230-1	76.1	5410	640	3.0	108-130	330	10	370			MH	0001-03	
HAG1-0050-TAC	208/230-3	76.1	5280	640	2.1	-	-	-	-			MH	-	
KAN2-0075-CAA	115-1	112.8	8360	925	9.6	541-634	110	30	370			MH	0001-22	
KAN2-0075-CAV	208/230-1	112.8	8360	925	4.8	145-174	220	10	370			MH	0001-03	
KAN1-0075-TAC	208/230-3	112.8	8560	900	3.0	-	-	-	-		M	MH	-	
KAR2-0100-CAA	115-1	157.5	11900	1550	14.6	430-516	125	40	330		M	MH	0001-11	
KAR2-0100-CAV	208/230-1	157.5	11900	1550	7.3	145-174	220	20	440		M	MH	0001-04	
KAR1-0100-TAC	208/230-3	157.5	11500	1520	4.6	-	-	-	-		M	MH	-	
KAR1-0100-TAD	460-3	157.5	11500	1520	2.3	-	-	-	-			MH	-	
KAM2-0100-CAA	115-1	169.2	13800	1470	14.0	430-516	125	40	330			MH	0001-11	
KAM2-0100-CAV	208/230-1	169.2	13800	1470	7.0	145-174	220	20	440			MH	0001-04	
KAM1-0100-TAC	208/230-3	169.2	13300	1350	4.4	-	-	-	-			MH	-	4,216.00
KAM1-0100-TAD	460-3	169.2	13300	1350	2.2	-	-	-	-			MH	-	
KAGB-0150-CAV	208/230-1	184.9	15300	1620	8.0	130-156	330	25	480			MH	0001-00	4,367.00
KAGA-0150-TAC	208/230-3	184.9	15300	1590	5.4	-	-	-	-			MH	-	4,685.00
KAGA-0150-TAD	460-3	184.9	15300	1590	2.7	-	-	-	-		M	MH	-	
KAKB-0200-CAV	208/230-1	254.8	21400	2320	11.0	130-156	330	25	480	M	M	LMH	0001-00	
KAKA-0200-TAC	208/230-3	254.8	21000	2240	7.3	-	-	-	-	M	M	LMH	-	5,091.00
KAKA-0200-TAD	460-3	254.8	21000	2240	3.7	-	-	-	-	M		LMH	-	
ERA2-0200-CAB	230-1	338.0	20100	2440	11.6	130-156	330	25	440			MH	0001-00	6,393.00
ERA1-0200-TAC	208/230-3	338.0	20000	2380	8.1	-	-	-	-			MH	-	6,836.00
ERA1-0200-TAD	460-3	338.0	20000	2380	4.1	-	-	-	-			MH	-	
ERA1-0200-TAE	575-3	338.0	20000	2380	3.3	-	-	-	-			MH	-	
EAD2-0320-CAB	230-1	388.0	30700	3310	14.9	189-227	330	40	440			MH	0001-08	
EAD1-0320-TAC	208/230-3	388.0	31800	3270	10.1	-	-	-	-			MH	-	
EAD1-0320-TAD	460-3	388.0	31800	3270	5.1	-	-	-	-		M	MH	-	
ERF2-0310-CAB	230-1	461.4	35900	4280	17.3	130-156	330	40	440		M	MH	0001-08	
ERF1-0311-TAC	208/230-3	461.4	35200	3840	11.6	-	-	-	-		M	MH	-	
ERF1-0311-TAD	460-3	461.4	35200	3840	5.8	-	-	-	-		M	MH	-	
ERF1-0300-TAE	575-3	461.4	35200	3840	4.6	-	-	-	-		M	MH	-	7,595.00
NRB2-0400-TFC	208/230-3	694.6	50100	5420	16.9	-	-	-	-		M	MH	-	9,671.00
NRB2-0400-TFD	460-3	694.6	50100	5420	8.5	-	-	-	-		M	MH	-	
NRB2-0400-TFE	575-3	694.6	50100	5420	6.8	-	-	-	-		M	MH	-	9,020.00
NRA2-0500-TFC	208/230-3	815.2	57600	6910	19.4	-	-	-	-		M	MH	-	9,735.00
NRA2-0500-TFD	460-3	815.2	57600	6910	9.7	-	-	-	-		M	MH	-	
NRA2-0500-TFE	575-3	815.2	57600	6910	7.8	-	-	-	-			MH	-	9,080.00

Standard Model	Volts / Phase	CFH	Conditions (°F): Evap/Cond/ Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Alternative Applications		Relay Part # (040-)	LIST
			BTUH	Watts	Amps	MFD	Volts	MFD	Volts	R-502	R-22		
HCFC-22 MED TEMP			**20 / 120 / 65 / 120 / 95°F**										
HAJ2-0050-CAA	115-1	84.1	3800	570	5.6	400-480	110	10	370	M	M	0001-22	
HAJ2-0050-CAV	208/230-1	84.1	3800	570	2.8	108-130	330	10	370	M	M	0001-03	
HAJ1-0050-TAC	208/230-3	84.1	3700	570	2.0	-	-	-	-	M	M	-	
KAE2-0075-CAA	115-1	134.2	6090	950	9.8	541-634	110	30	370	L	M	0001-22	
KAE2-0075-CAV	208/230-1	134.2	6090	950	4.9	145-174	220	10	370	L	M	0001-03	3,500.00
KAE1-0075-TAC	208/230-3	134.2	6080	930	3.0	-	-	-	-	L	M	-	
ERC2-0200-CAB	230-1	338.0	14400	2120	8.7	130-156	330	25	440	M	M	0001-00	6,836.00
ERC1-0200-TAC	208/230-3	338.0	14500	2020	6.1	-	-	-	-	M	M	-	
ERC1-0200-TAD	460-3	338.0	14500	2020	3.1	-	-	-	-	M	M	-	
3RA2-0310-CAB	230-1	628.0	25800	4030	20.7	130-156	330	40	440	M	M	0001-08	8,110.00
3RA1-0311-TAC	208/230-3	628.0	25800	3830	14.3	-	-	-	-	M	M	-	
3RA1-0311-TAD	460-3	628.0	25800	3830	7.2	-	-	-	-	M	M	-	
NRM1-0500-TFC	208/230-3	970.5	43400	6130	19.7	-	-	-	-	M	M	-	9,735.00
NRM1-0500-TFD	460-3	970.5	43400	6130	9.9	-	-	-	-	M	M	-	
NRM1-0500-TFE	575-3	970.5	43400	6130	7.9	-	-	-	-	M	M	-	

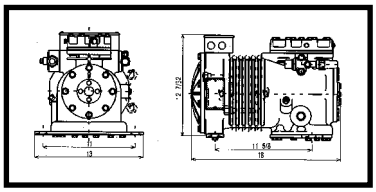
REFRIGERATION DUTY COMPRESSORS

COPELAMETIC - R-22

H, K, E, 3, L & N

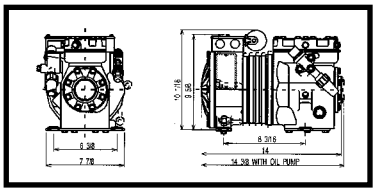


Typical H Family



Typical 3A Family





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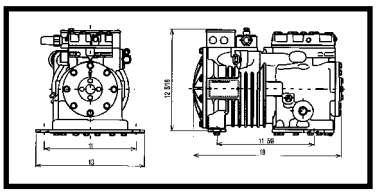

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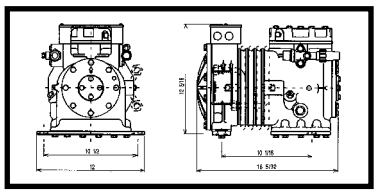

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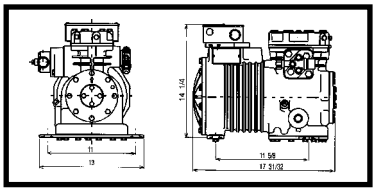

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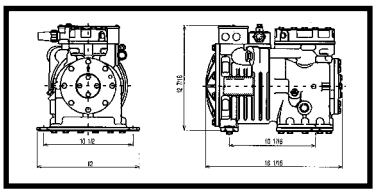

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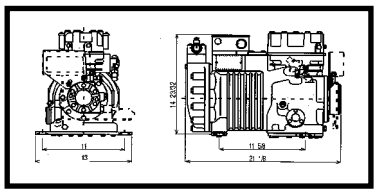


Typical N Family

Standard Model	Volts / Phase	CFH	Conditions (°F): Evap/Cond/ Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Alternative Applications			Relay Part # (040-)	LIST
			BTUH	Watts	Amps	MFD	Volts	MFD	Volts	R-12	R-502	R-22		
HCFC-22 LOW TEMP			-25 / 105 / 65 / 105 / 95°F											
HAFB-0033-IAA	115-1	63.4	695	295	4.7	324-389	115	-	-	MH	L	L	0001-01	
HATB-0051-CAA	115-1	123.3	1930	565	8.5	400-480	115	10	370	M		L	0001-11	
KANB-0050-IAA	115-1	112.8	1340	425	6.4	400-480	115	-	-	MH	L	L	0001-01	
KANB-0050-CAV	208/230-1	112.8	1340	426	3.2	108-130	330	10	370	MH	L	L	0001-03	
KAMB-0075-CAA	115-1	169.2	2720	670	7.4	430-516	125	40	330			L	0001-11	
KAMB-0075-CAV	208/230-1	169.2	2720	670	3.7	145-174	220	10	370	MH	L	L	0001-03	
KAMA-0075-TAC	208/230-3	169.2	2470	590	2.3	-	-	-	-	MH	L	L	-	
KAJB-0100-CAV	208/230-1	218.5	3470	820	4.1	145-174	220	20	440	MH	L	L	0001-04	
KAJA-0101-TAC	208/230-3	218.5	3370	800	3.1	-	-	-	-	MH	L	L	-	
KAKB-0200-CAV	208/230-1	254.8	4030	1090	5.9	130-156	330	25	480	M	M	LMH	0001-00	
KAKA-0200-TAC	208/230-3	254.8	3810	905	3.9	-	-	-	-	M	M	LMH	-	5,091.00
KAKA-0200-TAD	460-3	254.8	3810	905	2.0	-	-	-	-	M	M	LMH	-	
EADB-0200-CAB	230-1	388.0	5590	1340	6.2	130-156	330	25	440		L	L	0001-00	
EADA-0200-TAC	208/230-3	388.0	5710	1290	4.3	-	-	-	-		L	L	-	
EADA-0200-TAD	460-3	388.0	5710	1290	2.2	-	-	-	-		L	L	-	
EAVB-0210-CAV	208/230-1	441.4	6820	1730	8.3	189-227	330	40	440			L	0001-08	
EAVA-0210-TAC	208/230-3	441.4	6470	1410	5.2	-	-	-	-			L	-	
EAVA-0210-TAD	460-3	441.4	6470	1410	2.6	-	-	-	-			L	-	
3AJB-0210-CAB	230-1	592.6	8310	2010	10.0	189-227	330	40	440			L	0001-08	
3AJA-0210-TAC	208/230-3	592.6	8420	2040	7.4	-	-	-	-			L	-	7,466.00
LAHB-0311-CAB	230-1	694.6	9890	2270	10.4	189-227	330	40	440			L	0001-08	
LAHA-0310-TAC	208/230-3	694.6	9840	2080	7.6	-	-	-	-			L	-	
LAHA-0310-TAD	460-3	694.6	9840	2080	3.8	-	-	-	-			L	-	

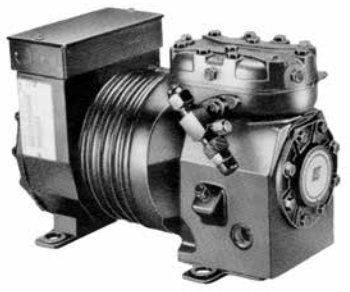
REFRIGERATION DUTY COMPRESSORS

COPELAMETIC - R-134a, R-404A, R-507

H, K, E, 3A, 3R, L & N



H



K



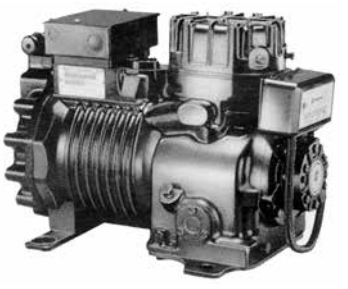
E



3



L



N

Standard Model	Volts / Phase	CFH	Conditions (°F): Evap/Cond/ Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Alternative Applications				Relay Part # (040-)	LIST
			BTUH	Watts	Amps	MFD	Volts	MFD	Volts	R-502	R-22	R-134a	R-507*		
R-404A MED TEMP			**20 / 120 / 65 / 120 / 95°F**												
HAJB-005E-CAV	208/230-1	84.2	3910	685	3.3	108-130	330	10	370		M		M	0001-09	3,543.00
KARB-010E-CAV	208/230-1	157.5	7490	1320	6.2	145-174	220	20	440	M	MH		M	0001-04	3,959.00
KARA-010E-TAC	208/230-3	157.5	7220	1280	4.1	-	-	-	-		MH		M	-	3,959.00
KAKB-021E-CAV	208/230-1	255.1	12100	2130	9.6	130-156	330	40	440				M	0001-00	4,763.00
KAKA-020E-TAC	208/230-3	255.1	11900	1850	6.4	-	-	-	-				M	-	4,763.00
ERCA-021E-TAC	208/230-3	337.8	15100	2480	7.3	-	-	-	-		M		M	-	6,393.00
ERFA-031E-TAC	208/230-3	461.3	22300	3460	10.3	-	-	-	-		MH		M	-	7,104.00
ERFA-031E-TAD	460-3	461.3	22300	3460	5.2	-	-	-	-		MH		M	-	7,104.00
ERFA-031E-TAE	575-3	461.3	22300	3460	4.1	-	-	-	-					-	7,104.00
3RAA-031E-TAC	208/230-3	628.2	26200	4240	12.2	-	-	-	-		M		M	-	7,581.00
NRB2-040E-TFC	208/230-3	694.8	29900	4770	15.8	-	-	-	-				M	-	

REFRIGERATION DUTY COMPRESSORS

COPELAMETIC - R-134a, R-404A, R-507

H, K, E, 3A, 3R, L & N

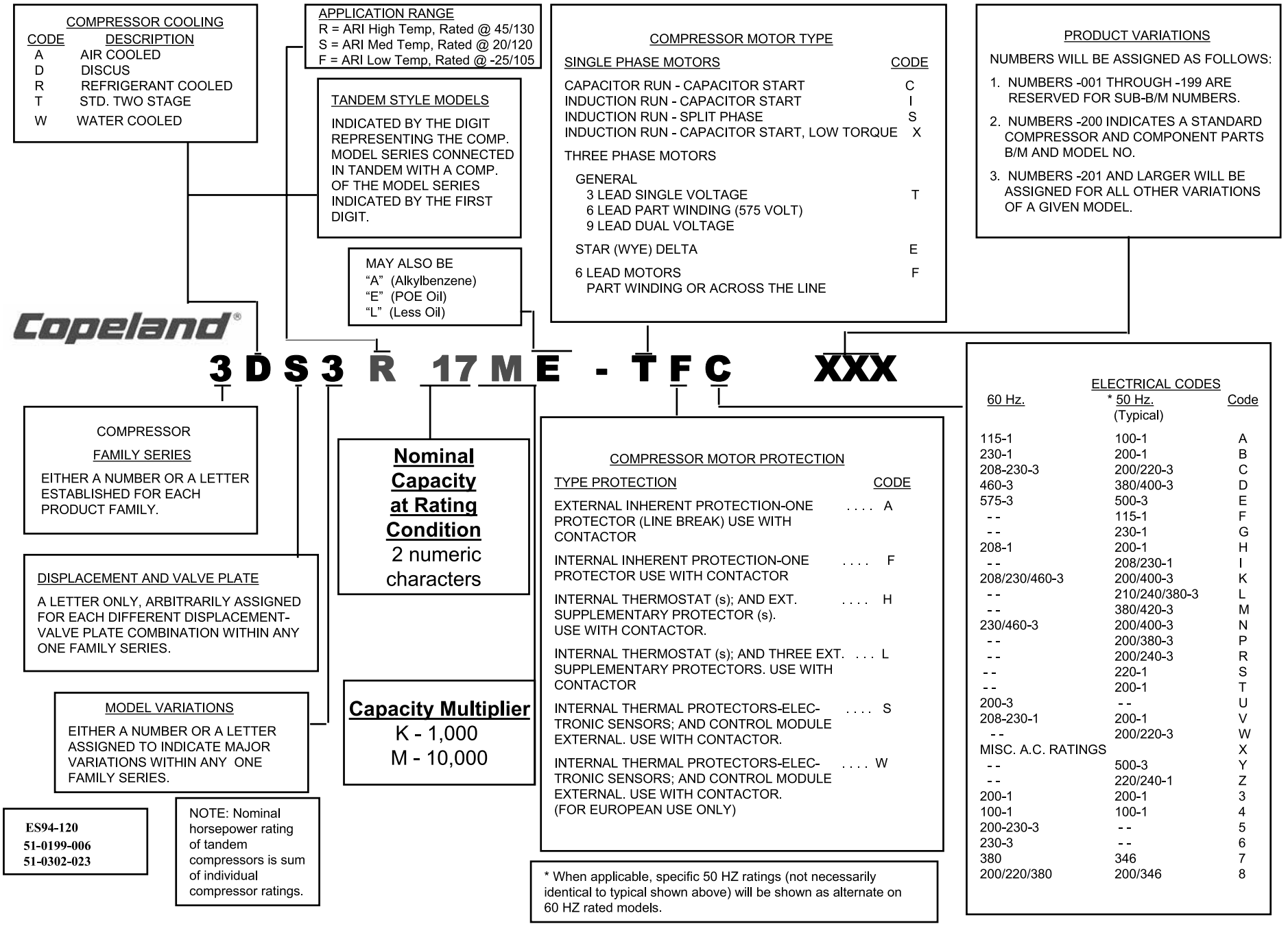




Standard Model	Volts / Phase	CFH	Conditions (°F): Evap/Cond/ Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Alternative Applications				Relay Part # (040-)	LIST
			BTUH	Watts	Amps	MFD	Volts	MFD	Volts	R-502	R-22	R-134a	R-507*		
R-404A LOW TEMP			-25 / 105 / 65 / 105 / 95°F												
HAFB-003E-IAA	115-1	63.4	882	310	4.9	324-389	115	-	370	L	L		L	0001-01	
KANB-005E-IAA	115-1	112.7	1510	443	4.4	400-480	115	-	440		L	MH	L	0001-01	3,238.00
KANB-005E-CAV	208/230-1	112.7	1510	443	2.2	108-130	330	10	-	L	L		L	0001-03	
KANA-006E-TAC	208/230-3	112.7	1400	421	1.7	-	-	-	440				L	-	
HATB-005E-CAA	115-1	123.3	2070	595	8.6	400-480	115	20	-	M				0001-11	
KAEB-007E-CAA	115-1	134.2	2030	611	7.0	540-648	115	30	-	L	M		L	0001-22	
KAEB-007E-CAV	208/230-1	134.2	2030	611	3.5	145-174	220	10	-	L	M		L	0001-03	
KAEA-007E-TAC	208/230-3	134.2	1980	556	2.3	-	-	-	-	L	M		L	-	
KAMB-007E-CAA	115-1	169.2	2800	730	8.0	430-516	125	40	-		L			0001-25	3,379.00
KAMB-007E-CAV	208/230-1	169.2	2800	730	4.0	145-174	220	10	-	L	L	MH		0001-03	3,379.00
KAMA-007E-TAC	208/230-3	169.2	2610	679	2.6	-	-	-	-	L	L		L	-	3,379.00
KAJB-010E-CAV	208/230-1	218.6	3810	914	4.5	145-174	220	20		L	L	MH		0001-04	3,940.00
KAJA-011E-TAC	208/230-3	218.6	3710	929	3.6	-	-	-			L	MH	L	-	3,940.00
KAJA-011E-TAD	460-3	218.6	3710	929	1.8	-	-	-			L		L	-	3,940.00
KAKB-011E-CAV	208/230-1	255.1	4410	1280	5.9	145-174	220	40						0001-04	4,143.00
KALB-015E-CAV	208/230-1	314.7	5690	1440	7.0	130-156	330	25		L		MH	L	0001-00	4,602.00
KALA-016E-TAC	208/230-3	314.7	5610	1310	5.3	-	-	-				MH	L	-	4,602.00
KALA-016E-TAD	460-3	314.7	5610	1310	2.6	-	-	-					L	-	
KATA-020E-TAU	200-3	387.8	7020	1640	6.2	-	-	-					L	-	
EADB-021E-CAB	230-1	387.8	6290	1560	7.2	130-156	330	25						0001-00	6,393.00
EADA-020E-TAC	208/230-3	387.8	6260	1480	4.8	-	-	-		L	L		L	-	6,393.00
EAVB-021E-CAV	208/230-1	441.3	7510	1900	9.2	189-227	330	40		L	L	MH	L	0001-08	6,393.00
EAVA-021E-TAC	208/230-3	441.3	6970	1620	5.6	-	-	-		L	L	MH	L	-	6,393.00
EAVA-021E-TAD	460-3	441.3	6970	1620	2.8	-	-	-			L		L	-	6,393.00
EAVA-021E-TAE	575-3	441.3	6970	1620	2.2	-	-	-						-	6,393.00
3ABB-032E-CAB	230-1	524.9	8530	2150	9.8	189-227	330	40						0001-08	7,397.00
3ABA-031E-TAC	208/230-3	524.9	8440	1940	6.9	-	-	-					L	-	7,397.00
LAHB-032E-CAB	230-1	694.8	11200	2780	13.2	189-227	330	60						0001-08	7,605.00
LAHA-032E-TAC	208/230-3	694.8	11200	2440	9.4	-	-	-					L	-	7,605.00
LAHA-032E-TAD	460-3	694.8	11200	2440	4.7	-	-	-					L	-	
LAHA-032E-TAE	575-3	694.8	11200	2440	3.8	-	-	-						-	7,605.00
LALA-032E-TAC	208/230-3	774.1	13000	2930	10.5	-	-	-					L	-	7,605.00
LALA-032E-TAD	460-3	774.1	13000	2930	5.2	-	-	-					L	-	
NRD1-040E-CFB	230-1	815.7	13600	3610	17.3	216-259	330	40						0001-08	9,043.00
NRD1-032E-TFC	208/230-3	815.7	14300	3470	11.4	-	-	-				MH	L	-	9,026.00
NRD1-032E-TFD	460-3	815.7	14300	3470	5.7	-	-	-					L	-	9,026.00

Standard Model	Volts / Phase	CFH	Conditions (°F): Evap/Cond/ Return Gas/Liquid/Ambient			Start Capacitor		Run Capacitor		Alternative Applications				Relay Part # (040-)	LIST
			BTUH	Watts	Amps	MFD	Volts	MFD	Volts	R-502	R-22	R-134a	R-507*		
R-404A EX. LOW TEMP			-25 / 105 / 65 / 105 / 95°F												
HAJB-003E-IAA	115-1	84.2	1230	425	5.6	324-389	115	-	-				XL	0001-01	
KAGB-005E-IAA	115-1	185.1	2930	832	9.6	400-480	115	-	-				XL	0001-01	3,238.00
KAAB-007E-CAA	115-1	255.1	4200	1130	12.0	540-648	115	25	440				XL	0001-01	3,459.00
KALB-010E-CAV	208/230-1	314.7	5380	1330	6.2	145-174	220	20	440				XL	0001-04	3,940.00
KATB-015E-CAV	208/230-1	387.8	6900	1700	8.2	130-156	330	25	480				XL	0001-00	4,602.00
KATA-015E-TAC	208/230-3	387.8	6700	1650	5.4	-	-	-	-				XL	-	4,602.00
LALB-032E-CAB	230-1	774.1	12700	3240	15.2	189-227	330	60	440					0001-08	7,605.00
LACB-032E-CAB	230-1	815.7	14700	3370	15.8	189-227	330	60	440			M	XL	0001-08	7,605.00
LACA-032E-TAD	460-3	815.7	14600	3070	5.4	-	-	-	-			M	XL	-	

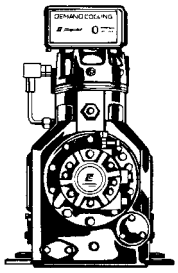
DISCUS COMPRESSOR MODEL NUMBER NOMENCLATURE



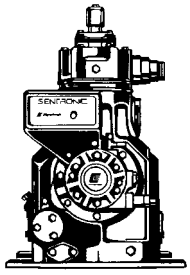
REFRIGERATION DUTY COMPRESSORS

COPELAMETIC DISCUS - R-22

2D, 3D, 4D & 6D
Low Temperature



2D



3D

Standard Model Specs

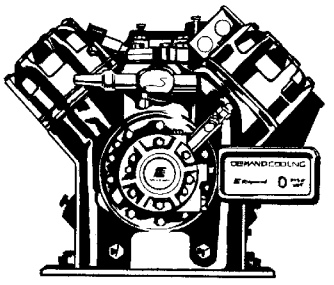
Standard Model	Model With Unloading		CURRENT Model	Volts / Phase	CFH	Conditions (°F): Evap/Cond/ Return Gas/Liquid/Ambient		Amperage Ratings			LIST
	1 Bank	2 Bank				BTUH	Amps	RLA	LRA	MCC	
HCFC-22 LOW TEMP DEMAND COOLING						**-25 / 105 / 65 / 105 / 95°F**					
2DF3-0300-TFC	-	-	2DF3F16K0-	208/230-3	904	13400	10.8	16.8	102.0	22.3	
2DF3-0300-TFD	-	-		460-3	904	13400	5.4	8.1	52.0	11.1	
2DF3-0300-TFE	-	-		575-3	904	13400	4.3	6.7	41.0	9.4	
2DL3-0400-TFC	-	-	2DL3F20KE-	208/230-3	1008	16100	12.1	26.3	161.0	33.8	
2DL3-0400-TFD	-	-		460-3	1008	16100	6.1	10.2	60.0	12.2	
2DL3-0400-TFE	-	-		575-3	1008	16100	4.8	7.7	49.0	10.5	
2DA3-0600-TFC	-	-	2DA3F23KE-	208/230-3	1135	18800	14.8	28.8	161.0	35.6	
2DA3-0600-TFD	-	-		460-3	1135	18800	7.4	10.2	60.0	13.6	
2DA3-0600-TFE	-	-		575-3	1135	18800	5.9	9.1	49.0	11.8	
2DB3-0600-TFC	-	-	2DB3F25KE-	208/230-3	1191	20500	15.0	28.2	161.0	35.6	
2DB3-0600-TFD	-	-		460-3	1191	20500	7.5	13.3	80.0	18.0	
2DB3-0600-TFE	-	-		575-3	1191	20500	6.0	9.6	63.0	13.4	
3DA3-0600-TFC	Not Permitted		3DA3F28KE-	208/230-3	1375	23200	16.7	30.3	150.0	37.5	
3DA3-0600-TFD	Not Permitted			460-3	1375	23200	8.4	16.8	77.0	16.8	
3DA3-0600-TFE	Not Permitted			575-3	1375	23200	6.7	10.5	62.0	14.7	
3DB3-0750-TFC	Not Permitted		3DB3F33KE-	208/230-3	1620	29000	18.9	31.5	161.0	44.0	
3DB3-0750-TFD	Not Permitted			460-3	1620	29000	9.5	16.1	83.0	22.0	
3DB3-0750-TFE	Not Permitted			575-3	1620	29000	7.6	11.0	67.0	15.4	
3DF3-0900-TFC	Not Permitted		3DF3F40KE-	208/230-3	1915	34400	22.7	39.0	215.0	51.8	
3DF3-0900-TFD	Not Permitted			460-3	1915	34400	11.4	16.9	106.0	23.4	
3DF3-0900-TFE	Not Permitted			575-3	1915	34400	9.1	16.5	84.0	19.7	
3DS3-1000-TFC	Not Permitted		3DS3F46KE-	208/230-3	2120	37500	24.4	42.0	215.0	49.2	
3DS3-1000-TFD	Not Permitted			460-3	2120	37500	12.2	18.6	106.0	22.9	
3DS3-1000-TFE	Not Permitted			575-3	2120	37500	9.8	16.8	84.0	22.7	
4DA3-1000-TSK	Not Permitted		4DA3F47KE-	208/230-3	2380	39000	27.0	42.0	240.0	49.0	
4DA3-1000-TSK	Not Permitted			460-3	2380	39000	13.6	21.0	120.0	24.5	
4DA3-1000-TSE	Not Permitted			575-3	2380	39000	10.8	17.4	106.0	20.0	
4DA3-1000-FSD	Not Permitted			460-3	2380	39000	13.6	20.0	115.0	23.1	
4DL3-1500-TSK	Not Permitted		4DL3F63KE-	208/230-3	3020	52300	37.0	52.6	278.0	73.6	
4DL3-1500-TSK	Not Permitted			460-3	3020	52300	18.3	26.3	139.0	36.8	
4DL3-1500-TSE	Not Permitted			575-3	3020	52300	14.6	20.9	113.0	25.0	
4DL3-1500-FSD	Not Permitted			460-3	3020	52300	18.3	24.5	136.0	28.3	
4DT3-2200-TSK	Not Permitted		4DT3F76KE-	208/230-3	3603	62500	42.0	66.0	374.0	72.0	
4DT3-2200-TSK	Not Permitted			460-3	3603	62500	20.9	33.0	187.0	36.0	
4DT3-2200-TSE	Not Permitted			575-3	3603	62500	16.7	24.2	135.0	27.5	
4DT3-2200-FSD	Not Permitted			460-3	3603	62500	20.9	33.9	180.0	39.1	
6DL3-2700-TSK	Not Permitted		6DL3F93K0-	208/230-3	4530	78300	54.7	80.8	450.0	95.0	
6DL3-2700-TSK	Not Permitted			460-3	4530	78300	27.4	40.4	225.0	47.5	
6DL3-2700-TSE	Not Permitted			575-3	4530	78300	21.9	32.5	172.0	36.4	
6DL3-2700-FSD	Not Permitted			460-3	4530	78300	27.4	41.6	218.0	48.0	
6DT3-3000-TSK	Not Permitted		6DT3F11ME-	208/230-3	5404	93400	64.7	95.6	470.0	106.0	
6DT3-3000-TSK	Not Permitted			460-3	5404	93400	32.4	47.8	235.0	53.0	
6DT3-3000-TSE	Not Permitted			575-3	5404	93400	25.9	39.6	200.0	44.0	
6DT3-3000-FSD	Not Permitted			460-3	5404	93400	32.4	42.8	235.0	49.5	

Note: Specifications subject to change without notice
See individual data sheets for complete performance and operating limits of compressors and AE-1278 for moduload unloading curves.
RLA is abbreviation for "Rated Load Amps"
LRA is abbreviation for "Locked Rotor Amps"
MCC is abbreviation for "Maximum Continuous Current"

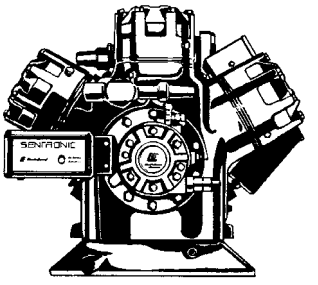
REFRIGERATION DUTY COMPRESSORS

COPELAMETIC DISCUS - R-22

2D, 3D, 4D & 6D
Medium Temperature



4D



6D

Standard Model Specs

Standard Model	Model With Unloading		CURRENT Model	Volts / Phase	CFH	Conditions (°F): Evap/Cond/ Return Gas/Liquid/Ambient		Amperage Ratings			LIST
	1 Bank	2 Bank				BTUH	Amps	RLA	LRA	MCC	
HCFC-22 MED TEMP						**20 / 120 / 65 / 120 / 95°F**					
2DC3-0500-CFB	-	-	2DC3R53KC-	230-1	716	32700	18.0	29.9	125.0	42.3	
2DC3-0500-TFC	-	-		208/230-3	716	34900	13.7	22.3	120.0	31.2	
2DC3-0500-TFD	-	-		460-3	716	34900	6.9	10.4	60.0	14.6	
2DC3-0500-TFE	-	-		575-3	716	34900	5.5	7.7	40.0	10.6	
2DD3-0500-TFC	-	-	2DD3R63K0-	208/230-3	823	41000	15.3	31.2	120.0	31.2	
2DD3-0500-TFD	-	-		460-3	823	41000	7.7	10.5	60.0	14.7	
2DD3-0500-TFE	-	-		575-3	823	41000	6.1	7.9	40.0	11.1	
2DL3-0750-TFC	-	-	2DL3R78K0-	208/230-3	1008	52400	19.9	31.6	169.0	44.2	
2DL3-0750-TFD	-	-		460-3	1008	52400	10.0	13.8	85.0	19.3	
2DL3-0750-TFE	-	-		575-3	1008	52400	8.0	13.2	67.0	18.5	
2DA3-0750-TFC	-	-	2DA3R89KE-	208/230-3	1135	59400	21.7	32.0	169.0	44.8	
2DA3-0750-TFD	-	-		460-3	1135	59400	10.9	14.1	85.0	19.4	
2DA3-0750-TFE	-	-		575-3	1135	59400	8.7	13.3	67.0	18.6	
3DA3-0750-TFC	3DE3	-	3DA3R10ME-	208/230-3	1375	72800	26.7	41.0	215.0	57.4	
3DA3-0750-TFD	3DE3	-		460-3	1375	72800	13.4	20.0	106.0	28.0	
3DA3-0750-TFE	3DE3	-		575-3	1375	72800	10.7	16.5	84.0	23.0	
3DB3-1000-TFC	3DP3	-	3DB3R12ME-	208/230-3	1620	87200	31.4	43.6	215.0	61.0	
3DB3-1000-TFD	3DP3	-		460-3	1620	87200	15.7	20.0	106.0	28.0	
3DB3-1000-TFE	3DP3	-		575-3	1620	87200	12.6	16.5	84.0	23.1	
3DF3-1200-TFC	3DK3	-	3DF3R15ME-	208/230-3	1915	101000	38.7	48.2	275.0	67.4	
3DF3-1200-TFD	3DK3	-		460-3	1915	101000	19.4	23.6	138.0	30.3	
3DF3-1200-TFE	3DK3	-		575-3	1915	101000	15.5	19.5	110.0	24.5	
3DS3-1500-TFC	3DT3	-	3DS3R17ME-	208/230-3	2120	116000	44.1	59.6	275.0	83.5	
3DS3-1500-TFD	3DT3	-		460-3	2120	116000	22.1	29.0	138.0	40.6	
3DS3-1500-TFE	3DT3	-		575-3	2120	116000	17.6	23.6	110.0	33.0	
4DA3-2000-TSK	4DE3	-	4DA3R18M0-	208/230-3	2380	123000	46.0	66.0	308.0	93.2	
4DA3-2000-TSD	4DE3	-		460-3	2380	123000	22.9	33.0	154.0	46.6	
4DA3-2000-TSE	4DE3	-		575-3	2380	123000	18.3	24.7	135.0	34.6	
4DA3-2000-FSD	4DE3	-		460-3	2380	123000	22.9	33.6	173.0	47.0	
4DH3-2500-TSK	4DK3	-	4DH3R22ME-	208/230-3	3020	158000	59.0	82.2	428.0	115.0	
4DH3-2500-TSD	4DK3	-		460-3	3020	158000	29.7	41.1	214	57.5	
4DH3-2500-TSE	4DK3	-		575-3	3020	158000	23.8	34.4	172.0	48.1	
4DH3-2500-FSD	4DK3	-		460-3	3020	158000	29.7	40.6	206.0	56.8	
4DJ3-3000-TSK	4DR3	-	4DJ3R28M0-	208/230-3	3603	187000	73.0	94.0	470.0	131.6	
4DJ3-3000-TSD	4DR3	-		460-3	3603	187000	36.3	47.0	235.0	65.8	
4DJ3-3000-TSE	4DR3	-		575-3	3603	187000	29.0	39.3	200.0	55.0	
4DJ3-3000-FSD	4DR3	-		460-3	3603	187000	36.3	45.0	235.0	63.0	
6DH3-3500-TSK	6DK3	**6DP3**	6DH3R35M0-	208/230-3	4530	230000	89.4	107.0	565.0	150.0	
6DH3-3500-TSD	6DK3	**6DP3**		460-3	4530	230000	44.7	53.5	283.0	53.5	
6DH3-3500-TSE	6DK3	**6DP3**		575-3	4530	230000	35.8	42.2	230.0	59.1	
6DH3-3500-TSD	6DK3	**6DP3**		460-3	4530	230000	44.7	55.0	260.0	77.0	
6DG3-3500-TSK	6DM3	**6DN3**	6DG3R37M0-	230-3	4957	254000	111.0	135.0	650.0	189.0	
6DG3-3500-TSD	6DM3	**6DN3**		460-3	4957	254000	96.4	62.5	297.0	87.5	
6DG3-3500-TSE	6DM3	**6DN3**		575-3	4957	254000	48.2	46.0	245.0	64.4	
6DG3-3500-FSD	6DM3	**6DN3**		460-3	4957	254000	48.2	66.0	315.0	92.4	
6DG3-3500-FSU	6DM3	**6DN3**		200-3	4957	254000	111.0	150.0	754.0	210.0	
6DJ3-4000-TSN	6DR3	**6DS3**	6DJ3R40M0-	230/460-3	5404	281000	102.9	142.0	594.0	198.0	
6DJ3-4000-TSE	6DR3	**6DS3**		575-3	5404	281000	41.2	53.5	245.0	74.9	
6DJ3-4000-FSD	6DR3	**6DS3**		460-3	5404	281000	51.5	70.0	315.0	98.0	
6DJ3-4000-FSU	6DR3	**6DS3**		200-3	5404	281000	118.0	150.0	754.0	210.0	

Note: Last seven (7) digits of unloader models are same as last seven (7) digits of standard models.

AIR CONDITIONING DUTY COMPRESSORS

COPELAMETIC DISCUS - R-22

2D, 3D, 4D, 6D & 8D

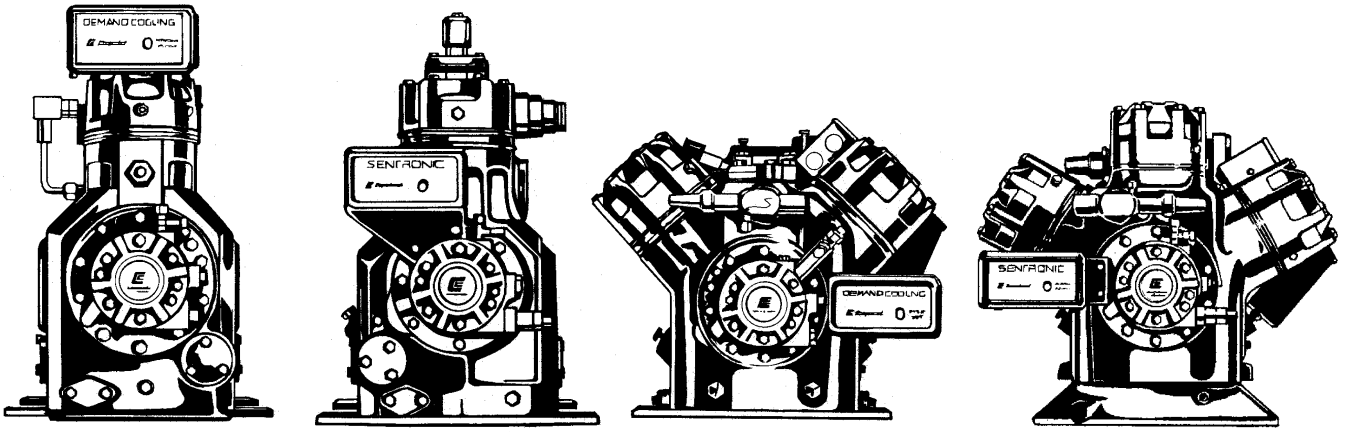
Standard Model Specs

Standard Model	Model With Unloading		CURRENT Model	Volts / Phase	CFH	Conditions (°F): Evap/Cond/ Return Gas/Liquid/Ambient		Amperage Ratings			LIST
	1 Bank	2 Bank				BTUH	Amps	RLA	LRA	MCC	
R-22 AIR CONDITIONING						**45 / 130 / 65 / 115 / 95°F**					
2DC3-0500-TFC	-	-	2DC3R53K0-	208/230-3	716	62700	16.3	22.3	120.0	31.2	
2DC3-0500-TFD	-	-		460-3	716	62700	8.2	40.4	60.0	14.6	
2DC3-0500-TFE	-	-		575-3	716	62700	6.5	7.7	49.0	10.8	
2DD3-0500-TFC	-	-	2DD3R63K0-	208/230-3	823	72800	18.5	22.3	120.0	31.2	
2DD3-0500-TFD	-	-		460-3	823	72800	9.3	10.5	60.0	14.7	
2DD3-0500-TFE	-	-		575-3	823	72800	7.4	7.9	49.0	11.1	
2DL3-0750-TFC	-	-	2DL3R78K0-	208/230-3	1008	90800	23.6	31.6	169.0	44.2	
2DL3-0750-TFD	-	-		460-3	1008	90800	11.8	13.8	85.0	19.3	
2DL3-0750-TFE	-	-		575-3	1008	90800	9.4	13.2	67.0	18.5	
2DA3-0750-TFC	-	-	2DA3R89KE-	208/230-3	1135	103000	26.2	32.0	169.0	44.8	
2DA3-0750-TFD	-	-		460-3	1135	103000	13.1	14.1	85.0	19.4	
2DA3-0750-TFE	-	-		575-3	1135	103000	10.5	13.3	67.0	18.5	
3DA2-0750-TFC	3DE2	-	3DA3R10ME-	208/230-3	1375	123900	31.9	41.0	215.0	57.4	
3DA2-0750-TFD	3DE2	-		460-3	1375	123900	6.0	20.0	106.0	28.0	
3DA2-0750-TFE	3DE2	-		575-3	1375	123900	12.8	16.5	84.0	23.0	
3DB2-1000-TFC	3DP2	-	3DB3R12M0-	208/230-3	1620	145900	37.9	43.6	215.0	61.0	
3DB2-1000-TFD	3DP2	-		460-3	1620	145900	19.0	20.0	106.0	28.0	
3DB2-1000-TFE	3DP2	-		575-3	1620	145900	15.2	16.5	84.0	23.1	
3DS2-1500-TFC	3DT2	-	3DS3R17ME-	208/230-3	2120	194000	52.4	59.6	275.0	83.5	
3DS2-1500-TFD	3DT2	-		460-3	2120	194000	26.2	29.0	138.0	40.6	
3DS2-1500-TFE	3DT2	-		575-3	2120	194000	21.0	23.6	110.0	33.0	
4DA3-2000-TSK	4DE3	-	4DA3R18M0-	208/230-3	2380	216000	55.4	66.0	308.0	93.2	
4DA3-2000-TSD	4DE3	-		460-3	2380	216000	27.7	33.0	154.0	46.6	
4DA3-2000-TSE	4DE3	-		575-3	2380	216000	22.2	24.7	135.0	34.6	
4DA3-2000-FSD	4DE3	-		460-3	2380	216000	27.7	33.6	173.0	47.0	
4DB3-2200-TSK	4DC3	-	4DB3R20M0-	208/230-3	2630	247300	64.2	65.6	374.0	91.8	
4DB3-2200-TSD	4DC3	-		460-3	2630	247300	32.1	32.8	187.0	45.9	
4DB3-2200-TSE	4DC3	-		575-3	2630	247300	25.7	26.5	135.0	37.1	
4DB3-2200-FSD	4DC3	-		460-3	2630	247300	32.1	32.5	180.0	45.5	
4DH3-2500-TSK	4DK3	-	4DH3R22MO-	208/230-3	3020	273000	72.1	82.2	428.0	115.0	
4DH3-2500-TSD	4DK3	-		460-3	3020	273000	36.1	41.1	214	57.5	
4DH3-2500-TSE	4DK3	-		575-3	3020	273000	28.8	34.4	172.0	48.1	
4DH3-2500-FSD	4DK3	-		460-3	3020	273000	36.1	40.6	206.0	56.8	
4DJ3-3000-TSK	4DR3	-	4DJ3R28M0-	208/230-3	3603	317900	88.8	94.0	470.0	131.6	
4DJ3-3000-TSD	4DR3	-		460-3	3603	317900	44.4	47.0	235.0	65.8	
4DJ3-3000-TSE	4DR3	-		575-3	3603	317900	35.5	39.3	200.0	55.0	
4DJ3-3000-FSD	4DR3	-		460-3	3603	317900	44.4	45.0	235.0	63.0	
6DB3-3000-TSK	6DW3	**6DY3**	6DB3R32M0-	208/230-3	4140	356400	96.8	105.0	565.0	147.0	
6DB3-3000-TSD	6DW3	**6DY3**		460-3	4140	356400	48.4	47.8	235.0	51.8	
6DB3-3000-TSE	6DW3	**6DY3**		575-3	4140	356400	19.4	40.0	230.0	56.0	
6DB3-3000-FSD	6DW3	**6DY3**		460-3	4140	356400	48.4	50.0	260.0	70.0	
6DH3-3500-TSK	6DK3	**6DP3**	6DH3R35M0-	208/230-3	4530	387200	107.5	107.0	565.0	150.0	
6DH3-3500-TSD	6DK3	**6DP3**		460-3	4530	387200	53.8	53.5	283.0	53.5	
6DH3-3500-TSE	6DK3	**6DP3**		575-3	4530	387200	43.0	42.5	230.0	59.5	
6DH3-3500-FSD	6DK3	**6DP3**		460-3	4530	387200	53.8	55.0	260.0	77.0	
6DG3-3500-TSN	6DM3	**6DN3**	6DG3R37M0-	230-3	4955	422100	116.8	125.0	594.0	175.0	
6DG3-3500-TSD	6DM3	**6DN3**		460-3	4955	422100	58.4	62.5	297.0	87.5	
6DG3-3500-TSE	6DM3	**6DN3**		575-3	4955	422100	46.7	46.0	245.0	64.4	
6DG3-3500-FSD	6DM3	**6DN3**		460-3	4955	422100	58.4	66.0	315.0	92.4	
6DG3-3500-FSU	6DM3	**6DN3**		200-3	4955	422100	134.3	135.0	650.0	189.0	
6DJ3-4000-TSN	6DR3	**6DS3**	6DJ3R40M0-	230-3	5404	466700	127.1	142.0	594.0	198.0	
6DJ3-4000-TSD	6DR3	**6DS3**		460-3	5404	466700	363.6	71.0	297.0	99.0	
6DJ3-4000-TSE	6DR3	**6DS3**		575-3	5404	466700	50.8	53.5	245.0	74.9	
6DJ3-4000-FSD	6DR3	**6DS3**		460-3	5404	467000	63.6	70.0	315.0	98.0	
6DJ3-4000-FSU	6DR3	**6DS3**		200-3	5404	467000	146.2	150.0	754.0	210.0	
8DP1-5000-TSK	8DP1	8DP1	8DP1R56M0-	208/230-3	6429	565700	164.8	180.0	1070.0	252.0	
8DP1-5000-TSD	8DP1	8DP1		460-3	6429	565700	82.4	90.0	535.0	126.0	
8DP1-5000-TSE	8DP1	8DP1		575-3	6429	565700	65.9	75.0	405.0	105.0	
8DP1-5000-FSD	8DP1	8DP1		460-3	6429	565700	82.4	91.0	510.0	127.0	
8DS1-6000-TSK	8DS1	8DS1	8DS1R67M0-	208/230-3	7609	644200	199.7	224.0	1070.0	314.0	
8DS1-6000-TSD	8DS1	8DS1		460-3	7609	644200	99.8	112.0	535.0	157.0	
8DS1-6000-TSE	8DS1	8DS1		575-3	7609	644200	79.9	80.0	405.0	112.0	
8DS1-6000-FSD	8DS1	8DS1		460-3	7609	644200	99.8	96.5	510.0	135.0	

REFRIGERATION DUTY COMPRESSORS

COPELAMETIC DISCUS - HFC-404A

2D, 3D, 4D & 6D
Low Temperature



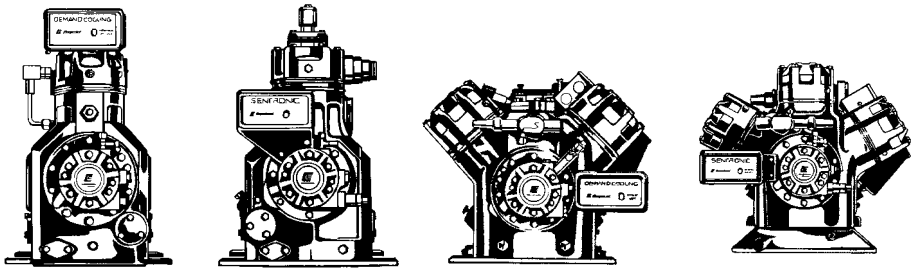
Standard Model Specs

Standard Model	Model With Unloading		CURRENT Model	Volts / Phase	CFH	Conditions (°F): Evap/Cond/ Return Gas/Liquid/Ambient		Amperage Ratings			LIST
	1 Bank	2 Bank				BTUH	Amps	RLA	LRA	MCC	
HFC-404A LOW TEMP						**-25 / 105 / 65 / 105 / 95°F**					
2DF3-030E-TFC	-	-	2DF3F16KE-	208/230-3	908	16300	12.0	16.8	102.0	22.4	9,215.00
2DF3-030E-TFD	-	-		460-3	908	16300	6.0	8.1	52.0	11.1	
2DF3-030E-TFE	-	-		575-3	908	16300	4.8	6.7	41.0	9.4	9,215.00
2DL3-040E-TFC	-	-	2DL3F20KE-	208/230-3	1008	19900	13.2	26.3	161.0	36.8	9,650.00
2DL3-040E-TFD	-	-		460-3	1008	19900	6.6	10.2	60.0	14.3	9,650.00
2DL3-040E-TFE	-	-		575-3	1008	19900	5.3	7.7	49.0	10.8	
2DA3-060E-TFC	-	-	2DA3F23KE-	20/230-3	1134	23100	14.6	28.8	161.0	40.3	9,755.00
2DA3-060E-TFD	-	-		460-3	1134	23100	7.3	10.2	60.0	14.3	9,755.00
2DA3-060E-TFE	-	-		575-3	1134	23100	5.8	9.1	49.0	12.7	9,755.00
2DB3-060E-TFC	-	-	2DB3F25KE-	208/230-3	1190	24600	16.4	28.2	161.0	39.5	9,798.00
2DB3-060E-TFD	-	-		460-3	1190	24600	8.2	13.3	80.0	18.6	
2DB3-060E-TFE	-	-		575-3	1190	24600	6.6	9.6	63.0	13.4	9,798.00
3DA3A060E-TFC	3DHH	-	3DA3F28KE-	208/230-3	1371	27800	17.8	30.3	150.0	37.5	10,858.00
3DA3A060E-TFD	3DHH	-		460-3	1371	27800	8.9	13.7	77.0	16.8	
3DA3A060E-TFE	3DHH	-		575-3	1371	27800	7.1	10.5	62.0	14.7	10,858.00
3DB3A075E-TFC	3DJH	-	3DB3F33KE-	208/230-3	1615	33100	20.6	31.5	161.0	43.0	11,346.00
3DB3A075E-TFD	3DJH	-		460-3	1615	33100	10.3	16.1	83.0	22.0	11,346.00
3DB3A075E-TFE	3DJH	-		575-3	1615	33100	8.2	11.0	67.0	15.4	11,346.00
3DF3A090E-TFC	3DGH	-	3DF3F40KE-	208/230-3	1913	40200	24.6	39.0	215.0	51.8	11,381.00
3DF3A090E-TFD	3DGH	-		460-3	1913	40200	12.3	16.9	106.0	23.4	11,381.00
3DF3A090E-TFE	3DGH	-		575-3	1913	40200	9.8	16.5	84.0	22.0	11,381.00
3DS3A100E-TFC	3DRH	-	3DS3F46KE-	208/230-3	2127	45700	26.8	42.0	215.0	58.0	12,135.00
3DS3A100E-TFD	3DRH	-		460-3	2127	45700	13.4	18.6	106.0	26.0	
3DS3A100E-TFE	3DRH	-		575-3	2127	45700	10.7	16.8	84.0	22.7	12,135.00
4DA3A101E-TSK	4DE3	-	4DA3F47KE-	208/230-3	2386	47200	29.6	45.2	220.0	63.8	13,903.00
4DA3A101E-TSK	4DE3	-		460-3	2386	47200	14.8	22.6	110.0	31.9	13,903.00
4DA3A101E-TSE	4DE3	-		575-3	2386	47200	11.8	17.5	106.0	24.3	13,903.00
4DL3A150E-TSK	4DP3	-	4DL3F63KE-	208/230-3	3018	63200	39.6	52.6	278.0	73.6	16,089.00
4DL3A150E-FSD	4DP3	-		460-3	3018	63200	19.8	24.5	136.0	34.3	
4DL3A150E-TSK	4DP3	-		460-3	3018	63200	19.8	26.3	139.0	36.8	16,089.00
4DL3A150E-TSE	4DP3	-		575-3	3018	63200	15.8	20.9	113.0	29.3	16,089.00
6DL3A270E-TSK	6DC3	**6DD3**	6DL3F93KE-	208/230-3	4527	93100	59.2	80.8	450.0	113.0	22,641.00
6DL3A270E-FSD	6DC3	**6DD3**		460-3	4527	93100	29.6	41.6	218.0	58.2	
6DL3A270E-TSD	6DC3	**6DD3**		460-3	4527	93100	29.6	40.4	225.0	56.5	
6DL3A270E-TSE	6DC3	**6DD3**		575-3	4527	93100	23.7	32.5	172.0	45.5	22,641.00
6DT3A300E-TSK	6DE3	**6DF3**	6DT3F11ME-	208/230-3	5407	105000	69.2	95.6	470.0	133.8	24,830.00
6DT3A300E-FSD	6DE3	**6DF3**		460-3	5407	105000	34.6	42.8	235.0	60.0	
6DT3A300E-TSK	6DE3	**6DF3**		460-3	5407	105000	34.6	47.8	235.0	66.9	24,830.00
6DT3A300E-TSE	6DE3	**6DF3**		575-3	5407	105000	27.7	39.6	200.0	55.4	24,830.00

REFRIGERATION DUTY COMPRESSORS

COPELAMETIC DISCUS - HFC-404A

2D, 3D, 4D & 6D
Medium Temperature



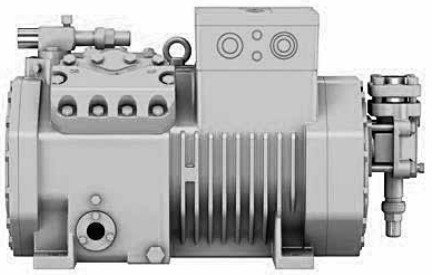
Standard Model Specs

Standard Model	Model With Unloading		CURRENT Model	Volts / Phase	CFH	Conditions (°F): Evap/Cond/ Return Gas/Liquid/Ambient		Amperage Ratings			LIST
	1 Bank	2 Bank				BTUH	Amps	RLA	LRA	MCC	
HFC-404A MED TEMP						**20 / 120 / 65 / 120 / 95°F**					
2DC3-050E-TFC	-	-	2DC3R53KE-	208/230-3	716	34600	14.8	22.3	120.0	31.2	9,581.00
2DC3-050E-TFD	-	-		460-3	716	34600	7.4	10.4	60.0	14.6	
2DC3-050E-TFE	-	-		575-3	716	34600	5.9	7.7	49.0	10.8	9,581.00
2DD3-050E-TFC	-	-	2DD3R63KE-	208/230-3	823	41900	16.6	22.3	120.0	31.2	9,690.00
2DD3-050E-TFD	-	-		460-3	823	41900	8.3	10.5	60.0	14.7	
2DD3-050E-TFE	-	-		575-3	823	41900	6.6	7.9	49.0	11.1	9,690.00
2DL3-075E-TFC	-	-	2DL3R78KE-	208/230-3	1008	51800	21.0	31.6	169.0	44.2	9,755.00
2DL3-075E-TFD	-	-		460-3	1008	51800	10.5	13.8	85.0	19.4	
2DL3-075E-TFE	-	-		575-3	1008	51800	8.4	13.2	67.0	18.5	9,755.00
2DA3-075E-TFC	-	-	2DA3R89KE-	208/230-3	1134	60100	23.4	32.0	169.0	44.8	10,188.00
2DA3-075E-TFD	-	-		460-3	1134	60100	11.7	14.1	85.0	19.7	10,188.00
2DA3-075E-TFE	-	-		575-3	1134	60100	9.4	13.3	67.0	18.6	10,188.00
3DA3A075E-TFC	3DEH	-	3DA3R10ME-	208/230-3	1371	71200	28.4	41.0	215.0	57.4	11,346.00
3DA3A075E-TFD	3DEH	-		460-3	1371	71200	14.2	20.0	106.0	28.0	11,346.00
3DA3A075E-TFE	3DEH	-		575-3	1371	71200	11.4	16.5	84.0	23.0	11,346.00
3DB3A100E-TFC	3DPH	-	3DB3R12ME-	208/230-3	1615	84800	33.2	43.6	215.0	61.0	12,018.00
3DB3A100E-TFD	3DPH	-		460-3	1615	84800	16.6	20.0	106.0	28.0	12,018.00
3DB3A100E-TFE	3DPH	-		575-3	1615	84800	13.3	16.5	84.0	23.1	12,018.00
3DF3-120E-TFC	3DKH	-	3DF3R15ME-	208/230-3	1913	104600	10.6	48.2	275.0	67.4	13,402.00
3DF3-120E-TFD	3DKH	-		460-3	1913	104600	21.2	23.6	138.0	33.0	
3DS3A150E-TFC	3DTH	-	3DS3R17ME-	208/230-3	2127	116000	46.8	59.6	275.0	83.5	13,103.00
3DS3A150E-TFD	3DTH	-		460-3	2127	116000	23.4	29.0	138.0	40.6	13,103.00
3DS3A150E-TFE	3DTH	-		575-3	2127	116000	18.7	23.6	110.0	33.0	13,103.00
4DA3A200E-TSK	4DE3	-	4DA3R18ME-	208/230-3	2386	120000	48.8	66.0	308.0	82.2	14,420.00
4DA3A200E-FSD	4DE3	-		460-3	2386	120000	24.4	33.6	173.0	45.0	
4DA3A200E-TSK	4DE3	-		460-3	2386	120000	24.4	33.0	154.0	41.1	
4DA3A200E-TSE	4DE3	-		575-3	2386	120000	19.5	24.7	135.0	33.3	
4DH3A250E-TSK	4DK3	-	4DH3R22ME-	208/230-3	3018	156000	66.0	82.2	428.0	104.2	17,308.00
4DH3A250E-FSD	4DK3	-		460-3	3018	156000	33.0	40.6	206.0	56.0	
4DH3A250E-TSK	4DK3	-		460-3	3018	156000	33.0	41.1	214.0	52.1	
4DH3A250E-TSE	4DK3	-		575-3	3018	156000	26.4	34.4	172.0	46.6	18,257.00
4DJ3A300E-TSK	4DR3	-	4DJ3R28ME-	208/230-3	3605	187000	78.6	94.0	470.0	117.6	19,232.00
4DJ3A300E-FSD	4DR3	-		460-3	3605	187000	39.3	45.0	235.0	60.5	
4DJ3A300E-TSK	4DR3	-		460-3	3605	187000	39.3	47.0	235.0	58.8	
4DJ3A300E-TSE	4DR3	-		575-3	3605	187000	31.4	39.3	200.0	54.0	19,232.00
6DH3A350E-TSK	6DK3	**6DP3**	6DH3R35ME-	208/230-3	4527	236000	95.6	107.0	565.0	150.0	23,768.00
6DH3A350E-FSD	6DK3	**6DP3**		460-3	4527	236000	47.8	55.0	260.0	75.0	
6DH3A350E-TSK	6DK3	**6DP3**		460-3	4527	236000	47.8	53.5	283.0	75.0	
6DH3A350E-TSE	6DK3	**6DP3**		575-3	4527	236000	38.2	42.5	230.0	57.0	
6DG3A350E-FSU	6DM3	**6DN3**	6DG3R37ME-	200-3	4957	257000	122.0	135.0	650.0	185.0	
6DG3A350E-TSN	6DM3	**6DN3**		230-3	4957	257000	106.0	125.0	594.0	153.6	
6DG3A350E-FSD	6DM3	**6DN3**		460-3	4957	257000	53.1	66.0	315.0	92.4	
6DG3A350E-TSN	6DM3	**6DN3**		460-3	4957	257000	53.1	62.5	297.0	76.8	
6DG3A350E-TSE	6DM3	**6DN3**		575-3	4957	257000	42.5	46.0	245.0	64.4	
6DJ3A400E-FSU	6DR3	**6DS3**	6DJ3R40ME-	200-3	5407	278000	132.0	150.	754.0	208.0	
6DJ3A400E-TSN	6DR3	**6DS3**		230-3	5407	278000	115.0	142.0	594.0	158.8	
6DJ3A400E-FSD	6DR3	**6DS3**		460-3	5407	278000	57.5	70.0	315.0	95.0	
6DJ3A400E-TSN	6DR3	**6DS3**		460-3	5407	278000	57.5	71.0	297.0	79.4	
6DJ3A400E-TSE	6DR3	**6DS3**		575-3	5407	278000	46.0	53.5	245.0	72.0	26,491.00

BITZER ECOLINE COMPRESSORS

ECOLINE Semi-Hermetic Reciprocating Compressors

Nomenclature Explained:				
4	NES-	14-	2NU-	1Y
Number of Cylinders: C1/C2 = 2; C3/C4 = 4; B5 = 4; B6 = 6				
4	NES-	14-	2NU-	1Y
Displacement Code / Ecoline Designator (E) / and optional (S) for slinger variants-note no digit for pump versions				
4	NES-	14-	2NU-	1Y
Horsepower – up to 3 digits; 0.5 HP to 100 HP (tandems)				
4	NES-	14-	2NU-	1Y
Voltage code – 3 digits always 2DU-208/230 3 Phase 2NU-208/230/ 460 3 Phase 5PU-575V 3 Phase				
4	NES-	14-	2NU-	1Y
Configuration suffix: 3 digits; head/oil/other (optional)				



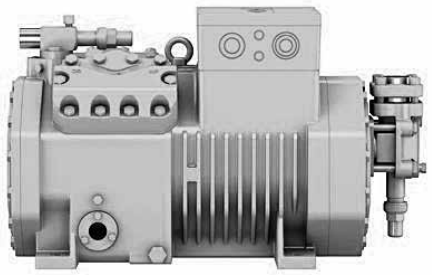
R134A Performance data based on 20 °F suction superheat, 120°F SDT

SST 45F		SST 25F		SST -10		SST -20F	
Mode	Comp Capacity kBtu/hr	Model	Comp Capacity kBtu/hr	Model	Comp Capacity kBtu/hr	Model	Comp Capacity kBtu/hr
2KES-05	9.29	2KES-05	5.58	2KES-05	1.54	2KES-05	0.78
2JES-07	11.88	2JES-07	7.15	2JES-07	1.97	2JES-07	0.99
2HES-1	15.69	2HES-1	9.71	2HES-1	3.24	2HES-1	2.02
2HES-2	15.62	2HES-2	9.70	2HES-2	3.23	2HES-2	2.01
2GES-2	18.33	2GES-2	11.50	2GES-2	3.99	2GES-2	2.57
2FES-2	22.72	2FES-2	14.15	2FES-2	4.89	2FES-2	3.14
2FES-3	22.64	2FES-3	14.13	2FES-3	4.88	2FES-3	3.14
2EES-2	28.63	2EES-2	17.63	2EES-2	5.96	2EES-2	3.81
2EES-3	28.62	2EES-3	17.64	2EES-3	5.92	2EES-3	3.80
2DES-2	34.18	2DES-2	21.17	2DES-2	7.32	2DES-2	4.77
2DES-3	34.16	2DES-3	21.17	2DES-3	7.29	2DES-3	4.76
2CES-3	42.03	2CES-3	26.24	2CES-3	9.39	2CES-3	6.28
2CES-4	42.02	2CES-4	26.26	2CES-4	9.36	2CES-4	6.28
4FES-3	44.74	4FES-3	27.12	4FES-3	9.05	4FES-3	5.85
4FES-5	44.69	4FES-5	27.14	4FES-5	9.03	4FES-5	5.88
4EES-4	56.96	4EES-4	35.67	4EES-4	13.12	4EES-4	8.97
4EES-6	56.92	4EES-6	35.70	4EES-6	13.08	4EES-6	8.99
4DES-5	67.85	4DES-5	41.60	4DES-5	14.56	4DES-5	9.75
4DES-7	67.80	4DES-7	41.63	4DES-7	14.53	4DES-7	9.79
4CES-6	83.41	4CES-6	51.59	4CES-6	18.72	4CES-6	12.83
4CES-9	83.37	4CES-9	51.64	4CES-9	18.68	4CES-9	12.87
4VES-7	88.48	4VES-7	54.02	4VES-7	17.05	4VES-7	10.05
4VES-10	86.98	4VES-10	52.97	4VES-10	17.57	4VES-10	11.39
4TES-9	106.76	4TES-9	65.76	4TES-9	21.52	4TES-9	13.08
4TES-12	105.03	4TES-12	64.47	4TES-12	22.15	4TES-12	14.74
4PES-12	122.44	4PES-12	74.32	4PES-12	22.87	4PES-12	13.18
4PES-15	120.31	4PES-15	72.88	4PES-15	23.58	4PES-15	15.00
4NES-14	144.25	4NES-14	88.45	4NES-14	28.41	4NES-14	17.00
4NES-20	143.20	4NES-20	87.98	4NES-20	30.36	4NES-20	20.26
4JE-15	163.18	4JE-15	102.12	4JE-15	35.94	4JE-15	23.40
4JE-22	160.56	4JE-22	99.81	4JE-22	34.00	4JE-22	21.79
4HE-18	192.47	4HE-18	121.09	4HE-18	44.41	4HE-18	30.07
4HE-25	190.77	4HE-25	119.30	4HE-25	41.83	4HE-25	27.47
4GE-23	216.50	4GE-23	135.04	4GE-23	48.35	4GE-23	32.37
4GE-30	222.58	4GE-30	139.55	4GE-30	49.58	4GE-30	32.88
4FE-28	265.68	4FE-28	167.98	4FE-28	64.60	4FE-28	45.62
4FE-35	261.16	4FE-35	163.96	4FE-35	60.58	4FE-35	41.94
6JE-25	241.62	6JE-25	149.49	6JE-25	52.07	6JE-25	34.22
6JE-33	244.24	6JE-33	150.85	6JE-33	51.64	6JE-33	33.91
6HE-28	284.75	6HE-28	177.67	6HE-28	64.17	6HE-28	43.31
6HE-35	281.04	6HE-35	174.60	6HE-35	60.65	6HE-35	40.08
6GE-34	324.88	6GE-34	204.29	6GE-34	76.02	6GE-34	52.22
6GE-40	325.14	6GE-40	204.96	6GE-40	74.90	6GE-40	51.08
6FE-44	391.40	6FE-44	247.07	6FE-44	93.34	6FE-44	64.75
6FE-50	384.74	6FE-50	241.26	6FE-50	87.89	6FE-50	59.87
4VES-6	88.91	4VES-6	53.94	4VES-6	16.97	4VES-6	10.20
4TES-8	107.26	4TES-8	65.66	4TES-8	21.42	4TES-8	13.25
4PES-10	123.06	4PES-10	74.22	4PES-10	22.77	4PES-10	13.41
4NES-12	145.19	4NES-12	88.56	4NES-12	28.48	4NES-12	17.43
4JE-13	164.15	4JE-13	102.74	4JE-13	36.57	4JE-13	24.33
4HE-15	193.02	4HE-15	121.13	4HE-15	44.44	4HE-15	30.46
4GE-20	223.75	4GE-20	141.02	4GE-20	53.39	4GE-20	37.51
4FE-25	266.44	4FE-25	167.97	4FE-25	64.51	4FE-25	45.99
6JE-22	246.32	6JE-22	151.88	6JE-22	52.76	6JE-22	35.17
6HE-25	285.62	6HE-25	177.65	6HE-25	64.08	6HE-25	43.76
6GE-30	332.14	6GE-30	210.00	6GE-30	80.95	6GE-30	57.56
6FE-40	392.81	6FE-40	247.02	6FE-40	93.20	6FE-40	65.38

BITZER ECOLINE COMPRESSORS

ECOLINE Semi-Hermetic Reciprocating Compressors

Nomenclature Explained:				
4	NES-	14-	2NU-	1Y
Number of Cylinders: C1/C2 = 2; C3/C4 = 4; B5 = 4; B6 = 6				
4	NES-	14-	2NU-	1Y
Displacement Code / Ecoline Designator (E) / and optional (S) for slinger variants-note no digit for pump versions				
4	NES-	14-	2NU-	1Y
Horsepower – up to 3 digits; 0.5 HP to 100 HP (tandems)				
4	NES-	14-	2NU-	1Y
Voltage code – 3 digits always 2DU-208/230 3 Phase 2NU-208/230/ 460 3 Phase 5PU-575V 3 Phase				
4	NES-	14-	2NU-	1Y
Configuration suffix: 3 digits; head/oil/other (optional)				



R404A Performance data based on 20°F suction superheat, 120°F SDT

SST 45F		SST 25F		SST -10		SST -20F	
Mode	**Comp Capacity kBtu/hr**	**Model**	**Comp Capacity kBtu/hr**	**Model**	**Comp Capacity kBtu/hr**	**Model**	**Comp Capacity kBtu/hr**
2KES-05	13.42	2KES-05	8.66	2KES-05	3.30	2KES-05	2.28
2JES-07	18.30	2JES-07	11.95	2JES-07	4.78	2JES-07	3.41
2HES-1	22.99	2HES-1	15.07	2HES-1	6.08	2HES-1	4.36
2HES-2	23.47	2HES-2	15.43	2HES-2	6.30	2HES-2	4.55
2GES-2	26.77	2GES-2	17.72	2GES-2	7.50	2GES-2	5.54
2FES-2	33.06	2FES-2	21.84	2FES-2	9.14	2FES-2	6.71
2FES-3	32.77	2FES-3	21.69	2FES-3	9.15	2FES-3	6.73
2EES-2	42.93	2EES-2	28.35	2EES-2	11.82	2EES-2	8.67
2EES-3	42.72	2EES-3	28.24	2EES-3	11.88	2EES-3	8.74
2DES-2	51.21	2DES-2	33.96	2DES-2	14.39	2DES-2	10.65
2DES-3	50.96	2DES-3	33.83	2DES-3	14.46	2DES-3	10.73
2CES-3	62.90	2CES-3	41.99	2CES-3	18.20	2CES-3	13.64
2CES-4	62.59	2CES-4	41.82	2CES-4	18.29	2CES-4	13.75
4FES-3	69.29	4FES-3	45.56	4FES-3	19.58	4FES-3	14.83
4FES-5	68.67	4FES-5	45.28	4FES-5	19.70	4FES-5	14.97
4EES-4	88.22	4EES-4	58.08	4EES-4	24.89	4EES-4	18.80
4EES-6	86.91	4EES-6	57.05	4EES-6	24.35	4EES-6	18.32
4DES-5	105.64	4DES-5	69.57	4DES-5	29.75	4DES-5	22.45
4DES-7	105.14	4DES-7	69.29	4DES-7	29.91	4DES-7	22.65
4CES-6	128.94	4CES-6	84.56	4CES-6	35.54	4CES-6	26.60
4CES-9	128.50	4CES-9	84.28	4CES-9	35.73	4CES-9	26.83
4VES-7	135.34	4VES-7	87.42	4VES-7	34.81	4VES-7	25.28
4VES-10	135.43	4VES-10	87.31	4VES-10	35.01	4VES-10	25.55
4TES-9	163.71	4TES-9	106.38	4TES-9	43.44	4TES-9	32.02
4TES-12	163.35	4TES-12	105.94	4TES-12	43.50	4TES-12	32.18
4PES-12	188.96	4PES-12	121.35	4PES-12	47.63	4PES-12	34.41
4PES-15	187.81	4PES-15	120.40	4PES-15	47.53	4PES-15	34.44
4NES-14	223.24	4NES-14	144.73	4NES-14	58.77	4NES-14	43.22
4NES-20	222.89	4NES-20	144.55	4NES-20	59.54	4NES-20	44.17
4JE-15	251.94	4JE-15	166.67	4JE-15	70.68	4JE-15	52.66
4JE-22	246.60	4JE-22	161.90	4JE-22	67.24	4JE-22	49.44
4HE-18	292.64	4HE-18	194.56	4HE-18	84.20	4HE-18	63.46
4HE-25	288.03	4HE-25	190.64	4HE-25	81.69	4HE-25	61.15
4GE-23	336.39	4GE-23	224.78	4GE-23	99.31	4GE-23	75.75
4GE-30	329.07	4GE-30	218.42	4GE-30	94.80	4GE-30	71.49
4FE-28	392.80	4FE-28	264.85	4FE-28	118.91	4FE-28	90.71
4FE-35	388.21	4FE-35	261.45	4FE-35	117.37	4FE-35	89.34
6JE-25	376.52	6JE-25	248.77	6JE-25	105.38	6JE-25	78.62
6JE-33	367.36	6JE-33	240.49	6JE-33	99.15	6JE-33	72.75
6HE-28	429.99	6HE-28	286.14	6HE-28	123.98	6HE-28	93.43
6HE-35	423.14	6HE-35	280.31	6HE-35	120.20	6HE-35	89.91
6GE-34	491.33	6GE-34	331.40	6GE-34	149.96	6GE-34	115.35
6GE-40	475.77	6GE-40	317.52	6GE-40	139.11	6GE-40	104.99
6FE-44	589.19	6FE-44	397.28	6FE-44	178.36	6FE-44	136.07
6FE-50	576.80	6FE-50	386.84	6FE-50	171.16	6FE-50	129.28

BITZER COMPACT SCREW COMPRESSORS

CSH Series Compact Screw Compressors



- Adjustment of the internal volume ratio (under full- and part-load) based on the extended range of applications
- Reduction of internal flow losses
- Optimisation of the oil management system
- Dual capacity control: switch between 4-stage and seamless capacity

R134A STANDARD (Economized info on request)

Performance data 60 Hz based on 20°F suction superheat, 15°F liquid subcooling

Compressor Model Number	Cond. temp. °F	Cooling capacity [kBTUH] Evaporation temperature °F							
		55	45	35	25	20	15	10	5
CSH6553-35Y	90	561	458	369	294	261	231	203	177
	110	504	408	326	256	225	197	171	148
	130	436	349	275	212	185	159	136	115
CSH6563-40Y	90	700	569	459	366	325	287	253	222
	110	625	506	405	320	283	249	217	189
	130	542	436	346	270	236	206	177	151
CSH6583-50Y	90	810	660	533	425	377	334	294	257
	110	723	586	469	371	328	288	252	219
	130	626	502	398	311	273	238	206	178
CSH6593-60Y	90	913	745	601	479	426	376	331	290
	110	815	661	529	418	370	325	284	247
	130	706	567	449	351	308	269	233	201
CSH7553-50Y	90	816	658	526	414	366	322	281	245
	110	725	581	460	359	315	275	239	207
	130	620	492	385	297	259	224	193	165
CSH7563-60Y	90	960	775	619	488	431	379	332	289
	110	854	684	542	423	371	325	282	244
	130	731	580	455	351	306	265	229	196
CSH7573-70Y	90	1102	890	711	561	495	436	382	332
	110	981	786	623	486	427	373	325	281
	130	840	667	523	403	352	305	264	226
CSH7583-80Y	90	1232	1003	808	644	573	507	447	393
	110	1118	903	722	569	503	442	387	337
	130	975	780	616	479	420	366	317	272
CSH7593-90Y	90	1403	1142	921	734	652	578	510	448
	110	1273	1029	822	648	573	504	441	384
	130	1111	889	702	546	478	417	361	310
CSH8553-80Y	90	1299	1058	852	679	603	534	471	413
	110	1173	948	757	596	526	462	404	350
	130	1033	826	652	505	442	383	331	283
CSH8563-90Y	90	1496	1218	982	783	695	615	542	476
	110	1351	1092	872	687	607	533	465	404
	130	1190	952	752	583	509	442	382	326
CSH8573-110Y	90	1767	1436	1157	921	818	724	639	561
	110	1596	1289	1029	812	717	631	552	481
	130	1379	1106	876	684	600	524	455	393
CSH8583-125Y	90	1957	1593	1284	1024	910	805	710	624
	110	1753	1418	1135	897	793	698	612	533
	130	1528	1227	973	760	667	583	506	436

R134A STANDARD (Economized info on request)

Performance data 60 Hz based on 20°F suction superheat, 15°F liquid subcooling

Compressor Model Number	Cond. temp. °F	Cooling capacity [kBTUH] Evaporation temperature °F							
		55	45	35	25	20	15	10	5
CSH8593-140Y	90	2228	1813	1462	1165	1035	917	809	710
	110	1995	1614	1292	1021	903	795	696	607
	130	1739	1397	1108	865	760	663	576	497
CSH9553-180Y	90	2241	1830	1479	1181	1050	929	817	715
	110	2012	1632	1307	1032	910	798	695	600
	130	1746	1403	1111	864	755	655	563	478
CSH9563-160Y	90	2630	2147	1736	1387	1232	1091	960	840
	110	2362	1916	1535	1212	1070	938	818	706
	130	2051	1649	1307	1017	889	771	664	565
CSH9573-180Y	90	3048	2476	1991	1584	1407	1245	1098	964
	110	2775	2238	1786	1407	1243	1093	958	836
	130	2407	1929	1528	1194	1049	918	799	692
CSH9583-210Y	90	3430	2802	2269	1818	1621	1440	1275	1125
	110	3100	2519	2026	1610	1428	1261	1110	971
	130	2737	2206	1757	1380	1215	1064	927	803
CSH9593-240Y	90	3897	3184	2578	2066	1842	1637	1449	1278
	110	3523	2862	2302	1830	1623	1434	1261	1104
	130	3110	2507	1997	1568	1381	1210	1054	913
CSH95103-280Y	90	4224	3445	2784	2226	1982	1758	1555	1369
	110	3816	3093	2480	1965	1739	1534	1346	1176
	130	3361	2698	2139	1669	1464	1278	1108	955

** Performance data for individual input data see BITZER Software.*

BITZER COMPACT SCREW COMPRESSORS

CSH Series Compact Screw Compressors

- Adjustment of the internal volume ratio (under full- and part-load) based on the extended range of applications
- Reduction of internal flow losses
- Optimisation of the oil management system
- Dual capacity control: switch between 4-stage and seamless capacity



R22* STANDARD (Economized info on request)

Performance data 60 Hz based on 20°F suction superheat, 15°F liquid subcooling

Compressor Type	Cond. temp. °F	Cooling capacity [kBTUH] Evaporation temperature °F							
		50	40	35	30	25	20	10	0
CSH6553-50	90		583	530	480	434	390	313	247
	110	627	518	468	422	380	340	269	208
	130	555	453	408	365	326	290	225	170
CSH6563-60	90		731	664	602	544	490	393	310
	110	787	650	588	530	477	427	338	262
	130	697	569	512	459	409	364	282	213
CSH7553-70	90		854	777	705	638	575	462	363
	110	916	758	687	620	558	500	396	306
	130	787	641	576	516	460	409	319	243
CSH7563-80	90		998	908	824	746	673	541	426
	110	1061	878	796	719	648	581	461	357
	130	903	737	663	594	531	472	368	282
CSH7573-90	90		1184	1080	983	892	806	652	516
	110	1268	1056	960	870	786	708	566	440
	130	1099	903	816	734	658	588	462	355
CSH7583-100	90		1317	1196	1083	978	881	707	559
	110	1410	1166	1056	954	859	771	615	481
	130	1224	1004	906	815	730	653	515	400
CSH7593-110	90		1502	1364	1235	1116	1004	806	636
	110	1609	1329	1204	1087	978	878	699	546
	130	1393	1142	1030	926	830	741	585	454
CSH8553-110	90		1433	1300	1176	1061	954	762	599
	110	1530	1261	1141	1028	924	827	655	507
	130	1305	1068	962	864	772	687	536	408
CSH8563-125	90		1634	1482	1340	1209	1087	869	682
	110	1744	1438	1300	1172	1053	943	746	578
	130	1487	1218	1097	984	880	783	611	465
CSH8573-140	90		1873	1716	1568	1430	1300	1062	849
	110	2027	1696	1545	1404	1272	1147	920	718
	130	1780	1456	1311	1176	1051	935	729	553
CSH8583-160	90		2104	1923	1754	1596	1447	1175	933
	110	2284	1900	1726	1564	1412	1269	1010	781
	130	2011	1637	1470	1315	1171	1038	802	603

Performance data for individual input data see BITZER Software.
** **For operation with R22 the oil B320H is required** Additional cooling: Liquid injection or external oil cooling*

R22* STANDARD (Economized info on request)

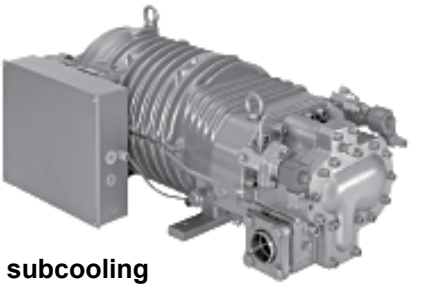
Performance data 60 Hz based on 20°F suction superheat, 15°F liquid subcooling

Compressor Type	Cond. temp. °F	Cooling capacity [kBTUH] Evaporation temperature °F							
		50	40	35	30	25	20	10	0
CSH8593-180	90		2446	2236	2039	1855	1682	1367	1086
	110	2658	2211	2009	1820	1643	1478	1177	912
	130	2348	1912	1716	1535	1367	1212	937	706
CSH9553-180	90		2483	2253	2039	1839	1653	1318	1029
	110	2710	2232	2017	1816	1630	1456	1144	875
	130	2379	1944	1748	1565	1396	1238	955	710
CSH9563-210	90		2874	2608	2359	2129	1915	1534	1210
	110	3150	2596	2348	2117	1902	1704	1350	1049
	130	2779	2273	2046	1836	1640	1459	1138	864
CSH9573-240	90		3336	3025	2736	2468	2220	1778	1402
	110	3610	2981	2699	2437	2194	1969	1568	1229
	130	3168	2608	2356	2123	1907	1707	1351	1049
CSH9583-280	90		3677	3345	3038	2754	2491	2027	1639
	110	4047	3360	3053	2769	2505	2263	1835	1477
	130	3619	2992	2710	2448	2205	1979	1577	1234
CSH9593-300	90		4190	3821	3478	3160	2866	2345	1905
	110	4575	3806	3462	3143	2847	2573	2088	1680
	130	4087	3379	3061	2765	2490	2235	1781	1393

Performance data for individual input data see BITZER Software.
** **For operation with R22 the oil B320H is required** Additional cooling: Liquid injection or external oil cooling*

BITZER SCREW COMPRESSORS

HSK and HSN Series Semi-Hermetic Screw Compressors



- Optimised for parallel operation
- High system output
- Optimal capacity adjustment and minimal energy requirements under full- and part-load
- Combination of various compressor sizes
- Robust design
- Large bearings
- Large built-in motor

R134A performance data 60 Hz based on 20°F suction superheat, 15°F liquid subcooling
High- Medium temperature range

Compressor Model Number	Cond. temp. °F	Cooling capacity [kBTUH] Evaporation temperature °F												
		60	55	50	45	40	35	30	25	20	15	10	5	0
HSK8551-80	110		1,095	986	886	794	709	631	560	495	436	382	334	289
	120		1,022	919	824	736	656	582	515	454	398	347	301	259
	130		947	849	759	676	600	531	468	410	358	310	267	
	140		868	776	691	614	543	478	419	365	316	272		
HSK8551-110	110	1,213	1,095	986	886	794	709	631	560	495	436	382	334	289
	120	1,135	1,022	919	824	736	656	582	515	454	398	347	301	259
	130	1,053	947	849	759	676	600	531	468	410	358	310	267	
	140	968	868	776	691	614	543	478	419	365	316	272		
HSK8561-90	110		1,248	1,124	1,010	905	809	721	640	567	500	439	384	334
	120		1,165	1,048	940	841	750	667	591	522	459	402	350	303
	130		1,078	968	866	773	688	610	539	475	416	362	314	
	140		986	884	789	703	623	551	485	425	370	321		
HSK8561-125	110	1,383	1,249	1,125	1,010	906	809	721	640	567	500	439	384	334
	120	1,293	1,165	1,048	940	841	750	667	591	522	459	402	350	303
	130	1,198	1,078	968	866	773	688	610	539	475	416	362	314	
	140	1,098	986	884	789	703	623	551	485	425	370	321		
HSK8571-110	110		1,428	1,288	1,160	1,042	933	834	743	660	584	516	453	397
	120		1,336	1,204	1,082	971	868	774	688	610	539	474	415	362
	130		1,241	1,117	1,002	897	800	712	632	558	491	431	376	
	140		1,144	1,027	920	821	731	649	574	505	443	387		
HSK8571-140	110	1,579	1,428	1,288	1,160	1,042	933	834	743	660	584	516	453	397
	120	1,480	1,336	1,204	1,082	971	868	774	688	610	539	474	415	362
	130	1,377	1,242	1,117	1,002	897	800	712	632	558	491	431	376	
	140	1,271	1,144	1,027	920	821	731	649	574	505	443	387		

For operation with R134a polyol-ester oil (BSE170) is required.
For ranges in which oil cooling becomes necessary and for oil cooler capacity see BITZER Software.

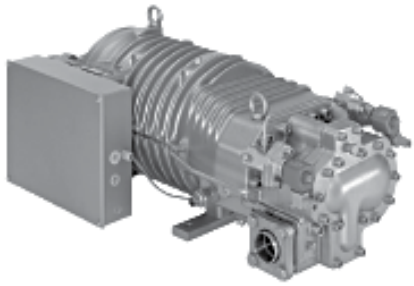
R404A, R507A performance data 60 Hz based on 20°F suction superheat, 15°F liquid subcooling
High- Medium temperature range

Compressor Model Number	Cond. temp. °F	Cooling capacity [kBTUH] Evaporation temperature °F									
		45	40	35	30	25	20	15	10	5	0
HSK8551-110	90	1,628	1,474	1,332	1,201	1,080	969	867	774	688	610
	110	1,377	1,242	1,117	1,003	897	801	712	631	557	490
	130	1,100	986	880	783	695	614	541	474	413	358
HSK8561-125	90	1,848	1,674	1,513	1,365	1,229	1,104	989	884	787	699
	110	1,564	1,411	1,270	1,141	1,022	913	814	723	640	564
	130	1,244	1,116	998	891	792	703	621	547	480	419
HSK8571-140	90	2,094	1,899	1,719	1,553	1,400	1,260	1,130	1,012	903	804
	110	1,773	1,604	1,447	1,303	1,170	1,048	937	834	741	656
	130	1,418	1,276	1,145	1,025	915	815	722	638	562	493

BITZER SCREW COMPRESSORS

HSK and HSN Series Semi-Hermetic Screw Compressors

- Optimised for parallel operation
- High system output
- Optimal capacity adjustment and minimal energy requirements under full- and part-load
- Combination of various compressor sizes
- Robust design
- Large bearings
- Large built-in motor



R404A, R507A performance data 60 Hz based on 20°F suction superheat, 15°F liquid subcooling
Low temperature range Economiser operation

Compressor Model Number	Cond. temp. °F	Cooling capacity [kBTUH] Evaporation temperature °F											
		5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50
HSK8551-110	90	1,065	968	878	794	716	645	579	517	461	409	361	317
	110	950	862	781	705	635	570	510	454	403	355	311	270
	120	881	799	723	652	586	524	468	415	366	321	278	239
HSK8561-125	90	1,328	1,204	1,090	984	886	796	712	636	565	499	439	384
	110	1,173	1,064	963	869	782	702	628	559	494	435	380	329
	120	1,085	984	891	803	723	647	577	512	451	395	342	292

Data are valid for R404A. Slight variations have to be considered for R507A – see BITZER Software.
Standard operation: performance data without liquid subcooling
For operation with R404A and R507A polyol-ester oil (BSE170) is required.

R22 performance data 60 Hz based on 20°F suction superheat, 15°F liquid subcooling
High- Medium temperature range

Compressor Model Number	Cond. temp. °F	Cooling capacity [kBTUH] Evaporation temperature °F											
		55	50	45	40	35	30	25	20	15	10	5	0
HSK8551-110	90	1,817	1,662	1,516	1,381	1,255	1,138	1,030	929	836	750	671	599
	110	1,631	1,488	1,354	1,230	1,114	1,007	907	815	730	651	579	512
	130	1,410	1,280	1,159	1,045	940	843	753	669	592	521	455	
HSK8561-125	90	2,058	1,881	1,717	1,563	1,420	1,288	1,164	1,050	944	846	756	673
	110	1,836	1,674	1,524	1,383	1,253	1,132	1,019	916	820	731	650	575
	130	1,598	1,451	1,314	1,187	1,069	959	858	765	680	601	528	
HSK8571-140	90	2,323	2,125	1,940	1,768	1,608	1,459	1,321	1,193	1,074	964	862	769
	110	2,087	1,906	1,737	1,580	1,434	1,297	1,171	1,054	945	845	752	667
	130	1,828	1,665	1,513	1,371	1,239	1,115	1,001	894	795	704	619	

R22 performance data 60 Hz based on 20°F suction superheat, 15°F liquid subcooling
Low temperature range Economiser operation

Compressor Model Number	Cond. temp. °F	Cooling capacity [kBTUH] Evaporation temperature °F											
		5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50
HSN8571-125	90	1,001	910	825	746	672	603	540	481	426	376	330	288
	110	942	855	773	697	626	560	499	442	389	340	295	254
	130	862	779	702	630	563	499	440	386	334	286		
HSN8591-160	90	1,270	1,152	1,042	940	846	758	676	601	532	468	409	355
	110	1,189	1,078	975	879	789	706	"629 "	557	490	429	372	320
	130	1,093	990	894	803	719	640	566	498	433	374		

Data are valid for R404A. Slight variations have to be considered for R507A – see BITZER Software.
Standard operation: performance data without liquid subcooling
For operation with R404A and R507A polyol-ester oil (BSE170) is required.

TECUMSEH PRODUCTS



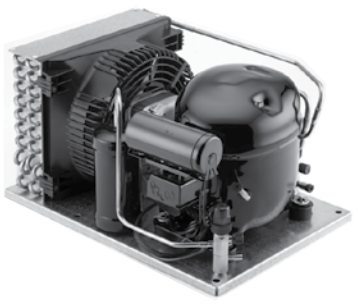
AE2 Series Compressor



AG Series Compressor



AJ Series Compressor



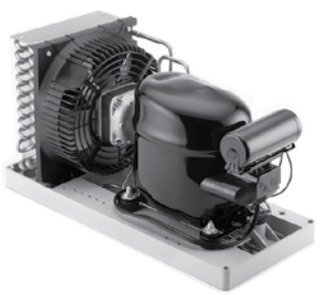
Celseon AE2 Compressor



AK Series Compressor



AV Series Compressor



Celseon AE2 Evaporative Condensate Unit



Replacement Relay and Overload Kits



Start Capacitor Kit

Please see your local REFRIGERATIVE SUPPLY branch for details

COMPRESSORS CROSS REFERENCE

LEGACY AE COMPRESSORS CROSS REFERENCE

AE Model	*Functional Cross	Functional Item # (BOM)	Market	Refrigerant
AEA0415EXA	PHASED OUT	PHASED OUT	OEM	R22
AEA0415ZXC	AE4425Z-FZ1A	AE1245E-212-A4 SWEAT	OEM	R404A
AEA0415ZXD	AE4425Z-XN1A	AE1348E-212-A4 SWEAT	OEM	R404A
AEA1332YXA	AZA1332YXA	AZ420AR-235-A6L SWEAT	OEM	R134a
AEA1336AXA	PHASED OUT	PHASED OUT	WHSL	R12
AEA1338YXA	PHASED OUT	PHASED OUT	OEM/WHSL	R134a
AEA1343AXA	PHASED OUT	PHASED OUT	WHSL	R12
AEA1360AXA	PHASED OUT	PHASED OUT	WHSL	R12
AEA1360YXA	THA1358YXA	TH130AR-245-J7HV SWEAT	OEM/WHSL	R134a
AEA1360YXC	PHASED OUT	PHASED OUT	OEM	R134a
AEA1410AXA	AE2410A-AA1A	AE1249E-679-J7 SWEAT	WHSL	R12
AEA1410YXA	AE2410Y-AA1A	AE1156E-679-J7 SWEAT	WHSL	R134a
AEA1410YXC	PHASED OUT	PHASED OUT	OEM	R134a
AEA1411EXA	PHASED OUT	PHASED OUT	WHSL	R22
AEA1413AXA	AE2413A-AA1B	AE1255E-679-J7 SWEAT/ AE1317E-219-J7 VALVE	WHSL	R12
AEA1413YXA	AE2413Y-AA1B	AE1240E-679-J7 SWEAT	WHSL	R134a
AEA1415EXA	PHASED OUT	PHASED OUT	WHSL	R22
AEA2380ZXA	AE2410Z-AA1A	AE1126E-106-A4 SWEAT/ AE1126E-106-J7 SWEAT	OEM/WHSL	R404A
AEA2380ZXC	AE2410Z-FZ1A	AE1291E-106-A4 SWEAT	OEM	R404A
AEA2410AXA	AE2410A-AA1A	AE1249E-679-J7 SWEAT	WHSL	R12
AEA2410AXC	PHASED OUT	PHASED OUT	OEM	R12
AEA2410YXA	AE2410Y-AA1A	AE1156E-679-A4 SWEAT /AE1156E-679-J7 SWEAT	OEM/WHSL	R134a
AEA2410YXC	AE2413Y-FZ1A	AE1333E-679-A4 SWEAT	OEM	R134a
AEA2411ZXA	AE2415Z-AA1A	AE1157E-679-A4 SWEAT / AE1157E-679-J7 SWEAT	OEM/WHSL	R404A
AEA2411ZXC	AE2415Z-FZ1B	AE1185E-679-A4 SWEAT	OEM	R404A
AEA2411ZXD	AE2415Z-GS1A	AE-1321-E available, ATP Org set up required	OEM	R404A
AEA2413AXA	AE2413A-AA1B	AE1255E-679-J7 SWEAT/ AE1317E-219-J7 VALVE	WHSL	R12
AEA2413YXA	AE2413Y-AA1B	AE1240E-679-J7 SWEAT	OEM/WHSL	R134a
AEA2413YXC	AE2413Y-FZ1A	AE1333E-679-A4 SWEAT	OEM	R134a
AEA2415AAB	AE2413A-AA1B	AE1255E-679-J7 SWEAT/ AE1317E-219-J7 VALVE	WHSL	R12
AEA2419ZXA	AE2425Z-AA3C	AE1182E-208-A4 SWEAT / AE1182E-208-J7 SWEAT	OEM	R404A
AEA2419ZXC	PHASED OUT	PHASED OUT	OEM	R404A
AEA3414APP	PHASED OUT	PHASED OUT	OEM	R12
AEA3414AXA	AE3425A-AA1A	AE1253E-212-J7 SWEAT	WHSL	R12
AEA3414YXA	THA0370YXA	MR7869	OEM/WHSL	R134a
AEA3414YXC	THA0370YXC	TH730JR-235-A4HB	OEM	R134a
AEA3414YXP	AZA0395YXP	AZ440ER-434-A4PB SWEAT / AZ440ER-236-A6 SWEAT	OEM	R134a
AEA3417AXA	AE3425A-AA1A	AE1253E-212-J7 SWEAT		R12
AEA3417YXA	THA0410YXA	MR7823	OEM/WHSL	R134a
AEA3417YXC	THA0412YXC	TH760JR-236-A4HB	OEM	R134a
AEA3417YXD	PHASED OUT	PHASED OUT	OEM	R134a
AEA3425AXA	AE3425A-AA1A	AE1253E-212-J7 SWEAT	WHSL	R12
AEA3425YXA	AE3425Y-AA1A	AE1004E-212-A4 SWEAT / AE1004E-212-J7 SWEAT / AE1198E-215-J7 VALVE	OEM/WHSL	R134a
AEA3425YXC	THA0412YXC	TH760JR-236-A4HB	OEM	R134a
AEA3425YXD	PHASED OUT	PHASED OUT	OEM	R134a
AEA3430AXA	AE4430A-AA1A	AE1251E-212-J7 SWEAT / AE1254E-215-J7 VALVE	WHSL	R12
AEA3430YXA	AE3430Y-AA1A	AE1153E-212-A4 SWEAT / AE1153E-212-J7 VALVE	OEM/WHSL	R134a
AEA3430YXC	AE3430Y-FZ1A	AE1186E-212-A4	OEM	R134a
AEA3440AXA	AE4440A-AA1A	AE1250E-212-J7 SWEAT /AE1252E-215-J7 VALVE	WHSL	R12
AEA3440YXA	AE3440Y-AA1A	AE1155E-212-A4 SWEAT /AE1155E-212-J7 SWEAT	OEM/WHSL	R134a
AEA3440YXC	AE3440Y-FZ1A	AE1235E-212-A4	OEM	R134a

** Review fit, form and function with customer application*

COMPRESSORS CROSS REFERENCE

LEGACY AE COMPRESSOR CROSS REFERENCE (CONT'D)

AE Model	*Functional Cross	Functional Item # (BOM)	Market	Refrigerant
AEA3440YXD	AE3440Y-XN1A	AE1192E-209-A4	OEM	R134a
AEA3448YXA	AE3440Y-AA1A	AE1155E-212-A4 SWEAT	OEM	R134a
AEA3448YXC	AE3440Y-FZ1A	AE1235E-212-A4	OEM	R134a
AEA4430AXA	AE4430A-AA1A	AE1251E-212-J7 SWEAT / AE1254E-215-J7 VALVE	WHSL	R12
AEA4430AXD	PHASED OUT	PHASED OUT	EXPORT	R12
AEA4430YLS	AE4430Y-AA1A	AE1023E-212-A4 SWEAT	EXPORT	R134a
AEA4430YXA	AE4430Y-AA1A	AE1023E-212-A4 SWEAT / AE1023E-212-J7 SWEAT / AE1199E-215-J7 VALVE	OEM/WHSL	R134a
AEA4430YXC	AE4430Y-FZ1A	AE1232E-212-A4	OEM	R134a
AEA4430YXD	AE4430Y-XN1A	AE1188E-212-A4	OEM	R134a
AEA4440ALS	AE4440A-AA1A	AE1250E-212-J7 SWEAT /AE1252E-215-J7 VALVE	EXPORT	R12
AEA4440AXA	AE4440A-AA1A	AE1250E-212-J7 SWEAT /AE1252E-215-J7 VALVE	WHSL	R12
AEA4440AXC	PHASED OUT	PHASED OUT	OEM/EXPORT	R12
AEA4440AXD	PHASED OUT	PHASED OUT	EXPORT	R12
AEA4440YXA	AE4440Y-AA1A	AE1022E-212-A4 SWEAT/ AE1022E-212-J7 SWEAT / AE1200E-215-J7 VALVE	OEM/WHSL	R134a
AEA4440YXC	AE4440Y-FZ1A	AE1187E-212-A4	OEM	R134a
AEA4440YXD	AE4440Y-XN1A	AE1204E-209-A4 SWEAT / AE1204E-209-J7	OEM/WHSL	R134a
AEA4448AXA	AE4440A-AA1A	AE1250E-212-J7 SWEAT /AE1252E-215-J7 VALVE	WHSL	R12
AEA4448YXA	AE4450Y-AA1A	AE1154E-209-A4 SWEAT / AE1154E-209-J7 SWEAT	OEM/WHSL	R134a
AEA4448YXD	AE4450Y-XN3C	AE1294E-677-A4 SWEAT/ AE1294E-677-A6 SWEAT	OEM	R134a
AEA5455EXA	AE4456E-DS1B	AE1364E-214-J7 SWEAT	WHSL	R22
AEA5460EXA	AE4456E-DS1B	AE1364E-214-J7 SWEAT	WHSL	R22
AEA5465EXA	AE4460E-DS**	MR7244	WHSL	R22
AEA5465EXC	PHASED OUT	PHASED OUT	EXPORT	R22
AEA5465EXD	AE4460E-ES**	MR5206	WHSL	R22
AEA5465EXV	PHASED OUT	PHASED OUT	OEM	R22
AEA5470EXA	PHASED OUT	PHASED OUT	OEM	R22
AEA9415EXA	AE4430E-DS1A	AE1320E-212-J7 SWEAT	WHSL	R22
AEA9415YXA	AE4430Y-AA1A	AE1023E-212-A4 SWEAT	OEM	R134a
AEA9415ZXA	AE4430Z-AA1A	AE1167E-212-A4 SWEAT / AE1167E-212-J7 SWEAT	OEM/WHSL	R404A
AEA9422EXA	AE4450E-DS1B	AE1363E-209-J7 SWEAT	WHSL	R22
AEA9422EXC	PHASED OUT	PHASED OUT	OEM	R22
AEA9422ZXA	AE4440Z-AA1A	AE1168E-209-A4 SWEAT / AE1168E-209-J7 SWEAT	OEM/WHSL	R404A
AEA9422ZXC	AE4440Z-FZ1A	AE1261E-209-A4 SWEAT	OEM	R404A
AEA9422ZXD	PHASED OUT	PHASED OUT	OEM	R404A
AEA9423YXA	AE4440Y-AA1A	AE1022E-212-A4 SWEAT	OEM	R134a
AEB1380AXA	PHASED OUT	PHASED OUT	WHSL	R12
AEB1411AXA	AE2410A-AA1A	AE1249E-679-J7 SWEAT	OEM	R12
AEB1413AXA	AE2413A-AA1B	AE1255E-679-J7 SWEAT/ AE1317E-219-J7 VALVE	WHSL	R12
AEB4448YXC	AE4440Y-FZ1A	AE1187E-212-A4 SWEAT	OEM	R134a
AEB4448YXC	AE4450Y-FZ1C	AE1158E-209-A4 SWEAT	OEM	R134a
AEB1413AXA	AE2413A-AA1B	AE1255E-679-J7 SWEAT/ AE1317E-219-J7 VALVE	WHSL	R12
AEB4448YXC	AE4440Y-FZ1A	AE1187E-212-A4 SWEAT	OEM	R134a
AEB4448YXC	AE4450Y-FZ1C	AE1158E-209-A4 SWEAT	OEM	R134a

** Review fit, form and function with customer application*

CONDENSING UNITS CROSS REFERENCE

ARGUS GOLD Package Outdoor Condensing Units CROSS REFERENCE

Stock	Item Number	Model Number	Voltage	HP	Nom Btuh		Fans	Chassis
					R404A*	R448A/R449A		
	Commercial Temperature -10° F to +45° F (Nominal Rating Point +20° F SST, 95° F Amb)							
	*2JH201-GF	*ASHR9440ZAAFG1	115-60-1	1/2	3,550	3,174	1	Small
	*2JH202-GF	*ASHR9440ZNAFG1	208-230-60-1	1/2	3,550	3,174	1	Small
	*2JH701-GF	*ASHR9460ZNAFG1	208-230-60-1	3/4	6,343	5,249	1	Small
	*2JH1001-GF	*ASHR9480ZNAFG1	208-230-60-1	1	8,127	6,719	1	Small
	*2JH1006-GF	*ASHR9510ZNAFG1	208-230-60-1	1 1/4	10,730	9,339	2	Medium
	2JH1007-GF	ASHR9510ZFAFG1	200-230-60-3	1 1/4	10,730	9,339	2	Medium
	*2JH3202-GF	*ASHR9512ZNAFG1	208-230-60-1	1 1/2	14,902	13,484	2	Medium
	2JH3203-GF	ASHR9512ZFAFG1	200-230-60-3	1 1/2	14,902	13,484	2	Medium
	*2JH2001-GF	*ASHS9516ZNAFG1	208-230-60-1	2	17,298	16,072	2	Medium
	2JH2006-GF	ASHS9516ZFAFG1	200-230-60-3	2	17,298	16,072	2	Medium
	*2JH2008-GF	*ASHS9520ZNAFG1	208-230-60-1	2 1/2	21,457	18,281	2	Medium
	2JH2009-GF	ASHS9520ZFAFG1	200-230-60-3	2 1/2	21,457	18,281	2	Medium
	2JH2002-GF	ASHS9522ZNAFG1	208-230-60-1	2 4/5	23,640	20,872	2	Medium
	2JH2007-GF	ASHS9522ZFAFG1	200-230-60-3	2 4/5	23,640	20,872	2	Medium
	*2JH3001-GF	*ASHS9524ZNAFG1	208-230-60-1	3	29,441	28,111	1	Large
	*2JH3004-GF	*ASHS9524ZFAFG1	200-230-60-3	3	29,441	28,111	1	Large
	*2JH4001-GF	*ASHS9532ZNAFG1	208-230-60-1	4	36,815	33,037	1	Large
	*2JH4002-GF	*ASHS9532ZFAFG1	200-230-60-3	4	36,815	33,037	1	Large
	*2JH5001-GF	*ASHS9540ZNAFG1	208-230-60-1	5	42,911	39,354	1	Large
	*2JH5002-GF	*ASHS9540ZFAFG1	208-230-60-3	5	42,911	39,354	1	Large
	*2JH6001-GF	*ASHS9548ZFAFG1	208-230-60-3	6	49,405	45,954	1	Large

*** RSL STOCKED ITEMS**

	Low Temperature -40° F to +10° F (Nominal Rating Point -10° F SST, 95° F Amb)							
	*2JH703-GF	*ASHR2430ZNAFG1	208-230-60-1	3/4	2,870		1	Small
	2JH1003-GF	ASHR2440ZNAFG1	208-230-60-1	1	3,533		1	Small
	2JH1005-GF	ASHR2450ZNAFG1	208-230-60-1	1 1/4	4,400		1	Small
	*2JH3201-GF	*ASHR2460ZNAFG1	208-230-60-1	1 1/2	6,050		1	Small
	2JH3204-GF	ASHR2460ZFAFG1	208-230-60-3	1 1/2	6,050		1	Small
	*2JH2004-GF	*ASHR2480ZNAFG1	208-230-60-1	2	9,843		2	Medium
	2JH2010-GF	ASHR2480ZFAFG1	208-230-60-3	2	9,843		2	Medium
	*2JH2005-GF	*ASHR2510ZNAFG1	208-230-60-1	2 1/2			2	Medium
	2JH2011-GF	ASHR2510ZFAFG1	208-230-60-3	2 1/2			2	Medium
	2JH3007-GF	ASHS2512ZNAFG1	208-230-60-1	3	14,160		2	Medium
	*2JH3008-GF	*ASHS2512ZFAFG1	208-230-60-3	3	14,160		2	Medium
	*2JH3005-GF	*ASHS2514ZNAFG1	208-230-60-1	3 1/2			2	Medium
	2JH3006-GF	ASHS2514ZFAFG1	208-230-60-3	3 1/2			2	Medium
	*2JH5003-GF	*ASHS2520ZNAFG1	208-230-60-1	5			1	Large
	*2JH5004-GF	*ASHS2520ZFAFG1	208-230-60-3	5			1	Large
	*2JH6002-GF	*ASHS2524ZFAFG1	208-230-60-3	6			1	Large

*** RSL STOCKED ITEMS**

- Approved for R404A, R448A, R449A and R452A. Nominal Capacity based on R404A.
Please see ARGUS Technical Guide for Capacity Tables with other Refrigerants and Microchannel Condenser

GOLD Feature Package

FEATURE	Low Temp Units	Commercial Temp Units
Insul. Suction Accum.	●	●
Suction Filter	●	●
Service Valves	●	●
Crankcase Heater	●	●
Heated/Insul. Rec.	●	●
Adj. Low Press Control	●	●
High Pressure Switch	●	●
Filter Drier/Sightglass	●	●
Check Valve	●	●
Head Press Control	●	●
Air Defrost Timer		●
Electric Defrost Timer	●	
Phase Monitor	**3 Phase Units**	**3 Phase Units**
LED Light in Serv. Panel	●	●
Fin Tube Condenser	●	●

OPTIONS
Dual Pressure Control
Anti-cycling Control
Non Fused Disconnect
E Coated Condenser
Oil Separator
LL Solenoid & Pumpdown
Oversized Receiver
Microchannel Condenser

** RSL Stocked Items*

CONDENSING UNITS CROSS REFERENCE

GOLD GEN III Package Outdoor Condensing Units

Item Number	Model Number	Voltage	HP	Nom Btu/h
				R404A*
Commercial Temperature -10° F to +45° F SST (Nominal Rating Point +20° F, +95°F Ambient)				
32L292-6C	AKA9440ZXDUS	208-230-60-1; 200-50-1	1/2	4,800
32L751-6C	AKA9464ZXDUS	208-230-60-1; 200-50-1	3/4	6,400
32L1138-6C	AWA9490ZXNUS	208-230-60-1; 200-220-50-1	7/8	10,000
32L1140-6C	AWA9490ZXTUS	200-230-60-3; 200-220-50-3	7/8	10,000
32L1351-6C	AWA9510ZXNUN	208-230-60-1; 200-220-50-1	1	10,700
32L1352-6C	AWA9510ZXTUN	200-230-60-3; 200-220-50-3	1	10,700
32L1451-6C	AWA9512ZXNUN	208-230-60-1; 200-220-50-1	1 1/4	11,600
32L1452-6C	AWA9512ZXTUN	200-230-60-3; 200-220-50-3	1 1/4	11,600
32L3238-6C	AWA9514ZXNUN	208-230-60-1; 200-220-50-1	1 3/4	13,100
32L3239-6C	AWA9514ZXTUN	200-230-60-3; 200-220-50-3	1 3/4	13,100
32L2165-6C	VSC9518ZNAUN	208-230-60-1	2	17,300*
32L2166-6C	VSC9518ZXTUN	200-230-60-3; 200-220-50-3	2	17,300*
32L2133-6C	AWA9518ZXNUN	208-230-60-1; 200-220-50-1	2 1/4	17,300
32L2134-6C	AWA9518ZXTUN	200-230-60-3; 200-220-50-3	2 1/4	17,300
32L3277-6C	VSC9522ZNAUN	208-230-60-1	2 1/2	21,300*
32L3278-6C	VSC9522ZXTUN	200-230-60-3; 200-220-50-3	2 1/2	21,300*
32L2135-6C	AVA9523ZXNUN	208-230-60-1; 200-220-50-1	3	21,200
32L2136-6C	AVA9523ZXTUN	200-230-60-3; 200-220-50-3	3	21,200
32L3279-6C	VSC9524ZNAUM	208-230-60-1	3	23,600*
32L3280-6C	VSC9524ZXTUM	200-230-60-3; 200-220-50-3	3	23,600*
32L3160-6C	AVA9525ZXNUN	208-230-60-1; 200-220-50-1	3 1/4	23,100
32L3154-6C	AVA9525ZXTUN	200-230-60-3; 200-220-50-3	3 1/4	23,100
32L3157-6C	AVA9529ZXNUN	208-230-60-1; 200-220-50-1	3 1/2	27,200
32L3158-6C	AVA9529ZXTUN	200-230-60-3; 200-220-50-3	3 1/2	27,200
32L3281-6C	VSC9529ZNAUM	208-230-60-1	3 1/2	28,900*
32L3282-6C	VSC9529ZXTUM	200-230-60-3; 200-220-50-3	3 1/2	28,900*
32L4054-6C	AVA9532ZXNUM	208-230-60-1; 200-220-50-1	4	32,100
32L4055-6C	AVA9532ZXTUM	200-230-60-3; 200-220-50-3	4	32,100
32L4097-6C	VSC9534ZNAUM	208-230-60-1	4	33,800*
32L4098-6C	VSC9534ZXTUM	200-230-60-3; 200-220-50-3	4	33,800*
32L4083-6C	AGA9538ZXNUM	208-230-60-1; 200-220-50-1	4 3/4	35,600
32L4084-6C	AGA9538ZXTUM	200-230-60-3; 200-220-50-3	4 3/4	35,600
32L5095-6C	AGA9542ZXNUM	208-230-60-1; 200-220-50-1	5	39,100
32L5098-6C	AGA9542ZXTUM	200-230-60-3; 200-220-50-3	5	39,100

*** - Compatible for R404A, R507, R134a, R22, R407F, R407A. Nominal Capacity is with R404A**
R404A - also approved for R448A, R449A, R452A. Nominal Capacity is with R404A

GOLD ARGUS Package Outdoor Condensing Units

Item Number	Model Number	Voltage	HP	Nom Btu/h		Compressor	Chassis
				R404A*	R448A/R449A		
Medium Temperature -10° F to +45° F SST (Nominal Rating Point +20° F, +95°F Ambient)							
2JH201-GF	ASHR9440ZAAFG1	115-60-1	1/2	3,550	3,174	Recip	Small
2JH202-GF	ASHR9440ZNAFG1	208-230-60-1	1/2	3,550	3,174	Recip	Small
2JH701-GF	ASHR9460ZNAFG1	208-230-60-1	3/4	6,343	5,249	Recip	Small
2JH1006-GF	ASHR9510ZNAFG1	208-230-60-1	1 1/4	10,730	9,339	Recip	Medium
2JH1007-GF	ASHR9510ZFAFG1	200-230-60-3	1 1/4	10,730	9,339	Recip	Medium
2JH1006-GF	ASHR9510ZNAFG1	208-230-60-1	1 1/4	10,730	9,339	Recip	Medium
2JH1007-GF	ASHR9510ZFAFG1	200-230-60-3	1 1/4	10,730	9,339	Recip	Medium
2JH3202-GF	ASHR9512ZNAFG1	208-230-60-1	1 1/2	14,902	13,484	Recip	Medium
2JH3203-GF	ASHR9512ZFAFG1	200-230-60-3	1 1/2	14,902	13,484	Recip	Medium
2JH3202-GF	ASHR9512ZNAFG1	208-230-60-1	1 1/2	14,902	13,484	Recip	Medium
2JH3203-GF	ASHR9512ZFAFG1	200-230-60-3	1 1/2	14,902	13,484	Recip	Medium
2JH2001-GF	ASHS9516ZNAFG1	208-230-60-1	2	17,298	16,072	Scroll	Medium
2JH2006-GF	ASHS9516ZFAFG1	200-230-60-3	2	17,298	16,072	Scroll	Medium
2JH2001-GF	ASHS9516ZNAFG1	208-230-60-1	2	17,298	16,072	Scroll	Medium
2JH2006-GF	ASHS9516ZFAFG1	200-230-60-3	2	17,298	16,072	Scroll	Medium
2JH2008-GF	ASHS9520ZNAFG1	208-230-60-1	2 1/2	21,457	18,281	Scroll	Medium
2JH2009-GF	ASHS9520ZFAFG1	200-230-60-3	2 1/2	21,457	18,281	Scroll	Medium
2JH2008-GF	ASHS9520ZNAFG1	208-230-60-1	2 1/2	21,457	18,281	Scroll	Medium
2JH2009-GF	ASHS9520ZFAFG1	200-230-60-3	2 1/2	21,457	18,281	Scroll	Medium
2JH2002-GF	ASHS9522ZNAFG1	208-230-60-1	2 4/5	23,640	20,872	Scroll	Medium
2JH2007-GF	ASHS9522ZFAFG1	200-230-60-3	2 4/5	23,640	20,872	Scroll	Medium
2JH2002-GF	ASHS9522ZNAFG1	208-230-60-1	2 4/5	23,640	20,872	Scroll	Medium
2JH2007-GF	ASHS9522ZFAFG1	200-230-60-3	2 4/5	23,640	20,872	Scroll	Medium
2JH3001-GF	ASHS9524ZNAFG1	208-230-60-1	3	29,441	28,111	Scroll	Large
2JH3004-GF	ASHS9524ZFAFG1	200-230-60-3	3	29,441	28,111	Scroll	Large
2JH3001-GF	ASHS9524ZNAFG1	208-230-60-1	3	29,441	28,111	Scroll	Large
2JH3004-GF	ASHS9524ZFAFG1	200-230-60-3	3	29,441	28,111	Scroll	Large
2JH4001-GF	ASHS9532ZNAFG1	208-230-60-1	4	36,815	33,037	Scroll	Large
2JH4002-GF	ASHS9532ZFAFG1	200-230-60-3	4	36,815	33,037	Scroll	Large
2JH4001-GF	ASHS9532ZNAFG1	208-230-60-1	4	36,815	33,037	Scroll	Large
2JH4002-GF	ASHS9532ZFAFG1	200-230-60-3	4	36,815	33,037	Scroll	Large
2JH4001-GF	ASHS9532ZNAFG1	208-230-60-1	4	36,815	33,037	Scroll	Large
2JH4002-GF	ASHS9532ZFAFG1	200-230-60-3	4	36,815	33,037	Scroll	Large
2JH5001-GF	ASHS9540ZNAFG1	208-230-60-1	5	42,911	39,354	Scroll	Large
2JH5002-GF	ASHS9540ZFAFG1	200-230-60-3	5	42,911	39,354	Scroll	Large
2JH6001-GF	ASHS9548ZFAFG1	200-230-60-3	6	49,405	45,954	Scroll	Large

Item No.	Model Number	Voltage	HP	Nom Btu/h
				R404A*
Medium Temperature -10° F to +30° F SST (Nominal Rating Point +20° F, +95°F Ambient)				
32L1106-6C	AJA7494ZXDUS	208-230-60-1; 200-50-1	1 1/4	8,800
32L3217-6C	AWA7512ZXDUS	208-230-60-1; 200-50-1	1 1/2	11,000
32L3218-6C	AWA7512ZXTUS	200-230-60-3; 200-220-50-3	1 1/2	11,000
32L3220-6C	AWA7515ZXDUS	208-230-60-1; 200-50-1	1 3/4	13,400
32L3219-6C	AWA7515ZXTUS	200-230-60-3; 200-220-50-3	1 3/4	13,400
32L3136-6C	AVA7523ZXNUN	208-230-60-1; 200-220-50-1	3	21,300
32L3137-6C	AVA7523ZXTUN	200-230-60-3; 200-220-50-3	3	21,300

R404A - also approved for R448A, R449A, R452A. Nominal Capacity is with R404A

Item Number	Model Number	Voltage	HP	Nom Btu/h		Compressor	Chassis
				R404A*	R448A/R449A		
Medium Temperature -10° F to +45° F SST (Nominal Rating Point +20° F, +95°F Ambient)							
2JH1001-GF	ASHR9480ZNAFG1	208-230-60-1	1	8,127	6,719	Recip	Small
2JH1006-GF	ASHR9510ZNAFG1	208-230-60-1	1 1/4	10,730	9,339	Recip	Medium
2JH1007-GF	ASHR9510ZFAFG1	200-230-60-3	1 1/4	10,730	9,339	Recip	Medium
2JH3202-GF	ASHR9512ZNAFG1	208-230-60-1	1 1/2	14,902	13,484	Recip	Medium
2JH3203-GF	ASHR9512ZFAFG1	200-230-60-3	1 1/2	14,902	13,484	Recip	Medium
2JH2008-GF	ASHS9520ZNAFG1	208-230-60-1	2 1/2	21,457	18,281	Scroll	Medium
2JH2009-GF	ASHS9520ZFAFG1	200-230-60-3	2 1/2	21,457	18,281	Scroll	Medium

R404A - also approved for R448A, R449A, R452A. Nominal Capacity is with R404A

Item No.	Model Number	Voltage	HP	Nom Btu/h
				R404A*
Low Temperature -40° F to +10° F (Nominal Rating Point -10° F, +95°F Ambient)				
32L511-6C	AJA2423ZXDUS	208-230-60-1; 200-50-1	1/2	2,500
32L727-6C	AJA2436ZXDUS	208-230-60-1; 200-50-1	3/4	3,400
32L1118-6C	AWA2444ZXDUS	208-230-60-1; 200-50-1	1	5,000
32L1121-6C	AWA2444ZXTUS	200-230-60-3; 200-220-50-3	1	5,000
32L3243-6C	AWA2457ZXDUS	208-230-60-1; 200-50-1	1 1/2	5,800
32L3244-6C	AWA2457ZXTUS	200-230-60-3; 200-220-50-3	1 1/2	5,800
32L2114-6C	AWA2479ZXDUS	208-230-60-1; 200-50-1	2	7,300
32L2115-6C	AWA2479ZXTUS	200-230-60-3; 200-220-50-3	2	7,300
32L2111-6C	AWA2490ZXDUN	208-230-60-1; 200-50-1	2 1/4	8,100
32L2112-6C	AWA2490ZXTUN	200-230-60-3; 200-220-50-3	2 1/4	8,100
32L2116-6C	AVA2510ZXNUS	208-230-60-1; 200-220-50-1	2 1/2	9,200
32L2117-6C	AVA2510ZXTUS	200-230-60-3; 200-220-50-3	2 1/2	9,200
32L3140-6C	AVA2512ZXNUN	208-230-60-1; 200-220-50-1	2 3/4	11,000
32L3141-6C	AVA2512ZXTUN	200-230-60-3; 200-220-50-3	2 3/4	11,000
32L3144-6C	AVA2515ZXNUN	208-230-60-1; 200-220-50-1	3	13,500
32L3145-6C	AVA2515ZXTUN	200-230-60-3; 200-220-50-3	3	13,500
32L4099-6C	VSC2518ZXTUM	200-230-60-3; 200-220-50-3	4 1/2	17,800*
32L5113-6C	VSC2522ZXTUM	200-230-60-3; 200-220-50-3	5 1/2	21,400*
32L6007-6C	VSC2527ZXTUM	200-230-60-3; 200-220-50-3	6 1/2	26,100*
32L8000-6C	VSC2533ZXTUM	200-230-60-3; 200-220-50-3	8	33,000*

*** - Compatible for R404A, R507, R134a, R22, R407F, R407A. Nominal Capacity is with R404A**
R404A - also approved for R448A, R449A, R452A. Nominal Capacity is with R404A

Item Number	Model Number	Voltage	HP	Nom Btu/h		Compressor	Chassis
				R404A*	R448A/R449A		
Low Temperature -40° F to +10° F (Nominal Rating Point -10° F, +95°F Ambient)							
2JH703-GF	ASHR2430ZNAFG1	208-230-60-1	3/4	2,870		Recip	Small
2JH1003-GF	ASHR2440ZNAFG1	208-230-60-1	1	3,533		Recip	Small
2JH1005-GF	ASHR2450ZNAFG1	208-230-60-1	1 1/4	4,400		Recip	Small
2JH3201-GF	ASHR2460ZNAFG1	208-230-60-1	1 1/2	6,050		Recip	Small
2JH3204-GF	ASHR2460ZFAFG1	200-230-60-3	1 1/2	6,050		Recip	Small
2JH2004-GF	ASHR2480ZNAFG1	208-230-60-1	2	9,843		Recip	Medium
2JH2010-GF	ASHR2480ZFAFG1	200-230-60-3	2	9,843		Recip	Medium
2JH2004-GF	ASHR2480ZNAFG1	208-230-60-1	2	9,843		Recip	Medium
2JH2010-GF	ASHR2480ZFAFG1	200-230-60-3	2	9,843		Recip	Medium
2JH2004-GF	ASHR2480ZNAFG1	208-230-60-1	2	9,843		Recip	Medium
2JH2010-GF	ASHR2480ZFAFG1	200-230-60-3	2	9,843		Recip	Medium
2JH2005-GF	ASHR2510ZNAFG1	208-230-60-1	2 1/2			Recip	Medium
2JH2011-GF	ASHR2510ZFAFG1	200-230-60-3	2 1/2			Recip	Medium
2JH3007-GF	ASHS2512ZNAFG1	208-230-60-1	3	14,160		Scroll	Medium
2JH3008-GF	ASHS2512ZFAFG1	200-230-60-3	3	14,160		Scroll	Medium
2JH3005-GF	ASHS2514ZNAFG1	208-230-60-1	3 1/2			Scroll	Medium
2JH3006-GF	ASHS2514ZFAFG1	200-230-60-3	3 1/2			Scroll	Medium
2JH5003-GF	ASHS2520ZFAFG1	200-230-60-3	5			Scroll	Large
2JH5003-GF	ASHS2520ZFAFG1	200-230-60-3	5			Scroll	Large
2JH6002-GF	ASHS2524ZFZFG1	200-230-60-3	6			Scroll	Large

GOLD Feature Package GEN III

FEATURE	Low Temp Units	High/Medium/Commercial
Suction Accumulator	●	●
Suction Filter	●	●
Service Valves	●	●
Crankcase Heater	●	●
Heated/Insul. Rec.	●	●
Adj. Low Press Control	●	●
High Pressure Switch	●	●
Filter Drier/Sightglass	●	●
Check Valve	●	●
Head Press Control	●	●
Adj. Fan Cycling Cont.	**2 Fan Models Only**	**2 Fan Models Only**
Electric Defrost Timer	●	

GOLD Feature Package ARGUS

FEATURE	Low Temp Units	Medium
Suction Accumulator	●	●
Suction Filter	●	●
Service Valves	●	●
Crankcase Heater	●	●
Heated/Insul. Rec.	●	●
Adj. Low Press Contro	●	●
High Pressure Switch	●	●
Filter Drier/Sightglass	●	●
Check Valve	●	●
Head Press Control	●	●
Air Defrost Timer		●
Electric Defrost Timer	●	
Phase Monitor	**3 Phase Only**	**3 Phase Only**

TECUMSEH CELSEON LOW PROFILE CONDENSING UNITS

SPECIFICATIONS

Application

Evaporating Ranges:	High Temperature	+10°F to +55°F (-12.2°C to +12.8°C)
	Commercial Temperature	-5°F to +40°F (-20.6°C to +4.4°C)
	Low Temperature	-40°F to +5°F (-40°C to -15.0°C)
Ambient Operating Temperature:		+80°F (+26.6°C) to +110°F (+43.3°C)

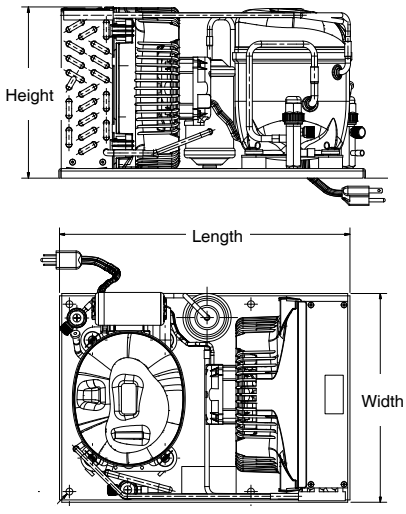
Materials

Valves:	Steel, Base Mounted with Copper Sweat Connections	
Receiver:	Steel, Plated Body with Copper Sweat Connections	
Base Plate:	Cold Rolled Steel 16 Ga. Galvanized G90U	
Refrigerant/Oil:	R134a, R404A/R507 Polyolester (POE)	R22, R12 Synthetic Alkylate (AB)
Electrical Terminations:	Screw	
Fan Guard:	High Density Polypropylene	
Fan Blade:	Polypropylene	
Fan Motor:	Shaded Pole (6 or 9 Watt) or ECM	
Condenser:	Copper Tube and Aluminum Fin	
Electrical Cord:	Length: 20 inches (508 mm)	Type: Three Prong, Grounded Plug

Physical Properties

Dimensions:	**Length:** 16 inches (406 mm)	**Width:** 11.5 inches (292 mm)	**Height:** 8.9 inches (226 mm) *9.9 inch es (252 mm) *TPA models only
Connection Type:	Suction Line: 5/16 inch (7.9 mm) without valves or 3/8 inch (9.5 mm)ODF Sweat with valves Liquid Line: 1/4 inch (6.4 mm) ODF Sweat		

DIMENSIONS



LOW PROFILE CONDENSING UNIT MODEL NUMBER

AE 4 440 Y - AA 1A S K (AE² models only)

AEA 9 440 Z XA S K (All models except AE²)

Family & Generation
AE², AEA, AEB Compressor Series
TPA, TPB Compressor Series
THA Compressor Series

Application Range
3, 4 High +10°F to +55°F (-12.2°C to +12.8°C)
0, 9,4* Comm. -5°F to +40°F (-20.6°C to +4.4°C)
*(AE² models only using R404A/R507 and R290)
1, 2 Low -40°F to +5°F (-40°C to -15.0°C)

Capacity
First number is total digits. Remainder is capacity in Btu/h.
This example 4000 Btu/h Capacity

Refrigerant
A = R12 E = R22 U = R290 Y = R134a Z = R404A/R507

Options
K (39), B (49), C (59), S (69)

Fan Motor Type
S Shaded Pole (SP), Std Efficiency
C Electronically Commutated Motor (ECM), High Efficiency

Voltage/Frequency/Ph
XA 115/60/1; 100/50/1
AB 115/60/1; 90/50/1
AA 115/60/1

Efficiency Level

AVAILABLE OPTIONS

Select the Model Designation for Customized Option Configurations

Options Model No (Item No)	Option Configuration
K (39)	Sweat Connections and Power Cord
B (49)	Sweat Connections, Power Cord and Receiver Tank
C (59)	Sweat Connections, Power Cord, Receiver Tank and Service Valves
S (69)	Sweat Connections, Power Cord and Service Valves

Note: Bill of Materials ending in XP or XPS ultize an ECM motor, except R290 units, which have ECM motors as standard.

LOW PROFILE CONDENSING UNITS

CELSEON® LOW PROFILE

Commercial Temperature

Model Number	Line Connections in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-5°F	0°F	5°F	10°F	15°F	20°F	25°F	30°F	35°F	40°F
					-20.6°C	-17.8°C	-15.0°C	-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C
R404A/R507 CBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
AE4425Z-AA1ASB	5/16 (7.9)	1/4 (6.4)	1/5	90 (32.2)	940	1,060	1,190	1,340	1,500	1,660	1,950	2,140	2,340	2,540
AE4430Z-AA1ASB	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	1,030	1,190	1,350	1,520	1,690	1,870	2,170	2,360	2,550	2,730
AE4440Z-AA1ASB	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	1,400	1,560	1,740	1,930	2,130	2,350	2,590	2,840	3,120	3,390
TPA9423ZAACB	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	1,610	1,770	1,940	2,130	2,340	2,560	2,800	3,050	3,320	3,600
R134a CBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
THA0370YXASK	5/16 (7.9)	1/4 (6.4)	1/9	90 (32.2)	430	480	550	630	720	820	920	1,040	1,160	1,290
THA0384YXACK	5/16 (7.9)	1/4 (6.4)	1/8	90 (32.2)	670	700	750	830	900	1,000	1,110	1,230	1,370	1,530
THA0384YXASK	5/16 (7.9)	1/4 (6.4)	1/8	90 (32.2)	520	600	700	800	910	1,040	1,170	1,310	1,450	1,600
THA0410YXASK	5/16 (7.9)	1/4 (6.4)	1/6	90 (32.2)	620	720	830	950	1,090	1,240	1,400	1,560	1,730	1,910
THA0412YXACK	5/16 (7.9)	1/4 (6.4)	1/5	90 (32.2)	860	990	1,060	1,160	1,340	1,470	1,630	1,820	2,020	2,240
THA0412YXASK	5/16 (7.9)	1/4 (6.4)	1/5	90 (32.2)	750	860	990	1,130	1,290	1,470	1,650	1,840	2,030	2,200
TPB9415YAACB	5/16 (7.9)	1/4 (6.4)	1/5	90 (32.2)	1,040	1,150	1,290	1,440	1,630	1,810	2,030	2,250	2,490	2,760
TPB9417YAACB	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	1,210	1,310	1,450	1,590	1,790	2,000	2,240	2,490	2,760	3,070
TPB9421YAACC	3/8 (9.5)	1/4 (6.4)	1/3	90 (32.2)	1,370	1,480	1,710	1,880	2,130	2,380	2,660	2,960	3,280	3,630
R290 CBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
THA9416UAACK	5/16 (7.9)	1/4 (6.4)	1/5	90 (32.2)	1,030	1,160	1,300	1,440	1,590	1,740	1,890	2,050	2,220	2,390
AE4430U-AA1ACK	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	-	-	1,560	1,750	1,950	2,160	2,390	2,630	2,880	3,130
AE4435U-AA1ACK	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	-	-	1,770	1,970	2,190	2,420	2,670	2,940	3,210	3,480
AE4440U-AA1ACK	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	-	-	2,060	2,310	2,560	2,830	3,100	3,380	3,660	3,950
R22 CBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
AE4430E-AA1ASB	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	960	1,100	1,280	1,470	1,690	1,920	2,170	2,430	2,710	2,990

High Temperature

Model Number	Line Connections in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			10°F	15°F	20°F	25°F	30°F	35°F	40°F	45°F	50°F	55°F
					-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C	7.2°C	10.0°C	12.8°C
R134a HBP Application Range +10°F to 55°F (-12.2°C to 12.7°C)														
AE3425Y-AA1ASK	5/16 (7.9)	1/4 (6.4)	1/5	90 (32.2)	1,140	1,370	1,590	1,810	2,040	2,260	2,480	2,700	2,910	3,130
AE4430Y-AA1ASB	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	1,430	1,620	1,830	2,050	2,290	2,540	2,800	3,080	3,380	3,690
AE4440Y-AA1ASB	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	1,880	2,100	2,340	2,580	2,830	3,100	3,370	3,650	3,950	4,250

Low Temperature

Model Number	Line Connections in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-40°F	-35°F	-30°F	-25°F	-20°F	-15°F	-10°F	-5°F	0°F	5°F
					-40.0°C	-37.2°C	-34.4°C	-31.7°C	-28.9°C	-26.1°C	-23.3°C	-20.6°C	-17.8°C	-15.0°C
R404A/R507 LBP Application Range -40°F to 5°F (-40°C to -15.0°C)														
AE2410Z-AA1ASB	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	410	460	540	630	730	850	980	1,130	1,280	1,450
AE2415Z-AA1ASB	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	550	650	770	910	1,060	1,220	1,380	1,550	1,730	1,910
TPA2411ZAACB	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	820	880	960	1,060	1,170	1,290	1,430	1,590	1,760	1,940
R134a LBP Application Range -40°F to 5°F (-40°C to -15.0°C)														
AE2410Y-AA1ASB	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	270	350	450	560	590	750	910	1,110	1,270	1,440
AE2413Y-AA1BSB	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	470	580	700	830	980	1,140	1,310	1,480	1,670	1,860
R290 LBP Application Range -40°F to 5°F (-40°C to -15.0°C)														
AE2413U-AA1ACK	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	530	650	770	890	1,010	1,180	1,340	1,500	1,680	1,870
AE2420U-AA1ACK	5/16 (7.9)	1/4 (6.4)	1/2	90 (32.2)	840	970	1,110	1,270	1,430	1,610	1,790	1,990	2,190	2,410

**Please check Bill of Material (BOM) to confirm configurations and options that may differ from uniform model numbers above.*

TECUMSEH
EVAP CONDENSATE UNITS

SPECIFICATIONS

Application

Evaporating Ranges:	High Temperature	+10°F to +55°F (-12.2°C to +12.8°C)
	Medium/Comm. Temperature	-5°F to +40°F (-20.6°C to +4.4°C)
	Low Temperature	-40°F to +5°F (-40°C to -15.0°C)
Ambient Operating Temperature:		+80°F (+26.6°C) to +110°F (+43.3°C)

Materials

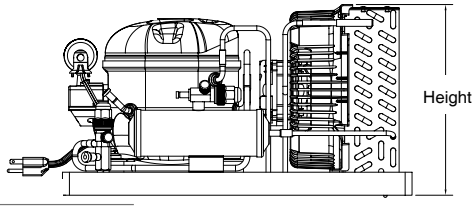
Valves:	Copper/Steel with Sweat/Flare Connections or with a valve	
Receiver:	Steel, Base Mounted with Copper Sweat Connections or with a valve	
Base Plate:	Grey: Poly Vinyl Choride (PVC)	Black or 10x20: Glass Filled Polypropylene
Refrigerant/Oil:	R134a, R404A/R507 Polyolester (POE)	R22 Synthetic Alkylate (AB)
Electrical Terminations:	Screw	
Fan Guard/Blade:	Polypropylene	
Fan Motor:	Shaded Pole	6 or 9 Watt
Condenser:	Copper Tube and Aluminum Fin	
Electrical Cord:	Length: 20 inches (50.8 mm)	Type: Three Prong, Grounded Plug

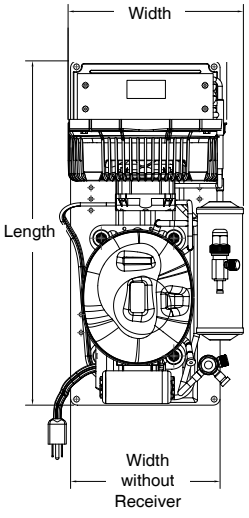
Physical Properties

Dimensions:	**Length:**	**Width:**	**Height:**
Grey:	19 inches (483 mm)	9.7 inches (246 mm) with receiver	10.3 inches (262 mm)
	19 inches (483 mm)	8.7 inches (223 mm) without receiver	10.3 inches (262 mm)
Black:	16 3/8 inches (416 mm)	13.0 inches (330 mm)	11.6 inches (295 mm)
10x20	20 inches (508 mm)	10.0 inches (254 mm)	11.6 inches (295 mm)

Connection Type:	Varies by model - see line connections

DIMENSIONS





AVAILABLE OPTIONS

Select the Model Designation for Customized Option Configurations

Options Model No (Item No)	Option Configurations
L (29)	Standard unit (Does Not Include Power Cord, Receiver Tank, or Service Valves)
K (39)	Includes Power Cord
B (49)	Includes Power Cord and Receiver Tank
C (59)	Includes Power Cord, Receiver Tank and Service Valves

LOW PROFILE CONDENSING UNIT MODEL NUMBER

AE 4 440 Y - AA 1A G K (AE^2 models only)

AEA 4 440 Y XA G K (All models except AE^2)

Family & Generation
AE^2, AEA, AEB Compressor Series
TPA, TPB Compressor Series

Application Range

3, 4	High	+10°F to +55°F (-12.2°C to +12.8°C)
0, 9, 4*	Comm.	-5°F to +40°F (-20.6°C to +4.4°C) *(AE^2 models only using R404A/R507 and R290)
7	Medium	-5°F to +40°F (-20.6°C to +4.4°C)
1, 2	Low	-40°F to +5°F (-40°C to -15.0°C)

Capacity
First number is total digits. Remainder is capacity in Btu/h.
This example 4000 Btu/h Capacity

Refrigerant

Options: Model (Item No.)
L (29), K (39), B (49), C (59)

Evap Condensate Unit

Voltage/Frequency/Ph

AA	115/60/1
AB	115/60/1; 90/50/1
XA	115/60/1; 100/50/1
XD	208-230/60/1; 200/50/1
XC	220-240/50/1

Efficiency Level

EVAP CONDENSATE UNITS

CELSEON® EVAP CONDENSATE

Commercial Temperature

Model Number	Line Connections^ in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-5°F	0°F	5°F	10°F	15°F	20°F	25°F	30°F	35°F	40°F
					-20.6°C	-17.8°C	-15.0°C	-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C
R404A/R507 CBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
AE4425Z-AA1AGB	3/8 (9.5)	1/4 (6.4)	1/5	90 (32.2)	880	1,000	1,120	1,240	1,370	1,500	1,740	1,890	2,040	2,180
AE4430Z-AA1AGB	3/8 (9.5)	1/4 (6.4)	1/4	90 (32.2)	1,010	1,140	1,280	1,420	1,580	1,740	2,030	2,210	2,390	2,570
AE4440Z-AA1AGB	3/8 (9.5)	1/4 (6.4)	1/3	90 (32.2)	1,260	1,420	1,580	1,750	1,920	2,090	2,440	2,620	2,810	2,980
AKA9429ZXAEC	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	1/3	90 (32.2)	1,300	1,610	1,920	2,230	2,540	2,850	3,160	3,470	3,780	4,080
R134a CBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
THA0370YXAGK	5/16 (7.9)	1/4 (6.4)	1/9	90 (32.2)	420	470	540	620	710	800	900	1,020	1,140	1,260
THA0410YXAGK	5/16 (7.9)	1/4 (6.4)	1/8	90 (32.2)	620	700	800	920	1,050	1,190	1,130	1,490	1,640	1,800
AKA9426YXAEC	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	1/3	90 (32.2)	1,200	1,500	1,780	2,050	2,330	2,600	-	-	-	-
R290 CBP Application Range +10°F to 55°F (-12.2°C to 12.7°C)														
THA9416UAAGK	5/16 (7.9)	1/4 (6.4)	1/5	90 (32.2)	1,030	1,160	1,300	1,440	1,590	1,740	1,890	2,050	2,220	2,390
AE4430U-AA1AGK	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	-	-	1,500	1,670	1,850	2,030	2,230	2,440	2,650	2,860
AE4435U-AA1AGK	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	-	-	1,690	1,880	2,080	2,290	2,520	2,750	2,980	3,210
AE4440U-AA1AGK	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	-	-	1,950	2,170	2,400	2,640	2,870	3,110	3,360	3,590
R22† CBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
AE4430E-AA1AGB	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	930	1,070	1,230	1,420	1,620	1,840	2,070	2,310	2,550	2,800
AE4450E-AA1BEB	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	1,780	2,010	2,270	2,550	2,850	3,170	3,490	3,810	4,120	4,420

High Temperature

Model Number	Line Connections in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			10°F	15°F	20°F	25°F	30°F	35°F	40°F	45°F	50°F	55°F
					-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C	7.2°C	10.0°C	12.8°C
R134a HBP Application Range 10°F to 55°F (-12.2°C to 12.8°C)														
AE3425Y-AA1AGK	5/16 (7.9)	1/4 (6.4)	1/5	90 (32.2)	-	-	1,530	1,730	1,920	2,110	2,290	2,470	2,650	-
AE4430Y-AA1AGC	3/8 (9.5)	1/4 (6.4)	1/4	90 (32.2)	-	-	1,870	2,090	2,310	2,540	2,760	2,990	3,220	-
AE4430Y-XN1AGC	3/8 (9.5)	1/4 (6.4)	1/4	90 (32.2)	-	-	1,890	2,110	2,330	2,570	2,790	3,020	3,250	-
AE4440Y-AA1AGC	3/8 (9.5)	1/4 (6.4)	1/3	90 (32.2)	-	-	2,360	2,610	2,860	3,110	3,370	3,620	3,890	-
AE4440Y-XN1AGC	3/8 (9.5)	1/4 (6.4)	1/3	90 (32.2)	-	-	2,380	2,640	2,890	3,140	3,400	3,660	-	-
AKA4460YXAEE	1/2 SAE (12.7SAE)	1/4 SAE (6.4 SAE)	1/2	90 (32.2)	-	-	3,570	4,000	4,450	4,920	5,390	5,880	-	
AKA4476YXAED	1/2 SAE (12.7SAE)	1/4 SAE (6.4 SAE)	1/2	90 (32.2)	-	-	4,400	4,900	5,400	5,950	6,500	7,100		

Medium Temperature

Model Number	Line Connections in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-5°F	0°F	5°F	10°F	15°F	20°F	25°F	30°F	35°F	40°F
					-20.6°C	-17.8°C	-15.0°C	-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C
R134a MBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
AKA7437YXAEC	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	1/2	90 (32.2)	1,940	2,250	2,630	3,000	3,400	3,800	4,250	4,700	-	-
AKA7437YXAED	1/2 SAE (12.7 SAE)	1/4 SAE (6.4SAE)	1/2	90 (32.2)	1,940	2,250	2,630	3,000	3,400	3,800	4,250	4,700	3,220	-

Low Temperature

Model Number	Line Connections in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-40°F	-35°F	-30°F	-25°F	-20°F	-15°F	-10°F	-5°F	0°F	5°F
					-40.0°C	-37.2°C	-34.4°C	-31.7°C	-28.9°C	-26.1°C	-23.3°C	-20.6°C	-17.8°C	-15.0°C
R404A/R507 LBP Application Range -40°F to 5°F (-40°C to -15.0°C)														
AE2410Z-AA1AGB	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	-	-	430	530	640	760	890	1,020	1,160	1,300
AE2415Z-AA1AGB	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	-	-	820	940	1,070	1,220	1,370	1,530	1,690	1,860
AJA2422ZXAEC	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	1/2	90 (32.2)	-	-	1,290	1,500	1,710	1,930	2,180	2,420	2,660	2,910
R134a LBP Application Range -40°F to 5°F (-40°C to -15.0°C)														
AE2410Y-AA1AGB	5/16 (7.9)	1/4 (6.4)	1/4	90 (32.2)	260	340	430	550	570	730	880	1,090	1,220	1,360
AE2413Y-AA1BGB	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	-	-	680	800	930	1,080	1,230	1,400	1,570	1,740
R290 LBP Application Range -40°F to 5°F (-40°C to -15.0°C)														
AE2413U-AA1AGK	5/16 (7.9)	1/4 (6.4)	1/3	90 (32.2)	520	640	750	860	970	1,130	1,280	1,430	1,590	1,760

^ Connections are ODF, unless otherwise stated. † Or compatible equivalent.
** Please check Bill of Material (BOM) to confirm configurations and options that may differ from the uniform model numbers above.*

TECUMSEH
AE², AK/AJ CONDENSING UNITS

SPECIFICATIONS

Application

Evaporating Ranges:	High Temperature:	+10°F to +55°F (-12.2°C to +12.8°C)
	Med./Comm. Temperature:	-5°F to +40°F (-20.6°C to +4.4°C)
	Low Temperature:	-40°F to +5°F (-40°C to -15.0°C)
Ambient Operating Temperature:		+80°F (+26.6°C) to +110°F (+43.3°C)

Materials

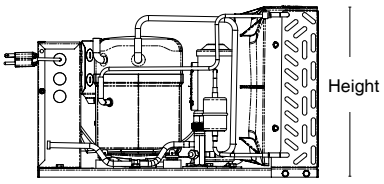
Valves:	Steel, Bracket Mounted with Copper Sweat Connections	
Receiver:	Steel, Base Mounted with Copper Sweat Connections	
Base Plate:	Cold Rolled Steel 16 Ga. Galvanized G90U	
Refrigerant/Oil:	R134a, R404A/R507 Polyolester (POE)	R22, R12 compatible Synthetic Alkylate (AB)
Fan Guard:	Polypropylene	
Fan Blade:	Aluminum	
Fan Motor:	Permanent Split Capacitor (PSC) 12, 35, or 50 Watt	
Condenser:	Copper Tube and Aluminum Fin	
Electrical Cord:	Length: 42 inches (1066 mm) Type: Three Prong, Grounded Plug	

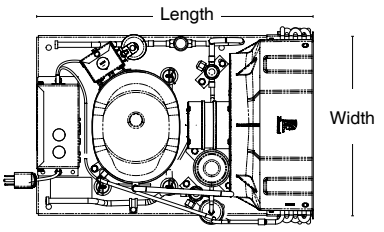
Physical Properties

Dimensions:	**Length**	**Width**	**Height**
Small:	15 in (381 mm)	14 in (330 mm)	12 in (304 mm)
Medium:	20 in (508 mm)	14.3 in (330 mm)	12 in (304 mm)
Large:	24 in (609 mm)	17.5 in (734 mm)	13 in (330 mm)

Connection Type:	Suction Line: 5/8 inch (15.9 mm) or 1/2 inch (12.7 mm)ODF Sweat Liquid Line: 1/4 inch (6.3 mm) ODF Sweat- Base unit only (Sm + Med) 3/8 in (9.5 mm) ODF Sweat - All other size and options

DIMENSIONS





AE², AK/AJ CONDENSING UNIT MODEL NUMBER

AE 4 440 Y - AA 1A D K (AE² models only)

AEA 4 440 Y XA D K (All models except AE²)

Family & Generation
AE², AK, AJ Compressor Series

Application Range

4	High	+10°F to +55°F (-12.2°C to +12.8°C)
4*, 7, 9	Med/Comm	-5°F to +40°F (-20.6°C to +4.4°C)
		*(AE² models only using R404A/R507)
2	Low	-40°F to +5°F (-40°C to -15.0°C)

Capacity
First number is total digits. Remainder is capacity in Btu/h.
This example 4000 Btu/h Capacity

Refrigerant
A = R12 E = R22 Y = R134a Z = R404A/R507

Options: Model (Item No.)
A (09), H (29), G (19), J (79) with no power cord
K (39), S (69), C (59), P (89) with power cord

Fan Motor/Efficiency
D Permanent Split Capacitor Motor (PSC)

Voltage/Frequency/Phase
AA 115/60/1
NA 208-230/60/1

Efficiency Level

TECUMSEH
AE², AK/AJ CONDENSING UNITS

CELSEON® AE², AK/AJ CONDENSING UNIT

Commercial Temperature

Model Number	Line Connections^ in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-5°F	0°F	5°F	10°F	15°F	20°F	25°F	30°F	35°F	40°F
					-20.6°C	-17.8°C	-15.0°C	-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C
R404A/R507 CBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
AKA9430ZAADK/A	3/8 (9.5)	1/4 (6.4)	1/3	90 (32.2)	-	1,970	2,240	2,510	2,790	3,090	3,400	3,720	4,060	4,400
AKA9430ZNADK/A	3/8 (9.5)	1/4 (6.4)	1/3	90 (32.2)	-	1,970	2,240	2,510	2,790	3,090	3,400	3,720	4,060	4,400
AKA9442ZAADK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	-	2,680	3,170	3,670	4,180	4,240	5,150	5,590	5,980	6,280
AKA9442ZNADK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	-	2,680	3,170	3,670	4,180	4,240	5,150	5,590	5,980	6,280
AKA9457ZAADK/A	3/8 (9.5)	3/8 (9.5)	3/4	90 (32.2)	-	3,770	4,190	4,650	5,160	5,710	6,300	6,940	7,620	8,350
AKA9457ZNADK/A	3/8 (9.5)	3/8 (9.5)	3/4	90 (32.2)	-	3,770	4,190	4,650	5,160	5,710	6,300	6,940	7,620	8,350
AKA9463ZAADK/A	3/8 (9.5)	3/8 (9.5)	3/4	90 (32.2)	-	4,290	4,750	5,250	5,790	6,360	6,970	7,610	8,290	9,010
AKA9463ZNADK/A	3/8 (9.5)	3/8 (9.5)	3/4	90 (32.2)	-	4,290	4,750	5,250	5,790	6,360	6,970	7,610	8,290	9,010
R22† CBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
AKA9435EAADK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	1,850	2,120	2,430	2,760	3,120	3,510	3,930	4,370	4,850	5,350
AKA9435ENADK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	1,850	2,120	2,430	2,760	3,120	3,510	3,930	4,370	4,850	5,350
AKA9446EAADK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	2,200	2,600	3,050	3,500	4,050	4,600	5,150	5,700	6,300	6,900
AKA9446ENADK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	2,200	2,600	3,050	3,500	4,050	4,600	5,150	5,700	6,300	6,900
AKA9461ENADK/A	3/8 (9.5)	3/8 (9.5)	3/4	90 (32.2)	3,000	3,500	4,100	4,700	5,400	6,100	6,900	7,700	8,500	9,300
AKA9470ENADK/A	3/8 (9.5)	3/8 (9.5)	3/4	90 (32.2)	3,800	4,300	5,000	5,600	6,300	7,000	7,800	8,500	9,300	10,100
AJA9486ENADK/A	3/8 (9.5)	3/8 (9.5)	1	90 (32.2)	4,300	5,100	5,900	6,800	7,700	8,600	9,500	10,400	11,400	12,400

† Or compatible equivalent.

High Temperature

Model Number	Line Connections^ in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			10°F	15°F	20°F	25°F	30°F	35°F	40°F	45°F	50°F	55°F
					-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C	7.2°C	10.0°C	12.8°C
R404A/R507 HBP Application Range +10°F to 55°F (-12.2°C to 12.7°C)														
AE4450Z-AA1ADK/A	5/16 (7.9)	1/4 (6.4)	1/2	90 (32.2)	-	-	1,840	2,030	2,250	2,490	2,750	3,030	3,320	3,620
AE4470Z-AA3CDK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	-	-	2,500	2,800	3,110	3,450	3,810	4,180	4,560	4,950
R134a HBP Application Range +10°F to 55°F (-12.2°C to 12.7°C)														
AE4450Y-AA1ADK/A	5/16 (7.9)	1/4 (6.4)	1/2	90 (32.2)	-	-	1,400	1,620	1,860	2,120	2,410	2,710	3,020	3,480
AE4456Y-AA1CDK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	-	-	1,550	1,810	2,090	2,380	2,680	2,990	3,310	3,780
AE4460Y-AA3CDK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	-	-	1,440	1,710	2,000	2,320	2,650	3,000	3,490	3,900
AKA4457YAADK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	-	-	3,500	3,920	4,330	4,750	5,170	5,670	6,020	6,440
AKA4457YNADK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	-	-	3,500	3,920	4,330	4,750	5,170	5,670	6,020	6,440
AKA4472YAADK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	-	-	4,430	4,960	5,500	6,050	6,620	7,190	7,770	8,360
AKA4472YNADK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	-	-	4,430	4,960	5,500	6,050	6,620	7,190	7,770	8,360
AJA4480YAADK/A	3/8 (9.5)	1/4 (6.4)	3/4	90 (32.2)	-	-	4,790	5,330	5,870	6,410	6,950	7,550	7,990	-
AJA4480YXNADK/A	3/8 (9.5)	1/4 (6.4)	3/4	90 (32.2)	-	-	4,790	5,330	5,870	6,410	6,950	7,550	7,990	-

^ Connections are ODF, unless otherwise stated. † Or compatible equivalent.
** Please check Bill of Material (BOM) to confirm configurations and options that may differ from the uniform model numbers above.*

TECUMSEH
AE2, AK/AJ CONDENSING UNITS

CELSEON® AE2, AK/AJ CONDENSING UNIT

Medium Temperature

Model Number	Line Connections in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-5°F	0°F	5°F	10°F	15°F	20°F	25°F	30°F	35°F	40°F
					-20.6°C	-17.8°C	-15.0°C	-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C
R404A/R507 MBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
AJA7480ZNADK/A	3/8 (9.5)	3/8 (9.5)	1	90 (32.2)	5,180	5,760	6,330	6,880	7,420	7,940	8,450	9,140	9,420	-
R134a MBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
AKA7437YAADK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	1,840	2,180	2,540	2,910	3,290	3,750	4,080	4,660	4,920	-
AJA7455YAADK/A	3/8 (9.5)	1/4 (6.4)	3/4	90 (32.2)	2,910	3,410	3,910	4,440	4,980	5,540	6,120	6,710	7,320	-
AJA7455YNADK/A	3/8 (9.5)	1/4 (6.4)	3/4	90 (32.2)	2,910	3,410	3,910	4,440	4,980	5,540	6,120	6,710	7,320	-

Low Temperature

Model Number	Line Connections in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-40°F	-35°F	-30°F	-25°F	-20°F	-15°F	-10°F	-5°F	0°F	5°F
					-40.0°C	-37.2°C	-34.4°C	-31.7°C	-28.9°C	-26.1°C	-23.3°C	-20.6°C	-17.8°C	-15.0°C
R404A/R507 LBP Application Range -40°F to 5°F (-40°C to -15.0°C)														
AJA2423ZAADK/A	3/8 (9.5)	1/4 (6.4)	1/2	90 (32.2)	820	1,030	1,250	1,490	1,730	1,990	2,310	2,570	2,820	3,120
AE2425Z-AA3CDK/A	5/16 (7.9)	5/16 (7.9)	3/4	90 (32.2)	990	1,180	1,390	1,610	1,850	2,100	2,440	2,640	2,920	3,210
AKA2430ZAADK/A	3/8 (9.5)	1/4 (6.4)	3/4	90 (32.2)	820	1,150	1,490	1,850	2,220	2,600	3,000	3,360	3,750	4,130
AJB2439ZAADK/A	3/8 (9.5)	1/4 (6.4)	1	90 (32.2)	1,750	2,070	2,410	2,770	3,140	3,520	3,900	4,280	4,640	4,990
AJB2447ZNADK/A	3/8 (9.5)	1/4 (6.4)	1-1/4	90 (32.2)	2,090	2,460	2,860	3,280	3,730	4,190	4,650	5,110	5,550	5,970
R134a LBP Application Range -40°F to 5°F (-40°C to -15.0°C)														
AE2413U-AA1AGK	5/16 (7.9)	1/4 (6.4)	1/2	90 (32.2)	160	360	740	1,120	1,520	1,920	2,320	2,720	3,110	3,490

^ *Connections are ODF, unless otherwise stated.*
* *Please check Bill of Material (BOM) to confirm configurations and options that may differ from the uniform model numbers above.*

AJ CONDENSING UNITS

SPECIFICATIONS

Application

Evaporating Ranges:	High Temperature:	+10°F to +55°F (-12.2°C to +12.8°C)
	Med./Comm. Temperature:	-5°F to +40°F (-20.6°C to +4.4°C)
	Low Temperature:	-40°F to +5°F (-40°C to -15.0°C)
Ambient Operating Temperature:		+80°F (+26.6°C) to +110°F (+43.3°C)

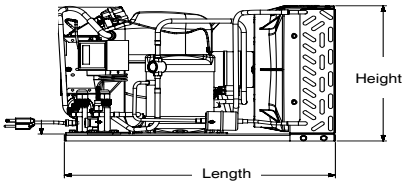
Materials

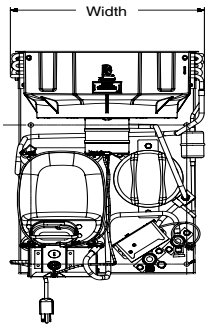
Valves:	Steel, Bracket Mounted with Copper Sweat Connections	
Receiver:	Steel, Base Mounted with Copper Sweat Connections	
Base Plate:	Cold Rolled Steel 16 Ga. Galvanized G90U	
Refrigerant/Oil:	R134a, R404A/R507 Polyolester (POE)	R12 Synthetic Alkylate (AB)
Fan Guard:	Polypropylene	
Fan Blade:	Aluminum	
Fan Motor:	Permanent Split Capacitor (PSC) 35 Watt	
Condenser:	Copper Tube and Aluminum Fin	
Electrical Cord:	Length: 42 inches (1066 mm) Type: Three Prong, Grounded Plug	

Physical Properties

Dimensions:	**Length**	**Width**	**Height**
Medium:	20 in (508 mm)	14.3 in (330 mm)	12.1 in (307 mm)
Connection Type:	Suction Line: 5/8 inch (15.9 mm) ODF Sweat Liquid Line: 3/8 inch (9.5 mm) ODF Sweat		

DIMENSIONS





AJ CONDENSING UNIT MODEL NOMENCLATURE

AJA 4 457 Y AA D C

Family & Generation
AJ Compressor Series

Application Range
4 High +10°F to +55°F (-12.2°C to +12.8°C)
7, 9 Med/Comm. -5°F to +40°F (-20.6°C to +4.4°C)
2 Low -40°F to +5°F (-40°C to -15.0°C)

Capacity
First number is total digits. Remainder is capacity in Btu/h.
This example 5700 Btu/h Capacity

Refrigerant
E = R 22 Y = R134a Z = R404A/R507

Voltage/Frequency/Phase
AA 115/60/1
NA 208-230/60/1

Fan Motor/Efficiency
D Permanent Split Capacitor (PSC)

Options
With power cords: C, P

High Temperature

Model Number	Line Connections^ in (mm)		HP	Ambient °F (°C)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			10°F	15°F	20°F	25°F	30°F	35°F	40°F	45°F	50°F	55°F
					-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C	7.2°C	10.0°C	12.8°C
R134a HBP Application Range 10°F to 55°F (-12.2°C to 12.8°C)														
AJA4480YAADC	5/8 (15.9)	3/8 (9.5)	3/4	90 (32.2)	-	-	4,790	5,330	5,870	6,410	6,950	7,550	7,990	-
AJA4480YNADC	5/8 (15.9)	3/8 (9.5)	3/4	90 (32.2)	-	-	4,790	5,330	5,870	6,410	6,950	7,550	7,990	-

Medium Temperature

Model Number	Line Connections^ in (mm)		HP	Ambient °F (°C)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-5°F	0°F	5°F	10°F	15°F	20°F	25°F	30°F	35°F	40°F
					-20.6°C	-17.8°C	-15.0°C	-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C
R134a MBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
AJA7455YAADC	5/8 (15.9)	3/8 (9.5)	3/4	90 (32.2)	2,440	2,910	3,410	3,910	4,440	4,980	5,540	6,120	6,710	7,320
AJA7455YNADC	5/8 (15.9)	3/8 (9.5)	3/4	90 (32.2)	2,440	2,910	3,410	3,910	4,440	4,980	5,540	6,120	6,710	7,320

Low Temperature

Model Number	Line Connections^ in (mm)		HP	Ambient °F (°C)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-40°F	-35°F	-30°F	-25°F	-20°F	-15°F	-10°F	-5°F	0°F	5°F
					-40.0°C	-37.2°C	-34.4°C	-31.7°C	-28.9°C	-26.1°C	-23.3°C	-20.6°C	-17.8°C	-15.0°C
R404A/R507 LBP Application Range -40°F to 5°F (-40°C to -15°C)														
AJA2431ZAADC	5/8 (15.9)	3/8 (9.5)	3/4	90 (32.2)	670	1,060	1,480	1,890	2,320	2,750	3,180	3,600	4,010	4,390

^ Connections are ODF, unless otherwise stated. † Or compatible equivalent.
** Please check Bill of Material (BOM) to confirm configurations and options that may differ from the uniform model numbers above.*

TECUMSEH VSC SCROLLS

SPECIFICATIONS

Applications

Evaporating Ranges:	Commercial Temperature:	-5°F to +40°F (-20.6°C to +4.4°C)
	Low Temperature:	-40°F to +5°F (-40°C to -15.0°C)
Ambient Operating Temp:		+80°F (+26.6°C) to +110°F (+43.3°C)

Materials

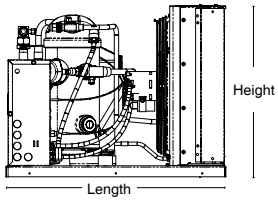
Valves:	Steel, Rotolock x Copper Sweat Connections
Receiver:	Steel, Base Mounted Vertical with Rotolock Valve connection Horizontal with Copper Sweat Connections
Base Plate:	Cold Rolled Steel 16 Ga. Galvanized G90U
Refrigerant/Oil:	R404A/R507 Polyvinylether (PVE)
Fan Guard:	Wire
Fan Blade:	Aluminum
Fan Motor:	Permanent Split Capacitor (PSC) 50 Watts or 1/4 Horse Power
Condenser:	Copper Tube and Aluminum Fin

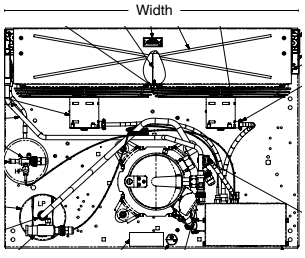
Physical Properties

	Length	Width	Height
Small:	34 in (364 mm)	25 in (635mm)	20 in (508 mm)
Large:	45 in (1143 mm)	29 in (737 mm)	27 in (686 mm)

Connection Type:	Suction Line: 5/8 inch (15.9 mm) ODF Sweat 7/8 inch (22.2 mm) ODF Sweat or 1 1/8 (28.6 mm) ODF Sweat (VSC2533 model only) Liquid Line: 3/8 inch (9.5 mm) ODF Sweat 1/2 inch (17.7 mm) ODF Sweat

DIMENSIONS





VSC SCROLL CONDENSING UNIT MODEL NOMENCLATURE

VSC 9 518 Z NA XM

Family & Generation
VSC Series

Application Range
9 Commercial -5°F to +40°F (-20.6°C to +7.2°C)
2 Low -40°F to +5°F (-40°C to -15.0°C)

Capacity
First number is total digits, remainder is capacity in Btu/h
This example 18,000 Btu/h Capacity

Release Variant
Receiver Tank, BX cable and Accumulator

Voltage/Frequency/Phase
NA 208-230/60/1
XT 200-230/60/3; 200-220/50/3

Refrigerant
Z = R404A, R507

Commercial Temperature

Model Number	Line Connections^ in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-5°F	0°F	5°F	10°F	15°F	20°F	25°F	30°F	35°F	40°F
					-20.6°C	-17.8°C	-15.0°C	-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C
R404A/R507 CBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
VSC9518ZNAXM	5/8 (15.9)	3/8 (9.5)	2	90 (32.2)	7,500	9,700	11,850	13,960	16,030	18,040	20,010	21,940	23,810	25,630
VSC9522ZNAXM	5/8 (15.9)	3/8 (9.5)	3	90 (32.2)	12,910	14,250	15,930	17,870	20,020	22,310	24,660	27,030	29,330	31,510
VSC9524ZNAXM	5/8 (15.9)	3/8 (9.5)	3	90 (32.2)	14,070	15,530	17,390	19,560	22,010	24,670	27,490	30,400	33,360	36,300
VSC9529ZNAXM	7/8 (22.2)	1/2 (12.7)	4	90 (32.2)	17,310	19,160	21,440	24,080	27,000	30,150	33,440	36,810	40,190	43,490
VSC9534ZNAXM	7/8 (22.2)	1/2 (12.7)	4-1/2	90 (32.2)	20,500	22,590	25,240	28,370	31,870	35,660	39,650	43,740	47,840	51,860

Low Temperature

Model Number	Line Connections^ in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-40°F	-35°F	-30°F	-25°F	-20°F	-15°F	-10°F	-5°F	0°F	5°F
					-40.0°C	-37.2°C	-34.4°C	-31.7°C	-28.9°C	-26.1°C	-23.3°C	-20.6°C	-17.8°C	-15.0°C
R404A/R507 LBP Application Range -40°F to 5°F (-40.6°C to -15.0°C)														
VSC2518ZXTXM	7/8 (22.2)	1/2 (12.7)	4-1/2	90 (32.2)	10,360	11,760	13,290	14,940	16,700	18,560	20,510	22,540	24,630	26,780
VSC2522ZXTXM	7/8 (22.2)	1/2 (12.7)	5-1/2	90 (32.2)	12,540	14,190	16,020	17,990	20,090	22,320	24,650	27,070	29,570	32,120
VSC2527ZXTXM	7/8 (22.2)	1/2 (12.7)	7	90 (32.2)	15,060	17,020	19,230	21,660	24,290	27,090	30,050	33,150	36,340	39,630
VSC2533ZXTXM	1-1/8 (28.6)	1/2 (12.7)	8	90 (32.2)	18,560	20,940	23,620	26,540	29,680	33,000	36,450	40,010	43,630	47,270

^ Connections are ODF, unless otherwise stated.
** Please check Bill of Material (BOM) to confirm configurations and options that may differ from the uniform model numbers above.*

TECUMSEH LARGE RECIPROCATING

SPECIFICATIONS

Applications

Evaporating Ranges:	High Temperature:	-10°F to +55°F (-12.2°C to +12.8°C)
	Med./Comm. Temperature:	-5°F to +40°F (-20.6°C to +4.4°C)
	Low (Vapor Injection) Temp:	-40°F to +5°F (-40°C to -15.0°C)
Ambient Operating Temp:		+80°F (+26.6°C) to +110°F (+43.3°C)

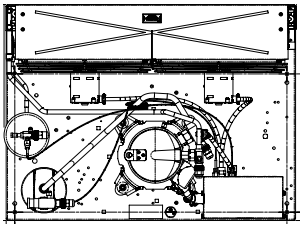
Materials

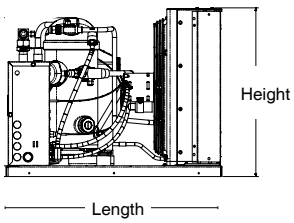
Base Plate:	Steel, Hot Rolled and Painted or Cold Rolled Galvanized G90U; 16 Ga.	
Refrigerant/Oil:	R404A/R507, R407C Polyolester (POE)	R22, R12 Synthetic Alkylate (AB)
Fan Guard:	Wire	
Fan Blade:	Aluminum	
Fan Motor:	Permanent Split Capacitor (PSC)	
Condenser:	Copper Tube and Aluminum Fin	

Physical Properties

Dimensions:	Vary by model - see pages 58-59
Connection Type:	Vary by model - see pages 49-51

DIMENSIONS





CONDENSING UNIT RELEASE VARIANT CODES

Air Cooled Condensing Units		Air Fan Cooled	Receiver Tank	BX Cable	See Item No. /(BOM)*	Accumulator
XA	Standard Unit	•				
XB	Std. Unit W/Receiver Tank	•	•			
XC	Std. Unit W/Receiver Tank & BX Cable	•	•	•		
XD	Std. Unit W/BX Cable	•		•		
XE,XF,XK	Physical Design Variant (Conduit)	•		•	•	
XG,XH,XJ,XL,XP	Physical Design Variant (Standard)	•			•	
XM	Advanced Commercial Design	•	•	•		•
XN	Advanced Commercial Design	•		•		•

*Note: See Item No./Bill of Material (BOM) must be referred to in order to determine other features not represented in the model nomenclature or release varient codes.

LARGE RECIPROCATING MODEL NOMENCLATURE

AWA 2 490 Z XD XG

Family & Generation
AW, AV, AG, AH Compressor Series

Application Range

4	High	+10°F to +55°F (-12.2°C to +12.8°C)
7, 9	Medium/Comm.	-5°F to +40°F (-20.6°C to +4.4°C)
2	Low	-40°F to +5°F (-40.0°C to -15.0°C)

Capacity
First number is total digits, the remainder is capacity in Btu/h.
This example 9000 Btu/h capacity.

Refrigerant

Release Variant

Voltage/Frequency/Phase

XD	208-230/60/1; 200/50/1
XN	208-230/60/1; 200-220/50/1
XT	200-230/60/3; 200-220/50/3
XG	460/60/3; 380-420/50/3
XF	208-230/60/3; 200-240/50/3

TECUMSEH LARGE RECIPROCATING

LARGE RECIPROCATING

Commercial Temperature

Model Number	Line Connections^ in (mm)		HP	Ambient °F (°C)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-5°F	0°F	5°F	10°F	15°F	20°F	25°F	30°F	35°F	40°F
					-20.6°C	-17.8°C	-15.0°C	-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C
R404A/R507 CBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
AWA9511ZXNXC	7/8 (22.2)	3/8 (9.5)	1	90 (32.2)	5,700	6,600	7,500	8,500	9,600	10,800	12,000	13,200	14,600	16,000
AWA9511ZXTXC	7/8 (22.2)	3/8 (9.5)	1	90 (32.2)	5,700	6,600	7,500	8,500	9,600	10,800	12,000	13,200	14,600	16,000
AWA9511ZXGXC	7/8 SAE (22.2 SAE)	3/8 SAE (9.5 SAE)	1	90 (32.2)	5,700	6,600	7,500	8,500	9,600	10,800	12,000	13,200	14,600	16,000
AWA9514ZXTXM	7/8 (22.2)	3/8 (9.5)	1-3/4	90 (32.2)	7,500	8,500	9,700	11,100	12,500	14,100	15,800	17,500	19,400	21,400
AWA9514ZXNXM	7/8 (22.2)	3/8 (9.5)	1-3/4	90 (32.2)	7,500	8,500	9,700	11,100	12,500	14,100	15,800	17,500	19,400	21,400
AWA9518ZXNXM	7/8 (22.2)	3/8 (9.5)	2-1/2	90 (32.2)	10,000	11,400	13,000	14,600	16,500	18,400	20,600	22,700	25,000	27,500
AWA9518ZXTXM	7/8 (22.2)	3/8 (9.5)	2-1/2	90 (32.2)	10,000	11,400	13,000	14,600	16,500	18,400	20,600	22,700	25,000	27,500
AVA9523ZXGXM	7/8 (22.2)	3/8 (9.5)	3	90 (32.2)	12,200	14,000	15,900	18,000	20,200	22,500	25,000	27,500	30,300	33,100
AVA9523ZXTXM	7/8 (22.2)	3/8 (9.5)	3	90 (32.2)	12,200	14,000	15,900	18,000	20,200	22,500	25,000	27,500	30,300	33,100
AVA9525ZXGXM	7/8 (22.2)	3/8 (9.5)	3	90 (32.2)	13,900	15,800	17,800	19,900	22,100	24,500	27,000	29,700	32,500	35,400
AVA9525ZXTXM	7/8 (22.2)	3/8 (9.5)	3	90 (32.2)	13,900	15,800	17,800	19,900	22,100	24,500	27,000	29,700	32,500	35,400
AVA9529ZXTXM	7/8 (22.2)	3/8 (9.5)	3-1/2	90 (32.2)	17,200	19,300	21,500	23,900	26,300	28,900	31,600	34,400	37,400	40,400

High Temperature

Model Number	Line Connections in (mm)		HP	Ambient °F (°C)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			10°F	15°F	20°F	25°F	30°F	35°F	40°F	45°F	50°F	55°F
					-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C	7.2°C	10.0°C	12.8°C
R407C HBP Application Range 10°F to 55°F (-12.2°C to 12.8°C)														
AWG4517CXNXC	7/8 (22.2)	3/8 (9.5)	1-1/2	90 (32.2)	7,100	8,400	9,700	11,100	12,500	14,000	15,400	17,000	18,500	20,100
AWG4520CXNXM	7/8 (22.2)	3/8 (9.5)	1-1/2	90 (32.2)	7,100	8,400	9,700	11,100	12,500	14,000	15,400	17,000	18,500	20,100
AWG4520CXNXM	7/8 (22.2)	3/8 (9.5)	1-3/4	90 (32.2)	7,500	8,800	10,200	11,900	13,700	15,700	17,800	20,200	22,700	25,400
AE4430Y-XN1AGC	7/8 (22.2)	3/8 (9.5)	2	90 (32.2)	11,800	13,800	15,900	18,100	20,400	22,800	25,300	27,800	30,400	33,200
AVA4536CXTXM	7/8 (22.2)	3/8 (9.5)	3	90 (32.2)	16,600	19,200	21,800	24,500	27,300	30,100	33,000	36,000	39,000	42,100
AGA4549CXTXM	7/8 SAE (22.2 SAE)	1/2 SAE (12.7 SAE)	4	90 (32.2)	19,800	23,400	27,100	31,000	35,100	39,400	43,900	48,600	53,500	58,600
AGA4562CXTXM	7/8 SAE (22.2 SAE)	1/2 SAE (12.7 SAE)	5	90 (32.2)	25,600	30,900	36,100	41,300	46,500	51,600	56,700	61,800	66,800	71,800
AKA4476YXAED	7/8 (22.2)	1/2 (12.7)	5	90 (32.2)	-	-	36,100	41,300	46,500	51,600	56,700	61,800	66,800	71,800
R22† HBP Application Range 10°F to 55°F (-12.2°C to 12.8°C)														
AWG4516EXNXC	7/8 (22.2)	3/8 (9.5)	1-1/4	90 (32.2)	-	-	9,400	10,500	11,700	13,000	14,300	15,800	17,400	-
AWG4516EXTXC	7/8 (22.2)	3/8 (9.5)	1-1/4	90 (32.2)	7,400	8,300	9,400	10,500	11,700	13,000	14,300	15,800	17,400	19,000
AWG4520EXNXC	7/8 (22.2)	3/8 (9.5)	1-1/2	90 (32.2)	-	-	11,800	13,200	14,600	16,100	17,600	19,100	20,700	22,300
AWG4520EXTXC	7/8 (22.2)	3/8 (9.5)	1-1/2	90 (32.2)	-	-	11,800	13,200	14,600	16,100	17,600	19,100	20,700	22,300
AWG4524EXNXM	7/8 (22.2)	3/8 (9.5)	2	90 (32.2)	-	-	14,700	16,400	18,200	20,100	22,100	24,200	26,400	28,600
AWG4524EXTXM	7/8 (22.2)	3/8 (9.5)	2	90 (32.2)	-	-	14,700	16,400	18,200	20,100	22,100	24,200	26,400	28,600
AWG4530EXGXM	7/8 (22.2)	3/8 (9.5)	2-1/2	90 (32.2)	-	-	18,600	20,800	23,000	25,400	27,800	30,400	33,000	35,800
AWG4530EXNXM	7/8 (22.2)	3/8 (9.5)	2-1/2	90 (32.2)	-	-	18,600	20,800	23,000	25,400	27,800	30,400	33,000	35,800
AWG4530EXTXM	7/8 (22.2)	3/8 (9.5)	2-1/2	90 (32.2)	-	-	18,600	20,800	23,000	25,400	27,800	30,400	33,000	35,800
AVA4540EXNXM	7/8 (22.2)	3/8 (9.5)	3-1/2	90 (32.2)	19,600	22,200	24,500	27,500	30,500	33,500	36,600	39,800	43,000	46,300
AVA4540EXTXM	7/8 (22.2)	3/8 (9.5)	3-1/2	90 (32.2)	-	-	24,500	27,500	30,500	33,500	36,600	39,800	43,000	46,300
AGA4553EXNXM	7/8 SAE (22.2 SAE)	1/2 SAE (12.7 SAE)	4-1/2	90 (32.2)	-	-	35,000	38,300	41,500	25,400	9,200	53,000	56,000	-
AGA4553EXTXM	7/8 SAE (22.2 SAE)	1/2 SAE (12.7 SAE)	4-1/2	90 (32.2)	-	-	35,000	38,300	41,500	25,400	9,200	53,000	56,000	-
AGA4563EXNXM	7/8 SAE (22.2 SAE)	1/2 SAE (12.7 SAE)	5	90 (32.2)	-	-	42,000	46,000	50,000	54,000	58,000	62,500	65,300	-
AGA4563EXTXM	7/8 SAE (22.2 SAE)	1/2 SAE (12.7 SAE)	5	90 (32.2)	-	-	42,000	46,000	50,000	54,000	58,000	62,500	65,300	-
AGA4572EXNXM	7/8 SAE (22.2 SAE)	1/2 SAE (12.7 SAE)	6	90 (32.2)	-	-	44,000	49,500	55,000	61,000	67,000	72,000	80,000	-
AGA4572EXTXM	7/8 SAE (22.2 SAE)	1/2 SAE (12.7 SAE)	6	90 (32.2)	-	-	44,000	49,500	55,000	61,000	67,000	72,000	80,000	-

^ Connections are ODF, unless otherwise stated. † Or compatible equivalent.
** Please check Bill of Material (BOM) to confirm configurations and options that may differ from the uniform model numbers above.*

TECUMSEH LARGE RECIPROCATING

Medium Temperature

Model Number	Line Connections^ in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-5°F	0°F	5°F	10°F	15°F	20°F	25°F	30°F	35°F	40°F
					-20.6°C	-17.8°C	-15.0°C	-12.2°C	-9.4°C	-6.7°C	-3.9°C	-1.1°C	1.7°C	4.4°C
R404A/R507 MBP Application Range -5°F to 40°F (-20.6°C to 4.4°C)														
AWA7512ZXDXC	7/8 (22.2)	3/8 (9.5)	1-1/2	90 (32.2)	6,800	7,700	8,700	9,700	10,800	11,900	13,100	14,400	-	-
AWA7512ZXTXC	7/8 (22.2)	3/8 (9.5)	1-1/2	90 (32.2)	6,800	7,700	8,700	9,700	10,800	11,900	13,100	14,400	-	-
AWA7515ZXDXC	7/8 (22.2)	3/8 (9.5)	1-3/4	90 (32.2)	8,900	9,900	10,900	12,000	13,200	14,400	15,700	17,000	-	-
AWA7515ZXTXC	7/8 (22.2)	3/8 (9.5)	1-3/4	90 (32.2)	8,900	9,900	10,900	12,000	13,200	14,400	15,700	17,000	-	-
AVA7523ZXNXC	7/8 (22.2)	3/8 (9.5)	3	90 (32.2)	13,600	15,400	17,100	19,000	20,900	22,800	24,800	26,800	-	-
AVA7523ZXTXC	7/8 (22.2)	3/8 (9.5)	3	90 (32.2)	13,600	15,400	17,100	19,000	20,900	22,800	24,800	26,800	-	-

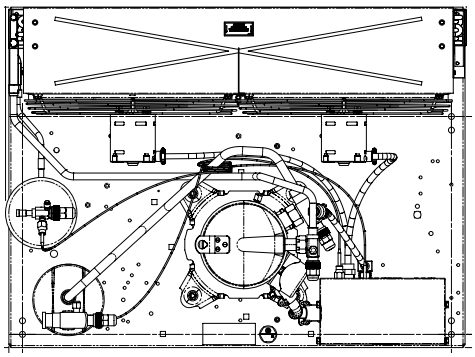
Low Temperature

Model Number	Line Connections^ in (mm)		HP	Ambient ºF (ºC)	Capacity (Btu/h) at Rated Conditions/ Evaporator Temperature									
	Suction	Liquid			-40°F	-35°F	-30°F	-25°F	-20°F	-15°F	-10°F	-5°F	0°F	5°F
					-40.0°C	-37.2°C	-34.4°C	-31.7°C	-28.9°C	-26.1°C	-23.3°C	-20.6°C	-17.8°C	-15.0°C
R404A/R507 LBP Application Range -40°F to 5°F (-40°C to -15.0°C)														
AWA2448ZXDXC	5/8 (15.9)	3/8 (9.5)	1-1/4	90 (32.2)	1,400	1,900	2,400	3,000	3,600	4,200	4,800	5,500	6,200	7,000
AWA2448ZXTXC	5/8 (15.9)	3/8 (9.5)	1-1/4	90 (32.2)	1,400	1,900	2,400	3,000	3,600	4,200	4,800	5,500	6,200	7,000
AWA2457ZXDXC	7/8 (22.2)	3/8 (9.5)	1-1/2	90 (32.2)	1,900	2,500	3,100	3,700	4,400	5,000	5,700	6,500	7,200	8,000
AWA2457ZXTXC	7/8 (22.2)	3/8 (9.5)	1-1/2	90 (32.2)	1,900	2,500	3,100	3,700	4,400	5,000	5,700	6,500	7,200	8,000
AWA2464ZXDXC	7/8 (22.2)	3/8 (9.5)	1-3/4	90 (32.2)	2,600	3,200	3,800	4,400	5,100	5,800	6,500	7,100	7,900	8,600
AWA2464ZXTXC	7/8 (22.2)	3/8 (9.5)	1-3/4	90 (32.2)	2,600	3,200	3,800	4,400	5,100	5,800	6,500	7,100	7,900	8,600
AWA2479ZXDXC	7/8 (22.2)	3/8 (9.5)	2	90 (32.2)	2,300	3,200	4,100	5,000	5,900	6,900	7,900	8,900	9,900	11,000
AWA2479ZXTXC	7/8 (22.2)	3/8 (9.5)	2	90 (32.2)	2,300	3,200	4,100	5,000	5,900	6,900	7,900	8,900	9,900	11,000
AWA2490ZXDXC	5/8 (15.9)	3/8 (9.5)	2	90 (32.2)	-	-	4,100	5,200	6,400	7,600	8,800	10,100	11,400	12,700
AWA2490ZXTXC	5/8 (15.9)	3/8 (9.5)	2	90 (32.2)	-	-	4,100	5,200	6,400	7,600	8,800	10,100	11,400	12,700
AVA2510ZXNXC	7/8 (22.2)	3/8 (9.5)	2-1/2	90 (32.2)	3,600	4,700	5,800	6,800	7,900	8,900	10,000	11,000	12,100	13,100
AVA2510ZXTXC	7/8 (22.2)	3/8 (9.5)	2-1/2	90 (32.2)	3,600	4,700	5,800	6,800	7,900	8,900	10,000	11,000	12,100	13,100
AVA2512ZXNXM	7/8 (22.2)	3/8 (9.5)	3	90 (32.2)	-	5,300	6,500	7,800	9,100	10,500	11,900	13,300	14,800	16,300
AVA2512ZXTXM	7/8 (22.2)	3/8 (9.5)	3	90 (32.2)	-	5,300	6,500	7,800	9,100	10,500	11,900	13,300	14,800	16,300
AVA2515ZXNXC	7/8 (22.2)	3/8 (9.5)	3-1/2	90 (32.2)	5,100	6,400	7,800	9,300	10,900	12,600	14,500	16,400	18,500	20,700
AVA2515ZXTXC	7/8 (22.2)	3/8 (9.5)	3-1/2	90 (32.2)	5,100	6,400	7,800	9,300	10,900	12,600	14,500	16,400	18,500	20,700

^ Connections are ODF, unless otherwise stated. † Or compatible equivalent.
** Please check Bill of Material (BOM) to confirm configurations and options that may differ from the uniform model numbers above.*

LARGE RECIPROCATING DIMENSIONS

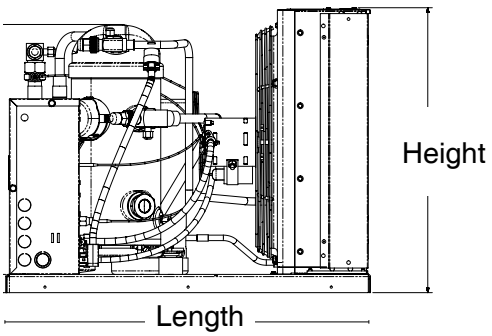
CBP Application Range -10°F to 40°F (-23.3°C to 4.4°C)				
Model Number	**Item Number (BOM)**	**Length in (mm)**	**Width in (mm)**	**Height in (mm)**
R404A/R507 CBP				
AWA9511ZXNXC	2B1138-9	24.0 (610)	19.4 (493)	16.2 (411)
AWA9511ZXTXC	2B1140-9	24.0(610)	19.4 (493)	16.2 (411)
AWA9511ZXGXC	32B1141-1	24.0 (610)	19.4 (493)	16.2 (411)
AWA9514ZXTXM	2B3239-9	33.8 (859)	25.0 (635)	19.5 (495)
AWA9514ZXNXM	2B3238-9	25.0 (635)	33.4 (850)	19.5 (495)
AWA9518ZXNXM	2C2133-9	33.8 (859)	25.0 (635)	19.5 (495)
AWA9518ZXTXM	2C2134-9	33.8 (859)	25.0 (635)	19.5 (495)
AVA9523ZXGXM	2C2137-9	33.8 (859)	25.0 (635)	19.5 (495)
AVA9523ZXTXM	2C2136-9	33.8 (859)	25.0 (635)	19.5 (495)
AVA9525ZXGXM	2B3155-9	33.7 (856)	25.0 (635)	19.5 (495)
AVA9525ZXTXM	2B3154-9	25.0 (635)	33.7 (856)	19.5 (495)
AVA9529ZXTXM	2B3158-9	25.0 (635)	33.7 (856)	19.5 (495)



HBP Application Range 20°F to 55°F (-6.7°C to 12.8C)				
Model Number	**Item Number (BOM)**	**Length in (mm)**	**Width in (mm)**	**Height in (mm)**
R404A/R507 HBP				
AWG4517CXNXC	2B3270-1	24.0 (610)	19.4 (493)	16.2 (411)
AWG4517CXNXC	2B3272-1	24.0 (610)	19.4 (493)	16.2 (411)
AWG4520CXNXM	2B3271-1	25.0 (635)	33.4 (850)	19.5 (495)
AWG4528CXNXM	2C2159-1	25.0 (635)	33.4 (850)	19.5 (495)
AVA4536CXTXM	2B3182-1	25.0 (635)	33.4 (850)	19.5 (495)
AGA4549CXTXM	2A4094-1	28.8 (732)	44.9 (1140)	26.9 (683)
AGA4562CXTXM	2A5104-1	28.8 (732)	44.9 (1140)	26.9 (683)
AGA4562CXTXS	2A5102-1	28.7 (729)	45.7 (1161)	26.9 (683)
AVA9523ZXTXM	2C2136-9	33.8 (859)	25.0 (635)	19.5 (495)
AVA9525ZXGXM	2B3155-9	33.7 (856)	25.0 (635)	19.5 (495)
AVA9525ZXTXM	2B3154-9	25.0 (635)	33.7 (856)	19.5 (495)
R22 HBP				
AWG4516EXNXC	2B1112-9	24.0 (610)	19.4 (493)	16.2 (411)
AWG4516EXTXC	2B1113-9	24.0 (610)	19.4 (493)	16.2 (411)
AWG4520EXNXC	2B3215-9	24.0 (610)	19.4 (493)	16.2 (411)
AWG4520EXTXC	2B3216-9	24.0 (610)	19.4 (493)	16.2 (411)
AWG4524EXNXM	2C2103-9	33.5 (851)	25.0 (635)	19.5 (495)
AWG4524EXTXM	2C2108-9	33.5 (851)	25.0 (635)	19.5 (495)
AWG4530EXGXM	2C2110-1	33.48 (850)	25.0 (635)	19.5 (495)
AWG4530EXNXM	2C2106-9	33.5 (851)	25.0 (635)	19.5 (495)
AWG4530EXTXM	2C2107-9	33.5 (851)	25.0 (635)	19.5 (495)
AVA4540EXNXM	2B3127-9	25.0 (635)	33.6 (853)	19.5 (495)
AVA4540EXTXM	2B3128-9	25.0 (635)	33.6 (853)	19.5 (495)
AGA4553EXNXM	2A4052-9	28.6 (726)	44.9 (1140)	26.9 (683)
AGA4553EXTXM	2A4053-9	28.8 (732)	44.9 (1140)	26.9 (683)
AGA4563EXNXM	2A5058-9	28.8 (732)	44.9 (1140)	26.9 (683)
AGA4563EXTXM	2A5059-9	28.6 (726)	44.9 (1140)	26.9 (683)
AGA4572EXNXM	2A5060-9	28.6 (726)	44.9 (1140)	26.9 (683)
AGA4572EXTXM	2A5061-9	28.8 (732)	44.9 (1140)	26.9 (683)
AHA4518AXDXC	2B3233-49	24.9 (632)	17.0 (432)	16.2 (411)

LARGE RECIPROCATING DIMENSIONS

MBP Application Range -10°F to 40°F (-23.3°C to 4.4°C)				
Model Number	**Item Number (BOM)**	**Length in (mm)**	**Width in (mm)**	**Height in (mm)**
R404A/R507 MBP				
AWA7512ZXDXC	2B3217-9	24.0 (610)	19.4 (493)	16.2 (411)
AWA7515ZXTXC	2B3218-9	24.0 (610)	19.4 (493)	16.2 (411)
AWA7515ZXDXC	2B3220-9	24.0 (610)	19.4 (493)	16.2 (411)
AWA7515ZXTXC	2B3219-9	24.0 (610)	19.4 (493)	16.2 (411)
AVA7523ZXNXC	2B3136-9	25.0 (635)	33.5 (851)	19.5 (495)
AVA7523ZXTXC	2B3137-9	25.0 (635)	33.6 (853)	19.5 (495)
AHA7480AXDXC	2B1126-49	25.0 (635)	17.8 (452)	14.6 (371)
AHA7480AXFXC	2B1127-49	24.9 (632)	17.8 (452)	15.6 (396)
AHA7511AXFXC	2B3237-49	24.9 (632)	17.0 (432)	16.2 (411)
AHB7511AXDXC	2B3235-49	24.0 (610)	19.4 (493)	16.2 (411)
AHA7514AXDXC	2B3234-49	24.9 (632)	19.4 (493)	16.2 (411)



LBP Application Range 20°F to 55°F (-6.7°C to 12.8C)				
Model Number	**Item Number (BOM)**	**Length in (mm)**	**Width in (mm)**	**Height in (mm)**
R404A/R507 LBP				
AWA2448ZXDXC	2B1118-9	24.0 (610)	17.8 (452)	15.4 (391)
AWA2448ZXTXC	2B1121-9	24.0 (610)	17.8 (452)	15.4 (391)
AWA2457ZXDXC	2B3243-9	24.0 (610)	17.8 (452)	16.4 (417)
AWA2457ZXTXC	2B3244-9	24.0 (610)	17.8 (452)	16.4 (417)
AWA2464ZXDXC	2B3224-9	24.0 (610)	17.8 (452)	15.4 (391)
AWA2464ZXTXC	2B3225-9	24.0 (610)	17.8 (452)	16.4 (417)
AWA2479ZXDXC	2C2114-9	24.0 (610)	19.4 (493)	16.2 (411)
AWA2479ZXTXC	2C2115-9	24.0 (610)	19.4 (493)	16.2 (411)
AWA2490ZXDXC	2C2111-9	25.0 (635)	33.6 (853)	19.5 (495)
AWA2490ZXTXC	2C2112-9	25.0 (635)	33.6 (853)	19.5 (495)
AVA2510ZXNXC	2C2116-9	24.0 (610)	19.4 (493)	16.2 (411)
AVA2510ZXTXC	2C2117-9	24.0 (610)	19.4 (493)	16.2 (411)
AVA2512ZXNXM	2B3140-9	25.0 (635)	33.6 (853)	19.5 (495)
AVA2512ZXTXM	2B3141-9	25.0 (635)	33.5 (851)	19.5 (495)
AVA2515ZXNXC	2B3144-9	25.0 (635)	33.6 (853)	19.5 (495)
AVA2515ZXTXC	2B3145-9	25.0 (635)	33.6 (853)	19.5 (495)
AWG4524EXNXM	2C2103-9	33.5 (851)	25.0 (635)	19.5 (495)
AWG4524EXTXM	2C2108-9	33.5 (851)	25.0 (635)	19.5 (495)
AWG4530EXGXM	2C2110-1	33.4 (850)	25.0 (635)	19.5 (495)
AWG4530EXNXM	2C2106-9	33.5 (851)	25.0 (635)	19.5 (495)
AWG4530EXTXM	2C2107-9	33.5 (851)	25.0 (635)	19.5 (495)
AVA4540EXNXM	2B3127-9	25.0 (635)	33.6 (853)	19.5 (495)
AVA4540EXTXM	2B3128-9	25.0 (635)	33.6 (853)	19.5 (495)

TECUMSEH WATER COOLED

SPECIFICATIONS

Applications

Evaporating Ranges:	High Temperature:	-10°F to +50°F (-12.2°C to +12.8°C)
	Med./Comm. Temperature:	-5°F to +40°F (-20.6°C to +4.4°C)
	Low (Vapor Injection) Temp:	-40°F to +5°F (-40°C to -15.0°C)
	Performance at +105°F (+40.6°C) Condensing Temperature	

Materials

Valves:	Steel, Copper Sweat Connections	
Receiver:	Steel, Rotolock Valve Connection	
Base Plate:	Hot Rolled Steel, 14-16 Ga.	
Refrigerant/Oil:	R134a, R404A/R507 Polyolester (POE)	R22, R12 Synthetic Alkylate (AB)
Condenser:	Coaxial Coil with Steel Outer Tube and Copper Inner Tube	
Water Regulating Valve:	Factory installed, Opening setting based on 105°F (+40.6°C) Condensing Temperature	

Physical Properties

Dimensions:	Vary by model - see pages 66
Connection Type:	Vary by model - see pages 63 and 65

WATER COOLED CONDENSING UNIT MODEL NOMENCLATURE

AWA 2 490 Z XD XW

Family & Generation

AE, AH, AJ, AK, AW, AV Compressor Series

Application Range

4	High	+10°F to +55°F (-12.2°C to +12.8°C)
7, 9	Medium/Comm.	-5°F to +40°F (-20.6°C to +4.4°C)
2	Low	-40°F to +5°F (-40.0°C to -15.0°C)

Capacity

First number is total digits, the remainder is capacity in Btu/h.
This example 9000 Btu/h capacity.

Refrigerant

A = R12 C = R407C E = R22 Z = R404A/R507

Release Variant

Voltage/Frequency/Phase

XA	115/60/1; 100/50/1
XD	208-230/60/1; 200/50/1
XF	208-230/60/3; 200-240/50/3
XG	460/60/3; 380-420/50/3
XN	208-230/60/1; 200-220/50/1
XT	200-230/60/3; 200-220/50/3

TECUMSEH WATER COOLED

WATER COOLED CONDENSING UNITS

Commercial Temperature

Model Number	Line Connections^ in (mm)		HP	Flow Rate (GPM) at Rating Point	Performance at 105°F (40.6°C) Condensing Temperature Capacity (Btu/h) at Suction Temperature				
	Suction	Liquid			0°F	10°F	20°F	30°F	40°F
					-17.8°C	-12.2°C	-6.7°C	-1.1°C	4.4°C
R404A/R507 CBP Application Range 0°F to 40°F (-17.8°C to 4.4°C)									
AKA9442ZXAXW	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	1/2	0.5	2,400	3,600	5,000	6,600	8,400
AKA9442ZXDXW	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	1/2	0.5	2,400	3,600	5,000	6,600	8,400
AKA9467ZXAXW	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	3/4	0.8	3,670	5,090	6,840	8,520	-
AKA9467ZXDXW	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	3/4	0.8	3,670	5,090	6,840	8,520	-
AKA9476ZXDXW	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	1	0.9	4,470	6,100	7,870	9,980	-
R22† CBP Application Range 0°F to 40°F (-17.8°C to 4.4°C)									
AEA9423EXAXW	3/8 SAE (9.5 SAE)	1/4 SAE (6.4 SAE)	1/3	0.4	1,420	2,000	2,580	3,350	4,180
AKA9457EXAXW	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	3/4	0.8	2,120	3,770	5,500	7,170	9,150
AKA9457EXDXW	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	3/4	0.8	2,120	3,770	5,500	7,170	9,150
AKA9479EXDXW	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	1	1.1	3,410	5,640	7,810	10,110	12,750
AJA9511EXDXW	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	1-1/4	1.8	4,570	7,730	10,710	13,720	17,110
AWG9513EXNXW	7/8 (22.2)	3/8 SAE (9.5 SAE)	1-1/2	2.6	6,750	9,610	13,000	17,000	21,740
AWG9513EXTXW	7/8 (22.2)	3/8 (9.5)	1-1/2	2.6	6,750	9,610	13,000	17,000	21,740

High Temperature

Model Number	Line Connections^ in (mm)		HP	Flow Rate (GPM) at Rating Point	Performance at 105°F (40.6°C) Condensing Temperature Capacity (Btu/h) at Suction Temperature				
	Suction	Liquid			20°F	30°F	40°F	45°F	50°F
					-6.7°C	-1.1°C	4.4°C	7.2°C	10.0°C
R134a HBP Application Range 20°F to 50°F (-6.7°C to 10.0°C)									
AEA4440YXAXW	3/8 SAE (9.5 SAE)	1/4 SAE (6.4 SAE)	1/3	0.5	2,500	3,200	4,100	4,600	5,200
AKA4475YXAXW	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	1/2	0.8	3,800	5,050	6,600	7,500	8,400
AKA4475YXDXW	1/2 SAE (12.7 SAE)	1/4 SAE (6.4 SAE)	1/2	0.8	3,800	5,050	6,600	7,500	8,400
AKA4490YXDXW	1/2 SAE (12.7 SAE)	3/8 SAE (9.5 SAE)	3/4	1.2	4,700	6,100	8,000	9,000	10,000
AJA4510YXDXW	1/2 SAE (12.7 SAE)	3/8 SAE (9.5 SAE)	1	1.3	5,400	7,000	9,000	10,200	11,400
AJA4514YXDXW	1/2 SAE (12.7 SAE)	3/8 SAE (9.5 SAE)	1-1/4	2.0	7,500	9,500	12,500	14,000	15,500
R22† HBP Application Range 20°F to 50°F (-6.7°C to 10.0°C)									
AWG4520EXNXW	5/8 (15.9)	3/8 (9.5)	2-1/2	3.3	14,670	19,230	24,800	27,590	-
AWG4524EXNXW	1/2 (12.7)	3/8 (9.5)	2-1/2	3.3	14,670	19,230	24,800	27,590	-
AWG4524EXTXW	1/2 (12.7)	3/8 (9.5)	2-1/2	3.3	14,670	19,230	24,800	27,590	-
AWG4530EXNXW	1/2 (12.7)	3/8 (9.5)	3	4.2	18,410	23,810	30,260	33,480	-
AWG4530EXTXW	1/2 (12.7)	3/8 (9.5)	3	4.2	18,410	23,810	30,260	33,480	-
AVA4535EXNXW	7/8 (22.2)	3/8 (9.5)	3	4.5	19,930	26,730	30,940	35,160	39,370
AVA4535EXTXW	1/2 (12.7)	3/8 (9.5)	3	4.2	19,930	26,730	30,940	35,160	-
AWG4532EXNXW	5/8 (15.9)	1/2 (12.7)	3	7.2	20,330	26,030	32,560	36,170	40,030
AWG4532EXTXW	5/8 (15.9)	1/2 (12.7)	3	7.2	20,330	26,030	32,560	36,170	40,030
AVB4538EXNXW	7/8 (22.2)	5/8 (15.9)	4	9.1	24,310	31,770	40,490	45,390	50,690
AVB4538EXTXW	7/8 (22.2)	5/8 (15.9)	4	9.1	24,310	31,770	40,490	45,390	50,690
AVB4549EXNXW	7/8 (22.2)	5/8 (15.9)	5	11.7	31,170	40,810	52,510	58,330	65,040
AVB4549EXTXW	7/8 (22.2)	5/8 (15.9)	5	11.7	31,170	40,810	52,510	58,330	65,040
AVB4558EXNXW	7/8 (22.2)	5/8 (15.9)	5	13.5	37,160	45,930	56,030	61,850	68,160
AVB4558EXTXW	7/8 (22.2)	5/8 (15.9)	5	13.5	37,160	45,930	56,030	61,850	68,160

Medium/High Temperature

Model Number	Line Connections^ in (mm)		HP	Flow Rate (GPM) at Rating Point	Performance at 105°F (40.6°C) Condensing Temperature Capacity (Btu/h) at Suction Temperature				
	Suction	Liquid			20°F	30°F	40°F	45°F	50°F
					-6.7°C	-1.1°C	4.4°C	7.2°C	10.0°C
R404A/R507 MBP/HBP Application Range 20°F to 50°F (-6.7°C to 10.0°C)									
AJA7512ZXDXW	1/2 SAE (12.7 SAE)	3/8 SAE (9.5 SAE)	1-1/2	1.8	5,000	7,000	9,000	12,000	14,000
AWA7515ZXDXW	7/8 (22.2)	3/8 SAE (9.5 SAE)	1-3/4	2.1	5,740	8,160	11,190	14,820	19,020
AWA7515ZXTXW	7/8 (22.2)	3/8 SAE (9.5 SAE)	1-3/4	2.1	5,740	8,160	11,190	14,820	19,020

^ Connections are ODF, unless otherwise stated. † Or compatible equivalent.
** Please check Bill of Material (BOM) to confirm configurations and options that may differ from the uniform model numbers above.*

TECUMSEH WATER COOLED

WATER COOLED CONDENSING UNITS

Low Temperature

Model Number	Line Connections^ in (mm)		HP	Flow Rate (GPM) at Rating Point	Performance at 105°F (40.6°C) Condensing Temperature Capacity (Btu/h) at Suction Temperature				
	Suction	Liquid			-30°F	-20°F	-10°F	0°F	10°F
					-34.4°C	-28.9°C	-23.3°C	-17.8°C	-12.2°C
R404A/R507 LBP Application Range -30°F to 10°F (-34.4°C to -12.2°C)									
AJA2424ZXDXW	1/2 SAE (12.7 SAE)	3/8 SAE (9.5 SAE)	1/2	0.5	1,100	1,700	2,400	3,100	4,000
AJA2433ZXDXW	1/2 SAE (12.7 SAE)	3/8 SAE (9.5 SAE)	1/2	0.7	1,100	1,700	2,400	3,100	4,000
AWA2453ZXDXW	5/8 (15.9)	3/8 SAE (9.5 SAE)	1-1/4	1.4	2,110	3,500	5,280	7,420	9,850
AWA2488ZXDXW	7/8 (22.2)	3/8 SAE (9.5 SAE)	2	2.2	3,800	6,020	8,760	12,050	15,910
AVA2512ZXNXW	7/8 (22.2)	3/8 SAE (9.5 SAE)	3	3.1	5,980	8,900	12,540	17,080	22,650
AVA2512ZXTXW	7/8 (22.2)	3/8 SAE (9.5 SAE)	3	3.1	5,980	8,900	12,540	17,080	22,650

^ Connections are ODF, unless otherwise stated. † Or compatible equivalent.
** Please check Bill of Material (BOM) to confirm configurations and options that may differ from the uniform model numbers above.*

WATER COOLED CONDENSING UNITS DIMENSIONS

CBP Application Range -10°F to 40°F (-23.3°C to 4.4°C)					
Model number	Item Number (BOM)	Length in (mm)	Width in (mm)	Height in (mm)	Compressor Height in (mm)
R404A/R507 CBP Application Range -10°F to 40°F (-23.3°C to 4.4°C)					
AKA9442ZXAXW	2D288-1	21.4 (544)	14.0 (356)	10.5 (267)	10.1 (257)
AKA9442ZXDXW	2D289-9	21.4 (544)	14.0 (356)	10.5 (267)	10.5 (267)
AKA9467ZXAXW	2B774-1	21.4 (544)	14.0 (356)	10.5 (267)	10.1 (257)
AKA9467ZXDXW	32B775-1	21.4 (544)	14.0 (356)	10.5 (267)	10.1 (257)
AKA9476ZXDXW	2B1103-1	21.4 (544)	14.0 (356)	10.5 (267)	10.1 (257)
R22 CBP Application Range -10°F to 40°F (-23.3°C to 4.4°C)					
AEA9423EXAXW	32C363-1	18.5 (470)	13.0 (330)	10 (254)	8.8 (224)
AKA9457EXAXW	32C290-1	21.4 (544)	14.0 (356)	10.5 (267)	10.1 (257)
AKA9457EXDXW	32C291-1	21.4 (544)	14.0 (356)	10.5 (267)	10.1 (257)
AKA9479EXDXW	32B746-1	21.4 (544)	14.0 (356)	10.5 (267)	10.5 (267)
AJA9511EXDXW	32A1192-1	24.0 (610)	17.0 (432)	13.6 (345)	12.0 (305)
AWG9513EXNXW	2B3227-9	24.3 (617)	17.9 (455)	15.2 (386)	14.3 (363)
AWG9513EXTXW	2B3228-9	24.3 (617)	17.9 (455)	15.2 (386)	14.3 (363)

HBP Application Range 20°F to 55°F (-6.7°C to 12.8°C)					
Model number	Item Number (BOM)	Length in (mm)	Width in (mm)	Height in (mm)	Compressor Height in (mm)
R134a HBP Application Range 20°F to 55°F (-6.7°C to 12.8°C)					
AEA4440YXAXW	32C391-1	18.4 (467)	13.0 (330)	10.5 (267)	8.8 (224)
AKA4475YXAXW	2D294-1	21.4 (544)	14.0 (356)	10.5 (267)	10.1 (257)
AKA4475YXDXW	2D295-1	21.4 (544)	14.0 (356)	10.5 (267)	10.1 (257)
AKA4490YXDXW	2B779-1	21.4 (544)	14.0 (356)	11.7 (297)	10.1 (257)
AJA4510YXDXW	32B780-1	24.0 (610)	17.0 (432)	10.9 (277)	12.0 (305)
AJA4514YXDXW	32B1104-1	24.0 (610)	17.0 (432)	10.9 (277)	12.0 (305)

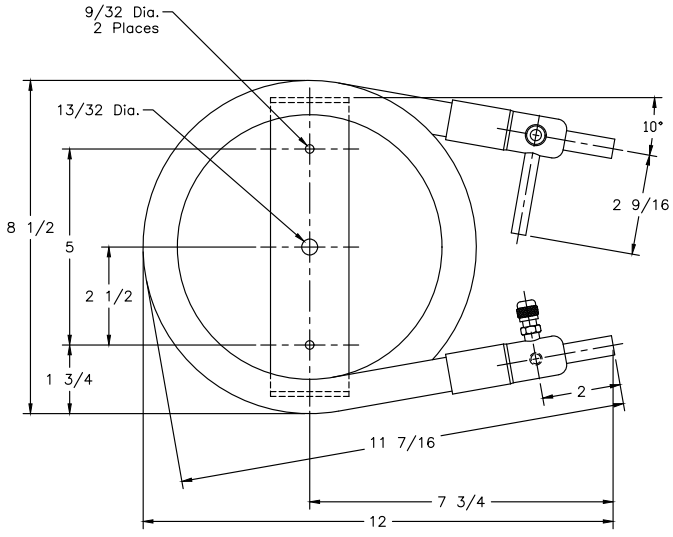
TECUMSEH WATER COOLED

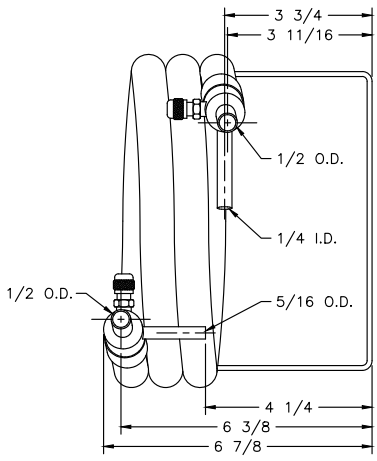
WATER COOLED CONDENSING UNITS DIMENSIONS

HBP Application Range 20°F to 55°F (-6.7°C to 12.8°C)					
Model number	**Item Number (BOM)**	**Length in (mm)**	**Width in (mm)**	**Height in (mm)**	**Compressor Height in (mm)**
R22 HBP Application Range 20°F to 55°F (-6.7°C to 12.8°C)					
AWG4520EXNXW	32W1501-1	24.0 (610)	17.0 (432)	15.0 (381)	12.7 (323)
AWG4524EXNXW	32W2101-1	24.0 (610)	17.0 (432)	15.0 (381)	12.7 (323)
AWG4524EXTXW	32W2102-1	24.0 (610)	17.0 (432)	15.0 (381)	12.7 (323)
AWG4530EXNXW	32W2503-1	24.0 (610)	17.0 (432)	15.0 (381)	12.7 (323)
AWG4530EXTXW	32W2504-1	24.0 (610)	17.0 (432)	15.0 (381)	12.7 (323)
AVA4535EXNXW	32W3105-1	27.4 (696)	23.6 (599)	15.5 (394)	15.4 (391)
AVA4535EXTXW	32W3106-1	24.0 (610)	17.0 (432)	15.0 (381)	14.0 (356)
AWG4532EXNXW	32W3151-1	26.0 (660)	23.6 (599)	15.4 (391)	14.3 (363)
AWG4532EXTXW	32W3152-1	26.0 (660)	23.6 (599)	15.4 (391)	14.3 (363)
AVB4538EXNXW	32W4079-1	27.4 (696)	23.6 (599)	22.3 (566)	15.4 (391)
AVB4538EXTXW	32W4080-1	27.4 (696)	23.6 (599)	22.3 (566)	15.4 (391)
AVB4549EXNXW	32W4791-1	27.4 (696)	23.6 (599)	22.3 (566)	15.4 (391)
AVB4549EXTXW	32W4792-1	27.4 (696)	23.6 (599)	22.3 (566)	15.4 (391)
AVB4558EXNXW	32W5093-1	27.4 (696)	23.6 (599)	22.3 (566)	15.4 (391)
AVB4558EXTXW	32W5094-1	27.4 (696)	23.6 (599)	22.3 (566)	15.4 (391)
MBP/HBP Application Range -10°F to 40°F (-23.3°C to 4.4°C)					
R404A/R507 MBP Application Range -10°F to 40°F (-23.3°C to 4.4°C)					
AJA7512ZXDXW	32B3210-1	24.0(610)	17.0 (432)	10.9 (277)	12.0 (305)
AWA7515ZXDXW	2B3221-9	24.3 (617)	17.0 (432)	15.5 (394)	14.3 (363)
AWA7515ZXTXW	2B3222-9	24.3 (617)	17.0 (432)	15.5 (394)	14.3 (363)
R404A/R507 LBP Application Range -40°F to 10°F (-40°C to -12.2°C)					
AJA2424ZXDXW	32D286-1	24.9 (632)	19.8 (503)	15.4 (391)	12.5 (318)
AJA2433ZXDXW	32B781-1	24.9 (632)	19.8 (503)	15.4 (391)	12.5 (318)
AWA2453ZXDXW	2B1119-9	24.3 (617)	17.0 (432)	15.7 (399)	14.3 (363)
AWA2488ZXDXW	2C2113-9	24.3 (617)	17.0 (432)	15.7 (399)	14.3 (363)
AVA2512ZXNXW	2B3143-9	24.3 (617)	17.0 (432)	16.6 (422)	14.6 (371)
AVA2512ZXTXW	2B3142-9	24.3 (617)	17.0 (432)	16.6 (422)	14.6 (371)

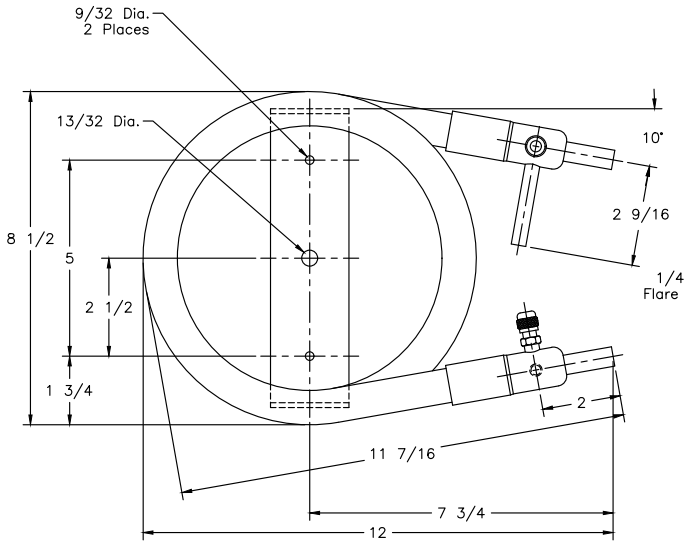
COILS

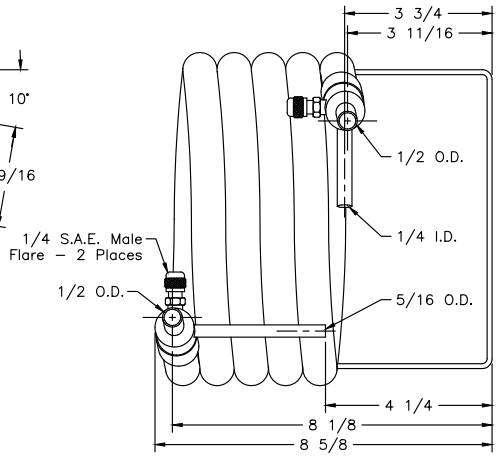
Packless Tecumseh Coils





Part #	Tecumseh model	LIST
COAX-1067-H	50812	





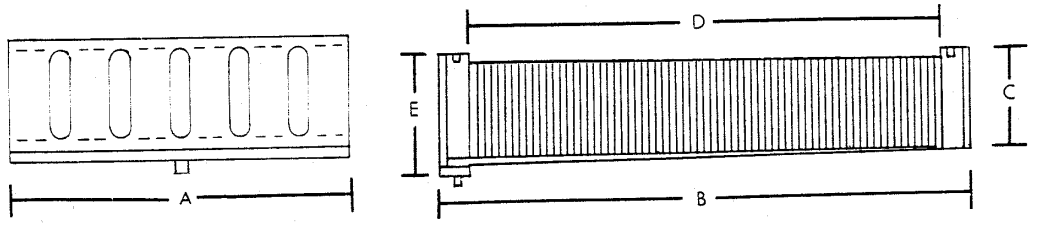
Part #	Tecumseh model	LIST
COAX-1068-H	50827	

GRAVITY COIL

Ceiling Mounted Gravity Coil

- Simplified and easy installation
- Energy saver no motor
- Low cost maintenance
- Close temperature control
- Provide low air velocity and high humidity condition
- White baked enamel exterior
- Collard aluminum fins
- Copper tubes mechanically expanded for maximum heat transfer
- Drain pan c/w 1/2" copper tube

INSTALLATION:
- Complete unit with support hangers
- "P-Trap" included
- Dry loop prefixed
- Gas distributor on request
- Clock timer recommended with installation



Part #	A	B	C	D	E
GF20-30	25-3/4"	35"	8-1/4"	30"	10"
GF20-34	25-3/4"	39"	8-1/4"	34"	10"
GF20-38	25-3/4"	43"	8-1/4"	38"	10"
GF20-42	25-3/4"	47"	8-1/4"	42"	10"
GF20-45	25-3/4"	50"	8-1/4"	45"	10"
GF20-50	25-3/4"	55"	8-1/4"	50"	10"
GF20-54	25-3/4"	59"	8-1/4"	54"	10"
GF20-56	25-3/4"	61"	8-1/4"	56"	10"
GF20-60	25-3/4"	65"	8-1/4"	60"	10"
GF20-72	25-3/4"	77"	8-1/4"	72"	10"
GF20-78	25-3/4"	83"	8-1/4"	78"	10"
GF20-88	25-3/4"	93"	8-1/4"	88"	10"

Replacement Coils for Foster Reach-In Cooler & Freezer Packages

Model #	Application	L (in)	W (in)	H (in)	LIST
MA-4-4-16	Cooler	18	3	4	
MA-5-4-16	Cooler	18	3-7/8	4	
MA-7-4-16	Freezer	18	5-1/4	4	

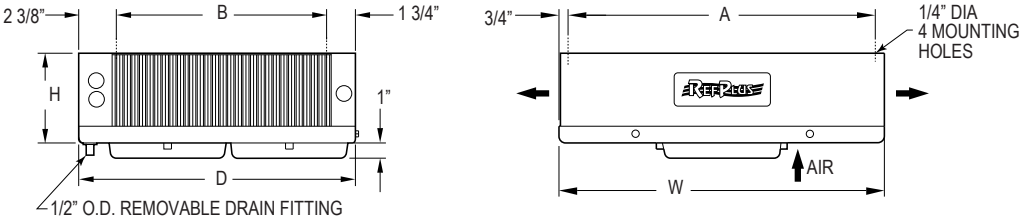
NOTE: All coils come with mounting bracket. Freezer coil has two passes to insert heaters. Fin spacing is 1/8".

REACH-IN UNIT COOLERS

REFPLUS

EDA/ ECA / EWA

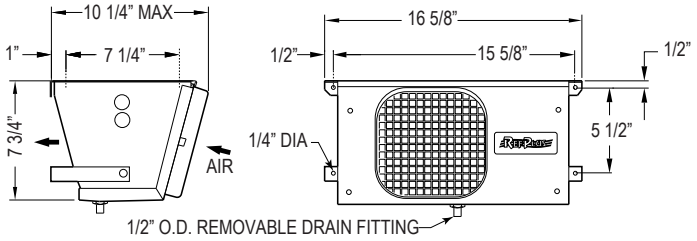
EDA



EDA - AIR DEFROST — **FOR COOLERS ABOVE +34°F**

MODEL	CFM	CAPACITY (BTU/HR)				FAN MOTORS 120V		UNIT DIMENSIONS (INCHES)					CONNECTIONS		R-134A OPERATING CHARGE (LB)	SHIPPING WEIGHT (LB.)
		8°F TD	10°F TD	12°F TD	15°F TD	QTY	FLA	W	H	D	A	B	LIQ. F.N.	SUCT. O.D.		
EDA102-1	195	800	1,000	1,200	1,500	1	0.7	18 1/8	3 1/2	14 1/8	17	10	1/2	3/8	0.3	11.5
EDA132-1	185	1,040	1,300	1,560	1,950	1	0.7	18 1/8	3 1/2	14 1/8	17	10	1/2	3/8	0.4	12.5
EDA152-1	245	1,200	1,500	1,800	2,250	1	0.7	18 1/8	4 1/2	14 1/8	17	10	1/2	3/8	0.4	13.0
EDA182-1	225	1,440	1,800	2,160	2,700	1	0.7	18 1/8	4 1/2	14 1/8	17	10	1/2	3/8	0.6	14.0
EDA232-1	505	1,840	2,300	2,760	3,450	2	1.4	20 1/8	5 1/2	17 1/8	19	13	1/2	3/8	0.5	17.0
EDA282-1	450	2,240	2,800	3,360	4,200	2	1.4	20 1/8	5 1/2	17 1/8	19	13	1/2	3/8	0.7	18.5
EDA332-1	430	2,640	3,300	3,960	4,950	2	1.4	20 1/8	5 1/2	17 1/8	19	13	1/2	3/8	0.9	20.0

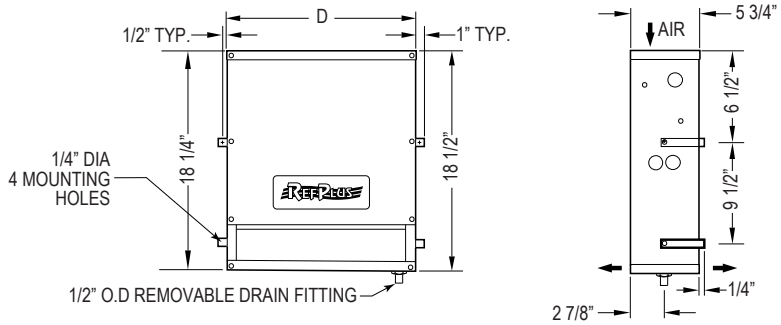
ECA



ECA - AIR DEFROST — **FOR COOLERS ABOVE +34°F**

MODEL	CFM	CAPACITY (BTU/HR)				FAN MOTORS 120V		CONNECTIONS		R-134A OPERATING CHARGE (LB.)	SHIPPING WEIGHT (LB.)
		8°F TD	10°F TD	12°F TD	15°F TD	QTY	FLA	LIQ. F.N.	SUCT. O.D.		
ECA100-1	220	800	1,000	1,200	1,500	1	0.7	1/2	3/8	0.3	10.5
ECA130-1	200	1,040	1,300	1,560	1,950	1	0.7	1/2	3/8	0.4	11.5
ECA150-1	190	1,200	1,500	1,800	2,250	1	0.7	1/2	3/8	0.6	12.5

EWA



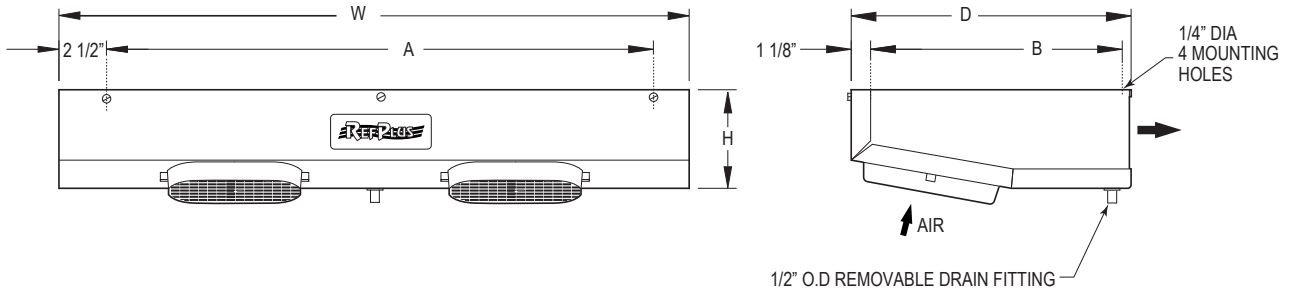
EWA - AIR DEFROST — **FOR COOLERS ABOVE +34°F**

MODEL	CFM	CAPACITY (BTU/HR)				FAN MOTORS 120V		UNIT DIMENSIONS (INCHES)	CONNECTIONS		R-134A OPERATING CHARGE (LB.)	SHIPPING WEIGHT (LB.)
		8°F TD	10°F TD	12°F TD	15°F TD	QTY	FLA	D	LIQ. F.N.	SUCT. O.D.		
EWA130-1	220	1,040	1,300	1,560	1,950	1	0.7	15 3/4	1/2	3/8	0.4	13.0
EWA180-1	200	1,440	1,800	2,160	2,700	1	0.7	15 3/4	1/2	3/8	0.6	14.0
EWA230-1	380	1,840	2,300	2,760	3,450	2	1.4	21 3/4	1/2	3/8	0.9	17.0

REACH-IN UNIT COOLERS

REFPLUS

ESA / ESE



ESA / ESE - AIR DEFROST — FOR COOLERS ABOVE +34°F

MODEL	CFM	CAPACITY (BTU/HR)				FAN MOTORS 120V		UNIT DIMENSIONS (INCHES)					CONNECTIONS		R-134A OPERATING CHARGE (LB)	SHIPPING WEIGHT (LB.)
		8°F TD	10°F TD	12°F TD	15°F TD	QTY	FLA	W	H	D	A	B	LIQ. F.N.	SUCT. O.D.		
ESA102-1	195	800	1,000	1,200	1,500	1	0.7	17 1/4	4 1/2	15	13	13 1/4	1/2	3/8	0.4	9.0
ESA132-1	185	1,040	1,300	1,560	1,950	1	0.7	17 1/4	4 1/2	15	13	13 1/4	1/2	3/8	0.5	10.0
ESA152-1	195	1,200	1,500	1,800	2,250	1	0.7	21 3/4	4 1/2	15	17 1/2	13 1/4	1/2	3/8	0.6	11.5
ESA182-1	225	1,440	1,800	2,160	2,700	1	0.7	25 3/4	4 1/2	15	21 1/2	13 1/4	1/2	3/8	0.7	13.0
ESA232-1	395	1,840	2,300	2,760	3,450	2	1.4	33 3/4	4 1/2	15	29 1/2	13 1/4	1/2	3/8	0.8	17.0
ESA282-1	385	2,240	2,800	3,360	4,200	2	1.4	33 3/4	4 1/2	15	29 1/2	13 1/4	1/2	3/8	0.9	18.5
ESA332-1	420	2,640	3,300	3,960	4,950	2	1.4	33 3/4	5 1/2	15	29 1/2	13 1/4	1/2	3/8	1.2	20.0
ESA452-1	625	3,600	4,500	5,400	6,750	3	2.1	43 3/4	5 1/2	17	39 1/2	15 1/4	1/2	1/2	1.5	27.5
ESA552-1	615	4,400	5,500	6,600	8,250	3	2.1	43 3/4	5 1/2	17	39 1/2	15 1/4	1/2	1/2	1.8	32.5

ESA / ESE - ELECTRIC DEFROST — FOR COOLERS AND FREEZERS FROM -20°F TO +34°F

MODEL	CFM	CAPACITY (BTU/HR)			FAN MOTORS			HEATERS			UNIT DIMENSIONS (INCHES)					CONNECTIONS		R-134A OPERATING CHARGE (LB)	SHIPPING WEIGHT (LB.)
					QTY	120V	240V		FLA							LIQ. F.N.	SUCT. O.D.		
		-20°F	0°F	+20°F		FLA	FLA	KW	120V	240V	W	H	D	A	B				
ESE102-1	195	850	925	1,000	1	0.7	NA	0.64	5.3	NA	17 1/4	4 1/2	15	13	13 1/4	1/2	3/8	0.6	9.0
ESE132-1	185	1,105	1,203	1,300	1	0.7	NA	0.64	5.3	NA	17 1/4	4 1/2	15	13	13 1/4	1/2	3/8	1.0	10.0
ESE152-1	195	1,275	1,388	1,500	1	0.7	NA	0.80	6.7	NA	21 3/4	4 1/2	15	17 1/2	13 1/4	1/2	3/8	1.3	11.5
ESE182-(1)(2)	225	1,530	1,665	1,800	1	0.7	0.42	0.96	8.0	4.0	25 3/4	4 1/2	15	21 1/2	13 1/4	1/2	3/8	1.0	13.0
ESE232-(1)(2)	395	1,955	2,128	2,300	2	1.4	0.84	1.28	10.7	5.3	33 3/4	4 1/2	15	29 1/2	13 1/4	1/2	3/8	1.5	17.0
ESE282-(1)(2)	385	2,380	2,590	2,800	2	1.4	0.84	1.28	10.7	5.3	33 3/4	4 1/2	15	29 1/2	13 1/4	1/2	3/8	2.0	18.5
ESE332-(1)(2)	420	2,805	3,053	3,300	2	1.4	0.84	1.28	10.7	5.3	33 3/4	5 1/2	15	29 1/2	13 1/4	1/2	3/8	2.5	20.0
ESE452-(1)(2)	625	3,825	4,163	4,500	3	2.1	1.26	1.60	13.3	6.7	43 3/4	5 1/2	17	39 1/2	15 1/4	1/2	3/8	2.9	27.5
ESE552-(1)(2)	615	4,675	5,088	5,500	3	2.1	1.26	1.60	13.3	6.7	43 3/4	5 1/2	17	39 1/2	15 1/4	1/2	3/8	3.6	32.5

Expansion Valve Connection

All unit coolers are supplied with a 1/2 in. OD sweat expansion valve connection. Expansion valves are field supplied.

ED, EC, EW, ES, US, UD unit coolers require the use of an internally equalized expansion valve.

ESA(E) 450, 550 require the use of an externally equalized expansion valve and are provided with a 1/4 equalizer line.

For More Product Details, Specification And Pricing, Please Contact Your Local Branch.

REACH-IN UNIT COOLERS

REFPLUS

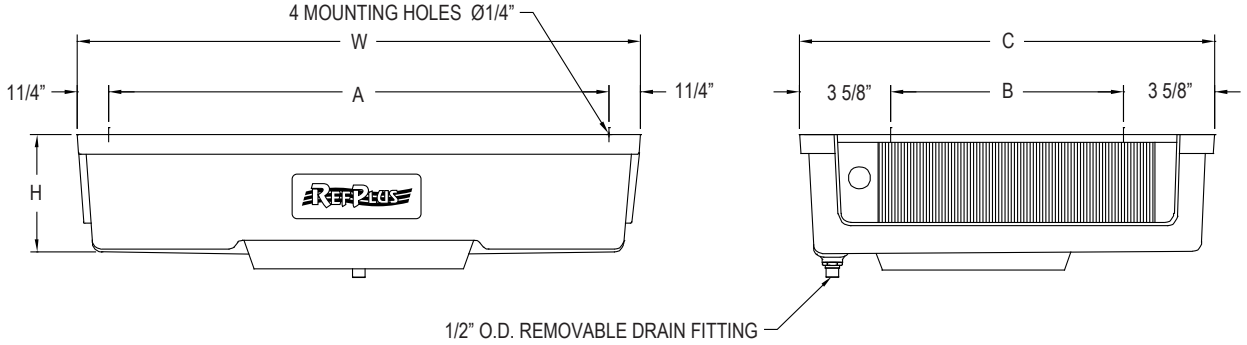
EUROLINE
UDA



UDA - AIR DEFROST — **FOR COOLERS ABOVE +34°F**

MODEL	CFM	CAPACITY (BTU/HR.)				FAN MOTORS 120V		R-134A OPERATING CHARGE (LB.)
		8°F TD	10°F TD	12°F TD	15°F TD	QTY	FLA	
UDA 090-1	220	720	900	1,080	1,350	1	0.40	0.3
UDA 110-1	200	880	1,100	1,320	1,650	1	0.40	0.5
UDA 130-1	240	1,040	1,300	1,560	1,950	1	0.40	0.5
UDA 150-1	220	1,200	1,500	1,800	2,250	1	0.40	0.6
UDA 180-1	210	1,440	1,800	2,160	2,700	1	0.40	0.8
UDA 230-1	410	1,840	2,300	2,760	3,450	1	0.74	0.7
UDA 280-1	400	2,240	2,800	3,360	4,200	1	0.74	0.9
UDA 330-1	440	2,640	3,300	3,960	4,950	1	0.74	1.2

Note:
1. Operating charge is based on 30% liquid and 70% vapor at 25°F suction.
2 Use R-13A chaerge for R-22
3. Use suffix 1 for 120/1/60 and suffix 2 for 240/1/60 power supply
4. Use suffix 2 for 200/220/1/50 and multiply capacity by 0.92



MODEL	UNIT DIMENSIONS (INCHES)					CONNECTIONS		R-134A OPERATING CHARGE (LB.)	SHIPPING WEIGHT (LB.)
	W	H	A	B	C	LIQ. F.N.	SUCT. O.D.		
UDA 090	22 1/2	5	20	9 1/4	16 1/2	1/2	3/8	0.3	15.0
UDA 110	22 1/2	5	20	9 1/4	16 1/2	1/2	3/8	0.5	16.0
UDA 130	22 1/2	5	20	9 1/4	16 1/2	1/2	3/8	0.5	16.0
UDA 150	22 1/2	5	20	9 1/4	16 1/2	1/2	3/8	0.6	17.5
UDA 180	22 1/2	5	20	9 1/4	16 1/2	1/2	3/8	0.8	18.5
UDA 230	24 1/8	6	21 5/8	12 1/4	19 1/2	1/2	3/8	0.7	19.0
UDA 280	24 1/8	6	21 5/8	12 1/4	19 1/2	1/2	3/8	0.9	20.0
UDA 330	24 1/8	6	21 5/8	12 1/4	19 1/2	1/2	3/8	1.2	23.0

• Internally equalized expansion valve is required.
* Exrternally equalized expansion valve is required for these models.

REACH-IN UNIT COOLERS

REFPLUS

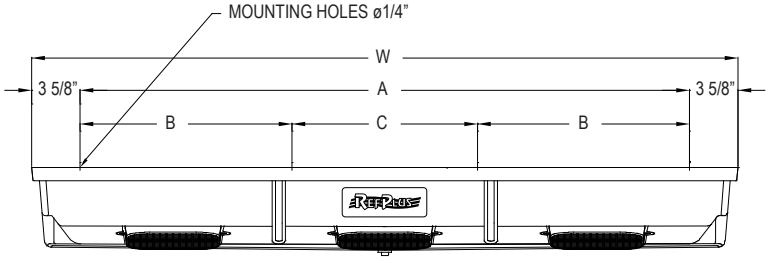
EUROLINE
USA

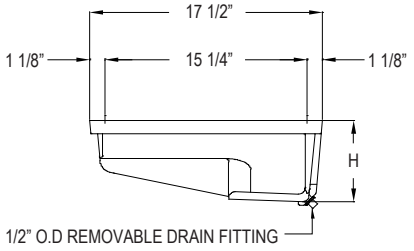


USA - AIR DEFROST — **FOR COOLERS ABOVE +34°F**

MODEL	CFM	CAPACITY (BTU/HR.)				FAN MOTORS 120V		R-134A OPERATING CHARGE (LB)
		8°F TD	10°F TD	12°F TD	15°F TD	QTY	FLA	
USA 100-1	215	800	1,000	1,200	1,500	1	0.7	0.4
USA 130-1	205	1,040	1,300	1,560	1,950	1	0.7	0.5
USA 150-1	240	1,200	1,500	1,800	2,250	1	0.7	0.6
USA 180-1	230	1,440	1,800	2,160	2,700	1	0.7	0.8
USA 230-1	430	1,840	2,300	2,760	3,450	2	1.4	0.8
USA 300-1	410	2,400	3,000	3,600	4,500	2	1.4	1.0
USA 450-1	670	3,600	4,500	5,400	6,750	3	2.1	1.5
USA 550-1	660	4,400	5,500	6,600	8,250	3	2.1	1.8

Note:
1. Operating charge is based on 30% liquid and 70% vapor at 25°F suction.
2 Use R-13A chaerge for R-22
3. Use suffix 1 for 120/1/60 and suffix 2 for 240/1/60 power supply
4. Use suffix 2 for 200/220/1/50 and multiply capacity by 0.92





MODEL	UNIT DIMENSIONS (INCHES)					CONNECTIONS		SHIPPING WEIGHT (LB.)
	W	H	A	B	C	LIQ. F.N.	SUCT. O.D.	
USA 100	21 1/2	5 1/8	14 1/4	-	-	1/2	3/8	13.5
USA 130	21 1/2	5 1/8	14 1/4	-	-	1/2	3/8	13.5
USA 150	29 1/2	5 1/8	22 1/4	-	-	1/2	3/8	17
USA 180	29 1/2	5 1/8	22 1/4	-	-	1/2	3/8	18
USA 230	37 1/2	5 1/8	30 1/4	14 1/4	1 3/4	1/2	3/8	19.5
USA 300	37 1/2	5 1/8	30 1/4	14 1/4	1 3/4	1/2	3/8	21.5
USA 450	53 1/4	6 1/8	46	16	14	*1/2	5/8	37
USA 550	53 1/4	6 1/8	46	16	14	*1/2	5/8	39

• Internally equalized expansion valve is required.
* Exrternally equalized expansion valve is required for these models.

For More Product Details, Specification And Pricing, Please Contact Your Local Branch.

WALK-IN COOLERS / FREEZERS

REFPLUS

LSA / LSE



LSA - AIR DEFROST — FOR COOLERS ABOVE + 34°F

MODEL	CFM	CAPACITY Btu/hr				ELECTRICAL 120/1/60				ELECTRICAL 240/1/60 OPTION				R-404a, R-507 OPERATING CHARGE (LB)
						FAN MOTOR		MCA	MOP	FAN MOTOR		MCA	MOP	
		8° FTD	10° FTD	12° FTD	15° FTD	QTY	FLA			QTY	FLA			
LSA 0451-1	1060	3600	4500	5400	6750	1	1.0	1.3	15.0	1	0.5	0.6	15	0.6
LSA 0551-1	950	4400	5500	6600	8250	1	1.0	1.3	15.0	1	0.5	0.6	15	0.8
LSA 0651-1	950	5200	6500	7800	9750	1	1.0	1.3	15.0	1	0.5	0.6	15	0.9
LSA 0751-1	1900	6000	7500	9000	11250	2	2.0	2.3	15.0	2	1.0	1.1	15	0.9
LSA 0921-1	1700	7360	9200	11040	13800	2	2.0	2.3	15.0	2	1.0	1.1	15	1.2
LSA 1081-1	1700	8640	10800	12960	16200	2	2.0	2.3	15.0	2	1.0	1.1	15	1.4
LSA 1301-1	1900	10400	13000	15600	19500	2	2.0	2.3	15.0	2	1.0	1.1	15	1.8
LSA 1401-1	3200	11200	14000	16800	21000	3	3.0	3.3	15.0	3	1.5	1.6	15	1.6
LSA 1601-1	2800	12800	16000	19200	24000	3	3.0	3.3	15.0	3	1.5	1.6	15	2.1
LSA 1901-1	2800	15200	19000	22800	28500	3	3.0	3.3	15.0	3	1.5	1.6	15	2.6
LSA 2301-1	3800	18400	23000	27600	34500	4	4.0	4.3	15.0	4	2.0	2.1	15	2.8
LSA 2601-1	3830	20800	26000	31200	39000	4	4.0	4.3	15.0	4	2.0	2.1	15	3.5
LSA 3201-1	4700	25600	32000	38400	48000	5	5.0	5.3	15.0	5	2.5	2.6	15	4.3
LSA 3901-1	5600	31200	39000	46800	58500	6	6.0	6.3	15.0	6	3.0	3.1	15	5.2

For 4 fpi, multiply capacity by 0.8 — 1

LSE - ELECTRIC DEFROST — FOR COOLERS AND FREEZERS FROM -20°F TO +34°F

MODEL	CFM	CAPACITY BTU/hr @ 10°F TD				240/1/60 FAN MOTOR		DEFROST HEATERS 240/1/60			DEFROST HEATERS 208/3/60			DEFROST HEATERS 240/3/60			R-404a, R-507 OPERATING CHARGE (LB)
		-30°F	-20°F	0°F	+20°F	QTY	FLA	KW	FLA	MOP	KW	FLA	MOP	KW	FLA	MOP	
LSE 0431-2	1060	3560	3740	4020	4300	1	0.5	0.96	4.0	15	0.96	2.7	15	1.28	3.1	15	0.6
LSE 0521-2	950	4310	4520	4860	5200	1	0.5	0.96	4.0	15	0.96	2.7	15	1.28	3.1	15	0.8
LSE 0621-2	950	5140	5390	5795	6200	1	0.5	0.96	4.0	15	0.96	2.7	15	1.28	3.1	15	0.9
LSE 0721-2	1900	5970	6260	6730	7200	2	1.0	1.50	6.3	15	1.50	4.2	15	2.00	4.8	15	0.9
LSE 0881-2	1700	7290	7650	8225	8800	2	1.0	1.50	6.3	15	1.50	4.2	15	2.00	4.8	15	1.2
LSE 1031-2	1700	8540	8960	9630	10300	2	1.0	1.50	6.3	15	1.50	4.2	15	2.00	4.8	15	1.4
LSE 1241-2	1900	10270	10780	11590	12400	2	1.0	1.92	8.0	15	1.92	5.3	15	2.56	6.2	15	1.8
LSE 1331-2	3200	11120	11670	12485	13300	3	1.5	2.88	12.0	15	2.88	8.0	15	3.84	9.2	15	1.6
LSE 1521-2	2800	12600	13220	14210	15200	3	1.5	2.88	12.0	15	2.88	8.0	15	3.84	9.2	15	2.1
LSE 1801-2	2800	14921	15650	16825	18000	3	1.5	2.88	12.0	15	2.88	8.0	15	3.84	9.2	15	2.6
LSE 2201-2	3800	18230	19130	20565	22000	4	2.0	3.84	16.0	20	3.84	10.7	15	5.12	12.3	20	2.8
LSE 2401-2	3830	19890	20870	22435	24000	4	2.0	3.84	16.0	20	3.84	10.7	15	5.12	12.3	20	3.5
LSE 3001-2	4700	24860	26090	28045	30000	5	2.5	4.80	20.0	25	4.80	13.3	20	6.40	15.4	20	4.3
LSE 3701-2	5600	30660	32170	34585	37000	6	3.0	5.76	24.0	30	5.76	16.0	20	7.68	18.5	25	5.2

For 4 fpi, multiply capacity by 0.8 — 3

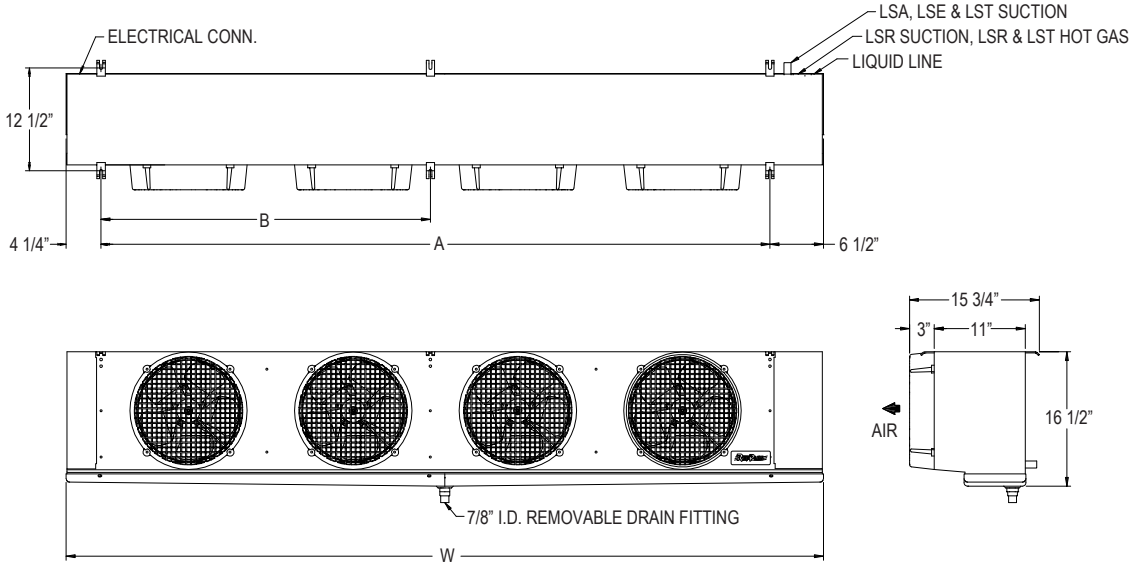
Note:
1. Operating charge based on 30% liquid and 70% vapor at 25°F suction
2. Fan Motor heat is not included in rating, add for PSC motor (100W) 342 BTU/HR
3. Fan Motor heat is not included in rating, add for EC motor (60W) 205 BTU/HR
4. For 200-240/1/50 use suffix 2 and multiply capacity by 0.92
5. For R134a refrigerant charge, multiply R-404a by 1.09
6. Air throw for LS series is 25 to 35 ft.

LS Series Dimension Data



LS SERIES

MODEL	SHIPPING WEIGHT (LB)	MODEL	SHIPPING WEIGHT (LB)	MODEL	SHIPPING WEIGHT (LB)	UNIT DIMENSION (INCHES)			CONNECTION (INCHES)		
						W	A	B	LIQUID	SUCTION	LST HOT GAS
LSA 0451	26	LSE 0431	27	LS(R)(T) 0431	28	32	21 1/4	-	1/2	5/8	1/2
LSA 0551	29	LSE 0521	30	LS(R)(T) 0521	31	32	21 1/4	-	1/2	5/8	1/2
LSA 0651	30	LSE 0621	31	LS(R)(T) 0621	32	32	21 1/4	-	1/2	5/8	1/2
LSA 0751	38	LSE 0721	40	LS(R)(T) 0721	41	44	33 1/4	-	1/2	7/8	1/2
LSA 0921	42	LSE 0881	44	LS(R)(T) 0881	45	44	33 1/4	-	1/2	7/8	1/2
LSA 1081	42	LSE 1031	44	LS(R)(T) 1031	45	44	33 1/4	-	1/2	7/8	1/2
LSA 1301	47	LSE 1241	49	LS(R)(T) 1241	51	52	41 1/4	-	1/2	7/8	1/2
LSA 1401	58	LSE 1331	60	LS(R)(T) 1331	63	72	61 1/4	-	1/2	7/8	1/2
LSA 1601	67	LSE 1521	70	LS(R)(T) 1521	72	72	61 1/4	-	1/2	7/8	1/2
LSA 1901	68	LSE 1801	71	LS(R)(T) 1801	73	72	61 1/4	-	1/2	7/8	1/2
LSA 2301	88	LSE 2201	92	LS(R)(T) 2201	95	92	81 1/4	40	1/2	7/8	1/2
LSA 2601	89	LSE 2401	93	LS(R)(T) 2401	96	92	81 1/4	40	1/2	1 1/8	5/8
LSA 3201	108	LSE 3001	112	LS(R)(T) 3001	116	112	101 1/4	40	1/2	1 1/8	5/8
LSA 3901	127	LSE 3701	132	LS(R)(T) 3701	136	132	121 1/4	60	1/2	1 1/8	5/8



For More Product Details, Specification And Pricing, Please Contact Your Local Branch.

WALK-IN COOLERS / FREEZERS

REFPLUS

LPA / LPE



LPA-AIR DEFROST — FOR COOLERS ABOVE +34°F

MODEL	CFM	CAPACITY BTU/HR				ELECTRICAL 120/1/60				ELECTRICAL 240/1/60 OPTION				R-404a,R-507 CHARGE (LB) OPERATING
						FAN MOTOR		MCA	MOP	FAN MOTOR		MCA	MOP	
		8°F TD	10°F TD	12°F TD	15°F TD	QTY	FLA			QTY	FLA			
LPA 0601-1	800	4,800	6,000	7,200	9,000	2	1.5	1.7	15	2	0.7	0.8	15	0.9
LPA 0701-1	880	5,600	7,000	8,400	10,500	2	1.5	1.7	15	2	0.7	0.8	15	1.1
LPA 0801-1	850	6,400	8,000	9,600	12,000	2	1.5	1.7	15	2	0.7	0.8	15	1.6
LPA 1001-1	1350	8,000	10,000	12,000	15,000	3	2.2	2.4	15	3	1.1	1.2	15	1.6
LPA 1201-1	1250	9,600	12,000	14,400	18000	3	2.2	2.4	15	3	1.1	1.2	15	2.3
LPA 1601-1	1660	12,800	16,000	19,200	24,000	4	3.0	3.2	15	4	1.5	1.5	15	3.0
LPA 2001-1	2090	16,000	20,000	24,000	30,000	5	3.7	3.9	15	5	1.8	1.9	15	3.8
LPA 2101-1	3200	16,800	21,000	25,200	31,500	3	3.0	3.3	15	3	1.5	1.6	15	3.6
LPA 2401-1	2500	19,200	24,000	28,800	36,000	6	4.5	4.6	15	6	2.2	2.3	15	4.5
LPA 2801-1	4200	22,400	28,000	33,600	42,000	4	4.0	4.3	15	4	2.0	2.1	15	4.8
LPA 3501-1	5400	28,000	35,000	42,000	52,500	5	5.0	5.3	15	5	2.5	2.6	15	5.9
LPA 4201-1	6500	33,600	42,000	50,400	63,000	6	6.0	6.3	15	6	3.0	3.1	15	7.1

For 4 fpi, multiple capacity by 0.8

LPE - ELECTRIC DEFROST — FOR COOLERS FROM +26°F TO +34°F

MODEL	CFM	CAPACITY BTU/HR				240/1/60 FAN MOTOR		DEFROST HEATERS									R-404a,R-507 CHARGE (LB) OPERATING
								240/1/60			208/3/60			240/3/60			
		8°F TD	10°F TD	12°F TD	15°F TD	QTY	FLA	KW	FLA	MOP	KW	FLA	MOP	KW	FLA	MOP	
LPE 0571-2	800	4,560	5,700	6,840	8,550	2	0.7	1.50	6.3	15	1.50	4.2	15	2.00	4.8	15	0.9
LPE 0671-2	880	5,360	6,700	8,040	10,050	2	0.7	1.92	8.0	15	1.92	5.3	15	2.56	6.2	15	1.1
LPE 0761-2	850	6,080	7,600	9,120	11,400	2	0.7	1.92	8.0	15	1.92	5.3	15	2.56	6.2	15	1.6
LPE 0951-2	1350	7,600	9,500	11,400	14,250	3	1.1	2.88	12.0	15	2.88	8.0	15	3.84	9.2	15	1.6
LPE 1151-2	1250	9,200	11,500	13,800	17,250	3	1.1	2.88	12.0	15	2.88	8.0	15	3.84	9.2	15	2.3
LPE 1151-2	1660	12,160	15,200	18,240	22,800	4	1.5	3.84	16.0	20	3.84	10.7	15	5.12	12.3	20	3
LPE 1901-2	2090	15,200	19,000	22,800	28,500	5	1.8	4.80	20.0	25	4.80	13.3	20	6.40	15.4	20	3.8
LPE 2001-2	3200	16,000	20,000	24,000	30,000	3	1.5	2.88	12.0	15	2.88	8.0	15	3.84	9.2	15	3.6
LPE 2301-2	2500	18,400	23,000	27,600	34,500	6	2.2	5.76	24.0	30	5.76	16.0	20	7.68	18.5	25	4.5
LPE 2701-2	4200	21,600	27,000	32,400	40,500	4	2.0	3.84	16.0	20	3.84	10.7	15	5.12	12.3	20	4.8
LPE 3341-2	5400	26,720	33,400	40,080	50,100	5	2.5	4.80	20.0	25	4.80	13.3	20	6.40	15.4	20	5.9
LPE 4001-2	6500	32,000	40,000	48,000	60, 000	6	3.0	5.76	24.0	30	5.76	16.0	20	7.68	18.5	25	7.1

For 4 fpi, multiple capacity by 0.8

Note: 1. For 200-240/1/50 use suffix 2 and multiply capacity by 0.92
2. For R134a refrigerant charge, multiply R-404a by 1.09
3. Air throw for LP series is 12 to 18 ft.

WALK-IN COOLERS / FREEZERS

REFPLUS

LAA/ LAE



LAA - AIR DEFROST — **FOR COOLERS ABOVE + 34°F**

MODEL	CFM	CAPACITY BTU/hr				ELECTRICAL 120/1/60				ELECTRICAL 240/1/60 OPTION				R-404a, R-507 OPERATING CHARGE (LB)
						FAN MOTOR		MCA	MOP	FAN MOTOR		MCA	MOP	
		8° FTD	10° FTD	12° FTD	15° FTD	QTY	FLA			QTY	FLA			
LAA 0601-1	1040	4800	6000	7200	9000	2	1.5	1.7	15	2	0.7	0.8	15	1.1
LAA 0751-1	1000	6000	7500	9000	11250	2	1.5	1.7	15	2	0.7	0.8	15	1.8
LAA 0951-1	980	7600	9500	11400	14250	2	1.5	1.7	15	2	0.7	0.8	15	2.5
LAA 1201-1	1620	9600	12000	14400	18000	3	2.2	2.4	15	3	1.1	1.2	15	2.6
LAA 1501-1	1560	12000	15000	18000	22500	3	2.2	2.4	15	3	1.1	1.2	15	3.6
LAA 1801-1	1920	14400	18000	21600	27000	4	3.0	3.2	15	4	1.5	1.5	15	4.8
LAA 2401-1	2510	19200	24000	28800	36000	5	3.7	3.9	15	5	1.8	1.9	15	5.9
LAA 2801-1	2880	22400	28000	33600	42000	6	4.5	4.6	15	6	2.2	2.3	15	7.1
LAA 3001-1	3810	24000	30000	36000	45000	3	3.0	3.3	15	3	1.5	1.6	15	5.9
LAA 3601-1	4930	28800	36000	43200	54000	4	4.0	4.3	15	4	2.0	2.1	15	7.1
LAA 4201-1	6162	33600	42000	50400	63000	5	5.0	5.3	15	5	2.5	2.6	15	9.2
LAA 4601-1	7400	36800	46000	55200	69000	6	6.0	6.3	15	6	3.0	3.1	15	11.0

For 4 fpi, multiply capacity by 0.8

LAE - ELECTRIC DEFROST — **FOR COOLERS FROM +26°F TO +34°F**

MODEL	CFM	CAPACITY BTU/hr				240/1/60 FAN MOTOR		DEFROST HEATERS 240/1/60			DEFROST HEATERS 208/3/60			DEFROST HEATERS 240/3/60			R-404a, R-507 OPERATING CHARGE (LB)
		8° FTD	10° FTD	12° FTD	15° FTD	QTY	FLA	KW	FLA	MOP	KW	FLA	MOP	KW	FLA	MOP	
LAE 0571-2	1040	4560	5700	6840	8550	2	0.7	1.92	8.0	15	1.92	5.3	15	2.56	6.2	15	1.1
LAE 0721-2	1000	5760	7200	8640	10800	2	0.7	1.92	8.0	15	1.92	5.3	15	2.56	6.2	15	1.8
LAE 0901-2	980	7200	9000	10800	13500	2	0.7	1.92	8.0	15	1.92	5.3	15	2.56	6.2	15	2.5
LAE 1141-2	1620	9120	11400	13680	17100	3	1.1	2.88	12.0	15	2.88	8.0	15	3.84	9.2	15	2.6
LAE 1431-2	1560	11440	14300	17160	21450	3	1.1	2.88	12.0	15	2.88	8.0	15	3.84	9.2	15	3.6
LAE 1701-2	1920	13600	17000	20400	25500	4	1.5	3.84	16.0	20	3.84	10.7	15	5.12	12.3	20	4.8
LAE 2301-2	2510	18400	23000	27600	34500	5	1.8	4.80	20.0	25	4.80	13.3	20	6.40	15.4	20	5.9
LAE 2701-2	2880	21600	27000	32400	40500	6	2.2	5.76	24.0	30	5.76	16.0	20	7.68	18.5	25	7.1
LAE 2861-2	3810	22880	28600	34320	42900	3	1.5	4.80	20.0	25	4.80	13.3	20	6.40	15.4	20	5.9
LAE 3431-2	4930	27440	34300	41160	51450	4	2.0	5.76	24.0	30	5.76	16.0	20	7.68	18.5	25	7.1
LAE 4001-2	6162	32000	40000	48000	60000	5	2.5	4.80	20.0	25	4.80	13.3	20	6.40	15.4	20	9.2
LAE 4381-2	7400	35040	43800	52560	65700	6	3.0	5.76	24.0	30	5.76	16.0	20	7.68	18.5	25	11.0

For 4 fpi, multiply capacity by 0.8

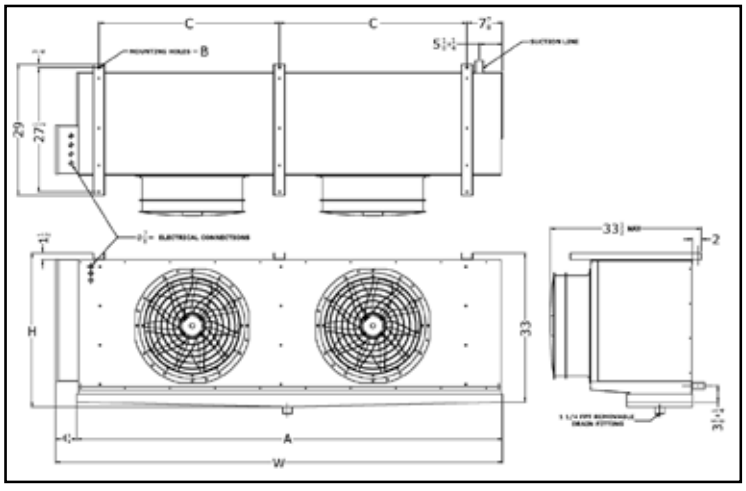
Note: 1. Operating charge based on 30% liquid and 70% vapor at 25°F suction
2. Fan Motor heat is not included in rating,
Unit 0601 to 2801, add for shaded Ple motor (58W) 198 BTU/HR
Unit 3001 to 4601, add for PSC motor (100W) 341 BTU/HR
Unit 3001 to 4601, add for EC motor (60W) 2051 BTU/HR
3. For 200-240/1/50 use suffix 2 and multiply capacity by 0.92
4. For R134a refrigerant charge, multiply R-404a by 1.09
5. Air throw for LA series is 10 to 15 ft.

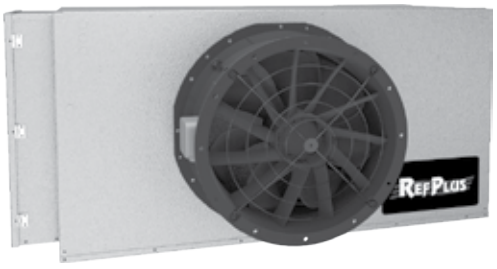
For More Product Details, Specification And Pricing, Please Contact Your Local Branch.

INDUSTRIAL HIGH EFFICIENCY COOLERS / FREEZERS

REFPLUS

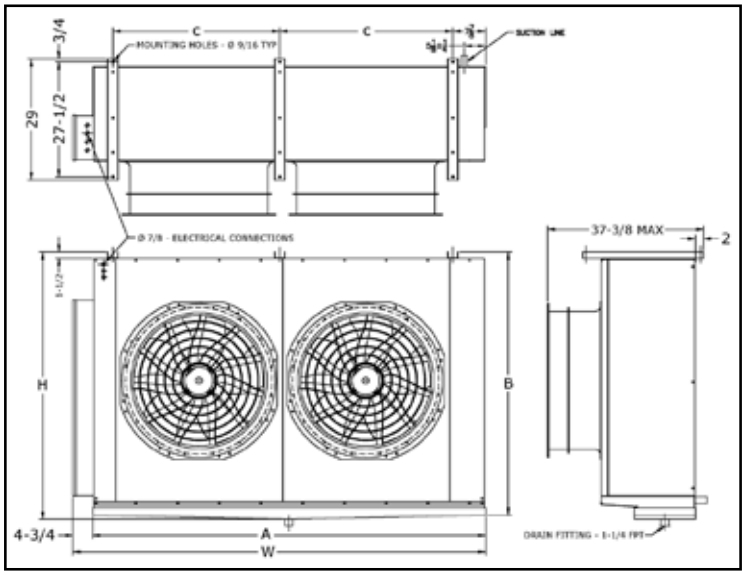
EJ SERIES

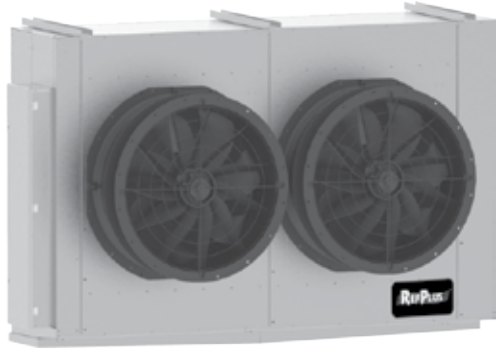




Fan Arrangement	UNIT DIMENSIONS (INCHES)				
	W	H	A	B	C
1 x 1	59	33-5/8	54-1/4	5/8	*
1 x 2	99	34-1/8	94-1/4	5/8	*
1 x 3	139	34-1/2	134-1/4	9/16	*
1 x 4	179	35	174-1/4	9/16	*

EQ-EX SERIES





Fan Arrangement	UNIT DIMENSIONS (INCHES)				
	W	H	A	B	C
1 x 1	59	63-1/2	54-1/4	63	*
1 x 2	99	64	94-1/4	63	*
1 x 3	139	64-3/8	134-1/4	63	*
1 x 4	179	65	174-1/4	63-1/8	*

Features:
- Range from 25,000 btu/h to 362,000 btu/h
- Standard 2 year warranty on motor & fan assembly
- Unitary fan & motor design for reduced fan vibration and quieter operation
- Reliable T.E.A.O., high efficiency, heavy duty, two-speed motor with cast aluminum fan blade
- ECM motors available across the full product range
- Ultra quiet line available (EQ)
- Fluid cooling & heating units available
- Hinged drain pan on air and electric defrost only
- Available in medium & high profile
- Insulated drain pan
- Air throw up to 200 feet

For More Product Details, Specification And Pricing, Please Contact Your Local Branch.

FREE STANDING COILS

REFPLUS

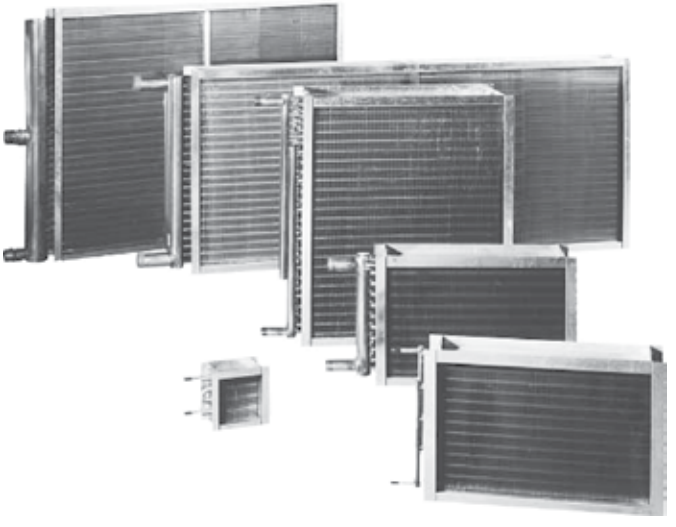
Smart Defrost Controller System

Guardian+



- Provides energy saving of 15%-50% over mechanically controlled systems
- Elimicates unnecessary defrosts
- Maximizes energy efficiency with less compressor run time
- Eliminates ice formation on floors and ceilings
- Eliminates excessive temperature swings

Commercial and Industrial Free Standing Coils



- Standard and custom construction
- Direct expansion evaporator coils (DX)
- Refrigerant condenser and heat reclaim coils
- Chilled and hot water coils
- Steam and steam distributing coils
- For retrofit or new installations

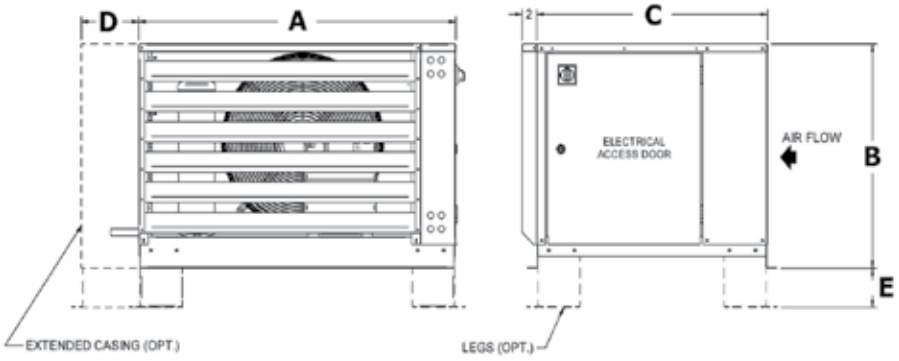
For More Product Details, Specification And Pricing, Please Contact Your Local Branch.

AIR COOLED CONDENSING UNITS

REFPLUS

OEH





- From 0.2 HP to 5 HP
- High, medium and low temperature application
- For outdoor use
- COPELAND Hermetic compressor

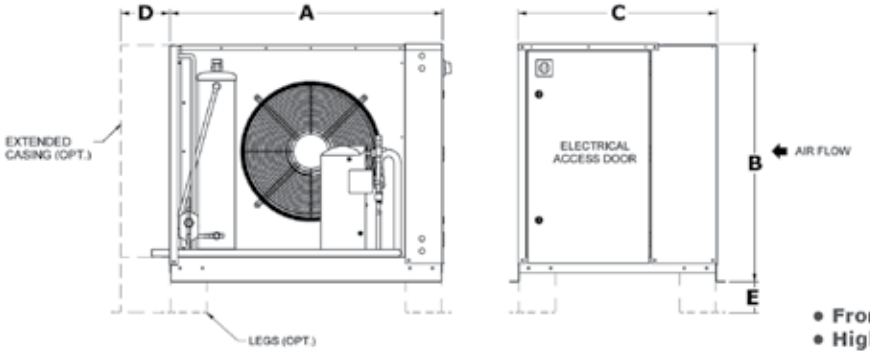
	A	B	C	D	E
002-010	28-1/4	22-5/8	30-1/4	8	5
011-025	32-1/4	28-5/8	32-1/4	8	5
026-045	44-1/4	28-5/8	32-1/4	8	5
046-060	44-1/4	38-5/8	32-1/4	8	5

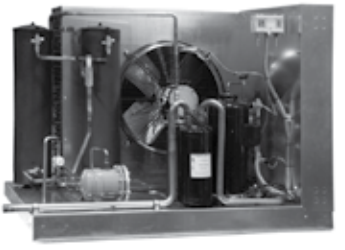
* All dimensions are in inches

AIR COOLED CONDENSING UNITS

REFPLUS

IEZ

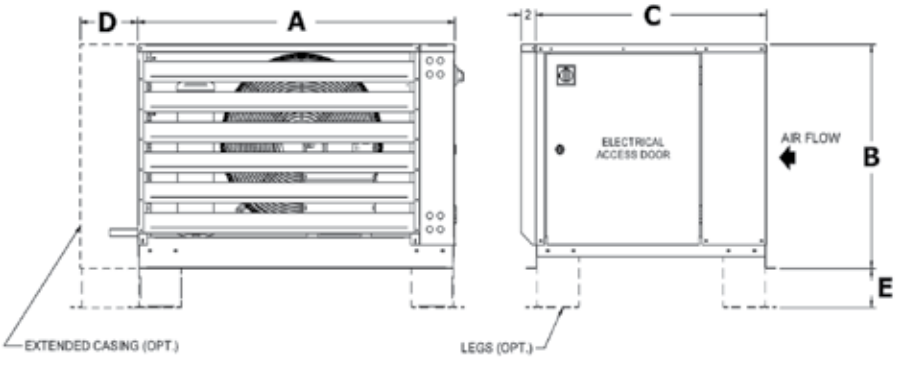




- From 1.3 HP to 20 HP
- High, medium and low temperature application
- For indoor use
- Copeland Scroll compressors

OEZ





- From 1.3 HP to 20 HP
- High, medium and low temperature application
- For outdoor use
- Copeland Scroll compressors

	A	B	C	D	E
013-025	32-1/4	28-5/8	32-1/4	8	5
026-045	44-1/4	28-5/8	32-1/4	8	5
046-060	44-1/4	38-5/8	32-1/4	8	5
061-099	67-1/4	39-9/16	40-1/4	N/A	5
100-220	97-1/4	39-9/16	40-1/4	N/A	5

* All dimensions are in inches

For More Product Details, Specification And Pricing, Please Contact Your Local Branch.

AIR COOLED CONDENSING UNITS

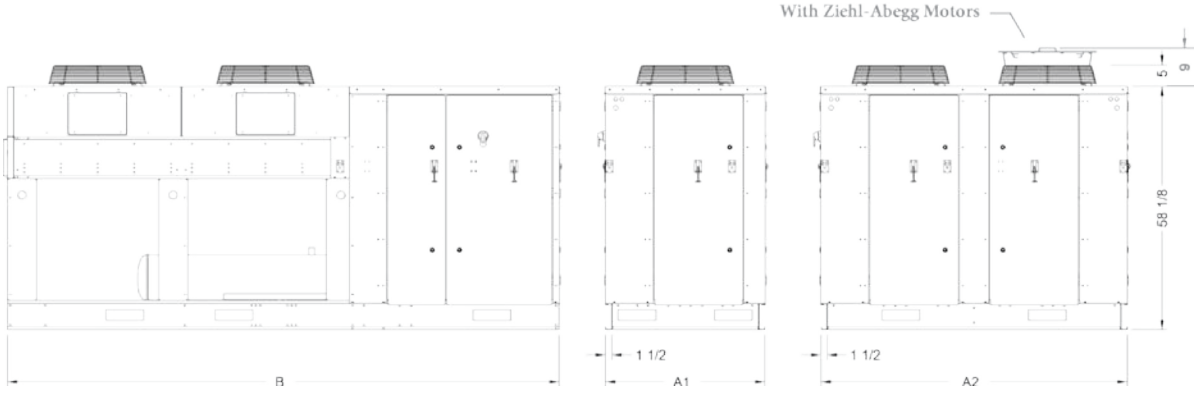
REFPLUS

OMS-ONS



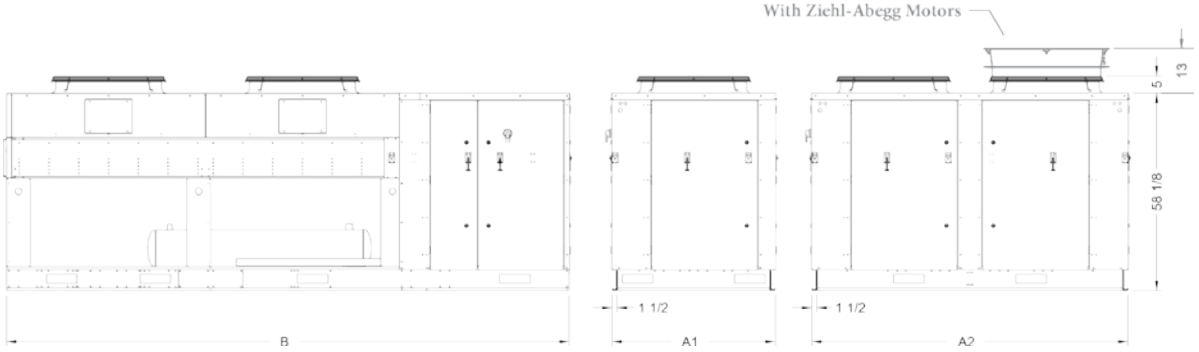
- Outdoor Vertical Air Flow
- Single Compressor from 6.1 to 50 HP
- Dual Compressor from 12.2 to 100 HP

Medium Outdoor Condensing Unit Evolution Series



Fan arrangement	A1	A2	B
1 x 2	38	-	131-1/2
1 x 3	38	-	171-1/2
2 x 2	-	73	131-1/2
2 x 3	-	73	171-1/2

Large Outdoor Condensing Unit Evolution Series



Fan arrangement	A1	A2	B
1 x 2	48	-	165-1/2
1 x 3	48	-	222-1/2
2 x 2	-	93	165-1/2
2 x 3	-	93	222-1/2

AIR COOLED CONDENSERS AND FLUID COOLERS

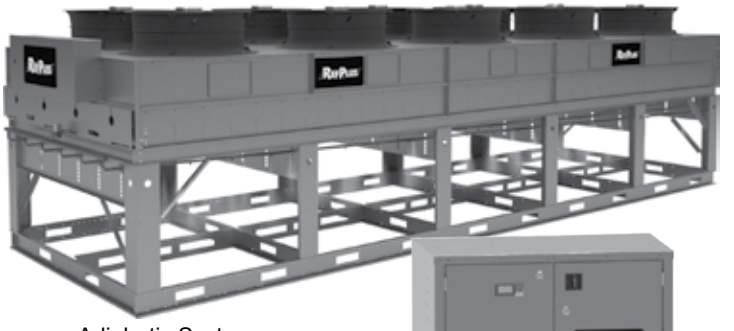
REFPLUS

Air Cooled Condensers, Heat Reclaim Units and Fluid Coolers



RefPlus offers a complete line of air-cooled condensers for both commercial refrigeration and air conditioning as well as industrial applications. The air-cooled condensers can be designed to meet any heat load – from as small as19,000 Btu/hr to over 5.5 million Btu/hr.

RefPlus air-cooled condensers are available in both single and multiple circuit applications. The standard vertical air flow units are available in low and high CFM configurations. Most importantly, the air-cooled condensers are rated and sized according to the customer's site and requirements.



Adiabatic System



Features:

- Vertical or horizontal air flow
- Standard, two-speed, or ECM motors (2-year warranty)
- Optional raised venturies and low rpm motors for silent operation
- Ambient or pressure controlled fan cycling for condenser operation
- Electronic aquastat controlled fan cycling for fluid coolers
- Blygold and Heresite coil coatings available
- Optional low ambient receiver & head pressure control packages

UNITS COOLERS

BOHN

MODELS BBM/BBL Back Bar Reach-In Unit Cooler

Application

The BB models are compact, wall-mounted units whose low height makes them ideal for undercounter reach-in or drawer-type fixtures. The unit draws air in at the bottom and discharges out the front. An optional air deflector is included and can be mounted over the center of the fan to direct air up and out. The BBM (medium temperature) model is designed for 35° to 40°F fixture temperature with off-cycle defrost. The BBL (low temperature) model is designed for 0° to -10°F fixture temperature, and has automatic electric defrost.



Features

• Master units include the basic unit plus factory mounted R-404a expansion valve, solenoid, and temperature control. Also right-hand piping extended 8" - 12" outside the housing, sealed and pressurized to 20 - 30 PSI. A 1/4" OD
liquid feed to slave is included
• Slave units include the basic unit plus factory mounted expansion valve with left-hand piping extended 8" - 12" outside the housing, sealed and pressurized to 20 - 30 PSI

Model	BTUH 10°F TD	Motor Data					Defrost Heaters		
		CFM	QTY	HP	115/1/60 Total FLA	208-230/1/60 Total FLA	Watts	115/1/60 Amps	208-23/1/60 Amps
BBL10	1,000	90	1	1/150	0.8	0.4	275	2.7	1.4
BBM11	1,100	90	1	1/150	0.8	0.4			
BBL15	1,500	180	2	1/150	1.6	0.8	350	3.5	1.7
BBM16	1,600	180	2	1/150	1.6	0.8			

Models KM and RAM

Are ideal for use in under-counter reach-in refrigerators. The thin line design allows the unit to be mounted behind the mullion with sufficient clearance for tray slides. KM has an unique fan arrangement allowing air to be drawn in at the top from both sides and discharged at the bottom for superor air circulation. RAM or Reverse Air Mullion draws air thru the coil at the bottom and discharges the cooled air out the top. This provides optimum temperature for drop in trays on salad bars or prep tables. It also keeps drawer stored product in premium condition. These versatile designs also adaptable for mounting on the back wall or ends of a cooler. The method of air circulation ensures minimum box temperature rise when the cabinet doors are open. Ideal for bottle goods and beverage coolers. The finned coil of KM and RAM is protected by BOHN-KOTE finish as standard.



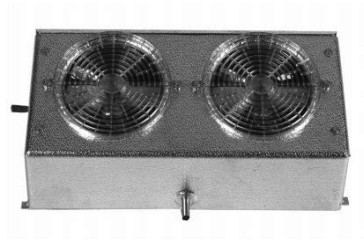
Model	BTUH 10°F TD	CFM	Motor Info			Dimensions (in.)	Approx. Shipping Wt. (lbs.)
			QTY	115/1/60 Total FLA	208-230/1/60 Total FLA	Coil Inlet / Suction / Drain	
(RA)KMK13	1,300	180	2	1.6	0.8	3/8" OD / 3/8" ID / 5/8" OD	19
(RA)KMK17	1,700	170	2	1.6	0.8	3/8" OD / 3/8" ID / 5/8" OD	20
(RA)KMK23	2,300	255	3	2.4	1.2	3/8" OD / 1/2" ID / 5/8" OD	28

* 208-230V optional

UNITS COOLERS

BOHN

MODEL VA Air Defrost Unit Coolers



A deluxe unit designed for use in small reach-ins, back bar and under counter refrigerators, and many other applications where a small, compact unit is required. The thermal expansion valve mounts inside the unit. The unit can be mounted from the ceiling or off the back wall or end walls.

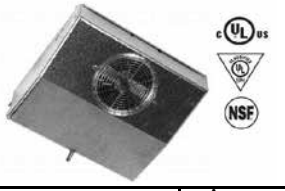
- Sweat inlet connection standard to reduce leaks (flare connection available as a ship loose option)
- Optional coated coil available (Model VAK) for enhanced protection in corrosive environments

* VAK models in stock

Model	BTUH 10°F TD	CFM	Motor Info			Dimensions W x D x H (in.)	Coil Inlet / Suction / Drain	Approx. Shipping Wt. (lbs.)
			QTY	115/1/60 Total FLA	208-230/1/60 Total FLA			
VAK-06	600	135	1	0.8	0.4	12.5" x 6-7/8" x 8-1/8"	3/8" OD / 3/8" ID / 1/2" OD	9
VAK-08	800	130	1	0.8	0.4	12.25" x 6-7/8" x 8-1/8"	3/8" OD / 3/8" ID / 1/2" OD	9
VAK-12	1,200	265	2	1.6	0.8	18" x 8-1/8" x 8"	3/8" OD / 3/8" ID / 1/2" OD	14
VAK-17^	1,700	245	1	1.0	0.5	14" x 10-1/2" x 9-3/4"	3/8" OD / 3/8" ID / 1/2" OD	11

^ Model available wih EC Motors

MODEL TA Thin Profile Air Defrost Reach-In Unit Cooler



A thin profile unit which mounts in the top of a refrigerator and makes the entire top shelf area usable. The attractive low silhouette makes the unit particularly desirable for display type refrigerators. It can also be used in back bars, under counter cabinets, or wherever space is at a premium.

- Drain fitting mounted at 45-degree angle so drain can be run through back or bottom of refrigerator
- Sweat inlet connection standard to reduce leaks (flare connection available as a ship loose option)

Model	BTUH 10°F TD	CFM	Motor Info			Dimensions W x D x H (in.)	Coil Inlet / Suction / Drain	Approx. Shipping Wt. (lbs.)
			QTY	115/1/60 Total FLA	208-230/1/60 Total FLA			
TA(K)10	1,000	120	1	0.8	0.4	16.5" x 14" x 4.5"	3/8" OD / 3/8" ID / 1/2" OD	14
TA(K)13	1,300	170	2	1.6	0.8	20.5" x 14" x 4.5"	3/8" OD / 3/8" ID / 1/2" OD	17
TA(K)17	1,700	210	2	1.6	0.8	24" x 15" x 4.5"	3/8" OD / 3/8" ID / 1/2" OD	21
TA(K)23	2,300	330	3	2.4	1.2	31-5/8" x 15" x 4.5"	3/8" OD / 3/8" ID / 1/2" OD	28
TA(K)30	3,000	360	3	2.4	1.2	40" x 15" x 4.5"	3/8" OD / 1/2" ID / 1/2" OD	33
TA(K)43	4,300	540	4	3.2	1.6	53-3/8" x 15" x 4.5"	1/2" OD / 5/8" ID / 1/2" OD	44
TA(K)55	5,500	650	5	4.0	2.0	53-3/8" x 15" x 6-3/4"	1/2" OD / 5/8" ID / 1/2" OD	53

* Models 43 and 55 require external equalized expansion valve

MODEL TL Thin Profile Electric Defrost Reach-In Unit Cooler



Low temperature unit cooler has a defrost system. Mounted in the top of a refrigerator, its extremely compact cabinet makes it possible to utilize the entire top shelf area for storage. Having a normal operating range of 15°F to -20°F, this unit is ideally suited for such applications as commercial freezers, ice cream boxes and bakery freezers.

- Electric defrost ensures positive heat source
- Built-in fan delay allows coil to be chilled before returning to the normal cooling cycle
- Defrost terminates on coil temperature eliminating excessive defrost period
- Textured aluminum cabinet
- Sweat inlet connection to reduce leaks (flare connection available as a ship loose option)

Model	BTUH 10°F TD @ -	CFM	Motor Info			Heater Data			Coil Inlet / Suction / Drain	Approx. Shipping Wt.
			QTY	115/1/60 Total	208-230/1/60	Watts	115/1/6	208-		
TL09	900	110	1	0.8		475	4.1	2.1	3/8" OD / 3/8" ID / 1/2" OD	14
TL12	1,200	210	2	1.6		600	5.2	2.6	3/8" OD / 1/2" ID / 1/2" OD	19
TL16	1,600	210	2	1.6		700	6.1	3.0	3/8" OD / 1/2" ID / 1/2" OD	23
TL21^	2,100	240	1	1.0	0.5	1,100	9.6	4.8	3/8" OD / 1/2" ID / 1/2" OD	24
TL28	2,800	335	3		1.2	1,430		5.7	3/8" OD / 1/2" ID / 1/2" OD	27
TL35^*	3,500	420	2		1.0	1,600		7.0	1/2" OD / 5/8" ID / 1/2" OD	38
TL53^*	5,300	595	3		1.5	1,950		8.5	1/2" OD / 7/8" ID / 1/2" OD	53

^ Models available with EC Motors

* Models 35 and 53 require external equalized expansion valve

UNITS COOLERS

BOHN

MODEL BTO Twin Flow Reach-In Unit Cooler

Ideal for temperatures of 35°F and higher. Box temperatures are kept more constant throughout and fresh products last longer. Seven sizes are available with BTUH from 900 to 5,500 at 10° TD.

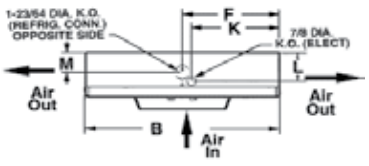


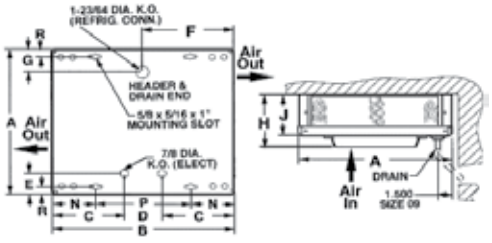
- Mounts flush to the ceiling and draws air in through the fan and discharges out both sides
- Air pattern reduces air loss when doors are opened and the medium velocity reduces product drying
- Textured aluminum cabinet
- Optional coated coil available (Model BTOK) for enhanced protection in corrosive environments
- Sweat inlet connection to reduce leaks (flare connection available as a ship loose option)

Model	BTUH 10°F TD	CFM	PSC Motor Data			Dimensions A / B / H (in.)	Coil Inlet / Suction / Drain	Approx. Shipping Wt. (lbs.)
			QTY	115/1/60 Total FLA	208-230/1/60 Total FLA			
BTO(K)09	900	130	1	0.8	0.4	16-1/8 / 19-1/8 / 4-7/8	1/2" OD / 1/2" ID / 1/2" OD	12
BTO(K)13	1,300	240	2	1.6	0.8	16-1/8 / 19-1/8 / 5-3/4	1/2" OD / 1/2" ID / 1/2" OD	14
BTO(K)18^	1,800	255	1	1.6	0.8	16-1/8 / 19-1/8 / 5-3/4	1/2" OD / 1/2" ID / 1/2" OD	15
BTO(K)25^*	2,500	460	2	2.4	1.2	18-1/8 / 26-1/8 / 6-3/4	1/2" OD / 1/2" ID / 1/2" OD	23
BTO(K)35^*	3,500	425	2	2.4	1.2	18-1/8 / 26-1/8 / 6-3/4	1/2" OD / 1/2" ID / 1/2" OD	24
BTO(K)45^*	4,500	550	2	3.2	1.6	21-1/8 / 29-1/8 / 9-1/4	1/2" OD / 1/2" ID / 5/8" OD	34
BTO(K)55^*	5,500	730	1	4.0	2.0	21-1/8 / 29-1/8 / 8-1/2	1/2" OD / 1/2" ID / 5/8" OD	34

^ Model available with EC Motors

* Models 25, 35, 45, 55 require external equalized expansion valve





MODEL LTA and LTL Extended Thin Profile Unit Cooler

The Extended Thin Profile Unit cooler is the most compact designed unit for reach-in display cases. The unit's low height design allows the unit to hide at the top of the cooler, which gives the case a cleaner look and also allows for more room for shelves and product.



Cabinet

- Modular front access panels provide easy access to motors and can be removed independently of the drain pan
- Liquid-line solenoid wire harness comes standard for quick installation

Unit

- Textured aluminum cabinet
- Blow-Through coil - air is discharged through the coil

Options

- Reverse air flow
- Smooth, White painted Cabinet
- TXV, solenoid valve and room thermostat factory mounted
- Coated coil for corrosion protection

Coil and Heaters

- Schrader valve is on the suction header for easy service
- Defrost Termination Control
- Fan Delay Control
- Heater Safety Control

Performance Data

Model Size	Capacity				Fan Data			EC Motor				
	R404A @ 10°F TD @ +25°F SST		R407A/C/F, R448A/R449A @ 10°F TD @ +25°F SST / @ 6°C TD @ -4°C SST		No. of Fans	CFM	M^3H	HP	115/1/60		208-230/1/60	
	BTUH	KW	BTUH	KW					Amps	Watts	Amps	Watts
LTA-053SA	5,300	1,550	5,900	1,730	2	850	1,450	1/15	2.0	60	1.2	54
LTA-079SA	7,900	2,310	8,700	2,550	3	1,350	2,300	1/15	3.0	90	1.8	81
LTA-102SA	10,200	2,900	11,200	3,280	4	1,800	3,100	1/15	4.0	120	2.4	108
LTA-134SA	13,400	3,930	14,700	4,310	5	2,250	3,850	1/15	5.0	150	3.0	135
LTA-172SA	17,200	5,040	18,600	5,450	6	2,550	4,350	1/15	6.0	180	3.6	162
LTL-046SA	4,600	1,350	5,000	1,460,	2	850	1,450	1/15			1.2	54
LTL-068SA	6,800	1,990	7,300	2,150	3	1,350	2,300	1/15			1.8	81
LTL-093SA	9,300	2,720	10,000	2,940	4	1,800	3,100	1/15			2.4	108
LTL-115SA	11,500	3,370	12,400	3,640	5	2,250	3,850	1/15			3.0	135
LTL-133SA	13,300	3,900	14,400	4,210	6	2,550	4,350	1/15			3.6	162

Dimensional Data

Air Def. LTA	Electric Def. LTL	Connections (Inches / mm)				Net Weight lbs.	Dimensions		
		Coil Inlet	Suction	External Equalizer	Drain		Length	Width	Height
							Inches / mm	Inches / mm	Inches / mm
53	46	1/2" OD	5/8" ID	1/4" OD	3/4" MPT	48	49-3/8" / 1254	20.06" / 509.5	8.88" / 225.5
79	68	1/2" OD	5/8" ID	1/4" OD	3/4" MPT	69	69-1/8" / 1756	20.06" / 509.5	8.88" / 225.5
102	93	1/2" OD	7/8" ID	1/4" OD	3/4" MPT	85	88-7/8" / 2257	20.06" / 509.5	8.88" / 225.5
134	115	1/2" OD	7/8" ID	1/4" OD	3/4" MPT	108	108-5/8" / 2759	20.06" / 509.5	8.88" / 225.5
172	133	1/2" OD	1-1/8" ID	1/4" OD	3/4" MPT	124	128-3/8" / 3261	20.06" / 509.5	8.88" / 225.5

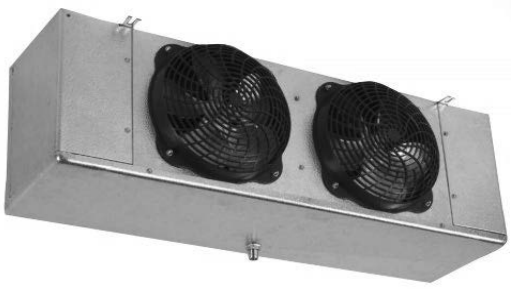
*** All Heatcraft capacities are calculated using DEW POINT SUPERHEAT**

UNITS COOLERS

BOHN

MODEL ADT

Trim-Aire features a low 15" profile ideal for low ceilings with limited headroom. ADTs standard features include thermally protected motors, balanced fans in individually baffled sections, factory-wired moistureproof electrical harness, rustproof hardware, molded fan guards for low static and easy cleaning, and an attractive, light grain patterned aluminum housing. PSC motors standard for 50-60 Hz. ECM motors will become standard with AWEF compliance . The ADT coolers include 12 models from 4,000 to 37,000 BTUH.



Optional Control:

IntelliGen™ Refrigeration Controller (iRC) units come with factory mounted, tested and calibrated with an electronic expansion valve, pressure transducer, temperature sensors, control board and User Interface. Standard features include Door Sensor, Product Load Input and Alarm Output.

Performance Data

Model	Capacity				Fan Data				
	R-404A @ 10°F TD @ +25°F SST		R-407A/C/F, R-448A/R-449A @ 6°C TD @ -4°C SST		No.	CFM	M^3H	115 FLA	230 FLA
	BTUH	Watts	BTUH	Watts					
ADT040	4,000	1,200	4,600	1,300	1	730	1,240	1.0	0.5
ADT052	5,200	1,500	6,100	1,800	1	700	1,189	1.0	0.5
ADT065	6,500	1,900	7,800	2,300	1	650	1,104	1.0	0.5
ADT070	7,000	2,100	7,900	2,300	2	1,460	2,481	2.0	1.0
ADT090	9,000	2,600	10,600	3,100	2	1,400	2,379	2.0	1.0
ADT104	10,400	3,000	12,500	3,700	2	1,400	2,379	2.0	1.0
ADT120	12,000	3,500	14,500	4,200	2	1,300	2,209	2.0	1.0
ADT130	13,000	3,800	15,500	4,500	2	1,300	2,209	2.0	1.0
ADT140	14,000	4,100	16,800	4,900	3	2,100	3,568	3.0	1.5
ADT156	15,600	4,600	18,500	5,400	3	2,100	3,568	3.0	1.5
ADT180	18,000	5,300	21,200	6,200	3	1,950	3,313	3.0	1.5
ADT208	20,800	6,100	24,600	7,200	4	2,800	4,758	4.0	2.0
ADT260	26,000	7,600	30,700	9,000	5	3,250	5,522	5.0	2.5
ADT312	31,200	9,100	36,800	10,800	6	3,900	6,627	6.0	3.0
ADT370	37,000	10,800	44,400	13,000	6	3,900	6,627	6.0	3.0

* All ADT units have 1/4" OD external equalization

*** All Heatcraft capacities for R-407A/C/F, R-448A/R-449A are calculated using DEW POINT SUPERHEAT**

Performance Data

Model	Dimensions (in.)			Connections (in.)			Approx. Ship Wt. (lbs.)
	L	H	W	Inlet	Suction	Drain	
ADT040	29.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	43
ADT052	29.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	46
ADT065	29.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	49
ADT070	45.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	65
ADT090	45.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	68
ADT104	45.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	69
ADT120	45.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	71
ADT130	45.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	73
ADT140	61.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	88
ADT156	61.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	92
ADT180	61.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	94
ADT208	77.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	112
ADT260	93.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	263
ADT312	109.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	304
ADT370	109.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	307

UNITS COOLERS

BOHN

MODEL LET & LLE



Trim-Aire unit cooler is designed for room temperatures -20°F to +34°F. The 15" low profile is ideal for low ceilings with limited headroom. LET units are 6 fins per inch for rooms where light or medium frost loads are expected. LLE units are 4 fins per inch for rooms where heavy frost loads are expected. Features include heavy aluminum casing and stainless steel screw for corrosion resistance, molded fan guards for ease of cleaning and directional air flow, and complete factory wiring of defrost components. The heaters slide into deep slots in the finned surface of the coil, and are easily removed when servicing is required.

Optional Control:

IntelliGen™ Refrigeration Controller (iRC) units come with factory mounted, tested and calibrated with an electronic expansion valve, pressure transducer, temperature sensors, control board and User Interface. Standard features include Door Sensor, Product Load Input and Alarm Output.

Performance Data

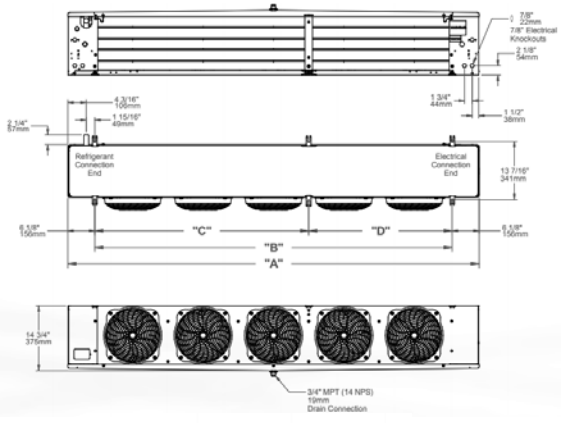
Model	Capacity				Fan Data			Electrical			Defrost Heaters			
	R-404A @ 10°F TD @ +25°F SST		R-407A/C/F, R-448A/R- @ 6°C TD @ -4°C SST		No.	CFM	M^3H	PSC, PSC-TE		EC Motor	Watts	230/1	230/3	460/1
								208-230/1 Amps	460/1 Amps	208-230/1 Amps		Total amps		
	BTUH	Watts	BTUH	Watts										
6 FPI Models														
LET035	3,500	1,000	3,900	1,100	1	700	1,189	0.5	0.4	0.5	900	3.9	2.3	2.0
LET040	4,000	1,200	4,500	1,300	1	700	1,189	0.5	0.4	0.5	900	3.9	2.3	2.0
LET047	4,700	1,400	5,300	1,600	1	650	1,104	0.5	0.4	0.5	900	3.9	2.3	2.0
LET065	6,500	1,900	7,200	2,100	2	1,400	2,379	1.0	0.8	1.0	1,800	7.8	4.5	3.9
LET075	7,500	2,200	8,400	2,500	2	1,300	2,209	1.0	0.8	1.0	1,800	7.8	4.5	3.9
LET090	9,000	2,600	9,900	2,900	2	1,300	2,209	1.0	0.8	1.0	1,800	7.8	4.5	3.9
LET120	12,000	3,500	13,500	4,000	3	2,100	3,568	1.5	1.2	1.5	2,700	11.7	6.8	5.9
LET140	14,000	4,100	16,000	4,700	3	1,950	3,313	1.5	1.2	1.5	2,700	11.7	6.8	5.9
LET160	16,000	4,700	17,900	5,200	4	2,600	4,418	2.0	1.6	2.0	3,600	15.7	9.0	7.8
LET180	18,000	5,300	20,100	5,900	4	2,600	4,418	2.0	1.6	2.0	3,600	15.7	9.0	7.8
LET200	20,000	5,900	22,400	6,600	5	3,250	5,522	2.5	2.0	2.5	4,500	19.6	11.3	9.8
LET240	24,000	7,000	26,900	7,900	6	3,900	6,627	3.0	2.4	3.0	5,400	23.5	13.6	11.7
LET280	28,000	8,200	31,400	9,200	6	3,900	6,627	3.0	2.4	3.0	5,400	23.5	13.6	11.7
4 FPI Models														
LLE041	4,100	1,200	4,500	1,300	1	690	1,172	0.5	0.4	0.5	900	3.9	2.3	2.0
LLE068	6,800	2,000	7,400	2,200	2	1,380	2,345	1.0	0.8	1.0	1,800	7.8	4.5	3.9
LLE080	8,000	2,300	8,800	2,600	2	1,380	2,345	1.0	0.8	1.0	1,800	7.8	4.5	3.9
LLE102	10,200	3,000	11,300	3,300	3	2,170	3,687	1.5	1.2	1.5	27,000	11.7	6.8	5.9
LLE136	13,600	4,000	15,100	4,400	4	2,760	4,690	2.0	1.6	2.0	3,600	15.7	9.0	7.8
LLE170	17,000	5,000	19,000	5,600	5	3,450	5,862	2.5	2.0	2.5	4,500	19.6	11.3	9.8
LLE204	20,400	6,000	2,280	6,700	6	4,140	7,035	3.0	2.4	3.0	5,400	23.5	13.6	11.7
LLE235	23,500	6,900	2,590	7,600	6	4,140	7,035	3.0	2.4	3.0	5,400	23.5	13.6	11.7

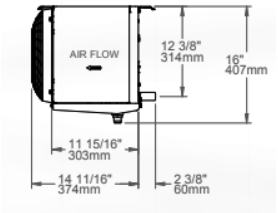
* All LET & LLE units have 1/4" OD external equalization

*** All Heatcraft capacities for R-407A/C/F, R-448A/R-449A are calculated using DEW POINT SUPERHEAT**

Capacity Correction Factors for Electric Defrost and Hot Gas Defrost Units				
Sat. Suct. Temp °F	20	-10	-20	-30
Multiply Capacity by	1.15	1.04	1	0.9

Model	Dimensions (in.)			Connections (in.)			Approx
	L	H	W	Inlet	Suction	Drain	
6 FPI Models							
LET035	29.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	24
LET040	29.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	26
LET047	29.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	29
LET065	45.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	43
LET075	45.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	45
LET090	45.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	48
LET120	45.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	60
LET140	45.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	62
LET160	61.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	81
LET180	61.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	84
LET200	61.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	101
LET240	77.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	121
LET280	93.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	124
4 FPI Models							
LLE041	109.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	28
LLE068	109.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	44
LLE080	109.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	47
LLE102	109.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	59
LLE136	109.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	80
LLE170	109.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	100
LLE204	109.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	120
LLE235	109.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	123





UNITS COOLERS

BOHN

MODEL HGT

Trim-Aire Hot Gas Defrost unit cooler is designed for room temperatures -20°F to +34°F. The 15" low profile is ideal for low ceilings with limited headroom. Three-pipe defrost or Reverse Cycle designed systems may be used with this versatile, low profile air units. Features include heavy aluminum casing and stainless steel screw for corrosion resistance, molded fan guards for ease of cleaning and directional air flow, and complete factory wiring of defrost components. Optional with electric drain pan heaters.



Optional

IntelliGen™ Refrigeration Controller (iRC) units come with factory mounted, tested and calibrated with an electronic expansion valve, pressure transducer, temperature sensors, control board and User Interface. Standard features include Door Sensor, Product Load Input and Alarm Output.

Performance Data

	Model	Capacity				Fan Data			PSC, PSC-TE Motor			EC Motor		Drain Pan Heaters			
		R-404A @ 10°F TD @ +25°F SST		R-407A/C/F, R-448A/R- @ 6°C TD @ -4°C SST		No.	CFM	M^3H	115/1	208-230/1	460/1	115/1	208-230/1	Watts	230/1	230/3	460/1
		BTUH	Watts	BTUH	Watts				Amps / Watts			Amps / Watts			Total amps		
6 Fins per Inch	HGT0.35	3,500	1,000	3,900	1,100	1	700	1,189	1.0 / 82	0.5 / 91	0.4 / 117	1.1 / 57	0.6 / 59	300	2.6	1.3	0.7
	HGT040	4,000	1,200	4,500	1,300	1	700	1,189	1.0 / 82	0.5 / 91	0.4 / 117	1.1 / 57	0.6 / 59	300	2.6	1.3	0.7
	HGT047	4,700	1,400	5,300	1,600	1	650	1,104	1.0 / 82	0.5 / 91	0.4 / 117	1.1 / 57	0.6 / 59	300	2.6	1.3	0.7
	HGT065	6,500	1,900	7,200	2,100	2	1,400	2,379	2.0 / 164	1.0 / 182	0.8 / 234	2.0 / 114	1.1 / 118	600	5.2	2.6	1.3
	HGT075	7,500	2,200	8,400	2,500	2	1,300	2,209	2.0 / 164	1.0 / 192	0.8 / 234	2.0 / 114	1.1 / 118	600	5.2	2.6	1.3
	HGT090	9,000	2,600	9,900	2,900	2	1,300	2,209	2.0 / 164	1.0 / 192	0.8 / 234	2.0 / 114	1.1 / 118	600	5.2	2.6	1.3
	HGT120	12,000	3,500	13,500	4,000	3	2,100	3,568	3.0 / 246	1.5 / 273	1.2 / 351	2.9 / 171	1.6 / 177	900	7.8	3.9	2.0
	HGT140	14,000	4,100	16,000	4,700	3	1,950	3,313	3.0 / 246	1.5 / 273	1.2 / 351	2.9 / 171	1.6 / 177	900	7.8	3.9	2.0
	HGT160	16,000	4,700	17,900	5,200	4	2,600	4,418	4.0 / 328	2.0 / 364	1.6 / 468	3.8 / 228	2.1 / 236	1,200	10.4	5.2	2.6
	HGT180	18,000	5,300	20,100	5,900	4	2,600	4,418	4.0 / 328	2.0 / 364	1.6 / 468	3.8 / 228	2.1 / 236	1,200	10.4	5.2	2.6
	HGT200	20,000	5,900	22,400	6,600	5	3,250	5,522	5.0 / 410	2.5 / 455	2.0 / 585	4.7 / 285	2.6 / 295	1,500	13.0	6.5	3.3
	HGT240	24,000	7,000	26,900	7,900	6	3,900	6,627	6.0 / 492	3.0 / 546	2.4 / 702	5.6 / 342	3.1 / 354	1,800	15.7	7.8	3.9
	HGT280	28,000	8,200	31,400	9,200	6	3,900	6,627	6.0 / 492	3.0 / 546	2.4 / 702	5.6 / 342	3.1 / 354	1,800	15.7	7.8	3.9
4 Fins per Inch	HGT041	4,100	1,200	4,500	1,300	1	690	1,172	1.0 / 82	0.5 / 91	0.4 / 117	1.1 / 57	0.6 / 59	300	2.6	1.3	0.7
	HGT068	6,800	2,000	7,400	2,200	2	1,380	2,345	2.0 / 164	1.0 / 182	0.8 / 234	2.0 / 114	1.1 / 118	600	5.2	2.6	1.3
	HGT080	8,000	2,300	8,800	2,600	2	1,380	2,345	2.0 / 164	1.0 / 182	0.8 / 234	2.0 / 114	1.1 / 118	600	5.2	2.6	1.3
	HGT102	10,200	3,000	11,300	3,300	3	2,170	3,687	3.0 / 246	1.5 / 273	1.2 / 2351	2.9 / 171	1.6 / 177	900	7.8	3.9	2.0
	HGT136	13,600	4,000	15,100	4,400	4	2,760	4,690	4.0 / 328	2.0 / 364	1.6 / 468	3.8 / 228	2.1 / 236	1,200	10.4	5.2	2.6
	HGT170	17,000	5,000	19,000	5,600	5	3,450	5,862	5.0 / 410	2.5 / 455	2.0 / 585	4.7 / 285	2.6 / 295	1,500	13.0	6.5	3.3
	HGT204	20,400	6,000	2,280	6,700	6	4,140	7,035	6.0 / 492	3.0 / 546	2.4 / 702	5.6 / 342	3.1 / 354	1,800	15.7	7.8	3.9
	HGT235	23,500	6,900	2,590	7,600	6	4,140	7,035	6.0 / 492	3.0 / 546	2.4 / 702	5.6 / 342	3.1 / 354	1,800	15.7	7.8	3.9

*** All Heatcraft capacities for R-407A/C/F, R-448A/R-449A are calculated using DEW POINT SUPERHEAT**

Capacity Correction Factors for Electric Defrost and Hot Gas Defrost Units				
Sat. Suct. Temp °F	20	-10	-20	-30
Multiply Capacity by	1.15	1.04	1	0.9

	Model	Dimensions (in.)			Connections (in.)					Approx. Ship Wt. (lbs.)
		L	H	W	Coil Inlet	Suction	Drain	Side Port OD	Hot Gas Pan Conn.	
6 Fins per Inch	HGT0.35	29.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	3/4 MPT	5/8	24
	HGT040	29.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	3/4 MPT	5/8	26
	HGT047	29.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	3/4 MPT	5/8	29
	HGT065	45.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	3/4 MPT	5/8	43
	HGT075	45.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	3/4 MPT	5/8	45
	HGT090	45.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	3/4 MPT	5/8	48
	HGT120	45.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	3/4 MPT	5/8	60
	HGT140	45.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	3/4 MPT	5/8	62
	HGT160	61.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	3/4 MPT	5/8	81
	HGT180	61.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	3/4 MPT	5/8	84
	HGT200	61.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	3/4 MPT	5/8	101
	HGT240	77.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	3/4 MPT	5/8	121
	HGT280	93.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	3/4 MPT	5/8	124
4 Fins per Inch	HGT041	109.5	14.94	14.88	1/2 OD	5/8 OD	3/4 MPT	3/4 MPT	5/8	28
	HGT068	109.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	3/4 MPT	5/8	44
	HGT080	109.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	3/4 MPT	5/8	47
	HGT102	109.5	14.94	14.88	1/2 OD	7/8 OD	3/4 MPT	3/4 MPT	5/8	59
	HGT136	109.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	3/4 MPT	5/8	80
	HGT170	109.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	3/4 MPT	5/8	100
	HGT204	109.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	3/4 MPT	5/8	120
	HGT235	109.5	14.94	14.88	1/2 OD	1-1/8 OD	3/4 MPT	3/4 MPT	5/8	123

* All HGT units have 1/4" OD external equalization

MODEL LO

This model is not AWEF compliant



UNITS COOLERS

BOHN

MODEL SM & SME



SM Spacemizer units are compact, medium velocity coolers designed for use in +35°F and above rooms. SME units are designed for less than +35°F. The low height gives more head room and allows product to be stacked higher. The center ceiling mount with dual air flow alows shelving and storage of product around all walls. Also equipped with dual drain pans to prevent sweating, the SM/SME units have heavy gauge grained aluminum cabinet that cleans easily and looks attractive. The PVS coated fan guards won't rust or rattle. Ease of installation and service are also part of the design. The panels on the ends quickly remove to for access to refrigerant components and electrical terminal block, without the need to drop the fan panel/drain pan.

Optional Control:

IntelliGen™ Refrigeration Controller (iRC) units come with factory mounted, tested and calibrated with an electronic expansion valve, pressure transducer, temperature sensors, control board and User Interface. Standard features include Door Sensor, Product Load Input and Alarm Output.

Performance data — Physical Data

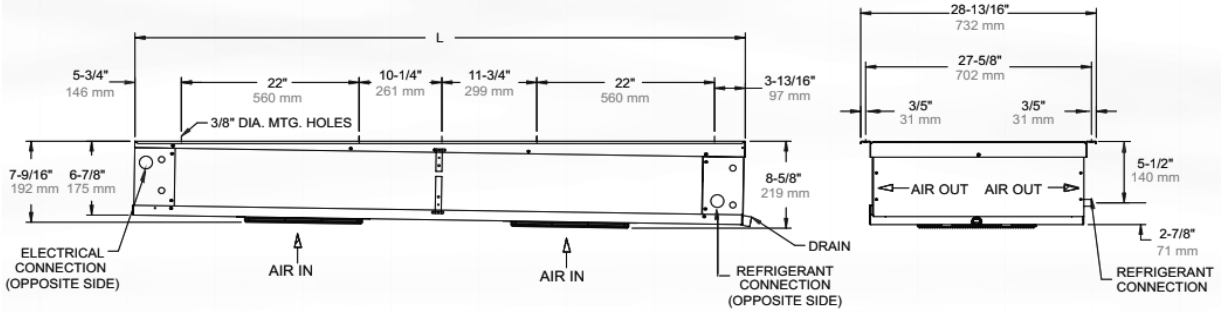
Model	Capacity				Fan Data			Connections (in.)		Approx. Net Wt		Dimensions	
	R-404A		R-407A/C/F, R-448A/R-449A					Coil Inlet	Suction			L	
	@ 10°F TD @ +25°F SST / @ 6°C TD @ -4°C SST												
	BTUH	Watts	BTUH	Watts	No.	CFM	M^3H	OD	OD	lbs.	kg	in.	mm
SM052	5,200	1,500	6,000	1,800	1	610	1,035	1/2	7/8	42	19	31-1/2	800
SM076	7,600	2,200	8,700	2,500	2	1,300	2,210	1/2	7/8	64	29	53-1/2	1359
SM090	9,000	2,600	10,100	3,000	2	1,260	2,140	1/2	7/8	70	32	53-1/2	1359
SM102	10,200	3,000	11,800	3,500	2	1,220	2,075	1/2	7/8	83	38	53-1/2	1359
SM108	10,800	3,200	12,600	3,700	3	1,950	3,315	1/2	7/8	105	48	75-1/2	1918
SM134	13,400	3,900	15,300	4,500	3	1,890	3,210	1/2	7/8	117	53	75-1/2	1918
SM156	15,600	4,600	18,100	5,300	3	1,830	3,110	1/2	7/8	123	56	75-1/2	1918
SM176	17,900	5,200	20,400	6,000	4	2,520	4,285	1/2	7/8	149	68	97-1/2	2477
SM208	20,800	6,100	24,100	7,100	4	2,440	4,145	1/2	1-1/8	164	74	97-1/2	2477
SM249	24,900	7,300	28,900	8,500	5	3,050	5,185	1/2	1-1/8	206	94	119-1/2	3035
SME040	4,000	1,170	4,400	1,290	1	610	1,035	1/2	7/8	90	41	31-1/2	800
SME054	5,400	1,580	5,900	1,730	2	1,300	2,210	1/2	7/8	120	54	53-1/2	1359
SME065	6,500	1,900	7,100	2,080	2	1,260	2,140	1/2	7/8	120	54	53-1/2	1359
SME090	9,000	2,640	9,900	2,900	3	1,220	2,075	1/2	7/8	160	73	75-1/2	1918
SME130	13,000	3,810	14,300	4,190	3	1,950	3,315	1/2	7/8	174	79	75-1/2	1918
SME174	17,400	5,100	19,500	5,720	4	1,890	3,210	1/2	1-1/8	218	99	97-1/2	2477

*** All Heatcraft capacities for R-407A/C/F, R-448A/R-449A are calculated using DEW POINT SUPERHEAT**

* All units have 1/4" OD external equalizor and 3/4" FPT drain connection

Electrical data

Model		HP	PSC				EC Motor				Heaters	
			115/1/60		208-230/1/60		115/1/60		208-230/1-60		208-230/1-60	
			Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
SM052	SME040	1/15	0.9	90	0.5	90	0.9	55	0.5	55	5.3	1,200
SM076	SME054	1/15	1.8	180	1.0	180	1.8	110	1.0	110	8.7	2,000
SM090	SME065	1/15	1.8	180	1.0	180	1.8	110	1.0	110	8.7	2,000
SM102		1/15	1.8	180	1.0	180	1.8	110	1.0	110		
SM108	SME090	1/15	2.7	270	1.5	270	2.7	165	1.5	165	10.5	2,400
SM134		1/15	2.7	270	1.5	270	2.7	165	1.5	165		
SM156	SME130	1/15	2.7	270	1.5	270	2.7	165	1.5	165	15.7	3,600
SM176		1/15	3.6	360	2.0	360	3.6	220	2.0	220		
SM208	SME174	1/15	3.6	360	2.0	360	3.6	220	2.0	220	20.9	4,800
SM249		1/15	4.5	450	2.5	450	4.5	275	2.5	275		



UNITS COOLERS

BOHN

MODEL WK / WKE / WKG

Whisper-Kool WK is ideal for floral storage, produce, dough retarding, fresh meat storage and preparation with room temperature +35°F and above. WKE/WKG is ideal for produce storage between +24°F and +34°F. The low height gives more head room and allows product to be stacked higher. The center ceiling mount with dual air flow alows shelving and storage of product around all walls. Also equipped with dual drain pans to prevent sweating, the WK has heavy gauge grained aluminum cabinet that cleans easily and looks attractive.



Performance data

Physical Data

Model	Capacity				Fan Data			Connections (in.)		Approx. Net Wt		Dimensions	
	R-404A @ 10°F TD @ +25°F SST		R-407A/C/F, R-448A/R-449A @ 6°C TD @ -4°C SST		No.	CFM	M^3H	Coil Inlet OD	Suction OD	lbs.	kg	L	
	BTUH	Watts	BTUH	Watts								in.	mm
WK050	5,000	1,460	5,800	1,700	1	725	1,233	1/2	7/8	70	32	53-1/2	800
WK075	7,500	2,200	8,400	2,460	1	730	1,241	1/2	7/8	103	47	53-1/2	800
WK100	10,000	2,930	11,600	3,400	2	1,450	2,465	1/2	7/8	106	48	75-1/2	1359
WK130	13,000	3,810	14,300	4,190	2	1,470	2,499	1-1/8	1-1/8	145	66	75-1/2	1359
WK155	15,500	4,540	17,360	5,100	2	1,460	2,482	1-1/8	1-1/8	149	68	75-1/2	1359
WK180	18,000	5,270	20,880	6,120	2	2,130	3,621	1-1/8	1-1/8	160	73	75-1/2	1918
WK210	21,000	6,150	23,940	7,020	4	2,840	4,828	1-1/8	1-1/8	193	88	97-1/2	2477
WK270	27,000	7,910	31,860	9,340	4	2,800	4,760	1-3/8	1-3/8	200	91	97-1/2	2477
WK340	34,000	9,960	40,120	11,760	5	3,500	5,950	1-3/8	1-3/8	242	110	119-1/2	3035
WKE050	5,000	1,460	5,800	1,700	1	725	1,233	1/2	7/8	75	34	53-1/2	800
WKE075	7,500	2,200	8,400	2,460	1	730	1,241	1/2	7/8	108	49	53-1/2	800
WKE100	10,000	2,930	11,600	3,400	2	1,450	2,465	1/2	7/8	111	50	75-1/2	1359
WKE130	13,000	3,810	14,300	4,190	2	1,470	2,499	1-1/8	1-1/8	150	68	75-1/2	1359
WKE155	15,500	4,540	17,360	5,100	2	1,460	2,482	1-1/8	1-1/8	154	70	75-1/2	1359
WKE180	18,000	5,270	20,880	6,120	2	2,130	3,621	1-1/8	1-1/8	157	71	75-1/2	1918
WKE210	21,000	6,150	23,940	7,020	4	2,840	4,828	1-1/8	1-1/8	203	92	97-1/2	2477
WKE270	27,000	7,910	31,860	9,340	4	2,800	4,760	1-3/8	1-3/8	208	94	97-1/2	2477
WKE340	34,000	9,960	40,120	11,760	5	3,500	5,950	1-3/8	1-3/8	250	113	119-1/2	3035
WKG100	10,000	2,930	11,600	3,400	2	1,450	2,465	1/2	7/8	131	59	75-1/2	1359
WKG130	13,000	3,810	14,300	4,190	2	1,470	2,499	1-1/8	1-1/8	170	77	75-1/2	1359
WKG155	15,500	4,540	17,360	5,100	2	1,460	2,482	1-1/8	1-1/8	174	79	75-1/2	1359
WKG180	18,000	5,270	20,880	6,120	2	2,130	3,621	1-1/8	1-1/8	185	84	75-1/2	1918
WKG210	21,000	6,150	23,940	7,020	4	2,840	4,828	1-1/8	1-1/8	223	101	97-1/2	2477
WKG270	27,000	7,910	31,860	9,340	4	2,800	4,760	1-3/8	1-3/8	228	103	97-1/2	2477
WKG340	34,000	9,960	40,120	11,760	5	3,500	5,950	1-3/8	1-3/8	270	122	119-1/2	3035

*** All Heatcraft capacities for R-407A/C/F, R-448A/R-449A are calculated using DEW POINT SUPERHEAT**

* All units have 1/4" OD external equalizor and 3/4" FPT drain connection

Electrical data

Model			PSC Motor			EC Motor		Defrost Heaters			Hot Gas Defrost Pan Heaters		
			115/1	230/1	460/1	115/1	230/1	Watts	230/1	460/1	Watts	115/1	230/1
			Amps/Watts	Amps/Watts	Amps/Watts	Amps/Watts	Amps/Watts		Total Amps			Total Amps	
WK050	WKE050^		0.5 / 90	0.5 / 90	0.4 / 117	0.9 / 55	0.5 / 55	2,000	8.7	4.4			
WK075	WKE075^		0.5 / 90	0.5 / 90	0.4 / 117	0.9 / 55	0.5 / 55	2,400	10.5	5.3			
WK100	WKE100^	WKG100^	1.8 / 180	1.0 / 180	0.8 / 234	1.8 / 110	1.0 / 110	2,800	12.2	6.1	350	3.0	1.5
WK130	WKE130^	WKG130^	1.8 / 180	1.0 / 180	0.8 / 234	1.8 / 110	1.0 / 110	4,000	17.4	8.7	500	4.4	2.2
WK155	WKE155^	WKG155^	1.8 / 180	1.0 / 180	0.8 / 234	1.8 / 110	1.0 / 110	4,000	17.4	8.7	500	4.4	2.2
WK180	WKE180^	WKG180^	2.7 / 270	1.5 / 270	1.2 / 351	2.7 / 165	1.5 / 165	4,000	17.4	8.7	500	4.4	2.2
WK210	WKE210^	WKG210^	3.6 / 360	2.0 / 360	1.6 / 468	3.6 / 220	2.0 / 220	5,200	22.6	11.3	650	5.7	2.8
WK270	WKE270^	WKG270^	3.6 / 360	2.0 / 360	1.6 / 468	3.6 / 220	2.0 / 220	5,200	22.6	11.3	650	5.7	2.8
WK340	WKE340^	WKG340^	4.5 / 450	2.5 / 450	2.0 / 585	4.5 / 275	2.5 / 275	7,000	30.4	15.2	875	7.6	3.8

^ WKE units are not available with 115/1 motors

UNITS COOLERS

BOHN

MODEL BMA



Medium Profile 24" profile larger walk-in boxes up to 16 ft. high. BMA standard features include thermally protected motors, balanced fans in individually baffled sections, factory-wired moistureproof electrical harness, rustproof hardware, molded fan guards for low static and easy cleaning, and an attractive, light grain patterned aluminum housing. PSC motors standard for 50-60 Hz. ECM motors will become standard with AWEF compliance .

Optional Control:

IntelliGen™ Refrigeration Controller (iRC) units come with factory mounted, tested and calibrated with an electronic expansion valve, pressure transducer, temperature sensors, control board and User Interface. Standard features include Door Sensor, Product Load Input and Alarm Output.

Performance data

Model	Capacity				Fan Data			Air Throw * †					
	R-404A		R-407A/C/F, R-448A/R-449A		No.	CFM	M^3H	Diameter		Extended (Std.)		Diffused (Opt.)	
	@ 10°F TD @ +25°F SST / @ 6°C TD @ -4°C SST												
	BTUH	Watts	BTUH	Watts				in	mm	ft.	m	ft.	m
BMA130	13,000	3,800	15,000	4,400	1	2,300	3,910	18	457	65	20	50	15
BMA155	15,500	4,500	18,000	5,300	1	2,200	3,740	18	457	65	20	50	15
BMA245	24,500	7,200	27,500	8,100	2	4,600	7,820	18	457	65	20	50	15
BMA300	30,000	8,800	34,000	10,000	2	4,400	7,480	18	457	65	20	50	15
BMA365	36,500	10,700	41,500	12,200	3	6,900	11,730	18	457	65	20	50	15
BMA450	45,500	13,200	51,500	15,100	3	6,600	11,220	18	457	65	20	50	15
BMA510	51,000	14,900	58,000	17,000	4	9,200	15,640	18	457	65	20	50	15
BMA600	60,000	17,600	68,500	20,100	4	8,800	14,960	18	457	65	20	50	15
BMA710	71,000	20,800	81,000	23,700	5	10,500	17,850	18	457	65	20	50	15

*** All Heatcraft capacities for R-407A/C/F, R-448A/R-449A are calculated using DEW POINT SUPERHEAT**

Electrical data

Model	HP	PSC								EC Motor			
		115/1/60		208-230/1/60		460/1/60		575/1/60		115/1/60		208-230/1-60	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
BMA130	1/4	4.0	300	1.8	305	1.0	305	0.7	310	2.8	210	1.4	215
BMA155	1/4	4.0	300	1.8	305	1.0	305	0.7	310	2.8	210	1.4	215
BMA245	1/4	8.0	600	3.6	610	2.0	610	1.4	620	5.6	420	2.8	430
BMA300	1/4	8.0	600	3.6	610	2.0	610	1.4	620	5.6	420	2.8	430
BMA365	1/4	12.0	900	5.4	915	3.0	915	2.1	930	8.4	630	4.2	645
BMA450	1/4	12.0	900	5.4	915	3.0	915	2.1	930	8.4	630	4.2	645
BMA510	1/4	16.0	1,200	7.2	1,220	4.0	1,220	2.8	1.240	11.2	840	5.6	860
BMA600	1/4	16.0	1,200	7.2	1,220	4.0	1,220	2.8	1.240	11.2	840	5.6	860
BMA710	1/4			9.0	1,525	5.0	1,525	3.5	1.550	14.0	1,050	7.0	1,075

* Standard molded fan guards allow for extended air throw; optional wire guards promote air diffusion

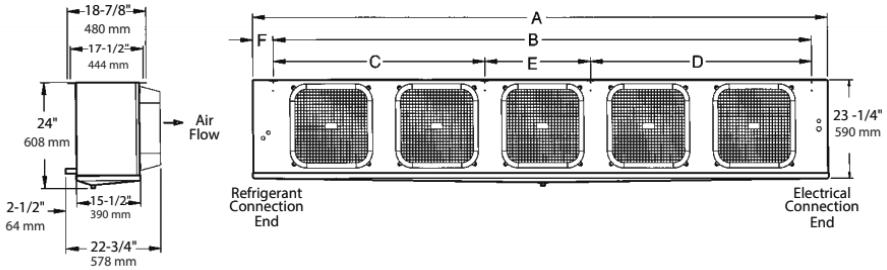
† Air throw data based on 12-ft. high ceilings with no obstructions where velocity drops to 50 FPM

‡ For EC motors, use 60 Hz capacity and airflow values (Units with EC motors operating at 50 Hz will not see a reduction in performance due to the electronic control of the motor)

Physical Data

Model	Connections (in.)				Approx. Net Wt		Dimensions					
	Coil Inlet ODF	Suction ODF	Ext. Equalizer ODF	Drain FPT	lbs.	kg	A	B	C	D	E	F
							in. / mm	in. / mm	in. / mm	in. / mm	in. / mm	in. / mm
BMA130	1/2	7/8	1/4	3/4	115	52	39-5/16 1,000	30-1/4 / 770				4-15/16 / 125
BMA155	1/2	1-1/8	1/4	3/4	123	56	39-5/16 1,000	30-1/4 / 770				4-15/16 / 125
BMA245	7/8	1-1/8	1/4	3/4	134	61	67-5/16 / 1,710	58-1/4 / 1,480				4-15/16 / 125
BMA300	7/8	1-1/8	1/4	3/4	148	67	67-5/16 / 1,710	58-1/4 / 1,480				4-15/16 / 125
BMA365	7/8	1-3/8	1/4	3/4	200	91	95-5/16 / 2,420	86-1/4 / 2,190				4-15/16 / 125
BMA450	1-1/8*	1-3/8	1/4	3/4	227	103	95-5/16 / 2,420	86-1/4 / 2,190				4-15/16 / 125
BMA510	1-1/8*	1-5/8	1/4	3/4	230	104	123-5/16 / 3,130	114-1/4 / 2,900	56 / 1,420	58-1/4 / 1,480		4-15/16 / 125
BMA600	1-1/8*	1-5/8	1/4	3/4	255	116	123-5/16 / 3,130	114-1/4 / 2,900	56 / 1,420	58-1/4 / 1,480		4-15/16 / 125
BMA710	1-1/8*	1-5/8	1/4	3/4	285	129	138-13/16 / 3,530	129-3/4 / 3,300	51 / 1,300	53-1/4 / 1,350	25-1/2 / 650	4-15/16 / 125

* Supplied with adapter to 7/8 ODF



UNITS COOLERS

BOHN

MODEL BME/BML BMG/BMF



Medium Profile 24" profile larger walk-in boxes up to 16 ft. high. BME electric defrost units are 6 fins per inch for rooms where light or medium frost loads are expected. BML electric defrost units are 4 fins per inch for rooms where heavy frost loads are expected. BMG hot gas defrost units are 6 fins per inch for rooms where light or medium frost loads are expected. BMF hot gas defrost units are 4 fins per inch for rooms where heavy frost loads are expected. Standard features include thermally protected motors, balanced fans in individually baffled sections, factory-wired moistureproof electrical harness, rustproof hardware, molded fan guards for low static and easy cleaning, and an attractive, light grain patterned aluminum housing. PSC motors standard for 50-60 Hz.

Note:
Hot Gas Defrost Models details can be found online @ https://www.heatcraftrpd.com

Optional Control:

IntelliGen™ Refrigeration Controller (iRC) units come with factory mounted, tested and calibrated with an electronic expansion valve, pressure transducer, temperature sensors, control board and User Interface. Standard features include Door Sensor, Product Load Input and Alarm Output.

iNtelliGeN
BY HEATCRAFT REFRIGERATION PRODUCTS

Performance data

	Model	Capacity				Fan Data			Air Throw * †					
		R-404A @ 10°F TD @ +25°F SST / @ 6°C TD @ -4°C SST		R-407A/C/F, R-448A/R-449A @ 10°F TD @ +25°F SST / @ 6°C TD @ -4°C SST		No.	CFM	M^3H	Diameter		Extended (Std.)		Diffused (Opt.)	
		BTUH	Watts	BTUH	Watts				in	mm	ft.	m	ft.	m
6 fin per inch	BME101	10,100	3,000	11,200	3,300	1	2,350	4,000	18	457	65	20	50	15
	BME140	14,000	4,100	15,500	4,500	1	2,250	3,830	18	457	65	20	50	15
	BME190	19,000	5,600	20,500	6,000	2	4,700	7,990	18	457	65	20	50	15
	BME260	26,000	7,600	28,500	8,400	2	4,500	7,650	18	457	65	20	50	15
	BME310	31,000	9,100	34,000	10,000	3	7,050	11,990	18	457	65	20	50	15
	BME390	39,000	11,400	43,000	12,600	3	6,750	11,480	18	457	65	20	50	15
	BME430	43,000	12,600	46,500	13,600	4	8,800	14,960	18	457	65	20	50	15
	BME520	52,000	15,200	57,000	16,700	4	8,400	14,280	18	457	65	20	50	15
	BME620	62,000	18,200	68,000	19,900	5	10,000	17,000	18	457	65	20	50	15
4 fin per inch	BML100	10,000	2,900	11,000	3,200	1	2,325	3,950	18	457	65	20	50	15
	BML165	16,500	4,800	18,000	5,300	1	4,900	8,330	18	457	65	20	50	15
	BML220	22,000	6,400	24,000	7,000	2	4,650	7,910	18	457	65	20	50	15
	BML250	25,000	7,300	27,000	7,900	2	7,350	12,500	18	457	65	20	50	15
	BML330	33,000	9,700	36,500	10,700	3	6,975	11,860	18	457	65	20	50	15
	BML370	37,000	10,800	40,000	11,700	3	9,100	15,470	18	457	65	20	50	15
	BML440	44,000	12,900	48,500	14,200	4	8,700	14,790	18	457	65	20	50	15
	BML530	53,000	15,500	58,500	17,100	4	10,350	17,600	18	457	65	20	50	15

*** All Heatcraft capacities for R-407A/C/F, R-448A/R-449A are calculated using DEW POINT SUPERHEAT**

Sat. Suct. Temp °F	20	-10	-20	-30
Multiply Capacity by	1.15	1.04	1	0.9

Electrical data

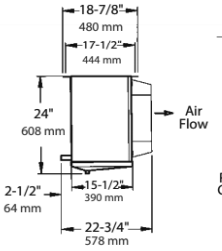
Model		HP	PSC						EC Motor		Defrost Heater					
			208-230/1/60		460/1/60		575/1/60		208-230/1-60		Watts	230/1	230/3	460/1	460/3	575/3
			Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts		Total Amps				
BME101		1/4	1.8	305	1.0	305	0.7	310	1.4	215	2,730	11.9	8.2	5.9	4.1	3.3
BME140	BML100	1/4	1.8	305	1.0	305	0.7	310	1.4	215	2,730	11.9	8.2	5.9	4.1	3.3
BME190	BML165	1/4	3.6	610	2.0	610	1.4	620	2.8	430	5,350	23.3	16.0	11.6	8.3	6.6
BME260	BML220	1/4	3.6	610	2.0	610	1.4	620	2.8	430	5,350	23.3	16.0	11.6	8.3	6.6
BME310	BML250	1/4	5.4	915	3.0	915	2.1	930	4.2	645	7,750	33.7	23.2	16.8	12.0	9.6
BME390	BML330	1/4	5.4	915	3.0	915	2.1	930	4.2	645	7,750	33.7	23.2	16.8	12.0	9.6
BME430	BML370	1/4	7.2	1,220	4.0	1,220	2.8	1.240	5.6	860	10,200		30.5	22.2	15.8	12.6
BME520	BML440	1/4	7.2	1,220	4.0	1,220	2.8	1.240	5.6	860	10,200		30.5	22.2	15.8	12.6
BME620	BML530	1/4	9.0	1,525	5.0	1,525	3.5	1.550	7.0	1,075	11,600		34.7	25.2	18.1	14.4

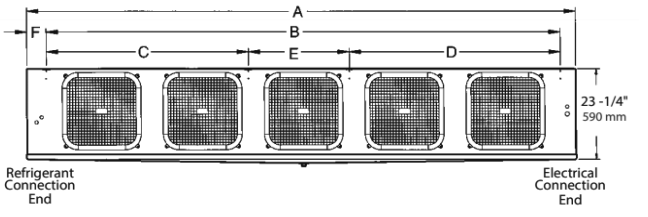
* Standard molded fan guards allow for extended air throw; optional wire guards promote air diffusion
† Air throw data based on 12-ft. high ceilings with no obstructions where velocity drops to 50 FPM
‡ For EC motors, use 60 Hz capacity and airflow values (Units with EC motors operating at 50 Hz will not see a reduction in performance due to the electronic control of the motor)

Physical Data

Model		Connections (in.)			Approx. Net Wt		Dimensions					
		Coil Inlet	Suction	Drain	lbs.	kg	A	B	C	D	E	F
		ODF	ODF	FPT			in. / mm	in. / mm	in. / mm	in. / mm	in. / mm	in. / mm
BME101		1/2	7/8	3/4	118	54	39-5/16 1,000	30-1/4 / 770				4-15/16 / 125
BME140	BML100	1/2	7/8	3/4	126	57	39-5/16 1,000	30-1/4 / 770				4-15/16 / 125
BME190	BML165	7/8	1-1/8	3/4	138	63	67-5/16 / 1,710	58-1/4 / 1,480				4-15/16 / 125
BME260	BML220	1-1/8*	1-3/8	3/4	153	69	67-5/16 / 1,710	58-1/4 / 1,480				4-15/16 / 125
BME310	BML250	1-1/8*	1-3/8	3/4	210	95	95-5/16 / 2,420	86-1/4 / 2,190				4-15/16 / 125
BME390	BML330	1-1/8*	1-3/8	3/4	237	108	95-5/16 / 2,420	86-1/4 / 2,190				4-15/16 / 125
BME430	BML370	1-1/8*	1-5/8	3/4	267	121	123-5/16 / 3,130	114-1/4 / 2,900	56 / 1,420	58-1/4 / 1,480		4-15/16 / 125
BME520	BML440	1-1/8*	1-5/8	3/4	300	136	123-5/16 / 3,130	114-1/4 / 2,900	56 / 1,420	58-1/4 / 1,480		4-15/16 / 125
BME620	BML530	1-1/8*	1-5/8	3/4	338	153	138-13/16 / 3,530	129-3/4 / 3,300	51 / 1,300	53-1/4 / 1,350	25-1/2 / 650	4-15/16 / 125

All units have 1/4" OD external equalization connection
* Supplied with adapter to 7/8 ODF

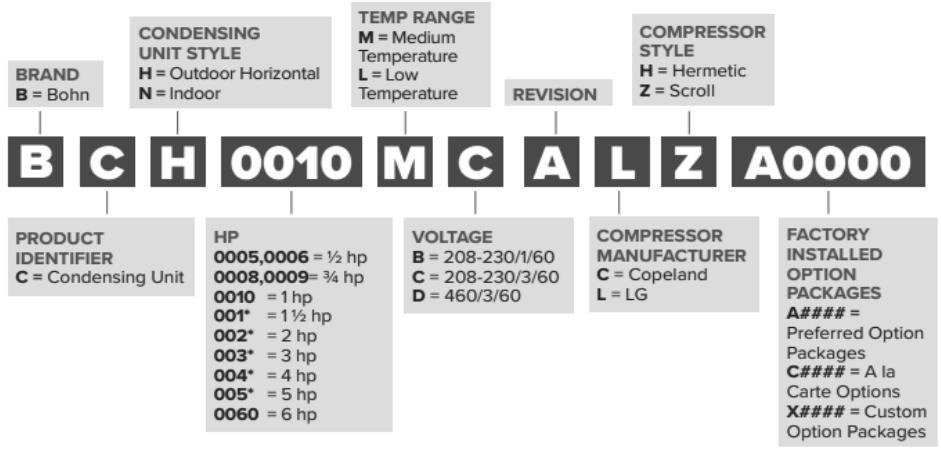




INDOOR & OUTDOOR AIR COOLED CONDENSING UNITS

Nomenclature

NOMENCLATURE



STANDARD FEATURES

Microchannel Coil	Sealed Liquid Line Drier (new)
Head Pressure Control Valve (optional for indoor models)	Liquid Line Sight Glass (new)
Crankcase Heater (optional for indoor models)	Liquid Line and Suction Line Base Valves
Adjustable Low Pressure Control	Painted Steel Cabinet
Fixed High Pressure Control	Removable & Hinged E-box Door with Captive Fasteners

ELECTRICAL OPTIONS

Option	Outdoor	Indoor
Fixed low pressure control	Option	Option
Air or Electric defrost timer only	Option	Option
intelliGen™/Beacon II™	Option	N/A
Crankcase Heater	Standard	Option
Dual pressure control (not available with intelliGen™/Beacon II™ or Low Ambient Kit)	Option	Option
Electric defrost with timer & contactors (C3 cabinet)	Option	Option
Fused disconnect	Option	Option
Phase loss / low voltage monitor	Option	Option
Smart Defrost Kit™ (Factory-Installed)	Option	Option
Variable speed EC (VSEC) motors with Orbus controller	Option	Option

MECHANICAL OPTIONS

Option	Outdoor	Indoor
12" Extended legs	Option	Option
Head pressure control flooding valve	Standard	N/A
Liquid line drier, sight glass	Standard	Standard
Liquid line solenoid valve and pumpdown switch (not available with intelliGen™/Beacon II™)	Option	Option
Low ambient kit with heated and insulated receiver, TD relay	RS Standard	N/A
Oil separator with discharge line check valve (C3 cabinet)	Option	Option
Oversize receiver (C2 & C3 cabinets)	Option	Option
Precharged refrigerant with quick connect fittings	Option	Option
Replaceable core liquid line filter (C3 cabinet)	Option	Option
Replaceable core suction line filter (C3 cabinet)	Option	Option

INDOOR & OUTDOOR AIR COOLED CONDENSING UNITS

BOHN - Hermetic Reciprocating Condensing Units

1/2 HP to 6 HP Medium Temperature

PERFORMANCE DATA – R-448A/R-449A

Medium Temperature Models - Hermetic Compressors

Please consult AWEF table on page 36 to confirm DOE compliance per model

R-448A/R-449A		Capacity BTUH @ 90°F Ambient by SST							
Model	Compressor	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F	+0°F
BC*0015M^ACH	CS10K6E	—	—	15,900	14,040	12,300	10,670	9,140	6,480
BC*0020M^ACH	CS12K6E	—	—	17,470	15,360	13,460	11,680	10,030	7,230
BC*0025M^ACH	CS14K6E	—	—	19,860	17,650	15,450	13,460	11,570	8,350
BC*0030M^ACH	CS18K6E	—	—	27,040	23,940	21,080	18,450	16,010	11,610
BC*0032M^ACH	CS20K6E	—	—	30,330	27,140	24,110	21,280	18,620	13,660

PERFORMANCE DATA – R-407A

Medium Temperature Models - Hermetic Compressors

Please consult AWEF table on page 36 to confirm DOE compliance per model

R-407A		Capacity BTUH @ 90°F Ambient by SST							
Model	Compressor	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F	+0°F
BC*0015M^ACH	CS10K6E	—	—	15,940	14,130	12,440	10,860	9,370	6,750
BC*0020M^ACH	CS12K6E	—	—	17,630	15,680	13,810	12,060	10,420	7,510
BC*0025M^ACH	CS14K6E	—	—	19,910	17,740	15,640	13,680	11,830	8,570
BC*0030M^ACH	CS18K6E	—	—	28,190	24,630	21,410	18,530	15,900	11,430
BC*0032M^ACH	CS20K6E	—	—	31,100	27,570	24,300	21,340	18,610	13,690

* H = Outdoor, N = Indoor
^ B = 208-230/1/60, C = 208-230/3/60, D = 460/3/60, E = 575/3/60
‡ C = Copeland Compressor, L = LG Compressor (found in BOHN data sheets)

UNIT SPECIFICATIONS

Medium & Low Temperature Models - Hermetic Compressors

Please consult AWEF table on page 36 to confirm DOE compliance per model

Model	Compressor	Refrigerant Line Connections (OD)		Rec. Capacity @90% full (lbs)		Cabinet[h]	Dimensions (In.)			Net Wt.	Sound Data
		Liquid	Suction	Std	Opt		Depth	Width	Height	(lbs.)	dBa[a]
BC*0015M^ACH	CS10K6E	1/2	7/8	14	20	C2	28.25	39.125	19.75	213	64
BC*0020M^ACH	CS12K6E	1/2	7/8	14	20	C2	28.25	39.125	19.75	223	64
BC*0025M^ACH	CS14K6E	1/2	7/8	14	20	C2	28.25	39.125	19.75	228	64
BC*0030M^ACH	CS18K6E	1/2	7/8	20	40	C3	30.25	43.875	29.25	300	64
BC*0032M^ACH	CS20K6E	1/2	7/8	20	40	C3	30.25	43.875	29.25	305	64
BC*0011L^ACH	CF04K6E	3/8	5/8	9	—	C1	28.25	24.625	19.75	154	62
BC*0014L^ACH	CF06K6E	3/8	5/8	9	—	C1	28.25	24.625	19.75	185	62
BC*0019L^ACH	CF06K6E	1/2	7/8	14	20	C2	28.25	39.125	19.75	220	64
BC*0025L^ACH	CF09K6E	1/2	7/8	14	20	C2	28.25	39.125	19.75	242	64
BC*0031L^ACH	CF12K6E	1/2	7/8	14	20	C2	28.25	39.125	19.75	235	64

INDOOR & OUTDOOR AIR COOLED CONDENSING UNITS

BOHN - Hermetic Reciprocating Condensing Units

1/2 HP to 6 HP Medium Temperature

ELECTRICAL DATA

Medium & Low Temperature Models - Hermetic Compressors

Please consult AWEF table on page 36 to confirm DOE compliance per model

Model	Compressor	Power[d]	Compressor		Condensor		Air Defrost or Remote Controller		Remote Loads			
									Evap. Fan Amps	Defrost Htrs. Amps	Electric Defrost	
			RLA[c]	LRA	No. Fans	FLA	MCA	MOPD			MCA	MOPD
BC*0015MBACH	CS10K6E-PFV	208-230/1/60	11.1	56.0	2	1	15.0	25.0	10	30	37.5	40
BC*0015MCACH	CS10K6E-TF5	208-230/3/60	7.2	51.0	2	1	15.0	15.0	9	23	28.8	30
BC*0020MBACH	CS12K6E-PFV	208-230/1/60	9.8	56.0	2	1	15.0	20.0	10	30	37.5	40
BC*0020MCACH	CS12K6E-TF5	208-230/3/60	6.7	51.0	2	1	15.0	15.0	9	23	28.8	30
BC*0025MBACH	CS14K6E-PFV	208-230/1/60	12.4	61.0	2	1	20.0	25.0	10	30	37.5	40
BC*0025MCACH	CS14K6E-TF5	208-230/3/60	8.5	55.0	2	1	15.0	20.0	9	23	28.8	30
BC*0030MBACH	CS18K6E-PFV	208-230/1/60	14.4	82.0	1	3.5	21.4	35.0	10	30	37.5	45
BC*0030MCACH	CS18K6E-TF5	208-230/3/60	9.4	65.5	1	3.5	20.0	20.0	10	30	37.5	40
BC*0030MDACH	CS18K6E-TFD	460/3/60	4.2	33.0	1	1.9	15.0	15.0	9	23	28.8	30
BC*0032MBACH	CS20K6E-PFV	208-230/1/60	17.9	96.0	1	3.5	25.9	40.0	10	30	37.5	50
BC*0032MCACH	CS20K6E-TF5	208-230/3/60	13.3	75.0	1	3.5	20.2	30.0	10	30	37.5	40
BC*0032MDACH	CS20K6E-TFD	460/3/60	4.6	40.0	1	1.9	15.0	15.0	9	23	28.8	30
BC*0011LBACH	CF04K6E-PFV	208-230/1/60	8.6	59.2	1	0.5	15.0	15.0	5	15	20	20
BC*0011LCACH	CF04K6E-TF5	208-230/3/60	5.7	52.0	1	0.5	15.0	15.0	5	15	20	20
BC*0014LBACH	CF06K6E-PFV	208-230/1/60	10.3	59.2	1	0.5	15.0	20.0	5	15	20	25
BC*0014LCACH	CF06K6E-TF5	208-230/3/60	6.3	52.0	1	0.5	15.0	15.0	5	15	20	20
BC*0019LBACH	CF06K6E-PFV	208-230/1/60	10.3	59.2	2	1	15.0	20.0	10	30	37.5	40
BC*0019LCACH	CF06K6E-TF5	208-230/3/60	6.3	52.0	2	1	15.0	15.0	9	23	28.8	30
BC*0025LBACH	CF09K6E-PFV	208-230/1/60	15.0	87.0	2	1	20.0	30.0	10	30	37.5	40
BC*0025LCACH	CF09K6E-TF5	208-230/3/60	9.2	72.2	2	1	15.0	20.0	9	23	28.8	30
BC*0031LBACH	CF12K6E-PFV	208-230/1/60	18.4	105.0	2	1	24.0	40.0	10	30	37.5	50
BC*0031LCACH	CF12K6E-TF5	208-230/3/60	11.0	85.0	2	1	15.0	25.0	9	23	28.8	30
BC*0031LDACH	CF12K6E-TFD	460/3/60	5.9	42.0	2	1	15.0	15.0	[b]	[b]	15	15

* H = Outdoor, N = Indoor

b. Power suppied by customer B = 208-230/1/60, C = 208-230/3/60, D = 460/3/60, E = 575/3/60

c. Per UL/ULC and NEC, RLA values have been calculated by dividing the Maximum Continuous Current (MCC) by 1.56

d. Unless otherwise noted, model is available for 50Hz. Consult factory for details.

INDOOR & OUTDOOR AIR COOLED CONDENSING UNITS

BOHN - Hermetic Reciprocating Condensing Units

1/2 HP to 6 HP Medium Temperature

AWEF DATA – MEDIUM TEMPERATURE

Hermetic Compressor Models - Indoor/Outdoor

If model has a numerical value in the table below, the following statement applies:
"This refrigeration system is designed and certified for use in walk-in cooler applications."

Model	Indoor						Outdoor					
	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F
BC*0015MBACH	—	—	—	—	X	X	7.60	7.60	7.60	7.60	X	X
BC*0015MCACH	—	—	—	—	X	X	7.60	7.60	7.60	7.60	X	X
BC*0020MBACH	—	X	X	X	X	X	7.60	X	X	X	X	X
BC*0020MCACH	—	—	—	—	X	X	7.60	7.60	7.60	7.60	X	X
BC*0025MBACH	—	—	—	—	X	X	7.60	7.60	7.60	7.60	X	X
BC*0025MCACH	—	—	—	—	X	X	7.60	7.60	7.60	7.60	X	X
BC*0030MBACH	5.61	—	—	—	X	X	7.60	7.60	7.60	7.60	X	X
BC*0030MCACH	5.61	5.61	5.61	—	X	X	7.60	7.60	7.60	7.60	X	X
BC*0030MDACH	5.61	5.61	—	5.61	X	X	7.60	7.60	7.60	7.60	X	X
BC*0032MBACH	5.61	—	—	—	X	X	7.60	7.60	7.60	7.60	X	X
BC*0032MCACH	5.61	5.61	5.61	—	X	X	7.60	7.60	7.60	7.60	X	X
BC*0032MDACH	5.61	5.61	—	—	X	X	7.60	7.60	7.60	7.60	X	X

AWEF DATA – LOW TEMPERATURE

Hermetic Compressor Models - Indoor/Outdoor

If model has a numerical value in the table below, the following statement applies:
"This refrigeration system is designed and certified for use in walk-in freezer applications."

Model	Indoor						Outdoor					
	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F
BC*0011LBACH	2.07	X	X	X	X	X	2.90	X	X	X	X	X
BC*0011LCACH	2.06	X	X	X	X	X	2.89	X	X	X	X	X
BC*0014LBACH	—	X	X	X	X	X	3.00	X	X	X	X	X
BC*0014LCACH	2.21	X	X	X	X	X	2.99	X	X	X	X	X
BC*0019LBACH	—	X	X	X	X	X	3.03	X	X	X	X	X
BC*0019LCACH	—	X	X	X	X	X	3.01	X	X	X	X	X
BC*0025LBACH	—	X	X	X	X	X	—	X	X	X	X	X
BC*0025LCACH	—	X	X	X	X	X	3.15	X	X	X	X	X
BC*0031LBACH	—	X	X	X	X	X	—	X	X	X	X	X
BC*0031LCACH	—	X	X	X	X	X	3.15	X	X	X	X	X
BC*0031LDACH	—	X	X	X	X	X	3.15	X	X	X	X	X

INDOOR & OUTDOOR SCROLL CONDENSING UNITS

BOHN - Hermetic Scroll Condensing Units

1/2 HP to 6 HP Medium Temperature

Performance Data ****** Please consult manufacture's AWEF data sheet to confirm compliance with all units******

Model		Capacity BTUH @ +90°F Ambient by SST									
New	Old	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F	0°F	-10°F	-20°F
R-448A / R-449A											
BC*0005M^ACZ	BZ*005M6^	9,680	8,840	8,030	7,260	6,530	5,840	5,200	4,090		
BC*0008M^ACZ	BZ*008M6^	11,150	10,260	9,420	8,590	7,790	7,030	6,300	4,950		
BC*0009M^ACZ	BZ*009M6^	12,580	11,680	10,770	9,870	9,020	8,160	7,340	5,780		
BC*0010M^A‡Z	BZ*010M6^	13,500	12,240	11,080	10,050	9,130	8,310	7,570	6,330		
BC*0015M^A‡Z	BZ*015M6^	19,570	17,670	15,910	14,340	12,930	11,690	10,580	8,710		
BC*0020M^A‡Z	BZ*020M6^	22,970	20,760	18,730	16,950	15,330	13,900	12,630	10,480		
BC*0025M^A‡Z	BZ*025M6^	25,270	22,880	20,700	18,720	17,000	15,460	14,070	11,760		
BC*0030M^A‡Z	BZ*030M6^	37,270	34,140	31,100	28,270	25,610	23,160	20,880	16,860		
BC*0035M^A‡Z	BZ*035M6^	45,170	41,130	37,250	33,700	30,310	27,240	24,440	19,780		
BC*0045M^A‡Z	BZ*045M6^	45,790	42,010	38,410	35,040	31,820	28,810	26,030	21,100		
BC*0050M^A‡Z	BZ*050M6^	50,040	46,000	42,110	38,410	34,880	31,620	28,470	22,790		
BC*0055M^A‡Z	BZ*055M6^	55,890	51,810	47,850	43,820	39,900	36,310	32,480	25,820		
BC*0060M^A‡Z	BZ*060M6^	64,210	59,590	54,990	50,460	46,130	41,830	37,700	30,120		
R-407A											
BC*0005M^ACZ	BZ*005M6^	10,150	9,230	8,340	7,510	6,740	6,040	5,420	4,430	3800	
BC*0008M^ACZ	BZ*008M6^	11,520	10,680	9,850	8,970	8,080	7,230	6,430	5,050	4180	
BC*0009M^ACZ	BZ*009M6^	12,540	11,940	11,210	10,340	9,430	8,490	7,520	5,790	4660	
BC*0010M^A‡Z	BZ*010M6^	14550	13,360	12,240	1,120	10,230	9,360	8,550	7,050	5680	4320
BC*0015M^A‡Z	BZ*015M6^	21,110	19,300	17,610	16,050	14,610	13,300	12,080	9,900	7950	6070
BC*0020M^A‡Z	BZ*020M6^	24,710	22,630	20,680	18,910	17,250	15,700	14,290	11,750	9450	7210
BC*0025M^A‡Z	BZ*025M6^	27,230	24,970	22,870	20,920	19,090	17,450	15,890	13,090	10540	8030
BC*0030M^A‡Z	BZ*030M6^	38,360	35,160	32,010	29,090	26,340	23,770	21,370	17,080	13390	10160
BC*0035M^A‡Z	BZ*035M6^	42,110	38,470	35,120	31,890	28,900	26,130	23,550	18,940	14980	11500
BC*0045M^A‡Z	BZ*045M6^	46,300	42,460	38,760	35,370	32,110	29,070	26,200	20,980	16310	14120
BC*0050M^A‡Z	BZ*050M6^	51,350	47,200	43,230	39,460	25,870	32,550	29,350	23,530	18340	13590
BC*0055M^A‡Z	BZ*055M6^	56,200	52,290	48,280	44,370	40,570	36,920	33,460	26,920	21240	16490
BC*0060M^A‡Z	BZ*060M6^	65,340	60,610	56,130	51,600	47,260	43,130	39,200	31,980	25540	19950
R-407C											
BC*0005M^ACZ	BZ*005M6^	9,050	8,160	7,330	6,550	5,840	5,190	4,610	3,640		
BC*0008M^ACZ	BZ*008M6^	10,540	9,640	8,740	7,890	7,080	6,320	5,610	4,370		
BC*0009M^ACZ	BZ*009M6^	12,060	11,070	10,100	9,180	8,280	7,430	6,620	5,160		
BC*0010M^A‡Z	BZ*010M6^	13,360	12,280	11,230	10,210	9,240	8,320	7,400	5,630		
BC*0015M^A‡Z	BZ*015M6^	19,040	17,460	15,900	14,420	13,010	11,650	10,330	7,780		
BC*0020M^A‡Z	BZ*020M6^	22,470	20,610	18,810	17,100	15,420	13,830	12,290	9,320		
BC*0025M^A‡Z	BZ*025M6^	24,930	22,890	20,910	19,000	17,190	15,440	13,760	1,058		
BC*0030M^A‡Z	BZ*030M6^	35,120	32,080	29,200	26,450	23,820	21,330	18,950	14,510		
BC*0035M^A‡Z	BZ*035M6^	38,430	35,230	32,090	29,110	26,260	23,530	20,890	15,790		
BC*0045M^A‡Z	BZ*045M6^	42,540	38,950	35,570	32,320	29,140	26,130	23,240	17,760		
BC*0050M^A‡Z	BZ*050M6^	46,520	42,680	38,930	35,410	32,010	28,700	25,520	19,430		
BC*0055M^A‡Z	BZ*055M6^	57,160	52,990	48,750	44,620	40,630	36,830	33,190	26,540		
BC*0060M^A‡Z	BZ*060M6^	66,930	61,820	56,840	52,150	47,540	43,190	39,070	31,570		

* H = Outdoor, N = Indoor

^ B = 208-230/1/60, C = 208-230/3/60, D = 460/3/60, E = 575/3/60

‡ C = Copeland Compressor, L = LG Compressor (found in BOHN data sheets)

Unit Specifications

Model	Compressor	Refrigerant Line Connections (OD)		Rec. Capacity @ 90% full (lbs)		Cabinet	Dimensions (In.)			Net Wt.	Sound Data
		Liquid	Suction	Std	Opt		Depth	Width	Height	(lbs.)	dBa[a]
BC*0005M^ACZ	ZB06KAE	3/8	5/8	9		C1	28.25	24.625	19.75	167	61
BC*0008M^ACZ	ZB07KAE	3/8	5/8	9		C1	28.25	24.625	19.75	168	61
BC*0009M^ACZ	ZB08KAE	3/8	5/8	9		C1	28.25	24.625	19.75	168	61
BC*0010M^A‡Z	ZS09KAE	3/8	5/8	9		C1	28.25	24.625	19.75	179	61
BC*0015M^A‡Z	ZS13KAE	1/2	7/8	14	20	C2	28.25	39.125	19.75	221	63
BC*0020M^A‡Z	ZS15KAE	1/2	7/8	14	20	C2	28.25	39.125	19.75	221	63
BC*0025M^A‡Z	ZS19KAE	1/2	7/8	14	20	C2	28.25	39.125	19.75	230	63
BC*0030M^A‡Z	ZS21KAE	1/2	7/8	20	40	C3	30.25	43.875	29.25	297	63
BC*0035M^A‡Z	ZS26KAE	1/2	7/8	20	40	C3	30.25	43.875	29.25	300	63
BC*0045M^A‡Z	ZS29KAE	1/2	1-1/8	20	40	C3	30.25	43.875	29.25	327	63
BC*0050M^A‡Z	ZS33KAE	1/2	1-1/8	20	40	C3	30.25	43.875	29.25	330	63
BC*0055M^A‡Z	ZS38K4E	1/2	1-1/8	20	40	C3	30.25	43.875	29.25	332	63
BC*0060M^A‡Z	ZS45K4E	1/2	1-1/8	20	40	C3	30.25	43.875	29.25	335	63

INDOOR & OUTDOOR SCROLL CONDENSING UNITS

BOHN - Hermetic Scroll Condensing Units

1/2 HP to 6 HP Medium Temperature

Electrical Data

Model	Power	Compressor[d]		Condenser No. Fans	FLA	Air Defrost or Remote Controller		Remote Loads: Evap. Fan Amps	Remote Loads: Defrost Heaters Amps	Remote Loads: Electric Defrost	
		RLA[c]	LRA			MCA	MOPD			MCA	MOPD
BC*0005MBACZ	208-230/1/60	5.4	35.7	1	0.5	15	15.00	5.0	15.0	20.0	20.0
BC*0005MCACZ	208-230/3/60	4.3	37.8	1	0.5	15.0	15.00	5.0	15.0	20.0	20.0
BC*0008MBACZ	208-230/1/60	5.6	48.0	1	0.5	15.0	15.00	5.0	15.0	20.0	20.0
BC*0008MCACZ	208-230/3/60	4.7	37.8	1	0.5	15.0	15.00	5.0	15.0	20.0	20.0
BC*0009MBACZ	208-230/1/60	7.2	47.2	1	0.5	15.0	15.00	5.0	15.0	20.0	20.0
BC*0009MCACZ	208-230/3/60	4.7	37.8	1	0.5	15.0	15.00	5.0	15.0	20.0	20.0
BC*0010MBACZ	208-230/1/60	9.0	40.3	1	0.5	15.0	20.00	5.0	15.0	20.0	25.0
BC*0010MCACZ	208-230/3/60	7.2	55.4	1	0.5	15.0	15.00	5.0	15.0	20.0	20.0
BC*0010MDACZ	460/3/60	3.4	28.0	1	0.5	15.0	15.00	5.0	15.0	20.0	20.0
BC*0010MEACZ	575/3/60			1							
BC*0015MBACZ	208-230/1/60	10.8	56.0	2	1.0	15.0	25.00	10.0	30.0	37.5	40.0
BC*0015MCACZ	208-230/3/60	8.7	58.0	2	1.0	15.0	20.00	9.0	23.0	28.8	30.0
BC*0015MDACZ	460/3/60	4.3	29.0	2	1.0	15.0	15.00	b	b	15.0	15.0
BC*0015MEACZ	575/3/60			2	1.0						
BC*0020MBACZ	208-230/1/60	14.1	68.0	2	1.0	20.0	30.00	10.0	30.0	37.5	40.0
BC*0020MCACZ	208-230/3/60	9.6	58.0	2	1.0	15.0	20.00	9.0	23.0	28.8	30.0
BC*0020MDACZ	460/3/60	4.8	29.0	2	1.0	15.0	15.00	b	b	15.0	15.0
BC*0020MEACZ	575/3/60			2							
BC*0025MBACZ	208-230/1/60	16.2	75.0	2	1.0	21.2	35.00	10.0	30.0	37.5	45.0
BC*0025MCACZ	208-230/3/60	12.3	730.0	2	1.0	20.0	25.00	9.0	23.0	28.8	35.0
BC*0025MDACZ	460/3/60	5.8	38.0	2	1.0	15.0	15.00	b	b	15.0	15.0
BC*0025MEACZ	575/3/60			2							
BC*0030MBACZ	208-230/1/60	20.8	112.0	1	3.5	29.5	50.00	10.0	30.0	39.5	60.0
BC*0030MCACZ	208-230/3/60	13.7	93.0	1	3.5	20.6	30.00	10.0	30.0	37.5	40.0
BC*0030MDACZ	460/3/60	6.2	48.0	1	1.9	15.0	15.00	9.0	23.0	28.8	30.0
BC*0030MEACZ	575/3/60			1							
BC*0035MBACZ	208-230/1/60	21.2	104.0	1	3.5	29.9	50.00	10.0	30.0	39.9	60.0
BC*0035MCACZ	208-230/3/60	13.9	93.0	1	3.5	20.9	30.00	10.0	30.0	37.5	40.0
BC*0035MDACZ	460/3/60	6.2	48.0	1	1.9	15.0	15.00	9.0	23.0	28.8	30.0
BC*0035MEACZ	575/3/60			1							
BC*0045MBACZ	208-230/1/60	23.4	137.0	1	3.5	32.7	50.00	10.0	30.0	42.7	60.0
BC*0045MCACZ	208-230/3/60	18.4	114.0	1	3.5	26.5	40.00	10.0	30.0	37.5	50.0
BC*0045MDACZ	460/3/60	8.4	58.0	1	1.9	15.0	20.00	9.0	23.0	28.8	30.0
BC*0045MEACZ	575/3/60			1							
BC*0050MBACZ	208-230/1/60	23.0	146.0	1	3.5	32.3	50.00	10.0	30.0	42.3	60.0
BC*0050MCACZ	208-230/3/60	20.0	114.0	1	3.5	28.5	45.00	10.0	30.0	38.5	50.0
BC*0050MDACZ	460/3/60	9.0	52.0	1	1.9	15.0	20.00	9.0	23.0	28.8	30.0
BC*0050MEACZ	575/3/60			1							
BC*0055MBACZ	208-230/1/60	28.5	169.0	1	3.5	39.2	60.00	10.0	30.0	49.2	60.0
BC*0055MCACZ	208-230/3/60	19.2	123.0	1	3.5	27.5	45.00	10.0	30.0	37.5	50.0
BC*0055MDACZ	460/3/60	8.7	62.0	1	1.9	15.0	20.00	9.0	23.0	28.8	30.0
BC*0055MEACZ	575/3/60			1							
BC*0060MCACZ	208-230/3/60	21.5	156.0	1	3.5	30.3	50.00	10.0	30.0	40.3	60.0
BC*0060MDACZ	460/3/60	8.3	75.0	1	1.9	15.0	20.00	9.0	23.0	28.8	30.0
BC*0060MEACZ	575/3/60			1							

* H = Outdoor, N = Indoor

b. Power suppied by customer B = 208-230/1/60, C = 208-230/3/60, D = 460/3/60, E = 575/3/60

c. Per UL/ULC and NEC, RLA values have been calculated by dividing the Maximum Continuous Current (MCC) by 1.56

d. Unless otherwise noted, model is available for 50Hz. Consult factory for details.

INDOOR & OUTDOOR SCROLL CONDENSING UNITS

BOHN - Hermetic Scroll Condensing Units

1/2 HP to 6 HP Medium Temperature

Model	Indoor						Outdoor					
	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F
BC*0005MBACZ	—	—	—	—	—	X	7.60	—	7.60	—	7.60	X
BC*0005MCACZ	—	—	—	—	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0008MBACZ	—	—	—	—	—	X	7.60	—	7.60	7.60	7.60	X
BC*0008MCACZ	—	—	—	—	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0009MBACZ	—	—	—	—	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0009MCACZ	—	—	—	—	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0010MBACZ	—	—	—	—	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0010MCACZ	—	—	—	—	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0010MDACZ	—	—	—	—	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0015MBACZ	5.61	—	—	5.61	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0015MCACZ	5.61	—	—	5.61	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0015MDACZ	5.61	—	—	5.61	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0020MBACZ	5.61	—	—	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0020MCACZ	5.61	—	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0020MDACZ	5.61	—	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0025MBACZ	5.61	—	—	5.61	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0025MCACZ	5.61	—	—	5.61	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0025MDACZ	5.61	—	—	5.61	—	X	7.60	7.60	7.60	7.60	7.60	X
BC*0030MBACZ	5.61	5.61	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0030MCACZ	5.61	5.61	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0030MDACZ	5.61	5.61	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0035MBACZ	5.61	5.61	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0035MCACZ	5.61	5.61	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0035MDACZ	5.61	5.61	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0045MBACZ	5.61	5.61	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0045MCACZ	5.61	5.61	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0045MDACZ	5.61	5.61	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0050MBACZ	5.61	5.61	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0050MCACZ	5.61	5.61	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0050MDACZ	5.61	5.61	5.61	5.61	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0055MBACZ	5.61	—	X	—	5.61	X	7.60	—	X	7.60	7.60	X
BC*0055MCACZ	5.61	—	—	—	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0055MDACZ	5.61	—	—	—	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0060MCACZ	5.61	—	—	—	5.61	X	7.60	7.60	7.60	7.60	7.60	X
BC*0060MDACZ	5.61	—	—	—	5.61	X	7.60	7.60	7.60	7.60	7.60	X

Notes:
*H = Outdoor, N = Indoor
X = model not suitable for this refrigerant
— = model is not DOE AWEF compliant

INDOOR & OUTDOOR SCROLL CONDENSING UNITS

BOHN - Hermetic Scroll Condensing Units

1/2 HP to 6 HP Low Temperature

PERFORMANCE DATA – R-448A/R-449A

Low Temperature Models - Scroll Compressors (Cont.)

Please consult AWEF table on page 29 to confirm DOE compliance per model

R-448A/R-449A		Capacity BTUH @ 100°F Ambient by SST								
Model	Compressor	0°F	-5°F	-10°F	-15°F	-20°F	-25°F	-30°F	-35°F	-40°F
BC*0006L^ACZ	ZF03KAE	4,310	3,850	3,450	3,080	2,760	2,460	2,200	1,950	1,720
BC*0008L^ACZ	ZF04KAE	5,820	5,180	4,600	4,060	3,570	3,130	2,750	2,430	2,160
BC*0010L^ACZ	ZF05KAE	6,750	6,040	5,380	4,760	4,200	3,680	3,220	2,820	2,470
BC*0022L^ACZ	ZF07KAE	9,500	8,580	7,740	6,980	6,290	5,630	5,020	4,430	3,830
BC*0025L^ACZ	ZF08K4E	12,600	11,320	10,140	9,050	8,050	7,140	6,310	5,540	4,830
BC*0030L^ACZ	ZF09K4E	13,830	12,440	11,170	9,980	8,870	7,840	6,880	5,970	5,090
BC*0035L^ACZ	ZF11K4E	16,740	15,120	13,610	12,200	10,900	9,700	8,610	7,590	6,660
BC*0045L^ACZ	ZF13K4E	20,640	18,470	16,470	14,630	12,940	11,420	10,060	8,860	7,810
BC*0055L^ACZ	ZF15K4E	24,730	22,200	19,890	17,760	15,810	14,040	12,460	11,030	9,760
BC*0060L^ACZ	ZF18K4E	28,790	26,020	23,440	21,040	18,820	16,790	14,940	13,240	11,710

PERFORMANCE DATA – R-407A/R-407F

Low Temperature Models - Scroll Compressors

Please consult AWEF table on page 29 to confirm DOE compliance per model

R-407A/R-407F		Capacity BTUH @ 90°F Ambient by SST								
Model	Compressor	0°F	-5°F	-10°F	-15°F	-20°F	-25°F	-30°F	-35°F	-40°F
BC*0006L^ACZ	ZF03KAE	4,670	4,170	3,720	3,310	2,950	2,630	2,340	2,090	1,860
BC*0008L^ACZ	ZF04KAE	6,350	5,640	4,980	4,380	3,840	3,360	2,940	2,590	2,310
BC*0010L^ACZ	ZF05KAE	7,360	6,560	5,810	5,120	4,480	3,910	3,410	2,980	2,610
BC*0022L^ACZ	ZF07KAE	10,530	9,550	8,620	7,780	6,970	6,210	5,490	4,780	4,080
BC*0025L^ACZ	ZF08K4E	13,690	12,330	11,050	9,840	8,710	7,650	6,680	5,800	4,990
BC*0030L^ACZ	ZF09K4E	14,900	13,580	12,260	10,930	9,640	8,440	7,360	6,440	5,730
BC*0035L^ACZ	ZF11K4E	18,010	16,490	14,920	13,320	11,770	10,300	8,980	7,860	6,990
BC*0045L^ACZ	ZF13K4E	22,420	20,090	17,870	15,780	13,840	12,090	10,560	9,260	8,250
BC*0055L^ACZ	ZF15K4E	27,000	24,170	21,540	19,080	16,830	14,810	13,060	11,590	10,430
BC*0060L^ACZ	ZF18K4E	31,670	28,520	25,520	22,650	20,010	17,620	15,530	13,750	12,330

PERFORMANCE DATA – R-407C

Low Temperature Models - Scroll Compressors

Please consult AWEF table on page 29 to confirm DOE compliance per model

R-407C		Capacity BTUH @ 90°F Ambient by SST								
Model	Compressor	0°F	-5°F	-10°F	-15°F	-20°F	-25°F	-30°F	-35°F	-40°F
BC*0006L^ACZ	ZF03KAE	4,130	3,670	3,260	2,900	2,580	2,310	2,070	1,860	1,670
BC*0008L^ACZ	ZF04KAE	5,600	4,950	4,360	3,820	3,340	2,920	2,560	2,260	2,020
BC*0010L^ACZ	ZF05KAE	6,550	5,810	5,130	4,500	3,930	3,430	2,990	2,610	2,300
BC*0022L^ACZ	ZF07KAE	9,420	8,420	7,560	6,790	6,090	5,440	4,820	4,180	3,500
BC*0025L^ACZ	ZF08K4E	—	—	—	—	—	—	—	—	—
BC*0030L^ACZ	ZF09K4E	13,120	11,920	10,710	9,520	8,380	7,330	6,410	5,630	5,040
BC*0035L^ACZ	ZF11K4E	16,020	14,600	13,140	11,660	10,260	8,960	7,810	6,870	6,200
BC*0045L^ACZ	ZF13K4E	19,420	17,330	15,370	13,520	11,830	10,330	9,030	7,940	7,120
BC*0055L^ACZ	ZF15K4E	23,430	20,950	18,610	16,440	14,450	12,690	11,170	9,930	9,000
BC*0060L^ACZ	ZF18K4E	27,620	24,750	22,070	19,540	17,230	15,160	13,370	11,880	10,740

Notes:
* H = Outdoor, N = Indoor
^ B = 208-230/1/60, C = 208-230/3/60, D = 460/3/60

INDOOR & OUTDOOR SCROLL CONDENSING UNITS

BOHN - Hermetic Scroll Condensing Units

1/2 HP to 6 HP Low Temperature

UNIT SPECIFICATIONS

Medium & Low Temperature Models - Scroll Compressors

Please consult AWEF table on pages 27-29 to confirm DOE compliance per model

Model	Compressor	Refrigerant Line Connections (OD)		Rec. Capacity @90% full (lbs)		Cabinet[h]	Dimensions (In.)			Net Wt.	Sound Data
		Liquid	Suction	Std	Opt		Depth	Width	Height	(lbs.)	dBa[a]
BC*0005M^ACZ	ZB06KAE	3/8	5/8	9	—	C1	28.25	24.625	19.75	167	61
BC*0008M^ACZ	ZB07KAE	3/8	5/8	9	—	C1	28.25	24.625	19.75	168	61
BC*0009M^ACZ	ZB08KAE	3/8	5/8	9	—	C1	28.25	24.625	19.75	168	61
BC*0010M^A‡Z	ZS09KAE / MPA010	3/8	5/8	9	—	C1	28.25	24.625	19.75	179	61
BC*0015M^A‡Z	ZS13KAE / MPA013	1/2	7/8	14	20	C2	28.25	39.125	19.75	221	63
BC*0020M^A‡Z	ZS15KAE / MPA015	1/2	7/8	14	20	C2	28.25	39.125	19.75	221	63
BC*0025M^A‡Z	ZS19KAE / MPA019	1/2	7/8	14	20	C2	28.25	39.125	19.75	230	63
BC*0030M^A‡Z	ZS21KAE / MBA021	1/2	7/8	20	40	C3	30.25	43.875	29.25	297	63
BC*0035M^A‡Z	ZS26KAE / MBA026	1/2	7/8	20	40	C3	30.25	43.875	29.25	300	63
BC*0045M^A‡Z	ZS29KAE / MBA029	1/2	1 1/8	20	40	C3	30.25	43.875	29.25	327	63
BC*0050M^A‡Z	ZS33KAE / MBA033	1/2	1 1/8	20	40	C3	30.25	43.875	29.25	330	63
BC*0055M^A‡Z	ZS38K4E / MRA038	1/2	1 1/8	20	40	C3	30.25	43.875	29.25	332	63
BC*0060M^A‡Z	ZS45K4E / MRA045	1/2	1 1/8	20	40	C3	30.25	43.875	29.25	335	63
BC*0006L^ACZ	ZF03KAE	3/8	5/8	9	—	C1	28.25	24.625	19.75	169	63
BC*0008L^ACZ	ZF04KAE	3/8	5/8	9	—	C1	28.25	24.625	19.75	171	63
BC*0010L^ACZ	ZF05KAE	3/8	5/8	9	—	C1	28.25	24.625	19.75	172	63
BC*0022L^ACZ	ZF07KAE	3/8	5/8	9	—	C1	28.25	24.625	19.75	173	63
BC*0025L^ACZ	ZF08K4E	1/2	7/8	14	20	C2	28.25	39.125	19.75	230	64
BC*0030L^ACZ	ZF09K4E	1/2	7/8	14	20	C2	28.25	39.125	19.75	230	64
BC*0035L^ACZ	ZF11K4E	1/2	7/8	14	20	C2	28.25	39.125	19.75	232	64
BC*0045L^ACZ	ZF13K4E	1/2	7/8	20	40	C3	30.25	43.875	29.25	317	64
BC*0055L^ACZ	ZF15K4E	1/2	7/8	20	40	C3	30.25	43.875	29.25	323	64
BC*0060L^ACZ	ZF18K4E	1/2	7/8	20	40	C3	30.25	43.875	29.25	327	64

Notes:

* H = Outdoor, N = Indoor

^ B = 208-230/1/60, C = 208-230/3/60, D = 460/3/60

‡ C = Copeland, L = LG

a. Estimated sound pressure values are 10 feet from the unit. For estimating sound pressure from the unit at different distances, deduct the following from the unit values: 20 feet, deduct 6 dBA; for 40 feet, deduct 12 dBA; for 80 feet, deduct 18 dBA. This data is typical of "free field" conditions for horizontal air cooled condensing units at the outlet of the discharge air. The actual sound measurements may vary depending on the condensing unit installation. Factors such as reflecting walls, background noise and mounting conditions may have a significant influence on this data.

h. See Page 43 for dimensional drawings

INDOOR & OUTDOOR SCROLL CONDENSING UNITS

BOHN - Hermetic Scroll Condensing Units

1/2 HP to 6 HP Low Temperature

Model	Compressor	Power[d]	Compressor		Condensor		Air Defrost or Remote Controller		Remote Loads			
									Evap. Fan Amps	Defrost Htrs. Amps	Electric Defrost	
			RLA[c]	LRA	No. Fans	FLA	MCA	MOPD			MCA	MOPD
BC*0006LBACZ	ZF03KAE-PFV	208-230/1/60	5.4	42.3	1	0.5	15.0	15.0	5	15	20	20
BC*0006LCACZ	ZF03KAE-TF5	208-230/3/60	3.7	31.7	1	0.5	15.0	15.0	5	15	20	20
BC*0008LBACZ	ZF04KAE-PFV	208-230/1/60	6.6	40.3	1	0.5	15.0	15.0	5	15	20	20
BC*0008LCACZ	ZF04KAE-TF5	208-230/3/60	6.0	55.4	1	0.5	15.0	15.0	5	15	20	20
BC*0008LDACZ	ZF04KAE-TFD	460/3/60	3.0	28.0	1	0.5	15.0	15.0	5	15	20	20
BC*0010LBACZ	ZF05KAE-PFV	208-230/1/60	7.8	55.0	1	0.5	15.0	15.0	5	15	20	20
BC*0010LCACZ	ZF05KAE-TF5	208-230/3/60	6.6	58.0	1	0.5	15.0	15.0	5	15	20	20
BC*0010LDACZ	ZF05KAE-TFD	460/3/60	2.9	28.0	1	0.5	15.0	15.0	5	15	20	20
BC*0022LBACZ	ZF07KAE-PFV	208-230/1/60	12.4	75.0	1	0.5	20.0	25.0	5	15	21	30
BC*0022LCACZ	ZF07KAE-TF5	208-230/3/60	7.8	58.0	1	0.5	15.0	15.0	5	15	20	20
BC*0022LDACZ	ZF07KAE-TFD	460/3/60	3.6	28.0	1	0.5	15.0	15.0	5	15	20	20
BC*0025LBACZ	ZF08K4E-PFV	208-230/1/60	14.7	73.0	2	1	20.0	30.0	10	30	37.5	40
BC*0025LCACZ	ZF08K4E-TF5	208-230/3/60	8.7	63.0	2	1	15.0	20.0	9	23	28.8	30
BC*0025LDACZ	ZF08K4E-TFD	460/3/60	4.5	31.0	2	1	15.0	15.0	b	b	15	15
BC*0030LBACZ	ZF09K4E-PFV	208-230/1/60	12.8	88.0	2	1	20.0	25.0	10	30	37.5	40
BC*0030LCACZ	ZF09K4E-TF5	208-230/3/60	9.9	77.0	2	1	15.0	20.0	9	23	28.8	30
BC*0030LDACZ	ZF09K4E-TFD	460/3/60	4.5	39.0	2	1	15.0	15.0	b	b	15	15
BC*0035LBACZ	ZF11K4E-PFV	208-230/1/60	16.3	109.0	2	1	21.4	35.0	10	30	37.5	45
BC*0035LCACZ	ZF11K4E-TF5	208-230/3/60	12.2	88.0	2	1	20.0	25.0	9	23	28.8	35
BC*0035LDACZ	ZF11K4E-TFD	460/3/60	5.8	44.0	2	1	15.0	15.0	b	b	15	15
BC*0045LBACZ	ZF13K4E-PFV	208-230/1/60	24.0	129.0	1	3.5	33.5	50.0	10	30	43.5	60
BC*0045LCACZ	ZF13K4E-TF5	208-230/3/60	11.9	99.0	1	3.5	20.0	30.0	10	30	37.5	40
BC*0045LDACZ	ZF13K4E-TFD	460/3/60	6.4	49.5	1	1.9	15.0	15.0	9	23	28.8	30
BC*0055LBACZ	ZF15K4E-PFV	208-230/1/60	24.7	169.0	1	3.5	34.3	50.0	10	30	44.3	60
BC*0055LCACZ	ZF15K4E-TF5	208-230/3/60	17.0	123.0	1	3.5	24.7	40.0	10	30	37.5	50
BC*0055LDACZ	ZF15K4E-TFD	460/3/60	8.7	62.0	1	1.9	15.0	20.0	9	23	28.8	30
BC*0060LCACZ	ZF18K4E-TF5	208-230/3/60	21.5	156.0	1	3.5	30.3	50.0	10	30	40.3	60
BC*0060LDACZ	ZF18K4E-TFD	460/3/60	8.0	75.0	1	1.9	15.0	15.0	9	23	28.8	30

Notes:
* H = Outdoor, N = Indoor
b. Power supplied by customer
c. Per UL and NEC, RLA values have been calculated by dividing the Maximum Continuous Current (MCC) by 1.56.
d. Unless otherwise noted, model is available for 50 Hz. Consult factory for details.

INDOOR & OUTDOOR SCROLL CONDENSING UNITS

BOHN - Hermetic Scroll Condensing Units

1/2 HP to 6 HP Low Temperature

AWEF DATA – LOW TEMPERATURE

Copeland Scroll Models - Indoor/Outdoor

If model has a numerical value in the table below, the following statement applies:
"This refrigeration system is designed and certified for use in walk-in freezer applications."

Model	Indoor						Outdoor					
	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F
BC*0006LBACZ	2.04	—	—	—	—	2.01	2.88	2.87	2.87	2.87	—	2.87
BC*0006LCACZ	2.04	—	—	—	—	2.01	2.88	2.87	2.87	2.87	—	2.87
BC*0008LBACZ	—	—	—	—	—	—	—	—	—	—	—	—
BC*0008LCACZ	2.11	—	—	—	—	2.07	2.93	2.91	2.90	2.91	2.89	2.91
BC*0008LDACZ	2.11	—	—	—	—	2.07	2.93	2.91	2.90	2.91	2.89	2.91
BC*0010LBACZ	2.17	—	—	—	—	—	2.98	2.94	2.94	2.94	2.92	2.94
BC*0010LCACZ	—	—	—	—	—	—	2.98	2.94	2.94	2.94	2.92	2.94
BC*0010LDACZ	—	—	—	—	—	—	2.98	2.94	2.94	2.94	2.92	2.94
BC*0022LBACZ	—	—	—	—	—	—	3.10	3.04	3.04	3.06	3.02	3.07
BC*0022LCACZ	—	—	—	—	—	—	3.10	3.04	3.04	3.06	3.02	3.07
BC*0022LDACZ	—	—	—	—	—	—	3.10	3.04	3.04	3.06	3.02	3.07
BC*0025LBACZ	—	—	—	X	X	X	3.15	3.14	3.13	X	X	X
BC*0025LCACZ	—	—	—	—	X	—	3.15	3.12	3.12	3.13	X	3.14
BC*0025LDACZ	—	—	—	—	X	—	3.15	3.12	3.12	3.13	X	3.14
BC*0030LBACZ	2.40	—	—	—	—	X	3.15	3.15	3.15	3.14	3.10	X
BC*0030LCACZ	2.40	—	—	—	—	—	3.15	3.15	3.15	3.15	3.13	3.15
BC*0030LDACZ	2.40	—	—	—	—	—	3.15	3.15	3.15	3.15	3.13	3.15
BC*0035LBACZ	—	—	—	—	—	X	3.15	3.15	3.15	—	3.15	X
BC*0035LCACZ	2.40	—	—	—	—	—	3.15	3.15	3.15	3.15	3.15	3.15
BC*0035LDACZ	2.40	—	—	—	—	—	3.15	3.15	3.15	3.15	3.15	3.15
BC*0045LBACZ	2.40	—	—	—	2.40	X	3.15	3.15	3.15	3.15	3.15	X
BC*0045LCACZ	2.40	—	—	—	—	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0045LDACZ	2.40	—	—	—	—	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0055LBACZ	2.40	—	—	—	—	X	3.15	3.15	3.15	3.15	3.15	X
BC*0055LCACZ	2.40	—	—	—	—	—	3.15	3.15	3.15	3.15	3.15	3.15
BC*0055LDACZ	2.40	—	—	—	—	—	3.15	3.15	3.15	3.15	3.15	3.15
BC*0060LCACZ	2.40	—	—	—	—	—	3.15	3.15	3.15	3.15	3.15	3.15
BC*0060LDACZ	2.40	—	—	—	—	—	3.15	3.15	3.15	3.15	3.15	3.15

Notes:
*H = Outdoor, N = Indoor
X = model not suitable for this refrigerant
— = model is not DOE AWEF compliant

AIR COOLED CONDENSING UNITS

BOHN - 3 - 22 HP Air Cooled Condensing Units

NOMENCLATURE

BRAND
B = Bohn

CONDENSING UNIT STYLE
H = Outdoor Horizontal
N = Indoor Horizontal

TEMP RANGE
M = Medium Temperature
L = Low Temperature

REVISION

COMPRESSOR STYLE
D = Discus™
Z = Scroll
X = Bitzer Semi-Hermetic

B	C	H	0030	L	C	A	C	D	A####

PRODUCT IDENTIFIER
C = Condensing Unit

HP

0030 = 3 hp	**0080** = 8 hp
0040 = 4 hp	**0086** = 8.5 hp
0041 = 4 hp	**0090** = 9 hp
0050 = 5 hp	**0091** = 9 hp
0051 = 5 hp	**0100** = 10 hp
0056 = 5.5 hp	**0101** = 10 hp
0060 = 6 hp	**0120** = 12 hp
0061 = 6 hp	**0121** = 12 hp
0062 = 6 hp	**0130** = 13 hp
0065 = 6.5 hp	**0131** = 13 hp
0070 = 7 hp	**0141** = 14 hp
0075 = 7.5 hp	**0150** = 15 hp
0076 = 7.5 hp	**0220** = 22 hp

VOLTAGE
C = 208-230/3/60
D = 460/3/60
E = 575/3/60

COMPRESSOR MANUFACTURER
C = Copeland
B = Bitzer

FACTORY INSTALLED OPTION PACKAGES
A#### = Preferred Option Packages
C#### = A la Carte Options
X#### = Custom Option Packages

STANDARD FEATURES

- ServiceMate™ Diagnostic Module
- Manual Pump down switch
- Electronic Oil Failure Switch (Discus™ Compressors Only)
- Fixed Head pressure control valve (C4 & C5 cabinets only)
  - Medium temp - 150 psi
  - Low temp - 100 psi
- Adjustable head pressure control valve (C6 cabinet only)
- Spring mounted compressors with suction and discharge vibration eliminators (Discus™ and Bitzer Compressors only)
- Crank Case Heater
- Adjustable Low Pressure Control
- Fixed High Pressure Control
- Liquid Line Sight Glass
- Permanent Liquid Line filter
- Outdoor Painted Cabinet
- Floating Tube™ design

AIR COOLED CONDENSING UNITS

BOHN - 6.5 - 14 HP Air Cooled Condensing Units

Medium Temperature 6.5 to 14 HP

R-404A/R-507A		Capacity BTUH @ 90°F Ambient by SST									
Model	Compressor	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F	+5°F	+0°F	-10°F
BC*0065M@ACZ	ZB48KCE	77,170	71,490	66,240	61,130	56,270	51,710	47,250	43,000	39,010	31,710
BC*0070M@ACZ	ZB58K5E	97,540	90,190	83,040	76,350	69,890	63,750	57,930	52,330	46,990	36,810
BC*0075M@ACZ	ZB66K5E	110,080	102,060	94,260	86,900	79,720	72,820	66,510	60,360	54,570	43,810
BC*0086M@ACZ	ZB76K5E	123,580	114,420	105,850	97,690	89,890	82,600	75,480	68,760	62,470	50,390
BC*0100M@ACZ	ZB95K5E	142,810	133,070	123,590	114,100	105,300	96,760	88,420	80,420	72,550	57,420
BC*0141M@ACZ	ZB114K5E	180,210	167,570	154,860	142,890	131,330	120,170	109,580	99,210	89,310	70,820
R-448A/R-449A		**Capacity BTUH @ 90°F Ambient by SST**									
Model	Compressor	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F	+5°F	+0°F	-10°F
BC*0065M@ACZ	ZB48KCE	78,750	72,150	65,840	59,920	54,250	48,990	44,090	39,590	35,490	28,390
BC*0070M@ACZ	ZB58K5E	96,260	87,510	79,120	71,240	63,930	57,190	51,010	45,450	40,490	32,300
BC*0075M@ACZ	ZB66K5E	108,670	99,160	89,840	81,060	72,860	65,370	58,480	52,340	46,930	38,460
BC*0086M@ACZ	ZB76K5E	122,870	112,200	102,050	92,310	83,240	74,870	67,290	60,470	54,460	44,960
BC*0100M@ACZ	ZB95K5E	146,390	133,550	121,290	109,740	99,090	88,870	79,190	69,950	60,840	43,070
BC*0141M@ACZ	ZB114K5E	184,480	167,570	151,530	136,480	122,610	109,520	97,230	85,630	74,580	53,090
R-407A/R-407F		**Capacity BTUH @ 90°F Ambient by SST**									
Model	Compressor	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F	+5°F	+0°F	-10°F
BC*0065M@ACZ	ZB48KCE	78,690	72,600	66,610	60,880	55,240	49,890	44,790	40,010	35,620	27,830
BC*0070M@ACZ	ZB58K5E	96,810	88,720	80,910	73,690	66,900	60,630	54,560	48,660	42,810	30,800
BC*0075M@ACZ	ZB66K5E	109,470	100,600	92,040	83,620	75,530	67,810	60,620	53,840	47,570	36,710
BC*0086M@ACZ	ZB76K5E	125,510	115,590	105,720	96,180	86,680	77,590	68,930	61,020	53,730	41,930
BC*0100M@ACZ	ZB95K5E	143,590	133,110	122,480	111,830	101,300	91,190	81,190	71,730	62,930	48,410
BC*0141M@ACZ	ZB114K5E	182,540	168,040	153,710	139,770	126,400	113,490	101,240	89,780	79,160	61,000
R-407C		**Capacity BTUH @ 90°F Ambient by SST**									
Model	Compressor	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F	+5°F	+0°F	-10°F
BC*0065M@ACZ	ZB48KCE	71,130	65,160	59,300	53,610	48,150	42,820	—	—	—	—
BC*0070M@ACZ	ZB58K5E	90,610	82,250	74,430	67,060	60,330	53,930	48,010	42,400	37,070	—
BC*0075M@ACZ	ZB66K5E	102,960	93,420	84,540	76,210	68,450	61,330	54,690	48,420	42,500	—
BC*0086M@ACZ	ZB76K5E	118,020	107,560	97,670	88,460	79,780	71,780	64,380	57,560	51,300	—
BC*0100M@ACZ	ZB95K5E	138,290	125,810	113,930	102,750	92,270	82,520	73,440	64,780	56,570	—
BC*0141M@ACZ	ZB114K5E	168,890	153,790	139,360	125,770	113,200	101,460	—	—	—	—

Model	Compressor	Refrigerant Line Connections (OD)		Rec. Capacity @90% full (lbs)		Cabinet[h]	Dimensions (In.)			Net Wt.	Sound Data
		Liquid	Suction	Std	Opt		Depth	Width	Height	(lbs.)	dBa[†]
BC*0065M@ACZ	ZB48KCE	1/2	1 1/8	28	52	C4	36.75	51.75	39.25	574	78
BC*0070M@ACZ	ZB58K5E	5/8	1 3/8	67	78	C5	36.75	63.75	39.25	800	80
BC*0075M@ACZ	ZB66K5E	5/8	1 3/8	67	78	C5	36.75	63.75	39.25	813	80
BC*0086M@ACZ	ZB76K5E	5/8	1 3/8	67	78	C5	36.75	63.75	39.25	818	80
BC*0100M@ACZ	ZB95K5E	5/8	1 3/8	67	78	C5	36.75	63.75	39.25	908	82
BC*0141M@ACZ	ZB114K5E	7/8	1 5/8	87	98	C6	41.75	75.125	48.75	1,235	82

AIR COOLED CONDENSING UNITS

BOHN - 6.5 - 14 HP Air Cooled Condensing Units

Low Temperature 6.5 to 14 HP

R-404A/R-507A		Capacity BTUH @ 90°F Ambient by SST								
Model	Compressor	+0°F	-5°F	-10°F	-15°F	-20°F	-25°F	-30°F	-35°F	-40°F
BC*0075L@ACZ	ZF25K4E	42,170	38,520	34,960	31,610	28,460	25,560	22,850	20,350	18,060
BC*0100L@ACZ	ZF34K5E	52,610	48,550	44,450	40,530	36,780	33,240	29,880	26,690	23,670
BC*0130L@ACZ	ZF41K5E	70,440	64,440	58,730	53,360	48,150	43,250	38,600	34,130	29,850
BC*0150L@ACZ	ZF49K5E	79,070	72,190	65,690	59,530	53,680	48,300	43,250	38,430	33,920
R-448A/R-449A		**Capacity BTUH @ 90°F Ambient by SST**								
Model	Compressor	+0°F	-5°F	-10°F	-15°F	-20°F	-25°F	-30°F	-35°F	-40°F
BC*0075L@ACZ	ZF25K4E	40,360	36,240	32,420	28,870	25,650	22,720	20,090	17,770	15,730
BC*0100L@ACZ	ZF34K5E	51,380	46,450	41,790	37,360	33,220	29,350	25,770	22,410	19,280
BC*0130L@ACZ	ZF41K5E	66,930	60,210	53,960	48,140	42,730	37,720	33,110	28,820	24,840
BC*0150L@ACZ	ZF49K5E	79,680	71,820	64,430	57,440	50,980	44,940	39,430	34,370	29,790
R-407A/R-407F		**Capacity BTUH @ 90°F Ambient by SST**								
Model	Compressor	+0°F	-5°F	-10°F	-15°F	-20°F	-25°F	-30°F	-35°F	-40°F
BC*0075L@ACZ	ZF25K4E	40,540	36,530	32,690	29,060	25,710	22,680	20,000	17,720	15,920
BC*0100L@ACZ	ZF34K5E	50,640	45,740	41,010	36,500	32,250	28,410	25,010	22,080	19,710
BC*0130L@ACZ	ZF41K5E	64,250	57,740	51,630	45,840	40,450	35,570	31,270	27,590	24,590
BC*0150L@ACZ	ZF49K5E	77,330	69,510	62,070	54,980	48,490	42,590	37,470	33,150	29,820
R-407C		**Capacity BTUH @ 90°F Ambient by SST**								
Model	Compressor	+0°F	-5°F	-10°F	-15°F	-20°F	-25°F	-30°F	-35°F	-40°F
BC*0075L@ACZ	ZF25K4E	35,540	31,870	28,370	25,120	22,110	19,440	17,140	15,250	13,840
BC*0100L@ACZ	ZF34K5E	48,670	43,870	39,370	35,140	31,230	27,620	24,370	21,370	18,660
BC*0130L@ACZ	ZF41K5E	63,520	56,880	50,790	45,090	39,900	35,150	30,850	26,960	23,460
BC*0150L@ACZ	ZF49K5E	72,880	65,250	57,970	51,150	44,920	39,330	34,590	30,790	28,020

Model	Compressor	Refrigerant Line Connections (OD)		Rec. Capacity @90% full (lbs)		Cabinet[h]	Dimensions (In.)			Net Wt.	Sound Data
		Liquid	Suction	Std	Opt		Depth	Width	Height	(lbs.)	dBa[†]
BC*0075L@ACZ	ZF25K4E	1/2	1 1/8	28	52	C4	36.75	51.75	39.25	671	82
BC*0100L@ACZ	ZF34K5E	1/2	1 1/8	28	52	C4	36.75	51.75	39.25	671	82
BC*0130L@ACZ	ZF41K5E	5/8	1 3/8	67	78	C5	36.75	63.75	39.25	910	84
BC*0150L@ACZ	ZF49K5E	5/8	1 3/8	67	78	C5	36.75	63.75	39.25	891	83

AIR COOLED CONDENSING UNITS

BOHN - 6.5 - 14 HP Air Cooled Condensing Units

ELECTRICAL DATA

Medium Temperature Models - Scroll Compressors

Please consult AWEF table on page 17 to confirm DOE compliance per model

Model	Compressor	Power	Compressor		Condenser		intelliGen™/ Beacon II		Remote Loads- Low Amps				Remote Loads- High Amps			
			RLA[c]	LRA	No. Fans	FLA (ea)	MCA	MOPD	Evap. Fan Amps	Defrost Htrs. Amps[‡]	Electric Defrost MCA	Electric Defrost MOPD	Evap. Fan Amps	Defrost Htrs. Amps[‡]	Electric Defrost MCA	Electric Defrost MOPD
BC*0065MCACZ	ZB48KCE-TF5	208-230/3/60	22.8	164.0	1	2.7	31.1	50.0	—	—	—	—	15	40 (1)	50.0	60
BC*0065MDACZ	ZB48KCE-TFD	460/3/60	12.2	100.0	1	1.9	20.0	25.0	—	—	—	—	8	20 (1)	25.2	35
BC*0065MEACZ[1,2]	ZB48KCE-TFE	575/3/60	9.0	78.0	1	1.2	15.0	20.0	—	—	—	—	6.4	16 (1)	20.0	25
BC*0070MCACZ	ZB58K5E-TFC	208-230/3/60	30.8	195.0	2	2.7	43.9	70.0	—	—	—	—	20	48 (1)	63.9	90
BC*0070MDACZ	ZB58K5E-TFD	460/3/60	16.0	95.0	2	1.9	23.8	35.0	—	—	—	—	10	25 (1)	33.8	45
BC*0070MEACZ[1]	ZB58K5E-TFE	575/3/60	12.2	80.0	2	1.2	20.0	25.0	—	—	—	—	8	20 (1)	25.6	35
BC*0075MCACZ	ZB66K5E-TFC	208-230/3/60	35.3	225.0	2	2.7	49.5	80.0	—	—	—	—	20	48 (1)	69.5	100
BC*0075MDACZ	ZB66K5E-TFD	460/3/60	15.4	114.0	2	1.9	23.0	35.0	—	—	—	—	10	25 (1)	33.0	45
BC*0075MEACZ[1]	ZB66K5E-TFE	575/3/60	12.8	80.0	2	1.2	20.0	30.0	—	—	—	—	8	20 (1)	26.4	35
BC*0086MCACZ	ZB76K5E-TFC	208-230/3/60	38.6	239.0	2	2.7	53.6	90.0	—	—	—	—	20	70 (2)	87.5	110
BC*0086MDACZ	ZB76K5E-TFD	460/3/60	18.6	125.0	2	1.9	27.0	45.0	—	—	—	—	13	35 (1)	43.8	50
BC*0086MEACZ[1]	ZB76K5E-TFE	575/3/60	13.1	80.0	2	1.2	20.0	30.0	–	—	—	—	10.4	28 (1)	35.0	40
BC*0100MCACZ	ZB95K5E-TWC	208-230/3/60	47.4	298.0	2	2.7	64.7	110.0	—	—	—	—	20	70 (2)	87.5	125
BC*0100MDACZ	ZB95K5E-TFD	460/3/60	21.8	150.0	2	1.9	31.0	50.0	—	—	—	—	13	35 (1)	44.0	60
BC*0100MEACZ[1]	ZB95K5E-TFE	575/3/60	18.7	123.0	2	1.2	25.7	40.0	—	—	—	—	10.4	28 (1)	36.1	50
BC*0141MCACZ[3]	ZB114K5E-TWC	208-230/3/60	56.5	321.0	2	4.4	79.5	125.0	15	70 (2)	94.5	150	20	80 (2)	100	150
BC*0141MDACZ[3]	ZB114K5E-TFD	460/3/60	24.4	179.0	2	2.2	34.8	50.0	15	40 (1)	50.0	70	15	60 (2)	75.0	80
BC*0141MEACZ[1]	ZB114K5E-TWE	575/3/60	20.1	132.0	2	1.8	28.8	45.0	12	32 (1)	40.8	60	12	48 (1)	60.0	60

ELECTRICAL DATA

Low Temperature Models - Scroll Compressors

Please consult AWEF table on page 18 to confirm DOE compliance per model

Model	Compressor	Power	Compressor		Condenser		intelliGen™/ Beacon II		Remote Loads- Low Amps				Remote Loads- High Amps			
			RLA[c]	LRA	No. Fans	FLA (ea)	MCA	MOPD	Evap. Fan Amps	Defrost Htrs. Amps	Electric Defrost MCA	Electric Defrost MOPD	Evap. Fan Amps	Defrost Htrs. Amps[‡]	Electric Defrost MCA	Electric Defrost MOPD
BC*0075LCACZ	ZF25K4E-TF5	208-230/3/60	24.0	224.0	1	2.7	32.7	50.0	—	—	—	—	20	60 (2)	75.0	80
BC*0075LDACZ	ZF25K4E-TFD	460/3/60	10.6	99.0	1	1.9	20.0	25.0	—	—	—	—	10	30 (1)	37.5	40
BC*0075LEACZ	ZF25K4E-TFE	575/3/60	8.1	82.4	1	1.2	15.0	15.0	—	—	—	—	8	24 (1)	30.0	30
BC*0100LCACZ[3]	ZF34K5E-TFC	208-230/3/60	33.3	239.0	1	2.7	44.4	70.0	—	—	—	—	20	60 (2)	75.0	90
BC*0100LDACZ	ZF34K5E-TFD	460/3/60	16.0	100.0	1	1.9	21.9	35.0	—	—	—	—	10	30 (1)	37.5	45
BC*0100LEACZ[1]	ZF34K5E-TFE	575/3/60	12.8	100.0	1	1.2	20.0	30.0	—	—	—	—	8	24 (1)	30.0	35
BC*0130LCACZ	ZF41K5E-TFC	208-230/3/60	37.8	248.0	2	2.7	52.7	90.0	—	—	—	—	20	70 (2)	87.5	110
BC*0130LDACZ	ZF41K5E-TFD	460/3/60	17.3	125.0	2	1.9	25.4	40.0	—	—	—	—	13	35 (1)	43.8	50
BC*0130LEACZ	ZF41K5E-TFE	575/3/60	14.0	100.0	2	1.2	20.0	30.0	—	—	—	—	10.4	28 (1)	35.0	40
BC*0150LCACZ[1]	ZF49K5E-TFC	208-230/3/60	45.5	338.7	2	2.7	62.3	100.0	—	—	—	—	20	70 (2)	87.5	125
BC*0150LDACZ	ZF49K5E-TFD	460/3/60	18.1	139.0	2	1.9	26.5	40.0	—	—	—	—	13	35 (1)	43.8	50
BC*0150LEACZ[1]	ZF49K5E-TFE	575/3/60	16.3	123.0	2	1.2	22.8	35.0	–	—	—	—	10.4	28 (1)	35.0	45

AIR COOLED CONDENSING UNITS

BOHN - 6.5 - 14 HP Air Cooled Condensing Units

AWEF DATA – MEDIUM TEMPERATURE

Scroll Compressor Models - Indoor/Outdoor

If model has a numerical value in the table below, the following statement applies:
This refrigeration system is designed and certified for use in walk-in cooler applications.

Model	Indoor						Outdoor					
	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F
BC*0065MCACZ	—	5.61	5.61	5.61	X	5.61	7.60	7.60	7.60	7.60	X	7.60
BC*0065MDACZ	—	5.61	5.61	5.61	X	5.61	7.60	7.60	7.60	7.60	X	7.60
BC*0065MEACZ	—	5.61	5.61	5.61	X	5.61	7.60	7.60	7.60	7.60	X	7.60
BC*0070MCACZ	5.61	5.61	5.61	—	X	5.61	7.60	7.60	7.60	7.60	X	7.60
BC*0070MDACZ	5.61	5.61	5.61	—	X	5.61	7.60	7.60	7.60	7.60	X	7.60
BC*0070MEACZ	5.61	5.61	5.61	—	X	5.61	7.60	7.60	7.60	7.60	X	7.60
BC*0075MCACZ	5.61	5.61	5.61	5.61	X	5.61	7.60	7.60	7.60	7.60	X	7.60
BC*0075MDACZ	5.61	5.61	5.61	5.61	X	5.61	7.60	7.60	7.60	7.60	X	7.60
BC*0075MEACZ	5.61	5.61	5.61	5.61	X	5.61	7.60	7.60	7.60	7.60	X	7.60
BC*0086MCACZ	—	5.61	5.61	—	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0086MDACZ	—	5.61	5.61	—	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0086MEACZ	—	5.61	5.61	—	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0100MCACZ	—	—	—	—	—	—	7.60	7.60	7.60	7.60	7.60	7.60
BC*0100MDACZ	—	—	—	—	—	—	7.60	7.60	7.60	7.60	7.60	7.60
BC*0100MEACZ	—	—	—	—	—	—	7.60	7.60	7.60	7.60	7.60	7.60
BC*0141MCACZ	—	—	—	—	5.61	—	7.60	7.60	7.60	7.60	7.60	7.60
BC*0141MDACZ	—	—	—	—	5.61	—	7.60	7.60	7.60	7.60	7.60	7.60
BC*0141MEACZ	—	—	—	—	5.61	—	7.60	7.60	7.60	7.60	7.60	7.60

AWEF DATA – LOW TEMPERATURE

Scroll Compressor Models - Indoor/Outdoor

If model has a numerical value in the table below, the following statement applies:
This refrigeration system is designed and certified for use in walk-in freezer applications.

Model	Indoor						Outdoor					
	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F
BC*0075LCACZ	2.40	—	—	—	—	—	3.15	3.15	3.15	3.15	3.15	3.15
BC*0075LDACZ	2.40	—	—	—	—	—	3.15	3.15	3.15	3.15	3.15	3.15
BC*0075LEACZ	2.40	—	—	—	—	—	3.15	3.15	3.15	3.15	3.15	3.15
BC*0100LCACZ	—	—	—	—	—	—	3.15	3.15	3.15	—	—	3.15
BC*0100LDACZ	—	—	—	—	—	—	3.15	3.15	3.15	—	—	3.15
BC*0100LEACZ	—	—	—	—	—	—	3.15	3.15	3.15	—	—	3.15
BC*0130LCACZ	2.40	2.40	2.40	—	—	—	3.15	3.15	3.15	—	3.15	3.15
BC*0130LDACZ	2.40	2.40	2.40	—	—	—	3.15	3.15	3.15	—	3.15	3.15
BC*0130LEACZ	2.40	2.40	2.40	—	—	—	3.15	3.15	3.15	—	3.15	3.15
BC*0150LCACZ	—	—	2.40	—	—	—	3.15	3.15	3.15	—	—	3.15
BC*0150LDACZ	—	—	2.40	—	—	—	3.15	3.15	3.15	—	—	3.15
BC*0150LEACZ	—	—	2.40	—	—	—	3.15	3.15	3.15	—	—	3.15

BOHN - 5 - 15 HP MT Air Cooled Condensing Units

PERFORMANCE DATA – R-404A/R-507A

Medium Temperature Models - Discus™ Compressors

Please consult AWEF table on page 38 to confirm DOE compliance per model

R-404A/R-507A		Capacity BTUH @ 90°F Ambient by SST									
Model	Compressor	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F	+5°F	+0°F	-10°F
BC*0050M@ACD	2DC3R53KE	60,650	55,700	50,840	46,270	41,940	37,750	33,860	30,210	26,820	20,890
BC*0051M@ACD	2DD3R63KE	69,020	64,010	58,800	53,620	48,820	44,230	39,810	35,720	31,930	25,270
BC*0075M@ACD	2DL3R78KE	81,700	75,800	70,110	64,340	58,670	53,440	48,450	43,710	39,290	31,270
BC*0076M@ACD	2DA3R89KE	101,530	93,490	86,120	78,770	71,990	65,420	59,280	53,490	48,110	38,250
BC*0080M@ACD	3DA3R10ME	118,200	109,220	100,350	92,040	84,200	76,540	69,330	62,450	56,100	44,430
BC*0100M@ACD	3DB3R12ME	133,270	124,030	114,660	105,400	96,850	88,670	80,800	73,300	66,170	52,670
BC*0120M@ACD	3DF3R15ME	153,030	142,480	132,770	123,400	113,810	104,640	95,640	87,180	79,020	63,780
BC*0150M@ACD	3DS3R17ME	184,960	171,910	159,010	146,210	134,330	122,900	111,960	101,600	91,680	73,230
R-448A/R-449A		**Capacity BTUH @ 90°F Ambient by SST**									
Model	Compressor	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F	+5°F	+0°F	-10°F
BC*0050M@ACD	2DC3R53KE	60,640	55,060	49,740	44,780	40,050	35,750	31,770	28,190	24,940	19,460
BC*0051M@ACD	2DD3R63KE	68,070	62,120	56,390	50,940	45,890	41,110	36,750	32,730	29,150	23,280
BC*0075M@ACD	2DL3R78KE	83,020	76,130	69,580	63,380	57,540	52,140	46,930	41,980	37,290	28,290
BC*0076M@ACD	2DA3R89KE	100,200	91,440	83,200	75,180	67,550	60,630	53,980	47,900	42,350	32,640
BC*0080M@ACD	3DA3R10ME	119,190	109,550	100,040	90,900	81,920	73,340	65,310	57,790	50,940	39,130
BC*0100M@ACD	3DB3R12ME	135,650	125,280	115,000	104,920	95,110	85,840	76,820	68,400	60,530	47,080
BC*0120M@ACD	3DF3R15ME	152,510	141,100	129,740	118,290	107,400	96,880	86,760	77,310	68,390	53,050
BC*0150M@ACD	3DS3R17ME	187,720	173,320	158,990	144,930	131,260	118,240	105,600	93,600	82,440	62,440
R-407A/R-407F		**Capacity BTUH @ 90°F Ambient by SST**									
Model	Compressor	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F	+5°F	+0°F	-10°F
BC*0050M@ACD	2DC3R53KE	61,510	55,840	50,430	45,430	40,600	36,300	32,310	28,740	25,490	19,970
BC*0051M@ACD	2DD3R63KE	69,070	62,720	56,950	51,480	46,440	41,660	37,280	33,290	29,720	23,830
BC*0075M@ACD	2DL3R78KE	83,660	76,600	69,730	63,420	57,490	52,060	46,880	42,120	37,890	30,440
BC*0076M@ACD	2DA3R89KE	101,470	92,620	84,110	76,210	68,650	61,680	55,100	49,050	43,510	33,610
BC*0080M@ACD	3DA3R10ME	120,960	110,860	101,140	91,870	83,220	74,930	67,240	59,960	53,350	41,340
BC*0100M@ACD	3DB3R12ME	137,510	126,310	115,860	105,810	96,220	87,160	78,670	70,560	62,960	49,410
BC*0120M@ACD	3DF3R15ME	152,510	140,890	129,520	118,480	107,610	97,570	88,020	79,010	70,770	55,990
BC*0150M@ACD	3DS3R17ME	186,520	171,360	157,130	143,430	130,330	117,860	106,210	95,060	84,550	65,380
R-407C		**Capacity BTUH @ 90°F Ambient by SST**									
Model	Compressor	+40°F	+35°F	+30°F	+25°F	+20°F	+15°F	+10°F	+5°F	+0°F	-10°F
BC*0050M@ACD	2DC3R53KE	57,780	51,970	46,480	41,390	36,630	32,380	28,510	25,040	22,020	17,290
BC*0051M@ACD	2DD3R63KE	65,540	58,940	52,830	47,140	41,950	37,130	32,870	29,080	25,770	20,550
BC*0075M@ACD	2DL3R78KE	79,980	72,320	65,210	58,530	52,340	46,730	41,530	36,880	32,800	26,300
BC*0076M@ACD	2DA3R89KE	95,180	86,060	77,480	69,300	61,730	54,710	48,400	42,670	37,510	29,010
BC*0080M@ACD	3DA3R10ME	111,190	101,710	92,460	83,570	75,140	67,170	59,670	52,760	46,370	35,480
BC*0100M@ACD	3DB3R12ME	128,190	117,670	107,230	97,360	87,910	78,960	70,560	62,630	55,430	42,750
BC*0120M@ACD	3DF3R15ME	144,160	132,710	121,330	110,250	99,550	89,240	79,660	70,740	62,620	48,580
BC*0150M@ACD	3DS3R17ME	172,680	158,620	144,820	131,450	118,640	106,580	95,020	84,170	74,130	56,110

BOHN - 3 - 22 HP LT Air Cooled Condensing Units

PERFORMANCE DATA – R-404A/R-507A

Low Temperature Models - Discus™ Compressors

Please consult AWEF table on page 39 to confirm DOE compliance per model

R-404A/R-507A		Capacity BTUH @ 90°F Ambient by SST								
Model	Compressor	+0°F	-5°F	-10°F	-15°F	-20°F	-25°F	-30°F	-35°F	-40°F
BC*0030L@ACD	2DF3F16KE	34,720	31,190	27,800	24,530	21,540	18,730	16,130	13,720	11,510
BC*0040L@ACD	2DL3F20KE	38,770	34,970	31,360	27,850	24,530	21,480	18,630	15,980	13,510
BC*0060L@ACD	2DB3F25KE	45,520	41,220	37,200	33,300	29,560	25,950	22,580	19,380	16,370
BC*0061L@ACD	3DA3F28KE	49,930	45,460	41,030	36,820	32,770	28,930	25,280	21,920	18,800
BC*0075L@ACD	3DB3F33KE	58,360	53,100	48,160	43,330	38,720	34,260	30,010	26,050	22,290
BC*0090L@ACD	3DF3F40KE	76,720	69,450	62,360	55,580	49,230	43,330	37,830	32,740	28,080
BC*0100L@ACD	3DS3F46KE	83,270	75,860	68,790	61,820	55,190	48,850	42,980	37,400	32,190
BC*0120L@ACD	4DBNF54KE	97,570	88,280	79,570	71,140	63,290	55,790	48,690	41,680	34,670
BC*0150L@ACD	4DHNF63KE	111,010	100,980	91,410	82,240	73,570	65,200	57,110	49,370	41,700
BC*0220L@ACD	4DJNF76KE	126,430	116,140	105,810	95,900	86,120	76,550	67,260	57,900	48,980
R-448A/R-449A		**Capacity BTUH @ 90°F Ambient by SST**								
Model	Compressor	+0°F	-5°F	-10°F	-15°F	-20°F	-25°F	-30°F	-35°F	-40°F
BC*0030L@ACD	2DF3F16KE	30,170	26,290	22,820	19,700	16,920	14,420	12,210	10,210	8,370
BC*0040L@ACD	2DL3F20KE	34,930	30,890	27,070	23,430	20,110	17,040	14,280	11,880	9,860
BC*0060L@ACD	2DB3F25KE	41,710	36,860	32,450	28,300	24,570	21,140	17,910	14,780	11,760
BC*0061L@ACD	3DA3F28KE	46,610	41,110	36,090	31,430	27,190	23,350	20,020	17,090	14,540
BC*0075L@ACD	3DB3F33KE	55,730	49,480	43,740	38,510	33,570	29,100	25,030	21,120	17,380
BC*0090L@ACD	3DF3F40KE	72,550	63,930	55,960	48,610	42,040	36,080	30,670	25,750	21,280
BC*0100L@ACD	3DS3F46KE	78,190	68,980	60,530	52,660	45,540	39,090	33,260	27,890	22,990
BC*0120L@ACD	4DBNF54KE	92,720	82,620	72,740	63,340	54,530	46,530	39,210	32,590	26,850
BC*0150L@ACD	4DHNF63KE	103,640	93,150	83,080	73,250	63,950	55,420	47,770	40,940	35,040
BC*0220L@ACD	4DJNF76KE	125,150	111,250	98,440	86,630	75,730	65,580	55,760	46,390	36,730
R-407A/R-407F		**Capacity BTUH @ 90°F Ambient by SST**								
Model	Compressor	+0°F	-5°F	-10°F	-15°F	-20°F	-25°F	-30°F	-35°F	-40°F
BC*0030L@ACD	2DF3F16KE	30,720	26,810	23,330	20,170	17,340	14,740	12,360	10,140	8,030
BC*0040L@ACD	2DL3F20KE	35,250	31,330	27,510	23,910	20,510	17,350	14,430	11,760	9,410
BC*0060L@ACD	2DB3F25KE	42,080	37,310	32,880	28,770	24,920	21,410	18,150	15,070	12,160
BC*0061L@ACD	3DA3F28KE	46,820	41,470	36,580	31,990	27,690	23,720	20,110	16,630	13,300
BC*0075L@ACD	3DB3F33KE	55,850	49,780	44,160	38,920	34,050	29,410	25,110	20,880	16,660
BC*0090L@ACD	3DF3F40KE	72,680	64,500	56,810	49,500	42,890	36,690	30,930	25,490	20,430
BC*0100L@ACD	3DS3F46KE	77,230	68,550	60,530	53,020	45,900	39,460	33,350	27,510	21,830
BC*0120L@ACD	4DBNF54KE	93,530	83,540	73,940	64,580	55,560	47,270	39,530	32,330	25,840
BC*0150L@ACD	4DHNF63KE	103,910	93,780	83,890	74,320	64,930	56,090	47,880	40,210	33,200
BC*0220L@ACD	4DJNF76KE	117,480	106,250	95,530	85,250	75,540	66,130	57,200	48,330	39,660
R-407C		**Capacity BTUH @ 90°F Ambient by SST**								
Model	Compressor	+0°F	-5°F	-10°F	-15°F	-20°F	-25°F	-30°F	-35°F	-40°F
BC*0030L@ACD	2DF3F16KE	26,570	23,160	20,110	17,360	14,900	12,710	10,720	8,870	7,100
BC*0040L@ACD	2DL3F20KE	30,760	27,190	23,830	20,660	17,680	14,920	12,430	10,160	8,170
BC*0060L@ACD	2DB3F25KE	37,130	32,760	28,770	25,030	21,650	18,500	15,590	12,910	10,390
BC*0061L@ACD	3DA3F28KE	41,900	36,900	32,290	28,000	24,000	20,330	17,010	13,960	11,260
BC*0075L@ACD	3DB3F33KE	49,790	44,010	38,740	33,800	29,300	25,060	21,240	17,650	14,350
BC*0090L@ACD	3DF3F40KE	64,030	56,580	49,570	42,970	36,740	31,080	25,910	21,220	17,130
BC*0100L@ACD	3DS3F46KE	68,490	60,540	53,000	46,050	39,510	33,510	28,050	22,970	18,380
BC*0120L@ACD	4DBNF54KE	82,720	72,560	63,010	54,310	46,290	39,020	32,490	26,480	21,110
BC*0150L@ACD	4DHNF63KE	92,760	81,950	72,050	62,650	54,240	46,530	39,450	33,040	27,100
BC*0220L@ACD	4DJNF76KE	106,920	94,180	82,860	72,640	63,380	55,020	47,360	39,930	32,610

AIR COOLED CONDENSING UNITS

BOHN - DISCUS Air Cooled Condensing Units

UNIT SPECIFICATIONS

Medium & Low Temperature Models - Discus™ Compressors

Please consult AWEF table on pages 38-39 to confirm DOE compliance per model

Model	Compressor	Refrigerant Line Connections (OD)		Rec. Capacity @90% full (lbs)		Cabinet	Dimensions (In.)			Net Wt.	Sound Data
		Liquid	Suction	Std	Opt		Depth	Width	Height	(lbs.)	dBa†
BC*0050M@ACD	2DC3R53KE	1/2	1 1/8	28	52	C4	36.75	51.75	39.25	751	78
BC*0051M@ACD	2DD3R63KE	1/2	1 1/8	28	52	C4	36.75	51.75	39.25	751	78
BC*0075M@ACD	2DL3R78KE	1/2	1 1/8	28	52	C4	36.75	51.75	39.25	761	78
BC*0076M@ACD	2DA3R89KE	5/8	1 3/8	67	78	C5	36.75	63.75	39.25	985	82
BC*0080M@ACD	3DA3R10ME	5/8	1 3/8	67	78	C5	36.75	63.75	39.25	1,020	82
BC*0100M@ACD	3DB3R12ME	5/8	1 3/8	67	78	C5	36.75	63.75	39.25	1,045	82
BC*0120M@ACD	3DF3R15ME	5/8	1 3/8	67	78	C5	36.75	63.75	39.25	1,065	82
BC*0150M@ACD	3DS3R17ME	7/8	1 5/8	87	98	C6	41.75	75.125	48.75	1,182	81
BC*0030L@ACD	2DF3F16KE	1/2	1 1/8	28	52	C4	36.75	51.75	39.25	737	78
BC*0040L@ACD	2DL3F20KE	1/2	1 1/8	28	52	C4	36.75	51.75	39.25	741	78
BC*0060L@ACD	2DB3F25KE	1/2	1 1/8	28	52	C4	36.75	51.75	39.25	751	78
BC*0061L@ACD	3DA3F28KE	1/2	1 1/8	28	52	C4	36.75	51.75	39.25	781	81
BC*0075L@ACD	3DB3F33KE	1/2	1 1/8	28	52	C4	36.75	51.75	39.25	805	81
BC*0090L@ACD	3DF3F40KE	5/8	1 3/8	67	78	C5	36.75	63.75	39.25	1,030	82
BC*0100L@ACD	3DS3F46KE	5/8	1 3/8	67	78	C5	36.75	63.75	39.25	1,035	82
BC*0120L@ACD	4DBNF54KE	7/8	1 5/8	87	98	C6	41.75	75.125	48.75	1,199	82
BC*0150L@ACD	4DHNF63KE	7/8	1 5/8	87	98	C6	41.75	75.125	48.75	1,234	82
BC*0220L@ACD	4DJNF76KE	7/8	1 5/8	87	98	C6	41.75	75.125	48.75	1,224	82

† Estimated sound pressure values are 10 feet from the unit. For estimating sound pressure from the unit at different distances, deduct the following from the unit values: 20 feet, deduct 6 dBA; for 40 feet, deduct 12 dBA; for 80 feet, deduct 18 dBA. This data is typical of "free field" conditions for horizontal air cooled condensing units at the outlet of the discharge air. The actual sound measurements may vary depending on the condensing unit installation. Factors such as reflecting walls, background noise and mounting conditions may have a significant influence on this data.

AIR COOLED CONDENSING UNITS

BOHN - DISCUS Air Cooled Condensing Units

ELECTRICAL DATA

Medium Temperature Models - Discus™ Compressors

Please consult AWEF table on page 38 to confirm DOE compliance per model

Model	Compressor	Power*	Compressor		Condenser		intelliGen™/ Beacon II		Remote Loads- Low Amps^				Remote Loads- High Amps^			
			RLA[c]	LRA	No. Fans	FLA (ea)	MCA	MOPD	Evap. Fan Amps	Defrost Htrs. Amps‡	Electric Defrost MCA	Electric Defrost MOPD	Evap. Fan Amps	Defrost Htrs. Amps‡	Electric Defrost MCA	Electric Defrost MOPD
BC*0050MCACD	2DC3R53KE-TFC	208-230/3/60	20.0	120.0	1	2.7	27.7	45.0	—	—	—	—	15	40(1)	50.0	60
BC*0050MDACD	2DC3R53KE-TFD	460/3/60	9.4	60.0	1	1.9	15.0	20.0	—	—	—	—	8	20(1)	25.0	30
BC*0050MEACD	2DC3R53KE-TFE	575/3/60	6.9	49.0	1	1.2	15.0	15.0	—	—	—	—	6.4	16(1)	20.0	20
BC*0051MCACD	2DD3R63KE-TFC	208-230/3/60	20.0	120.0	1	2.7	27.7	45.0	—	—	—	—	15	40(1)	50.0	60
BC*0051MDACD	2DD3R63KE-TFD	460/3/60	9.4	60.0	1	1.9	15.0	20.0	—	—	—	—	8	20(1)	25.0	30
BC*0051MEACD	2DD3R63KE-TFE	575/3/60	7.1	49.0	1	1.2	15.0	15.0	—	—	—	—	6.4	16(1)	20.0	20
BC*0075MCACD	2DL3R78KE-TFC	208-230/3/60	28.3	169.0	1	2.7	38.1	60.0	—	—	—	—	20	48(1)	60.0	80
BC*0075MDACD	2DL3R78KE-TFD	460/3/60	12.4	85.0	1	1.9	20.0	25.0	—	—	—	—	10	25(1)	31.3	35
BC*0075MEACD	2DL3R78KE-TFE	575/3/60	11.9	67.0	1	1.2	20.0	25.0	—	—	—	—	8	20(1)	25.0	35
BC*0076MCACD	2DA3R89KE-TFC	208-230/3/60	28.7	169.0	2	2.7	41.3	70.0	—	—	—	—	20	48(1)	61.3	90
BC*0076MDACD	2DA3R89KE-TFD	460/3/60	12.6	85.0	2	1.9	20.0	30.0	—	—	—	—	10	25(1)	31.3	40
BC*0076MEACD	2DA3R89KE-TFE	575/3/60	11.9	67.0	2	1.2	20.0	25.0	—	—	—	—	8	20(1)	25.3	35
BC*0080MCACD	3DA3R10ME-TFC	208-230/3/60	36.8	215.0	2	2.7	51.4	80.0	—	—	—	—	20	70(2)	87.5	100
BC*0080MDACD	3DA3R10ME-TFD	460/3/60	17.9	106.0	2	1.9	26.2	40.0	—	—	—	—	13	35(1)	43.8	50
BC*0080MEACD	3DA3R10ME-TFE	575/3/60	14.7	84.0	2	1.2	20.8	35.0	—	—	—	—	10.4	28(1)	35.0	45
BC*0100MCACD	3DB3R12ME-TFC	208-230/3/60	39.1	215.0	2	2.7	54.3	90.0	—	—	—	—	20	70(2)	87.5	110
BC*0100MDACD	3DB3R12ME-TFD	460/3/60	17.9	106.0	2	1.9	26.2	40.0	—	—	—	—	13	35(1)	43.8	50
BC*0100MEACD	3DB3R12ME-TFE	575/3/60	14.8	84.0	2	1.2	20.9	35.0	—	—	—	—	10.4	28(1)	35.0	45
BC*0120MCACD	3DF3R15ME-TFC	208-230/3/60	43.2	275.0	2	2.7	59.4	100.0	—	—	—	—	20	70(2)	87.5	110
BC*0120MDACD	3DF3R15ME-TFD	460/3/60	21.2	138.0	2	1.9	30.2	50.0	—	—	—	—	13	35(1)	43.8	60
BC*0150MCACD	3DS3R17ME-TFC	208-230/3/60	53.5	275.0	2	4.4	75.7	125.0	15	70(2)	90.7	125	20	80(2)	100.0	125
BC*0150MDACD	3DS3R17ME-TFD	460/3/60	26.0	138.0	2	2.2	36.9	60.0	15	40(1)	51.9	70	15	60(2)	75.0	80
BC*0150MEACD	3DS3R17ME-TFE	575/3/60	21.2	110.0	2	1.8	30.0	50.0	12	32(1)	42.0	60	12	48(1)	60.0	60

Notes:

* H = Outdoor, N = Indoor

Per UL and NEC, RLA values have been calculated by dividing the Maximum Continuous Current (MCC) by 1.56.

† Unless otherwise noted, model is available for 50 Hz. Consult factory for details.

‡ = Number of defrost heater contactors in parentheses

^ = Two fan large units have ability for a reduced amp electric defrost kit (low amps). Confirm proper defrost kit prior to ordering or installing.

AIR COOLED CONDENSING UNITS

BOHN - DISCUS Air Cooled Condensing Units

ELECTRICAL DATA

Low Temperature Models - Discus™ Compressors

Please consult AWEF table on page 39 to confirm DOE compliance per model

Model	Compressor	Power*	Compressor		Condenser		intelliGen™/ Beacon II		Remote Loads- Low Amps^				Remote Loads- High Amps^			
									Evap. Fan Amps	Defrost Htrs. Amps‡	Electric Defrost		Evap. Fan Amps	Defrost Htrs. Amps‡	Electric Defrost	
			RLA‹	LRA	No. Fans	FLA (ea)	MCA	MOPD			MCA	MOPD			MCA	MOPD
BC*0030LCACD	2DF3F16KE-TFC	208-230/3/60	14.4	102.0	1	2.7	20.6	35.0	—	—	—	—	15	40(1)	50.0	50
BC*0030LDACD	2DF3F16KE-TFD	460/3/60	7.1	52.0	1	1.9	15.0	15.0	—	—	—	—	8	20(1)	25.0	25
BC*0030LEACD	2DF3F16KE-TFE	575/3/60	6.0	41.0	1	1.2	15.0	15.0	—	—	—	—	6.4	16(1)	20.0	20
BC*0040LCACD	2DL3F20KE-TFC	208-230/3/60	23.6	161.0	1	2.7	32.2	50.0	—	—	—	—	15	48(1)	60.0	70
BC*0040LDACD	2DL3F20KE-TFD	460/3/60	9.2	60.0	1	1.9	15.0	20.0	—	—	—	—	8	25(1)	31.3	35
BC*0040LEACD	2DL3F20KE-TFE	575/3/60	6.9	49.0	1	1.2	15.0	15.0	—	—	—	—	6.4	20(1)	25.0	25
BC*0060LCACD	2DB3F25KE-TFC	208-230/3/60	25.3	161.0	1	2.7	34.4	50.0	—	—	—	—	20	60(2)	75.0	80
BC*0060LDACD	2DB3F25KE-TFD	460/3/60	11.9	80.0	1	1.9	20.0	25.0	—	—	—	—	10	30(1)	37.5	40
BC*0060LEACD	2DB3F25KE-TFE	575/3/60	8.6	63.0	1	1.2	15.0	20.0	—	—	—	—	8	24(1)	30.0	30
BC*0061LCACD	3DA3F28KE-TFC	208-230/3/60	24.0	150.0	1	2.7	32.7	50.0	—	—	—	—	20	60(2)	75.0	80
BC*0061LDACD	3DA3F28KE-TFD	460/3/60	10.8	77.0	1	1.9	20.0	25.0	—	—	—	—	10	30(1)	37.5	40
BC*0061LEACD	3DA3F28KE-TFE	575/3/60	9.4	62.0	1	1.2	15.0	20.0	—	—	—	—	8	24(1)	30.0	30
BC*0075LCACD	3DB3F33KE-TFC	208-230/3/60	27.6	161.0	1	2.7	37.2	60.0	—	—	—	—	20	60(2)	75.0	80
BC*0075LDACD	3DB3F33KE-TFD	460/3/60	14.1	83.0	1	1.9	20.0	30.0	—	—	—	—	10	30(1)	37.5	40
BC*0075LEACD	3DB3F33KE-TFE	575/3/60	9.9	67.0	1	1.2	15.0	20.0	—	—	—	—	8	24(1)	30.0	30
BC*0090LCACD	3DF3F40KE-TFC	208-230/3/60	33.2	215.0	2	2.7	46.9	80.0	—	—	—	—	20	70(2)	87.5	100
BC*0090LDACD	3DF3F40KE-TFD	460/3/60	15.0	106.0	2	1.9	22.6	35.0	—	—	—	—	13	35(1)	43.8	50
BC*0090LEACD	3DF3F40KE-TFE	575/3/60	14.1	84.0	2	1.2	20.0	30.0	—	—	—	—	10.4	28(1)	35.0	40
BC*0100LCACD	3DS3F46KE-TFC	208-230/3/60	37.2	215.0	2	2.7	51.9	80.0	—	—	—	—	20	70(2)	87.5	100
BC*0100LDACD	3DS3F46KE-TFD	460/3/60	16.7	106.0	2	1.9	24.6	40.0	—	—	—	—	13	35(1)	43.8	50
BC*0100LEACD	3DS3F46KE-TFE	575/3/60	14.6	84.0	2	1.2	20.6	35.0	—	—	—	—	10.4	28(1)	35.0	45
BC*0120LCACD	4DBNF54KE-TSK	208-230/3/60	46.0	220.0	2	4.4	66.3	110.0	15	40(1)	81.3	125	20	70(2)	87.5	125
BC*0120LDACD	4DBNF54KE-TSK	460/3/60	23.0	110.0	2	2.2	33.2	50.0	15	25(1)	48.2	70	15	40(1)	50.0	70
BC*0150LCACD	4DHNF63KE-TSK	208-230/3/60	47.2	278.0	2	4.4	67.8	110.0	15	48(1)	82.8	125	25	70(2)	92.8	125
BC*0150LDACD	4DHNF63KE-TSK	460/3/60	23.6	139.0	2	2.2	33.9	50.0	15	25(1)	48.9	70	15	40(1)	50.0	70
BC*0220LCACD	4DJNF76KE-TSK	208-230/3/60	57.7	374.0	2	4.4	80.9	125.0	15	48(1)	95.9	150	25	70(2)	105.9	150
BC*0220LDACD	4DJNF76KE-TSK	460/3/60	28.8	187.0	2	2.2	40.5	60.0	15	25(1)	55.5	80	15	48(1)	60.0	80

Notes:

* H = Outdoor, N = Indoor

X = model not suitable for this refrigerant

— = model is not DOE AWEF compliant

If model has a numerical value in the table, the following statement applies. "This refrigeration system is designed and certified for use in walk-in cooler applications."

AIR COOLED CONDENSING UNITS

BOHN - DISCUS Air Cooled Condensing Units

AWEF DATA – MEDIUM TEMPERATURE

Discus™ Compressor Models - Indoor/Outdoor

If model has a numerical value in the table below, the following statement applies:
This refrigeration system is designed and certified for use in walk-in cooler applications.

Model	Indoor						Outdoor					
	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F
BC*0050MCACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0050MDACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0050MEACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0051MCACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0051MDACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0051MEACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0075MCACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0075MDACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0075MEACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0076MCACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0076MDACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0076MEACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0080MCACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0080MDACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0080MEACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0100MCACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0100MDACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0100MEACD	5.61	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0120MCACD	—	5.61	5.61	—	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0120MDACD	—	5.61	5.61	—	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0120MEACD	—	5.61	5.61	—	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0150MCACD	—	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0150MDACD	—	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60
BC*0150MEACD	—	5.61	5.61	5.61	5.61	5.61	7.60	7.60	7.60	7.60	7.60	7.60

Notes:
* H = Outdoor, N = Indoor
X = model not suitable for this refrigerant
— = model is not DOE AWEF compliant
If model has a numerical value in the table, the following statement applies. "This refrigeration system is designed and certified for use in walk-in cooler applications."

AIR COOLED CONDENSING UNITS

BOHN - DISCUS Air Cooled Condensing Units

AWEF DATA – LOW TEMPERATURE

Discus™ Compressor Models - Indoor/Outdoor

If model has a numerical value in the table below, the following statement applies:
This refrigeration system is designed and certified for use in walk-in freezer applications.

Model	Indoor						Outdoor					
	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F	R-404A/ R-507A	R-448A	R-449A	R-407A	R-407C	R-407F
BC*0030LCACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0030LDACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0030LEACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0040LCACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0040LDACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0040LEACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0060LCACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0060LDACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0060LEACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0061LCACD	2.40	2.40	2.40	—	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0061LDACD	2.40	2.40	2.40	—	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0061LEACD	2.40	2.40	2.40	—	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0075LCACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0075LDACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0075LEACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0090LCACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0090LDACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0090LEACD	2.40	2.40	2.40	2.40	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0100LCACD	2.40	—	—	—	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0100LDACD	2.40	—	—	—	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0100LEACD	2.40	—	—	—	2.40	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0120LCACD	—	—	—	—	—	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0120LDACD	—	—	—	—	—	2.40	3.15	3.15	3.15	3.15	3.15	3.15
BC*0120LEACD	—	—	—	—	—	—	—	—	—	—	—	—
BC*0150LCACD	—	—	—	—	—	2.40	3.15	—	—	—	—	3.15
BC*0150LDACD	—	—	—	—	—	2.40	3.15	—	—	—	—	3.15
BC*0150LEACD	—	—	—	—	—	—	—	—	—	—	—	—
BC*0220LCACD	—	—	—	—	—	—	3.15	—	—	—	—	3.15
BC*0220LDACD	—	—	—	—	—	—	3.15	—	—	—	—	3.15
BC*0220LEACD	—	—	—	—	—	—	—	—	—	—	—	—

Notes:
* H = Outdoor, N = Indoor
X = model not suitable for this refrigerant
— = model is not DOE AWEF compliant
If model has a numerical value in the table, the following statement applies. "This refrigeration system is designed and certified for use in walk-in freezer applications."

BOHN - PRO 3 TOP MOUNT PACKAGED REFRIGERATION SYSTEMS

Heatcraft BOHN products and options are designed to exceed current energy and environmental standards. We have made a conscious commitment to developing environmentally innovative products that allow our customers to make energy efficient, eco-conscious choices. BOHN products reduce costs, improve bottom line, and enhance both equipment performance and service life. The PRO³ Top Mount and Side Mount packaged refrigeration systems have a reduced refrigerant charge compared to comparable split systems. Also, EC motors are available for the evaporator portion of these units for increased energy efficiency and decreased energy costs.

Top Mount

Nomenclature							
P	T	N	072	H	6	B	H
Product Line	Design Orientation	Application Location	Nominal Capacity	Temperature Range	Refrigerant Type	Voltage	Motor
P = PRO³ Packaged Refrigeration System	T = Top Mount	N = Indoor	# = BTUH X 100	H = High/Medium	6 = R-404A	A = 115/1/60	H = PSC
		T = Outdoor		L = Low		B = 208-230/1/60	E = EC (evap. only)
				M = Medium w/electric defrost		C = 208-230/3/60	

Model PTN/PTT High/Medium Temperature | Air Defrost | Cooler Application

Model	80°F Ambient		90°F Ambient		95°F Ambient		100°F Ambient		110°F Ambient	
	Box Temperature									
	35° F	38° F	35° F	38° F	35° F	38° F	35° F	38° F	35° F	38° F
PTN026H6	2,970	3,100	2,730	2,860	2,610	2,740	2,470	2,600	2,230	2,340
PTN031H6	3,590	3,750	3,300	3,450	3,160	3,310	2,980	3,140	2,390	2,820
PTN042H6	4,950	5,170	4,560	4,760	4,360	4,570	4,110	4,330	3,710	3,890
PT*050H6	5,820	6,080	5,350	5,600	5,120	5,370	4,830	5,080	4,360	4,570
PT*067H6	7,800	8,150	7,180	7,500	6,860	7,190	6,470	6,810	5,850	6,130
PT*076H6	8,610	9,060	7,890	8,260	7,500	7,840	7,100	7,420	6,270	6,540
PT*104H6	12,990	13,750	11,800	12,490	11,190	11,810	10,550	11,200	9,260	9,840
PT*133H6	14,780	15,600	13,530	14,260	12,790	13,500	12,040	12,750	10,740	11,310

Model PTN/PTT Medium Temperature | Electric Defrost | Freezer Application

Model	80°F Ambient	90°F Ambient	95°F Ambient	100°F Ambient	110°F Ambient
	Box Temperature				
	35° F	35° F	35° F	35° F	35° F
PTN024M6	2,970	2,730	2,610	2,470	2,230
PTN029M6	3,590	3,300	3,160	2,980	2,390
PTN040M6	4,950	4,560	4,360	4,110	3,710
PT*047M6	5,820	5,350	5,120	4,830	4,360
PT*063M6	7,800	7,180	6,860	6,470	5,850
PT*072M6	8,610	7,890	7,500	7,100	6,270
PT*099M6	12,990	11,800	11,190	10,550	9,260
PT*128M6	14,780	13,530	12,790	12,040	10,740

*T For Outdoor, N for Indoor.

Model PTN/PTT Low Temperature | Electric Defrost | Freezer Application

Model	80°F Ambient			90°F Ambient			95°F Ambient			100°F Ambient			110°F Ambient		
	Box Temperature														
	0° F	-10° F	-20° F	0° F	-10° F	-20° F	0° F	-10° F	-20° F	0° F	-10° F	-20° F	0° F	-10° F	-20° F
PT*021L6	3,220	2,590	1,610	2,860	2,300	1,430	2,680	2,160	1,340	2,470	1,990	1,230	2,080	1,670	1,030
PT*031L6	5,060	3,830	2,470	4,500	3,400	2,200	4,220	3,190	2,060	3,880	2,940	1,900	3,260	2,470	1,600
PT*044L6	7,040	5,440	4,080	6,260	4,830	3,630	5,870	4,530	3,400	5,400	4,170	3,130	4,540	3,500	2,630
PT*052L6	8,400	6,430	4,690	7,470	5,720	4,170	7,000	5,360	3,910	6,440	4,930	3,600	5,410	4,140	3,020
PT*069L6	10,870	8,520	6,300	9,670	7,850	5,600	9,060	7,100	5,250	8,340	6,530	4,830	7,010	5,490	4,060

BOHN - PRO 3 TOP MOUNT PACKAGED REFRIGERATION SYSTEMS

Model PTN/PTT Electrical Data | Specifications | All Models

Model	Compressor Model	Voltage	MCA	MOPD	Unit amps	Evaporator CFM	Plug Supplied	Matching NEMA Receptacle	Dimensions Figure[1]	Approximate Net Weight	
										lbs.	kg
PTN 026H6A^	ASE20C4E	115/1/60	7.4	15	5.9	340	Yes	5-20R	A	88	40
PTN 031H6A^	ASE26C4E	115/1/60	8.3	15	6.9	340	Yes	5-20R	A	90	41
PTN 042H6A^	ASE35C4E	115/1/60	11.3	15	9.3	340	Yes	5-20R	A	92	42
PTN 050H6A^	RST45C1E	115/1/60	14.0	20	11.6	350	Yes	5-20R	B	192	87
PT*050H6B^	RST45C1E	208-230/1/60	7.0	15	5.9	350	Yes[2]	6-15R	B	192	87
PT*067H6B^	RST64C1E	208-230/1/60	11.5	15	9.5	550	Yes[2]	6-15R	B	207	94
PT*076H6B^	RST70C1E	208-230/1/60	9.7	15	8.63	500	Yes[2]	6-15R	B	211	95
PT*104H6B^	CS10K6E	208-230/1/60	14.8	20	12.4	875	Yes[2]	6-20R	C	270	122
PT*104H6C^	CS10K6E	208-230/3/60	11.0	15	9.3	875	–	–	C	265	120
PT*133H6B^	CS12K6E	208-230/1/60	14.8	20	12.4	825	Yes[2]	6-20R	C	290	132
PT*133H6C^	CS12K6E	208-230/3/60	11.0	15	9.3	825	–	–	C	285	129
PT*024M6A^	ASE20C4E	115/1/60	7.4	15	5.9	340	Yes	5-20R	A	88	40
PT*029M6A^	ASE26C4E	115/1/60	8.3	15	6.9	340	Yes	5-20R	A	90	41
PT*040M6A^	ASE35C4E	115/1/60	11.3	15	9.3	340	Yes	5-20R	A	92	42
PTN 047M6A^	RST45C1E	115/1/60	14.0	20	11.6	350	Yes	5-20R	B	192	87
PT*047M6B^	RST45C1E	208-230/1/60	7.0	15	5.9	350	Yes[2]	6-15R	B	192	87
PT*063M6B^	RST64C1E	208-230/1/60	11.5	15	9.5	550	Yes[2]	6-15R	B	207	94
PT*072M6B^	RST70C1E	208-230/1/60	9.7	15	8.63	500	Yes[2]	6-15R	B	211	95
PT*099M6B^	CS10K6E	208-230/1/60	14.8	20	12.4	875	Yes[2]	6-20R	C	270	122
PT*099M6C^	CS10K6E	208-230/3/60	11.0	15	9.3	875	–	–	C	265	120
PT*128M6B^	CS12K6E	208-230/1/60	14.8	20	12.4	825	Yes[2]	6-20R	C	290	132
PT*128M6C^	CS12K6E	208-230/3/60	11.0	15	9.3	825	–	–	C	285	129
PT*021L6A^	AJA2425ZXD	115/1/60	14.5	20	12.3	350	Yes	5-20R	B	213	97
PT*021L6B^	AJA2425ZXD	208-230/1/60	7.6	15	6.5	350	Yes[2]	6-15R	B	213	97
PT*031L6B^	CF04K6E	208-230/1/60	13.8	15	11.6	550	Yes[2]	6-15R	B	221	100
PT*044L6B^	CF06K6E	208-230/1/60	15.9	20	13.3	520	Yes[2]	6-20R	B	225	102
PT*052L6B^	CF06K6E	208-230/1/60	18.1	20	15.3	900	–	–	C	275	125
PT*052L6C^	CF06K6E	208-230/3/60	12.2	15	13.0	900	–	–	C	270	122
PT*069L6B^	CF09K6E	208-230/1/60	23.8	30	20.0	875	–	–	C	280	127
PT*069L6C^	CF09K6E	208-230/3/60	15.9	20	14.2	875	–	–	C	275	125

^ Indicates either E for EC evaporator motor or H for PSC evaporator motor
**T For Outdoor, N for Indoor.*
2 Plug Supplied on Indoor models only.
1 See dimensions page 6.

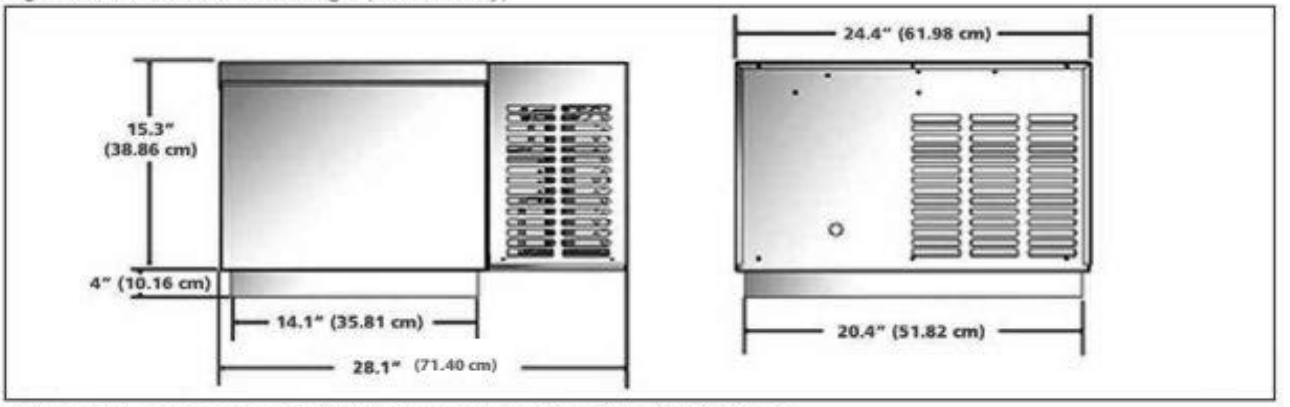
AWEF VALUES: MEDIUM/HIGH TEMPERATURE SYSTEMS COOLER APPLICATION

MODEL	INDOOR	OUTDOOR
	R404A	R404A
PTN026H6	1.76	-
PTN031H6	2.07	-
PTN042H6	2.17	-
PT*050H6	2.56	3.02^
PT*067H6	2.04	2.41
PT*076H6	2.37	2.87
PT*104H6	2.41	2.89
PT*133H6	2.53	3.16
PTN024M6	1.76	-
PTN029M6	2.07	-
PTN040M6	2.17	-
PT*047M6	2.56	3.02^
PT*063M6	2.04	2.41
PT*072M6	2.37	2.87
PT*099M6	2.41	2.89
PT*128M6	2.53	3.16

These refrigeration systems are designed and certified for use in walk-in cooler applications.
* T= Outdoors, N = Indoors
^ = Outdoor is only available for 230/1/60 Units

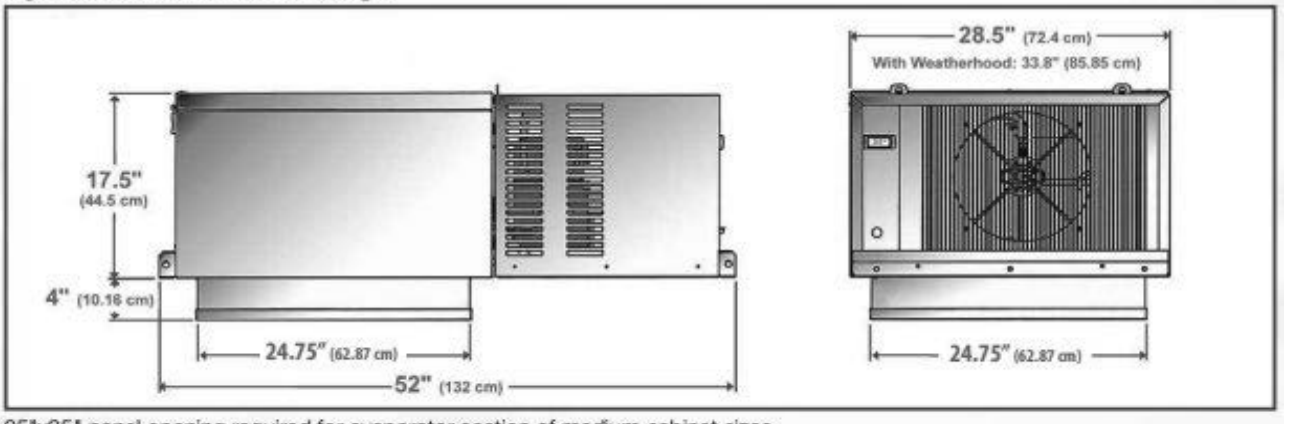
BOHN - PRO 3 TOP MOUNT PACKAGED REFRIGERATION SYSTEMS

Figure A Small Cabinet Design (indoor only)



14.5"x20.75" panel opening required for evaporator section of small cabinet sizes.

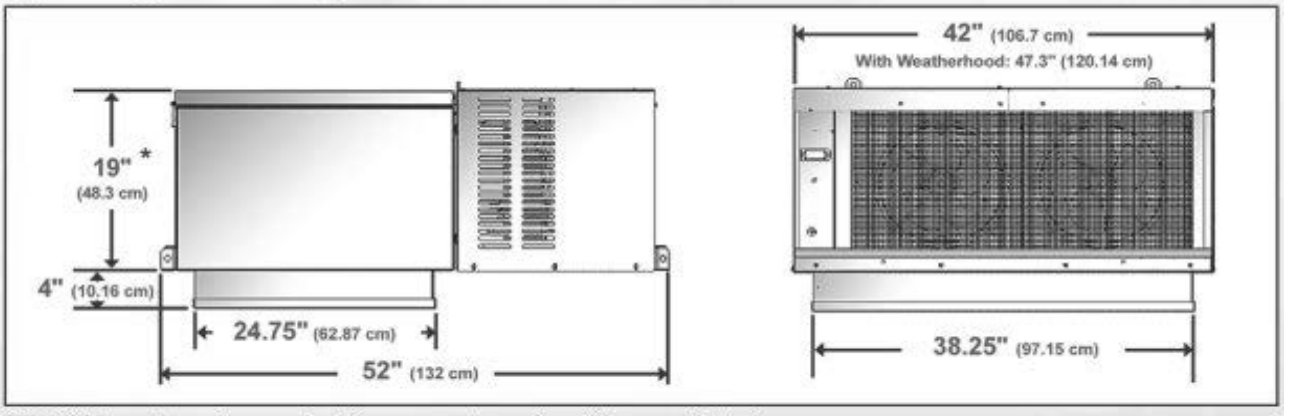
Figure B Medium Cabinet Design



25"x25" panel opening required for evaporator section of medium cabinet sizes.

- 21.5" (54.61 cm) on outdoor models with weatherhood

Figure C Large Cabinet Design



25"x38.5" panel opening required for evaporator section of large cabinet sizes.

*- 23.5" (59.69 cm) on outdoor models with weatherhood

• For installation instructions refer to the Installation and Operation Manual.

REACH-IN UNIT COOLERS

KEEPRITE REFRIGERATION

Half Round Evaporators



NOMENCLATURE

R 375 W - M

KEEPRITE
HALF ROUND EVAPORATOR

BTUH CAPACITY
@ 1 °F TD (60Hz)
e.g. 450 = 4500 @ 10 °F TD

ELECTRICAL DESIGNATION
A = 115/1/60 W = 208-230/1/60

MOTOR
M = SINGLE SPEED EC MOTOR

Model R			375	485	595	775	905	1025	1305	2050
Number of Fans			1	1	1	1	1	1	1	2
Capacity BTUH *(WATTS)*	Evap Temp. 25°F *(-4°C)*	R407A R448A	*3540 (1038)*	*4640 (1359)*	*5750 (1684)*	*7510 (2199)*	*8460 (2478)*	*9700 (2840)*	*12200 (3563)*	*19400 (5680)*
		R407C	*3360 (984)*	*4392 (1287)*	*5445 (1596)*	*7110 (2084)*	*8010 (2347)*	*9180 (2690)*	*11600 (3376)*	*18400 (5381)*
		R404A R507	*3730 (1093)*	*4880 (1430)*	*6050 (1773)*	*7900 (2315)*	*8900 (2608)*	*10200 (2989)*	*12800 (3751)*	*20400 (5979)*
		R22	*3540 (1038)*	*4640 (1359)*	*5750 (1684)*	*7510 (2199)*	*8500 (2478)*	*9700 (2840)*	*12200 (3563)*	*19400 (5680)*
		R134a	*3360 (984)*	*4392 (1287)*	*5445 (1596)*	*7110 (2084)*	*8010 (2347)*	*9180 (2690)*	*11600 (3376)*	*18400 (5381)*
Air Flow	CFM *(L/s)*		770 *(363)*	770 *(363)*	1280 *(604)*	1300 *(614)*	1380 *(651)*	2025 *(956)*	2000 *(944)*	4050 *(1911)*
Refrigerant ** Charge R407A	Lbs *(Kg)*		*1.4 (0.6)*	*1.9 (0.9)*	*2.3 (1.0)*	*3.3 (1.5)*	*3.6 (1.6)*	*4.1 (1.9)*	*5.3 (2.4)*	*8.3 (3.7)*

Capacities rated using 10°F *(5.6°C)* TD & 100°F *(38°C)* liquid temperature.
Capacities at other TD within a range of 8 to 15 °F *(4.4 to 8.3°C)* are directly proportional to TD, or use formula: Capacity = Rated capacity ÷ 10 x TD.
For capacities at TD outside of range 8 to 15 °F *(4.4 to 8.3°C)*, or liquid temperature lower than 75°F *(24°)*, consult factory.
Capacities for R448A, R407A and R407C are based on mean temperature. Mean temperature is the average temperature between the saturated suction temperature and the temperature feeding the evaporator. For dew point ratings, consult factory.
For R449A, use R448A data.

**** REFRIGERANT CHARGE CONVERSION FACTORS**

R448A	R407C	R404A	R507	R22	R134a
0.96	0.99	0.92	0.93	1.02	1.03

SINGLE SPEED EC MOTOR(S)

MODEL R	QTY.	POWER SUPPLY	HP	RPM	WATTS	TOTAL MOTOR FLA	MCA	MOP
375	1	115/1/60	1/20	1550	26	0.5	0.63	15
485	1	115/1/60	1/20	1550	26	0.5	0.63	15
595	1	115/1/60	1/20	1550	26	0.5	0.63	15
775	1	115/1/60	1/12	1070	84	1.5	1.88	15
905	1	115/1/60	1/12	1070	84	1.5	1.88	15
1025	1	115/1/60	1/12	1070	84	1.5	1.88	15
1305	1	115/1/60	1/12	1070	84	1.5	1.88	15
2050	2	115/1/60	1/12	1070	168	3.0	3.38	15
775	1	208-230/1/60	1/10	1070	86	1	1.25	15
905	1	208-230/1/60	1/10	1070	86	1	1.25	15
1025	1	208-230/1/60	1/10	1070	86	1	1.25	15
1305	1	208-230/1/60	1/10	1070	86	1	1.25	15
2050	2	208-230/1/60	1/10	1070	172	2	2.25	15

WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KLV Two-Way Low Profile Evaporators



NOMENCLATURE

KTL 115 M A - S1 A

- **Product Name** — Two Way Low Profile Evaporator
- **X 100 = Nominal Capacity** (10°F TD, 60Hz), Btu/H
- **Evap Temp Range** — M = Medium Temp (10 - 45°F), 8 FPI.
- **Defrost Type** — A = Air Defrost; E = Electric Defrost
- **Unit Electrical Designation** — S1 = 115/1/60; S2 = 208-230/1/60; S6 = 200-220/1/50
- **Design Version**

MEDIUM TEMPERATURE MODELS - CAPACITY *

Model KTL			010M	015M	020M	025M	032M	038M	060M	077M	115M
Number of Fans			1	1	1	1	1	1	2	2	3
Capacity BTUH (WATTS)	Evap Temp. 25°F (-4°C)	R407A R448A	900 (264)	1380 (404)	1900 (557)	2380 (696)	3040 (891)	3600 (1058)	5700 (1670)	7300 (2144)	10900 (3202)
		R407C	860 (250)	1305 (383)	1800 (527)	2250 (660)	2880 (844)	3420 (1003)	5400 (1582)	6900 (2031)	10400 (3033)
		R404A R507	950 (278)	1450 (425)	2000 (586)	2500 (733)	3200 (938)	3800 (1114)	6000 (1758)	7700 (2257)	11500 (3370)
		R22	900 (264)	1380 (404)	1900 (557)	2380 (696)	3000 (891)	3600 (1058)	5700 (1670)	7300 (2144)	10900 (3202)
		R134a	855 (250)	1305 (383)	1800 (527)	2250 (660)	2880 (844)	3420 (1003)	5400 (1582)	6930 (2031)	10350 (3033)
Air Flow	CFM (L/s)		130 (61)	180 (85)	237 (112)	270 (127)	440 (208)	440 (208)	928 (438)	807 (381)	1242 (586)
Refrigerant ** Charge R407A	Lbs (Kg)		0.4 (0.2)	0.5 (0.2)	0.7 (0.3)	0.8 (0.4)	0.9 (0.4)	1.2 (0.5)	1.4 (0.6)	2.3 (1.0)	3.4 (1.5)

LOW TEMPERATURE MODELS - CAPACITY *

Model KTL			009L	013L	017L	021L	028L	033L	052L	066L	099L
Number of Fans			1	1	1	1	1	1	2	2	3
Capacity BTUH (WATTS)	Evap Temp. -20°F (-28.9°C)	R407A R448A	810 (237)	1190 (348)	1620 (473)	2000 (584)	2660 (780)	3100 (919)	4900 (1448)	6300 (1837)	9400 (2756)
		R407C	770 (224)	1125 (329)	1530 (448)	1890 (554)	2520 (739)	2970 (870)	4700 (1372)	6000 (1741)	8900 (2611)
		R404A R507	850 (249)	1250 (366)	1700 (498)	2100 (615)	2800 (821)	3300 (967)	5200 (1524)	6600 (1934)	9900 (2901)
		R22	810 (237)	1190 (348)	1620 (473)	2000 (584)	2700 (780)	3100 (919)	4900 (1448)	6300 (1837)	9400 (2756)
		R134a	765 (224)	1125 (329)	1530 (448)	1890 (554)	2520 (739)	2970 (870)	4680 (1372)	5940 (1741)	8910 (2611)
Air Flow	CFM (L/s)		130 (61)	180 (85)	237 (112)	270 (127)	440 (208)	440 (208)	928 (438)	807 (381)	1242 (586)
Refrigerant ** Charge R407A	Lbs (Kg)		0.4 (0.2)	0.5 (0.2)	0.7 (0.3)	0.8 (0.4)	0.9 (0.4)	1.2 (0.5)	1.4 (0.6)	2.3 (1.0)	3.4 (1.5)

*** Derate capacity by 5% when using EC Motors**

Capacities rated using 10°F *(5.6°C)* TD & 100°F *(38°C)* liquid temperature.
Capacities at other TD within a range of 8 to 15 °F *(4.4 to 8.3°C)* are directly proportional to TD, or use formula: Capacity = Rated capacity ÷ 10 x TD.
For capacities at TD outside of range 8 to 15 °F *(4.4 to 8.3°C)*, or liquid temperature lower than 75°F *(24°)*, consult factory.
Capacities for R448A, R407A and R407C are based on mean temperature. Mean temperature is the average temperature between the saturated suction temperature and the temperature feeding the evaporator. For dew point ratings, consult factory.
For R449A, use R448A data.

*** CAPACITY CORRECTION FACTORS FOR LOW TEMPERATURE UNITS**

SATURATED SUCTION TEMPERATURE °F (°C)	0 (-17.8)	-10 (23.3)	-20 (-28.9)
FACTOR	1.06	1.03	1.0

NO CORRECTION FACTOR REQUIRED FOR MEDIUM TEMP. UNITS

**** REFRIGERANT CHARGE CONVERSION FACTORS**

R448A	R407C	R404A	R507	R22	R134a
0.96	0.99	0.92	0.93	1.02	1.03

KLV Two-Way Low Profile Evaporators

Electrical Data 115/1/60

AIR DEFROST

MODEL KTL	No. of FANS	FAN MOTOR(S) - SHADED POLE (STANDARD)				FAN MOTOR(S)- EC (OPTIONAL)			
		TOTAL MOTOR FLA	M.C.A.	M.O.P	WATTS	TOTAL MOTOR FLA	M.C.A.	M.O.P	WATTS
010MA-S1A	1	1.2	1.5	15	70	-	-	-	-
015MA-S1A	1	1.2	1.5	15	70	-	-	-	-
020MA-S1A	1	1.2	1.5	15	70	-	-	-	-
025MA-S1A	1	1.2	1.5	15	70	-	-	-	-
032MA-S1A	1	1.2	1.5	15	70	0.60	0.75	15	30
038MA-S1A	1	1.2	1.5	15	70	0.60	0.75	15	30
060MA-S1A	2	2.4	2.7	15	140	1.20	1.35	15	60
077MA-S1A	2	2.4	2.7	15	140	1.20	1.35	15	60
115MA-S1A	3	3.6	3.9	15	210	1.80	1.95	15	90

ELECTRIC DEFROST

MODEL KTL	No. of FANS	FAN MOTOR(S) - SHADED POLE (STANDARD)				FAN MOTOR(S)- EC (OPTIONAL)				DEFROST HEATERS			
		TOTAL MOTOR FLA	M.C.A.	M.O.P	WATTS	TOTAL MOTOR FLA	M.C.A.	M.O.P	WATTS	TOTAL WATTS	TOTAL AMPS	M.C.A.	M.O.P
010ME-S1A	1	1.2	1.5	15	70	-	-	-	-	206	1.8	2.2	15
015ME-S1A	1	1.2	1.5	15	70	-	-	-	-	530	4.6	5.8	15
020ME-S1A	1	1.2	1.5	15	70	-	-	-	-	530	4.6	5.8	15
025ME-S1A	1	1.2	1.5	15	70	-	-	-	-	530	4.6	5.8	15
032ME-S1A	1	1.2	1.5	15	70	0.60	0.75	15	30	750	6.5	8.2	15
038ME-S1A	1	1.2	1.5	15	70	0.60	0.75	15	30	750	6.5	8.2	15
060ME-S1A	2	2.4	2.7	15	140	1.20	1.35	15	60	1100	9.6	12.0	15
077ME-S1A	2	2.4	2.7	15	140	1.20	1.35	15	60	1540	13.4	16.8	20
115ME-S1A	3	3.6	3.9	15	210	1.80	1.95	15	90	2270	19.7	24.6	25
009LE-S1A	1	1.2	1.5	15	70	-	-	-	-	206	1.8	2.2	15
013LE-S1A	1	1.2	1.5	15	70	-	-	-	-	530	4.6	5.8	15
017LE-S1A	1	1.2	1.5	15	70	-	-	-	-	530	4.6	5.8	15
021LE-S1A	1	1.2	1.5	15	70	-	-	-	-	530	4.6	5.8	15
028LE-S1A	1	1.2	1.5	15	70	0.60	0.75	15	30	750	6.5	8.2	15
033LE-S1A	1	1.2	1.5	15	70	0.60	0.75	15	30	750	6.5	8.2	15
052LE-S1A	2	2.4	2.7	15	140	1.20	1.35	15	60	1100	9.6	12.0	15
066LE-S1A	2	2.4	2.7	15	140	1.20	1.35	15	60	1540	13.4	16.8	20
099LE-S1A	3	3.6	3.9	15	210	1.80	1.95	15	90	2270	19.7	24.6	25

WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KLV Two-Way Low Profile Evaporators

Electrical Data 208-230/1/60

AIR DEFROST

MODEL KTL	No. of FANS	FAN MOTOR(S) - SHADED POLE(STANDARD)				FAN MOTOR(S)- EC (OPTIONAL)			
		TOTAL MOTOR FLA	M.C.A.	M.O.P	WATTS	TOTAL MOTOR FLA	M.C.A.	M.O.P	WATTS
010MA-S2A	1	0.7	0.9	15	60	-	-	-	-
015MA-S2A	1	0.7	0.9	15	60	-	-	-	-
020MA-S2A	1	0.7	0.9	15	60	-	-	-	-
025MA-S2A	1	0.7	0.9	15	60	-	-	-	-
032MA-S2A	1	0.7	0.9	15	60	0.30	0.40	15	30
038MA-S2A	1	0.7	0.9	15	60	0.30	0.40	15	30
060MA-S2A	2	1.4	1.6	15	120	0.60	0.70	15	60
077MA-S2A	2	1.4	1.6	15	120	0.60	0.70	15	60
115MA-S2A	3	2.1	2.3	15	180	0.90	1.00	15	90

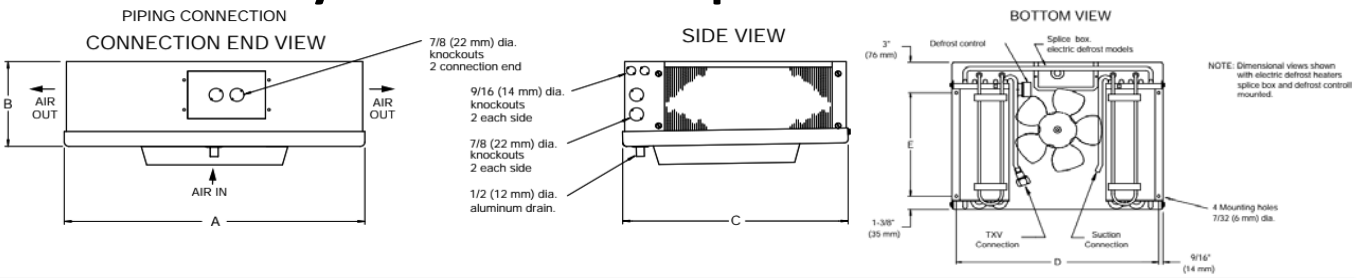
ELECTRIC DEFROST

MODEL KTL	No. of FANS	FAN MOTOR(S) - SHADED POLE(STANDARD)				FAN MOTOR(S)- EC (OPTIONAL)				DEFROST HEATERS			
		TOTAL MOTOR FLA	M.C.A.	M.O.P	WATTS	TOTAL MOTOR FLA	M.C.A.	M.O.P	WATTS	TOTAL WATTS	TOTAL AMPS	M.C.A.	M.O.P
010ME-S2A	1	0.7	0.9	15	60	-	-	-	-	206	0.9	1.1	15
015ME-S2A	1	0.7	0.9	15	60	-	-	-	-	530	2.3	2.9	15
020ME-S2A	1	0.7	0.9	15	60	-	-	-	-	530	2.3	2.9	15
025ME-S2A	1	0.7	0.9	15	60	-	-	-	-	530	2.3	2.9	15
032ME-S2A	1	0.7	0.9	15	60	0.30	0.40	15	30	750	3.3	4.1	15
038ME-S2A	1	0.7	0.9	15	60	0.30	0.40	15	30	750	3.3	4.1	15
060ME-S2A	2	1.4	1.6	15	120	0.60	0.70	15	60	1100	4.8	6.0	15
077ME-S2A	2	1.4	1.6	15	120	0.60	0.70	15	60	1540	6.7	8.4	15
115ME-S2A	3	2.1	2.3	15	180	0.90	1.00	15	90	2270	9.9	12.4	15
009LE-S2A	1	0.7	0.9	15	60	-	-	-	-	206	0.9	1.1	15
013LE-S2A	1	0.7	0.9	15	60	-	-	-	-	530	2.3	2.9	15
017LE-S2A	1	0.7	0.9	15	60	-	-	-	-	530	2.3	2.9	15
021LE-S2A	1	0.7	0.9	15	60	-	-	-	-	530	2.3	2.9	15
028LE-S2A	1	0.7	0.9	15	60	0.30	0.40	15	30	750	3.3	4.1	15
033LE-S2A	1	0.7	0.9	15	60	0.30	0.40	15	30	750	3.3	4.1	15
052LE-S2A	2	1.4	1.6	15	120	0.60	0.70	15	60	1100	4.8	6.0	15
066LE-S2A	2	1.4	1.6	15	120	0.60	0.70	15	60	1540	6.7	8.4	15
099LE-S2A	3	2.1	2.3	15	180	0.90	1.00	15	90	2270	9.9	12.4	15

WALK-IN UNIT COOLERS

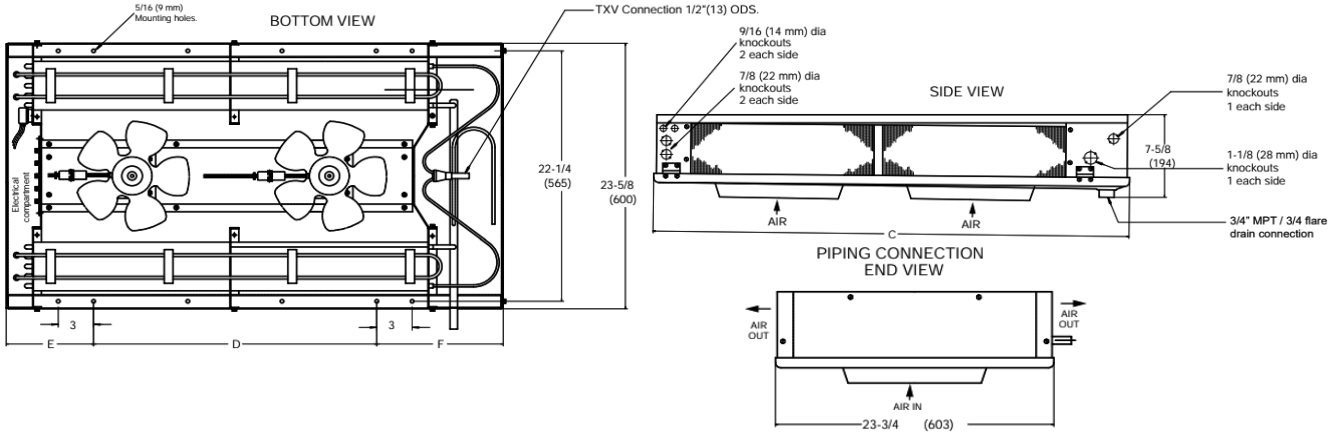
KEEPRITE REFRIGERATION

KLV Two-Way Low Profile Evaporators



MODEL KTL	Suc. Conn.	TXV	A		B		C		D		E		APPROX. WEIGHT	
	(ID) Sweat	Inlet Size	Inches	*mm*	Inches	*mm*	Inches	*mm*	Inches	*mm*	Inches	*mm*	Lbs.	*Kgs*
010M*	3/8	1/2" Flare	18 7/8	*479*	4 1/2	*114*	14 1/8	*359*	17 3/4	*451*	9 3/4	*248*	11.6	*5.3*
015M*	3/8	1/2" Flare	18 7/8	*479*	4 1/2	*114*	14 1/8	*359*	17 3/4	*451*	9 3/4	*248*	12.6	*5.7*
020M*	3/8	1/2" Flare	18 7/8	*479*	5 1/2	*140*	14 1/8	*359*	17 3/4	*451*	9 3/4	*248*	13.7	*6.2*
025M*	3/8	1/2" Flare	18 7/8	*479*	5 1/2	*140*	14 1/8	*359*	17 3/4	*451*	9 3/4	*248*	14.7	*6.7*
032M*	3/8	1/2" ODS	21 7/8	*556*	5 1/2	*140*	19 1/8	*486*	20 3/4	*527*	14 3/4	*375*	18.9	*8.6*
038M*	3/8	1/2" ODS	21 7/8	*556*	5 1/2	*140*	19 1/8	*486*	20 3/4	*527*	14 3/4	*375*	20.0	*9.1*
009LE	3/8	1/2" Flare	18 7/8	*479*	4 1/2	*114*	14 1/8	*359*	17 3/4	*451*	9 3/4	*248*	11.6	*5.3*
013LE	3/8	1/2" Flare	18 7/8	*479*	4 1/2	*114*	14 1/8	*359*	17 3/4	*451*	9 3/4	*248*	12.6	*5.7*
017LE	3/8	1/2" ODS	18 7/8	*479*	5 1/2	*140*	14 1/8	*359*	17 3/4	*451*	9 3/4	*248*	13.7	*6.2*
021LE	3/8	1/2" ODS	18 7/8	*479*	5 1/2	*140*	14 1/8	*359*	17 3/4	*451*	9 3/4	*248*	14.7	*6.7*
028LE	1/2	1/2" ODS	21 7/8	*556*	5 1/2	*140*	19 1/8	*486*	20 3/4	*527*	14 3/4	*375*	18.9	*8.6*
033LE	1/2	1/2" ODS	21 7/8	*556*	5 1/2	*140*	19 1/8	*486*	20 3/4	*527*	14 3/4	*375*	20.0	*9.1*

*** - A (AIR DEFROST) OR E (ELECTRIC DEFROST)**



MODEL KTL	Suc. Conn.	TXV	C		D		E		F		APPROX. WEIGHT	
	(ID) Sweat	Inlet Size	Inches	*mm*	Inches	*mm*	Inches	*mm*	Inches	*mm*	Lbs.	*Kgs*
060M	1/2	1/2" ODS	42 3/4	*1086*	4 holes @ 8"	*203*	7 11/16	*195*	10 15/16	*278*	37.8	*17.1*
077M	5/8	1/2" ODS	42 3/4	*1086*	4 holes @ 8"	*203*	7 11/16	*195*	10 15/16	*278*	39.9	*18.1*
115M	5/8	1/2" ODS	59 1/2	*1511*	6 holes @ 8"	*203*	8	*203*	11 7/16	*291*	59.9	*27.2*
052LE	5/8	1/2" ODS	42 3/4	*1086*	4 holes @ 8"	*203*	7 11/16	*195*	10 15/16	*278*	37.8	*17.1*
066LE	5/8	1/2" ODS	42 3/4	*1086*	4 holes @ 8"	*203*	7 11/16	*195*	10 15/16	*278*	39.9	*18.1*
099LE	7/8	1/2" ODS	59 1/2	*1511*	6 holes @ 8"	*203*	8	*203*	11 7/16	*291*	59.9	*27.2*

WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KLV Two-Way Low Profile Low Velocity Evaporators



NOMENCLATURE

KLV 150 ED - S2 B - D

Low Velocity Evaporators

Nominal Capacity @ 10 °F TD
150 x 100 = 15000 BTUH, Rated at 20°F Evap. Temp.

Type of Defrost
AD = Air Defrost ED = Electric Defrost
HE = 3 Pipe Defrost, Electric Heated Drain Pan
RE = Reverse Cycle Defrost, Electric Heated Drain Pan
TE = Thermosaver Defrost, Electric Heated Drain Pan

Motor
Blank = PSC
D = SmartSpeed ECM

Generation
B = Second Generation

Electrical Designation
S1 = 115/1/60
S2 = 208-230/1/60
S4 = 460/1/60

High Temp. Model KLV			060AD	090AD	120AD	150AD	180AD	220AD	270AD	300AD	340AD	370AD
Electric Defrost Model KLV			060ED	090ED	120ED	150ED	180ED	220ED	270ED	300ED	340ED	370ED
Hot Gas Defrost Model KLV			060‡	090‡	120‡	150‡	180‡	220‡	270‡	300‡	340‡	370‡
Capacity BTUH *(WATTS)*	Evap Temp. 25°F *(-4°C)*	R407A R448A	5700 *(1669)*	8550 *(2503)*	11400 *(3338)*	14250 *(4172)*	17100 *(5007)*	20900 *(6120)*	25700 *(7511)*	28500 *(8345)*	32300 *(9458)*	35200 *(10292)*
		R407C	5400 *(1581)*	8100 *(2372)*	10800 *(3163)*	13500 *(3953)*	16200 *(4744)*	19800 *(5798)*	24400 *(7115)*	27100 *(7906)*	30700 *(8960)*	33400 *(9751)*
		R404A R507	6000 *(1757)*	9000 *(2635)*	12000 *(3514)*	15000 *(4392)*	18000 *(5271)*	22000 *(6442)*	27000 *(7906)*	30000 *(8784)*	34000 *(9956)*	37000 *(10834)*
		R22	5700 *(1669)*	8550 *(2503)*	11400 *(3338)*	14250 *(4172)*	17100 *(5007)*	20900 *(6120)*	25700 *(7511)*	28500 *(8345)*	32300 *(9458)*	35200 *(10292)*
		R134a	5400 *(1581)*	8100 *(2372)*	10800 *(3163)*	13500 *(3953)*	16200 *(4744)*	19800 *(5798)*	24300 *(7115)*	27000 *(7906)*	30600 *(8960)*	33300 *(9751)*
Air Flow	CFM *(L/s)*		850 *(401)*	1120 *(529)*	1500 *(708)*	2000 *(944)*	2530 *(1194)*	2785 *(1314)*	3400 *(1605)*	4000 *(1888)*	4370 *(2062)*	4840 *(2284)*
Refrigerant ** Charge R407A		Lbs *(Kg)*	2.6 *(1.2)*	4.4 *(2.0)*	6.5 *(2.9)*	7.3 *(3.3)*	7.9 *(3.6)*	10.1 *(4.6)*	9.9 *(4.5)*	11.9 *(5.4)*	15.2 *(6.9)*	15.2 *(6.9)*
Std. Unit Net Weight (w/o Refrigerant)		Lbs *(Kg)*	90 *(41)*	105 *(48)*	139 *(63)*	158 *(72)*	220 *(100)*	235 *(107)*	257 *(117)*	270 *(123)*	280 *(127)*	290 *(132)*

‡Refer to Hot Gas Defrost nomenclature and insert appropriate code

NOTE: Defrost heaters can be field converted to operate on 208-230/3/60

Capacities rated using 10°F *(5.6°C)* TD & 100°F *(38°C)* liquid temperature.
Capacities at other TD within a range of 8 to 15 °F *(4.4 to 8.3°C)* are directly proportional to TD, or use formula: Capacity = Rated capacity ÷ 10 x TD.
For capacities at TD outside of range 8 to 15 °F *(4.4 to 8.3°C)*, or liquid temperature lower than 75°F *(24°)*, consult factory.
Capacities for R448A, R407A and R407C are based on mean temperature. Mean temperature is the average temperature between the saturated suction temperature and the temperature feeding the evaporator. For dew point ratings, consult factory.
For R449A, use R448A data.

**** REFRIGERANT CHARGE CONVERSION FACTORS**

R448A	R407C	R404A	R507	R22	R134a
0.96	0.99	0.92	0.93	1.02	1.03

KLV Two-Way Low Profile Low Velocity Evaporators

Air Defrost Models - 115/1/60

Model KLV	No. of Fans	Standard PSC Motor				Optional SMARTSPEED EC Motor			
		FLA	MCA*	Watts	MOP	FLA	MCA*	Watts	MOP
060AD	1	1.1	1.4	90	15	0.8	1.0	55	15
090AD	1	1.1	1.4	130	15	1.6	2.0	95	15
120AD	2	2.2	2.5	180	15	1.6	1.8	110	15
150AD	2	2.2	2.5	260	15	3.2	3.6	190	15
180AD	3	3.3	3.6	270	15	2.4	2.6	165	15
220AD	3	3.3	3.6	390	15	4.8	5.2	285	15
270AD	3	3.3	3.6	390	15	4.8	5.2	285	15
300AD	4	4.4	4.7	520	15	6.4	6.8	380	15
340AD	4	4.4	4.7	520	15	6.4	6.8	380	15
370AD	5	5.5	5.8	650	15	8.0	8.4	475	15

FLA = Full Load Amps MCA = Minimum Circuit Ampacity MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

Air Defrost Models - 208-230/1/60

Model KLV	No. of Fans	Standard PSC Motor				Optional SMARTSPEED EC Motor			
		FLA	MCA*	Watts	MOP	FLA	MCA*	Watts	MOP
060AD	1	0.5	0.6	90	15	0.5	0.6	55	15
090AD	1	0.5	0.6	130	15	1.0	1.3	95	15
120AD	2	1.0	1.1	180	15	1.0	1.1	110	15
150AD	2	1.0	1.1	260	15	2.0	2.3	190	15
180AD	3	1.5	1.6	270	15	1.5	1.6	165	15
220AD	3	1.5	1.6	390	15	3.0	3.3	285	15
270AD	3	1.5	1.6	390	15	3.0	3.3	285	15
300AD	4	2.0	2.1	520	15	4.0	4.3	380	15
340AD	4	2.0	2.1	520	15	4.0	4.3	380	15
370AD	5	2.5	2.6	650	15	5.0	5.3	475	15

FLA = Full Load Amps MCA = Minimum Circuit Ampacity MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

Air Defrost Models - 460/1/60

Model KLV	No. of Fans	Standard PSC Motor			
		FLA	MCA*	Watts	MOP
060AD	1	0.3	0.4	90	15
090AD	1	0.3	0.4	130	15
120AD	2	0.6	0.7	180	15
150AD	2	0.6	0.7	260	15
180AD	3	0.9	1.0	270	15
220AD	3	0.9	1.0	390	15
270AD	3	0.9	1.0	390	15
300AD	4	1.2	1.3	520	15
340AD	4	1.2	1.3	520	15
370AD	5	1.5	1.6	650	15

FLA = Full Load Amps MCA = Minimum Circuit Ampacity
MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KLV Two-Way Low Profile Low Velocity Evaporators

Electric Defrost Models - 115/1/60

Model KLV	No. of Fans	Fan Motors								Defrost Heaters			
		Standard PSC Motor				Optional SMARTSPEED EC Motor							
		FLA	MCA*	Watts	MOP	FLA	MCA*	Watts	MOP	Watts	FLA	MCA*	MOP
060ED	1	1.1	1.4	90	15	0.8	1.0	55	15	1880	16.4	20.4	25
090ED	1	1.1	1.4	130	15	1.6	2.0	95	15	1880	16.4	20.4	25

FLA = Full Load Amps MCA = Minimum Circuit Ampacity MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

Electric Defrost Models - 208-230/1/60

Model KLV	No. of Fans	Fan Motors - 208-230/1/60								Defrost Heaters - 208/230/1/60				Defrost Heaters field converted to operate on 208-230/3/60			
		Standard PSC Motor				Optional SMARTSPEED EC Motor											
		FLA	MCA*	Watts	MOP	FLA	MCA*	Watts	MOP	Watts	FLA	MCA*	MOP	Watts	FLA	MCA*	MOP
060ED	1	0.5	0.6	90	15	0.5	0.6	55	15	1880	8.2	10.2	15	1880	4.9	6.1	15
090ED	1	0.5	0.6	130	15	1.0	1.3	95	15	1880	8.2	10.2	15	1880	4.9	6.1	15
120ED	2	1.0	1.1	180	15	1.0	1.1	110	15	3180	13.8	17.3	20	3180	8.5	10.6	15
150ED	2	1.0	1.1	260	15	2.0	2.3	190	15	3180	13.8	17.3	20	3180	8.5	10.6	15
180ED	3	1.5	1.6	270	15	1.5	1.6	165	15	4540	19.7	24.7	25	4540	12.1	15.1	20
220ED	3	1.5	1.6	390	15	3.0	3.3	285	15	4540	19.7	24.7	25	4540	12.1	15.1	20
270ED	3	1.5	1.6	390	15	3.0	3.3	285	15	4540	19.7	24.7	25	4540	12.1	15.1	20
300ED	4	2.0	2.1	520	15	4.0	4.3	380	15	4540	19.7	24.7	25	4540	12.1	15.1	20
340ED	4	2.0	2.1	520	15	4.0	4.3	380	15	5580	24.3	30.3	35	5580	14.9	18.6	20
370ED	5	2.5	2.6	650	15	5.0	5.3	475	15	5580	24.3	30.3	35	5580	14.9	18.6	20

FLA = Full Load Amps MCA = Minimum Circuit Ampacity MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

Hot Gas Defrost Models - 115/1/60

Model KLV	No. of Fans	Standard PSC Motor					Optional SMARTSPEED EC Motor				
		Drain Pan Heater Watts	Heater Amps	Fan Motor FLA	MCA*	MOP	Drain Pan Heater Watts	Heater Amps	Fan Motor FLA	MCA*	MOP
060 HE/RE	1	580	5.0	1.1	6.3	15	580	5.0	0.8	6.6	15
090 HE/RE	1	580	5.0	1.1	6.3	15	580	5.0	1.6	6.6	15
120 HE/RE	2	580	5.0	2.2	6.3	15	580	5.0	1.6	6.6	15
150 HE/RE	2	580	5.0	2.2	6.3	15	580	5.0	3.2	6.6	15
180 HE/RE	3	820	7.1	3.3	8.9	15	820	7.1	2.4	9.4	15
220 HE/RE	3	820	7.1	3.3	8.9	15	820	7.1	4.8	9.4	15
270 HE/RE	3	820	7.1	3.3	8.9	15	820	7.1	4.8	9.4	15
300 HE/RE	4	820	7.1	4.4	8.9	15	820	7.1	6.4	9.4	15
340 HE/RE	4	1020	8.9	4.4	11.1	15	1020	8.9	6.4	11.6	15
370 HE/RE	5	1020	8.9	5.5	11.1	15	1020	8.9	8	11.6	15

FLA = Full Load Amps MCA = Minimum Circuit Ampacity MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

Hot Gas Defrost Models - 208-230/1/60

Model KLV	No. of Fans	Standard PSC Motor					Optional EC Motor				
		Drain Pan Heater Watts	Heater Amps	Fan Motor FLA	MCA*	MOP	Drain Pan Heater Watts	Heater Amps	Fan Motor FLA	MCA*	MOP
060 HE/RE	1	580	2.5	0.5	3.2	15	580	2.5	0.5	2.9	15
090 HE/RE	1	580	2.5	0.5	3.2	15	580	2.5	1.0	2.9	15
120 HE/RE	2	580	2.5	1.0	3.2	15	580	2.5	1.0	2.9	15
150 HE/RE	2	580	2.5	1.0	3.2	15	580	2.5	2.0	2.9	15
180 HE/RE	3	820	3.6	1.5	4.5	15	820	3.6	1.5	4.1	15
220 HE/RE	3	820	3.6	1.5	4.5	15	820	3.6	3.0	4.1	15
270 HE/RE	3	820	3.6	1.5	4.5	15	820	3.6	3.0	4.1	15
300 HE/RE	4	820	3.6	2.0	4.5	15	820	3.6	4.0	4.1	15
340 HE/RE	4	1020	4.4	2.0	5.5	15	1020	4.4	4.0	5.1	15
370 HE/RE	5	1020	4.4	2.5	5.5	15	1020	4.4	5.0	5.1	15

FLA = Full Load Amps MCA = Minimum Circuit Ampacity MOP = Maximum Over Current Protection

* Electrical wiring is to be sized in accordance with minimum circuit ampacity

WALK-IN UNIT COOLERS

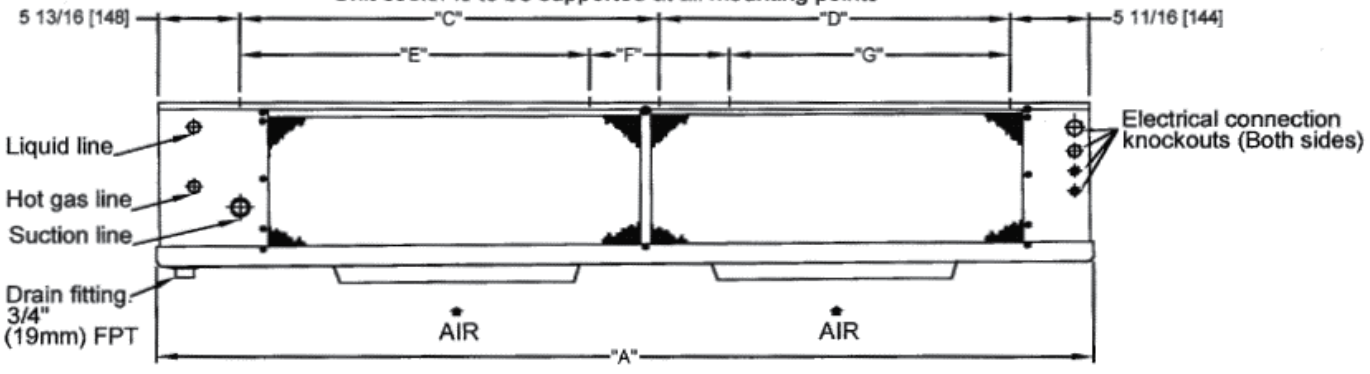
KEEPRITE REFRIGERATION

KLV Two-Way Low Profile Low Velocity Evaporators

MODEL KLV	No. of Fans	DIMENSIONAL DATA - INCHES *(mm)*									
		Suction Connection (OD)	Distributor Inlet (OD)	Hot Gas Side Conn. (OD)	A	B	Mounting Holes				
							C	D	E	F	G
060	1	5/8 *(16)*	1/2 *(13)*	1/2 *(13)*	66 7/8 *(1699)*	8 11/16 *(221)*	27 1/2 *(699)*	27 1/2 *(699)*	-	-	-
090	1	7/8 *(22)*	1/2 *(13)*	1/2 *(13)*	66 7/8 *(1699)*	9 9/16 *(252)*	27 1/2 *(699)*	27 1/2 *(699)*	-	-	-
120	2	7/8 *(22)*	1/2 *(13)*	1/2 *(13)*	66 7/8 *(1699)*	12 7/16 *(316)*	27 1/2 *(699)*	27 1/2 *(699)*	-	-	-
150	2	1 1/8 *(29)*	1/2 *(13)*	1/2 *(13)*	66 7/8 *(1699)*	14 15/16 *(378)*	27 1/2 *(699)*	27 1/2 *(699)*	-	-	-
180	3	1 1/8 *(29)*	1/2 *(13)*	1/2 *(13)*	92 7/8 *(2359)*	14 15/16 *(378)*	40 1/2 *(1029)*	40 1/2 *(1029)*	-	-	-
220	3	1 1/8 *(29)*	1/2 *(13)*	1/2 *(13)*	92 7/8 *(2359)*	14 15/16 *(378)*	40 1/2 *(1029)*	40 1/2 *(1029)*	-	-	-
270	3	1 1/8 *(29)*	* 7/8 *(22)*	5/8 *(16)*	92 7/8 *(2359)*	17 7/16 *(443)*	40 1/2 *(1029)*	40 1/2 *(1029)*	-	-	-
300	4	1 1/8 *(29)*	* 7/8 *(22)*	5/8 *(16)*	92 7/8 *(2359)*	17 7/16 *(443)*	40 1/2 *(1029)*	40 1/2 *(1029)*	-	-	-
340	4	1 3/8 *(35)*	* 7/8 *(22)*	5/8 *(16)*	112 7/8 *(2867)*	17 7/16 *(443)*	-	-	40 1/2 *(1029)*	20 *(508)*	40 1/2 *(1029)*
370	5	1 3/8 *(35)*	* 7/8 *(22)*	5/8 *(16)*	112 7/8 *(2867)*	17 7/16 *(443)*	-	-	40 1/2 *(1029)*	20 *(508)*	40 1/2 *(1029)*

* Reducer supplied to accomodate 1/2" or 7/8" TXV outlet connection.

MOUNTING HOLES [3/8" (9.5 mm) DIA.] & PIPING CONNECTION
Unit cooler is to be supported at all mounting points



WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KTM Two-Way Medium Profile Evaporators



NOMENCLATURE

KTM 295 M A - S1 A - T

Product Name
Two Way Medium Profile Evaporator

X 100 = Nominal Capacity
(10°F TD, 60Hz), Btu/H

Evap Temp Range
M = Medium Temp (10 - 45°F), 6 FPI.
L = Low Temp (-20 - 0°F), 6 FPI.

Defrost Type
A = Air Defrost
E = Electric Defrost
G = Reverse Cycle w/ Electric Heater Pan

Unit Electrical Designaton
S1 = 115/1/60 (air defrost models only)
S2 = 208-230/1/60 S6 = 200-220/1/50
S4 = 460/1/60 S9 = 380-400/1/50

Generation

Motor
C = PSC
T = ECM

MEDIUM TEMPERATURE MODELS - CAPACITY

Model KTM			115M	139M	172M	208M	236M	260M	295M
Number of Fans			2	2	3	3	4	4	5
Capacity BTUH *(WATTS)*	Evap Temp. 25°F *(-4°C)*	R407A R448A	10930 *(3202)*	13210 *(3870)*	16340 *(4789)*	19760 *(5791)*	22420 *(6570)*	24700 *(7239)*	28000 *(8214)*
		R407C	10350 *(3033)*	12510 *(3667)*	15480 *(4537)*	18720 *(5486)*	21240 *(6224)*	23400 *(6858)*	26600 *(7781)*
		R404A R507	11500 *(3370)*	13900 *(4074)*	17200 *(5041)*	20800 *(6096)*	23600 *(6916)*	26000 *(7620)*	29500 *(8646)*
		R22	10930 *(3202)*	13210 *(3870)*	16340 *(4789)*	19760 *(5791)*	22400 *(6570)*	24700 *(7239)*	28000 *(8214)*
		R134a	10350 *(3033)*	12510 *(3667)*	15480 *(4537)*	18720 *(5486)*	21240 *(6224)*	23400 *(6858)*	26550 *(7781)*
Air Flow	CFM *(L/s)*		2020 *(953)*	1900 *(897)*	3030 *(1430)*	2850 *(1345)*	3700 *(1746)*	3780 *(1784)*	4630 *(2185)*
Refrigerant ** Charge R407A	Lbs *(Kg)*		2.3 *(1.0)*	3.1 *(1.4)*	3.4 *(1.5)*	4.6 *(2.1)*	4.6 *(2.1)*	5.7 *(2.6)*	5.7 *(2.6)*

LOW TEMPERATURE MODELS - CAPACITY *

Models			105L	124L	153L	188L	210L	235L	265L
Number of Fan KTM			2	2	3	3	4	4	5
Capacity BTUH *(WATTS)*	Evap Temp. -20°F *(-28.9°C)*	R407A R448A	9980 *(2923)*	11780 *(3452)*	14540 *(4260)*	17860 *(5235)*	19950 *(5846)*	22300 *(6543)*	25200 *(7378)*
		R407C	9450 *(2769)*	11160 *(3271)*	13770 *(4036)*	16920 *(4959)*	18900 *(5539)*	21150 *(6198)*	23900 *(6989)*
		R404A R507	10500 *(3077)*	12400 *(3634)*	15300 *(4484)*	18800 *(5510)*	21000 *(6154)*	23500 *(6887)*	26500 *(7766)*
		R22	9980 *(2923)*	11780 *(3452)*	14540 *(4260)*	17860 *(5235)*	20000 *(5846)*	22300 *(6543)*	25200 *(7378)*
		R134a	9450 *(2769)*	11160 *(3271)*	13770 *(4036)*	16920 *(4959)*	18900 *(5539)*	21150 *(6198)*	23850 *(6989)*
Air Flow	CFM *(L/s)*		2020 *(953)*	1900 *(897)*	3030 *(1430)*	2850 *(1345)*	3700 *(1746)*	3780 *(1784)*	4630 *(2185)*
Refrigerant ** Charge R407A	Lbs *(Kg)*		2.3 *(1.0)*	3.1 *(1.4)*	3.4 *(1.5)*	4.6 *(2.1)*	4.6 *(2.1)*	5.7 *(2.6)*	5.7 *(2.6)*

Capacities rated using 10°F *(5.6°C)* TD & 100°F *(38°C)* liquid temperature.
Capacities at other TD within a range of 8 to 15 °F *(4.4 to 8.3°C)* are directly proportional to TD, or use formula: Capacity = Rated capacity ÷ 10 x TD.
For capacities at TD outside of range 8 to 15 °F *(4.4 to 8.3°C)*, or liquid temperature lower than 75°F *(24°)*, consult factory.
Capacities for R448A, R407A and R407C are based on mean temperature. Mean temperature is the average temperature between the saturated suction temperature and the temperature feeding the evaporator. For dew point ratings, consult factory.
For R449A, use R448A data.

*** CAPACITY CORRECTION FACTORS FOR LOW TEMPERATURE UNITS**

SATURATED SUCTION TEMPERATURE °F *(°C)*	0 *(-17.8)*	-10 *(23.3)*	-20 *(-28.9)*
FACTOR	1.06	1.03	1.0

NO CORRECTION FACTOR REQUIRED FOR MEDIUM TEMP. UNITS

**** REFRIGERANT CHARGE CONVERSION FACTORS**

R448A	R407C	R404A	R507	R22	R134a
0.96	0.99	0.92	0.93	1.02	1.03

WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KTM Two-Way Medium Profile Evaporators

AIR DEFROST

MODEL KTM	No. of FANS	POWER SUPPLY	FAN MOTOR(S)							
			PSC-Standard				ECM-Optional			
			TOTAL MOTOR FLA	M.C.A.	WATTS	M.O.P	TOTAL MOTOR FLA	M.C.A.	WATTS	M.O.P
115MA-S1	2	115/1/60	2.2	2.5	200	15	3	3.4	104	15
139MA-S1	2	115/1/60	2.2	2.5	200	15	3	3.4	104	15
172MA-S1	3	115/1/60	3.3	3.6	300	15	4.5	4.9	156	15
208MA-S1	3	115/1/60	3.3	3.6	300	15	4.5	4.9	156	15
236MA-S1	4	115/1/60	4.4	4.7	400	15	6	6.4	208	15
260MA-S1	4	115/1/60	4.4	4.7	400	15	6	6.4	208	15
295MA-S1	5	115/1/60	5.5	5.8	500	15	7.5	7.9	260	15
115MA-S2	2	208-230/1/60	1.0	1.1	200	15	2.0	2.3	104	15
139MA-S2	2	208-230/1/60	1.0	1.1	200	15	2.0	2.3	104	15
172MA-S2	3	208-230/1/60	1.5	1.6	300	15	3.0	3.3	156	15
208MA-S2	3	208-230/1/60	1.5	1.6	300	15	3.0	3.3	156	15
TM236MA-S2	4	208-230/1/60	2.0	2.1	400	15	4.0	4.3	208	15
260MA-S2	4	208-230/1/60	2.0	2.1	400	15	4.0	4.3	208	15
295MA-S2	5	208-230/1/60	2.5	2.6	500	15	5.0	5.3	260	15
115MA-S4	2	460/1/60	0.6	0.7	200	15	-	-	-	-
139MA-S4	2	460/1/60	0.6	0.7	200	15	-	-	-	-
172MA-S4	3	460/1/60	0.9	1.0	300	15	-	-	-	-
208MA-S4	3	460/1/60	0.9	1.0	300	15	-	-	-	-
236MA-S4	4	460/1/60	1.2	1.3	400	15	-	-	-	-
260MA-S4	4	460/1/60	1.2	1.3	400	15	-	-	-	-
295MA-S4	5	460/1/60	1.5	1.6	500	15	-	-	-	-

ELECTRIC DEFROST

MODEL KTM	No. of FANS	POWER SUPPLY				ECM-Optional				DEFROST HEATERS				
			TOTAL AMPS	WATTS	M.O.P	TOTAL AMPS	M.C.A.	WATTS	M.O.P	POWER SUPPLY	TOTAL WATTS	TOTAL AMPS	M.C.A.	M.O.P
115ME-S2	2	208-230/1/60	1.1	200	15	2.0	2.3	104	15	208-230/1/60	2600	11.3	14.1	15
139ME-S2	2	208-230/1/60	1.1	200	15	2.0	2.3	104	15	208-230/1/60	2600	11.3	14.1	15
172ME-S2	3	208-230/1/60	1.6	300	15	3.0	3.3	156	15	208-230/1/60	3720	16.2	20.3	25
208ME-S2	3	208-230/1/60	1.6	300	15	3.0	3.3	156	15	208-230/1/60	3720	16.2	20.3	25
236ME-S2	4	208-230/1/60	2.1	400	15	4.0	4.3	208	15	208-230/1/60	3720	16.2	20.3	25
260ME-S2	4	208-230/1/60	2.1	400	15	4.0	4.3	208	15	208-230/1/60	4560	19.8	24.8	25
295ME-S2	5	208-230/1/60	2.6	500	15	5.0	5.3	260	15	208-230/1/60	4560	19.8	24.8	25
105LE-S2	2	208-230/1/60	1.1	200	15	2.0	2.3	104	15	208-230/1/60	2600	11.3	14.1	15
124LE-S2	2	208-230/1/60	1.1	200	15	2.0	2.3	104	15	208-230/1/60	2600	11.3	14.1	15
153LE-S2	3	208-230/1/60	1.6	300	15	3.0	3.3	156	15	208-230/1/60	3720	16.2	20.3	25
188LE-S2	3	208-230/1/60	1.6	300	15	3.0	3.3	156	15	208-230/1/60	3720	16.2	20.3	25
210LE-S2	4	208-230/1/60	2.1	400	15	4.0	4.3	208	15	208-230/1/60	3720	16.2	20.3	25
235LE-S2	4	208-230/1/60	2.1	400	15	4.0	4.3	208	15	208-230/1/60	4560	19.8	24.8	25
265LE-S2	5	208-230/1/60	2.6	500	15	5.0	5.3	260	15	208-230/1/60	4560	19.8	24.8	25

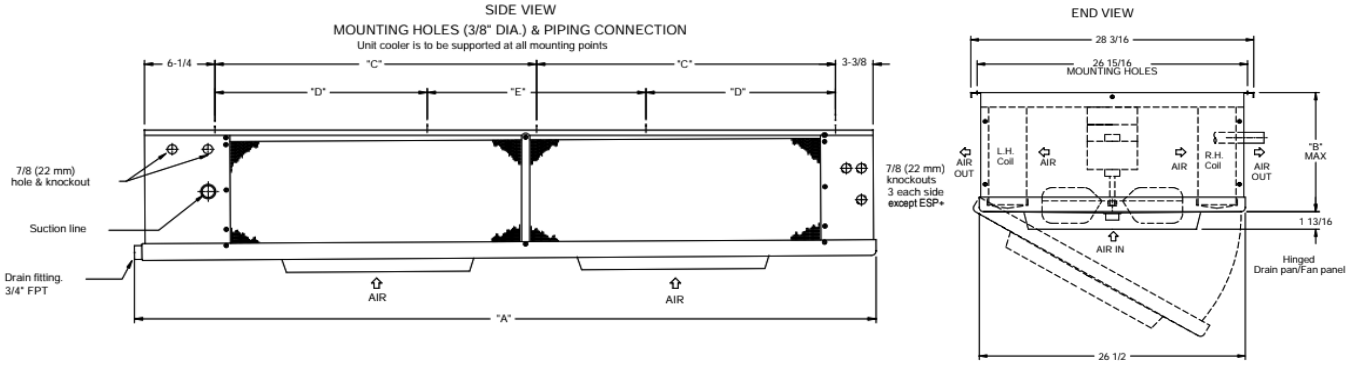
WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KTM Two-Way Medium Profile Evaporators

HOT GAS DEFROST

MODEL KTM	No. of FANS	POWER SUPPLY	FAN MOTOR(S)								DRAIN PAN HEATERS				
			PSC-Standard				ECM-Optional								
			TOTAL AMPS	M.C.A.	WATTS	M.O.P	TOTAL AMPS	M.C.A.	WATTS	M.O.P	POWER SUPPLY	TOTAL WATTS	TOTAL AMPS	M.C.A.	M.O.P
115MG-S1	2	115/1/60	2.2	2.5	200	15	3.0	3.4	104	15	115/1/60	1300	11.3	14.1	15
139MG-S1	2	115/1/60	2.2	2.5	200	15	3.0	3.4	104	15	115/1/60	1300	11.3	14.1	15
172MG-S1	3	115/1/60	3.3	3.6	300	15	4.5	4.9	156	15	115/1/60	1860	16.2	20.3	25
208MG-S1	3	115/1/60	3.3	3.6	300	15	4.5	4.9	156	15	115/1/60	1860	16.2	20.3	25
236MG-S1	4	115/1/60	4.4	4.7	400	15	6.0	6.4	208	15	115/1/60	1860	16.2	20.3	25
260MG-S1	4	115/1/60	4.4	4.7	400	15	6.0	6.4	208	15	115/1/60	2280	19.8	24.8	25
295MG-S1	5	115/1/60	5.5	5.8	500	15	7.5	7.9	260	15	115/1/60	2280	19.8	24.8	25
115MG-S2	2	208-230/1/60	1.0	1.1	200	15	2.0	2.3	104	15	208-230/1/60	1300	5.7	7.1	15
139MG-S2	2	208-230/1/60	1.0	1.1	200	15	2.0	2.3	104	15	208-230/1/60	1300	5.7	7.1	15
172MG-S2	3	208-230/1/60	1.5	1.6	300	15	3.0	3.3	156	15	208-230/1/60	1860	8.1	10.1	15
208MG-S2	3	208-230/1/60	1.5	1.6	300	15	3.0	3.3	156	15	208-230/1/60	1860	8.1	10.1	15
236MG-S2	4	208-230/1/60	2.0	2.1	400	15	4.0	4.3	208	15	208-230/1/60	1860	8.1	10.1	15
260MG-S2	4	208-230/1/60	2.0	2.1	400	15	4.0	4.3	208	15	208-230/1/60	2280	9.9	12.4	15
295MG-S2	5	208-230/1/60	2.5	2.6	500	15	5.0	5.3	260	15	208-230/1/60	2280	9.9	12.4	15



MODEL KTM	# FANS	A		B		C		D		E	
		in	*mm*	in	*mm*	in	*mm*	in	*mm*	in	*mm*
115M	2	67 1/2	*1715*	8 11/16	*221*	27 1/2	*699*	-	-	-	-
139M	2	67 1/2	*1715*	8 11/16	*221*	27 1/2	*699*	-	-	-	-
172M	3	93 1/2	*2375*	8 11/16	*221*	40 1/2	*1029*	-	-	-	-
208M	3	93 1/2	*2375*	8 11/16	*221*	40 1/2	*1029*	-	-	-	-
236M	4	93 1/2	*2375*	8 11/16	*221*	40 1/2	*1029*	-	-	-	-
260M	4	113 1/2	*2883*	8 11/16	*221*	-	-	40 1/2	*1029*	20	*508*
295M	5	113 1/2	*2883*	8 11/16	*221*	-	-	40 1/2	*1029*	20	*508*
105L	2	67 1/2	*1715*	8 11/16	*221*	27 1/2	*699*	-	-	-	-
124L	2	67 1/2	*1715*	8 11/16	*221*	27 1/2	*699*	-	-	-	-
153L	3	93 1/2	*2375*	8 11/16	*221*	40 1/2	*1029*	-	-	-	-
188L	3	93 1/2	*2375*	8 11/16	*221*	40 1/2	*1029*	-	-	-	-
210L	4	93 1/2	*2375*	8 11/16	*221*	40 1/2	*1029*	-	-	-	-
235L	4	113 1/2	*2883*	8 11/16	*221*	-	-	40 1/2	*1029*	20	*508*
265L	5	113 1/2	*2883*	8 11/16	*221*	-	-	40 1/2	*1029*	20	*508*

* Reducer supplied to accomodate 1/2" or 7/8" TXV outlet connection.

WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KLP Low Profile Evaporators



NOMENCLATURE

KLP 3 17 L E - S2 B T

- KLP — Low Profile Evaporator
- 3 — Number of Fans
- 17 — Nominal Capacity: x 1000 @ 10°F TD, Btu/H, R404A
- L — Application Range: M = Medium to High Temp 6 FPI (10°F to 45°F (-12°C to 7°C) Evap Temp); L = Low Temp 6 FPI (-40°F to 0°F(-40°C to -17°C) Evap Temp); V = Low Temp 4 FPI (-40°F to 0°F (-40°C to -17°C) Evap Temp); W = Fluid Air Cooler (with water or glycol)
- E — Defrost*: A = Air; E = Electric; T = 3 Pipe Hot Gas w/ Electric Heater Pan or Warm Fluid w/ Electric Heater Pan for Fluid Air Coolers; H = 3 Pipe Hot Gas w/ Hot Gas Loop Pan (optional); G = Reverse Cycle w/ Electric Heater Pan; R = Reverse Cycle w/ Hot Gas Loop Pan (optional)
  * T, H, G, R, available on 2 to 6 fan models only
- S2 — Voltage: S1 = 115/1/60 (air defrost & hot gas models only); S2 = 208-230/1/60; S4 = 460/1/60; T3 = 208-230/3/60
- B — Generation: B = 2nd
- T — Motor: Blank = PSC; T = SmartSpeed ECM

Medium Temperature Models - Capacity @ 6 F.P.I. *

Medium Temp. Model KLP			104M	106M	107M	209M	211M	214M	317M	320M	423M	426M	532M	639M
Number Of Fans			1	1	1	2	2	2	3	3	4	4	5	6
Capacity BTUH (WATTS)	Evap Temp. 25°F (-4°C)	R407A R448A	4090 (1197)	5230 (1530)	6460 (1891)	8170 (2394)	10450 (3059)	13300 (3895)	16200 (4731)	19000 (5567)	21900 (6403)	24700 (7230)	30400 (8902)	37100 (10830)
		R407C	3870 (1134)	4950 (1449)	6120 (1791)	7740 (2268)	9900 (2898)	12600 (3690)	15400 (4482)	18100 (5274)	20800 (6066)	23500 (6849)	28900 (8433)	35200 (10260)
		R404A R507	4300 (1260)	5500 (1610)	6800 (1990)	8600 (2520)	11000 (3220)	14000 (4100)	17000 (4980)	20000 (5860)	23000 (6740)	26000 (7610)	32000 (9370)	39000 (11400)
		R22	4090 (1197)	5230 (1530)	6460 (1891)	8170 (2394)	10500 (3059)	13300 (3895)	16200 (4731)	19000 (5567)	21900 (6403)	24700 (7230)	30400 (8902)	37100 (10830)
Air Flow	CFM (L/S)		1010 (477)	950 (448)	900 (425)	2020 (953)	1910 (901)	1800 (850)	2860 (1350)	2700 (1274)	3810 (1798)	3600 (1699)	4500 (2124)	5400 (2549)
Refrigerant ** Charge R407A	LB. (KG)		0.7 (0.3)	1.1 (0.5)	1.5 (0.7)	1.3 (0.6)	1.4 (0.6)	2.0 (0.9)	3.0 (1.4)	4.0 (1.8)	3.9 (1.8)	3.3 (1.5)	6.5 (2.9)	7.8 (3.5)

Low Temperature Models - Capacity @ 6 F.P.I. *

Low Temp. Model KLP			104L	105L	106L	207L	209L	211L	314L	317L	419L	422L	527L	631L
Number Of Fans			1	1	1	2	2	2	3	3	4	4	5	6
Capacity BTUH (WATTS)	Evap Temp. -20°F (-29°C)	R407A R448A	3610 (1055)	4560 (1340)	5510 (1615)	7030 (2062)	8550 (2508)	10500 (3059)	13300 (3895)	16200 (4731)	18100 (5292)	20900 (6118)	25700 (7515)	29500 (8626)
		R407C	3420 (999)	4320 (1269)	5220 (1530)	6660 (1953)	8100 (2376)	9900 (2898)	12600 (3690)	15400 (4482)	17200 (5013)	19900 (5796)	24400 (7119)	28000 (8172)
		R404A R507	3800 (1110)	4800 (1410)	5800 (1700)	7400 (2170)	9000 (2640)	11000 (3220)	14000 (4100)	17000 (4980)	19000 (5570)	22000 (6440)	27000 (7910)	31000 (9080)
		R22	3610 (1055)	4560 (1340)	5510 (1615)	7030 (2062)	8550 (2508)	10500 (3059)	13300 (3895)	16200 (4731)	18100 (5292)	20900 (6118)	25700 (7515)	29500 (8626)
Air Flow	CFM (L/S)		1010 (477)	950 (448)	900 (425)	2020 (953)	1910 (901)	1800 (850)	2860 (1350)	2700 (1274)	3810 (1798)	3600 (1699)	4500 (2124)	5400 (2549)
Refrigerant ** Charge R407A	LB. (KG)		0.7 (0.3)	1.1 (0.5)	1.5 (0.7)	1.3 (0.6)	1.4 (0.6)	2.0 (0.9)	3.0 (1.4)	4.0 (1.8)	3.9 (1.8)	3.3 (1.5)	6.5 (2.9)	7.8 (3.5)

Low Temperature Models - Capacity @ 4 F.P.I. *

Low Temp. 4 FPI Model KLP			103V	104V	105V	206V	208V	209V	312V	315V	416V	419V	523V	627V
Number Of Fans			1	1	1	2	2	2	3	3	4	4	5	6
Capacity BTUH (WATTS)	Evap Temp. -20°F (-29°C)	R407A R448A	2850 (836)	3900 (1140)	4750 (1397)	6080 (1786)	7410 (2176)	8840 (2584)	11400 (3344)	14300 (4171)	15200 (4456)	18100 (5292)	21900 (6403)	25700 (7515)
		R407C	2700 (792)	3690 (1080)	4500 (1323)	5760 (1692)	7020 (2061)	8370 (2448)	10800 (3168)	13600 (3951)	14400 (4221)	17200 (5013)	20800 (6066)	24400 (7119)
		R404A R507	3000 (880)	4100 (1200)	5000 (1470)	6400 (1880)	7800 (2290)	9300 (2720)	12000 (3520)	15000 (4390)	16000 (4690)	19000 (5570)	23000 (6740)	27000 (7910)
		R22	2850 (836)	3900 (1140)	4750 (1397)	6080 (1786)	7410 (2176)	8840 (2584)	11400 (3344)	14300 (4171)	15200 (4456)	18100 (5292)	21900 (6403)	25700 (7515)
Air Flow	CFM (L/S)		1010 (477)	950 (448)	900 (425)	2020 (953)	1910 (901)	1800 (850)	2860 (1350)	2700 (1274)	3810 (1798)	3600 (1699)	4500 (2124)	5400 (2549)
Refrigerant ** Charge R407A	LB. (KG)		0.7 (0.3)	1.1 (0.5)	1.5 (0.7)	1.3 (0.6)	1.4 (0.6)	2.0 (0.9)	3.0 (1.4)	4.0 (1.8)	3.9 (1.8)	3.3 (1.5)	6.5 (2.9)	7.8 (3.5)

Capacities rated using 10°F *(5.6°C)* TD & 100°F *(38°C)* liquid temperature.
Capacities at other TD within a range of 8 to 15 °F *(4.4 to 8.3°C)* are directly proportional to TD, or use formula: Capacity = Rated capacity ÷ 10 x TD.
For capacities at TD outside of range 8 to 15 °F *(4.4 to 8.3°C)*, or liquid temperature lower than 75°F *(24°)*, consult factory.
Capacities for R448A, R407A and R407C are based on mean temperature. Mean temperature is the average temperature between the saturated suction temperature and the temperature feeding the evaporator. For dew point ratings, consult factory.
For R449A, use R448A data.

*** CAPACITY CORRECTION FACTORS FOR LOW TEMPERATURE UNITS**

SATURATED SUCTION TEMPERATURE °F (°C)	0 (-17.8)	-10 (23.3)	-20 (-28.9)	-30 (-34.4)	-40 (-40)
FACTOR	1.06	1.03	1.0	0.92	0.85

NO CORRECTION FACTOR REQUIRED FOR MEDIUM TEMP. UNITS

**** REFRIGERANT CHARGE CONVERSION FACTORS**

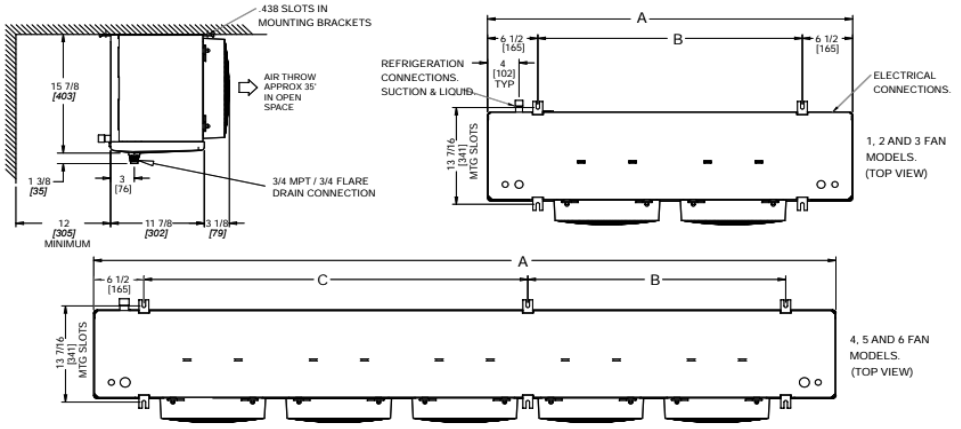
R448A	R407C	R404A	R507	R22
0.96	0.99	0.92	0.93	1.02

WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KLP Low Profile Evaporators

Dimensions



MODEL KLP	NO. OF FANS	A		B		C		SUCTION CONNECTION (ID) SWEAT	DISTRIBUTOR INLET SIZE	HOT GAS DISTRIBUTOR SIDE PORT	DRAIN PAN LOOP
		IN	*(mm)*	IN	*(mm)*	IN	*(mm)*				
104M^	1	30 1/4	*(768)*	17 1/4	*(438)*	N/A	*N/A*	5/8	1/2	1/2	N/A
106M^	1	30 1/4	*(768)*	17 1/4	*(438)*	N/A	*N/A*	5/8	1/2	1/2	N/A
107M^	1	30 1/4	*(768)*	17 1/4	*(438)*	N/A	*N/A*	5/8	1/2	1/2	N/A
209M#	2	46 1/4	*(1175)*	33 1/4	*(845)*	N/A	*N/A*	7/8	1/2	1/2	5/8
211M#	2	46 1/4	*(1175)*	33 1/4	*(845)*	N/A	*N/A*	7/8	1/2	1/2	5/8
214M#	2	46 1/4	*(1175)*	33 1/4	*(845)*	N/A	*N/A*	7/8	1/2	1/2	5/8
317M#	3	62 1/4	*(1581)*	49 1/4	*(1251)*	N/A	*N/A*	7/8	1/2	1/2	7/8
320M#	3	62 1/4	*(1581)*	49 1/4	*(1251)*	N/A	*N/A*	7/8	1/2	1/2	7/8
423M#	4	78 1/4	*(1988)*	32 5/8	*(829)*	32 5/8	*(829)*	1 1/8	1/2	1/2	7/8
426M#	4	78 1/4	*(1988)*	32 5/8	*(829)*	32 5/8	*(829)*	1 1/8	1/2	1/2	7/8
532M#	5	94 1/4	*(2394)*	32 5/8	*(829)*	48 5/8	*(1235)*	1 3/8	1/2	1/2	1 1/8
639M#	6	110 1/4	*(2800)*	48 5/8	*(1235)*	48 5/8	*(1235)*	1 3/8	7/8	5/8	1 1/8
104L^	1	30 1/4	*(768)*	17 1/4	*(438)*	N/A	*N/A*	5/8	1/2	1/2	N/A
105L^	1	30 1/4	*(768)*	17 1/4	*(438)*	N/A	*N/A*	5/8	1/2	1/2	N/A
106L^	1	30 1/4	*(768)*	17 1/4	*(438)*	N/A	*N/A*	5/8	1/2	1/2	N/A
207L#	2	46 1/4	*(1175)*	33 1/4	*(845)*	N/A	*N/A*	7/8	1/2	1/2	5/8
209L#	2	46 1/4	*(1175)*	33 1/4	*(845)*	N/A	*N/A*	7/8	1/2	1/2	5/8
211L#	2	46 1/4	*(1175)*	33 1/4	*(845)*	N/A	*N/A*	7/8	1/2	1/2	5/8
314L#	3	62 1/4	*(1581)*	49 1/4	*(1251)*	N/A	*N/A*	7/8	1/2	1/2	7/8
317L#	3	62 1/4	*(1581)*	49 1/4	*(1251)*	N/A	*N/A*	1 1/8	1/2	1/2	7/8
419L#	4	78 1/4	*(1988)*	32 5/8	*(829)*	32 5/8	*(829)*	1 1/8	1/2	1/2	7/8
422L#	4	78 1/4	*(1988)*	32 5/8	*(829)*	32 5/8	*(829)*	1 1/8	7/8	5/8	7/8
527L#	5	94 1/4	*(2394)*	32 5/8	*(829)*	48 5/8	*(1235)*	1 3/8	7/8	5/8	1 1/8
631L#	6	110 1/4	*(2800)*	48 5/8	*(1235)*	48 5/8	*(1235)*	1 3/8	7/8	5/8	1 1/8
103V^	1	30 1/4	*(768)*	17 1/4	*(438)*	N/A	*N/A*	5/8	1/2	1/2	N/A
104V^	1	30 1/4	*(768)*	17 1/4	*(438)*	N/A	*N/A*	5/8	1/2	1/2	N/A
105V^	1	30 1/4	*(768)*	17 1/4	*(438)*	N/A	*N/A*	5/8	1/2	1/2	N/A
206V#	2	46 1/4	*(1175)*	33 1/4	*(845)*	N/A	*N/A*	7/8	1/2	1/2	5/8
208V#	2	46 1/4	*(1175)*	33 1/4	*(845)*	N/A	*N/A*	7/8	1/2	1/2	5/8
209V#	2	46 1/4	*(1175)*	33 1/4	*(845)*	N/A	*N/A*	7/8	1/2	1/2	5/8
312V#	3	62 1/4	*(1581)*	49 1/4	*(1251)*	N/A	*N/A*	7/8	1/2	1/2	7/8
315V#	3	62 1/4	*(1581)*	49 1/4	*(1251)*	N/A	*N/A*	1 1/8	1/2	1/2	7/8
416V#	4	78 1/4	*(1988)*	32 5/8	*(829)*	32 5/8	*(829)*	1 1/8	1/2	1/2	7/8
419V#	4	78 1/4	*(1988)*	32 5/8	*(829)*	32 5/8	*(829)*	1 1/8	7/8	5/8	7/8
523V#	5	94 1/4	*(2394)*	32 5/8	*(829)*	48 5/8	*(1235)*	1 3/8	7/8	5/8	1 1/8
627V#	6	110 1/4	*(2800)*	48 5/8	*(1235)*	48 5/8	*(1235)*	1 3/8	7/8	5/8	1 1/8

 # = A, E, T, H, G, or R. ^ = A or E. T, H, G or R available in 2 to 6 fan models only Refer to Nomenclature for details

WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KMP Medium Profile Evaporators



NOMENCLATURE

KMP 3 48 L E - T5 A - T

- Medium Profile Evaporator
- Number of Fans
- Nominal Capacity: x 1000 @ 10°F TD, Btu/H
- Application Range:
  - M = Medium to High Temp 6 FPI (10°F to 35°F Evap Temp) *
  - L = Low Temp 6 FPI (-40°F to 0°F Evap Temp)
  - V = Low Temp 4 FPI (-40°F to 0°F Evap Temp)
  - W = Fluid Air Cooler (with water or glycol)
  - * except "488M", which is 8 FPI
- Defrost:
  - A = Air
  - E = Electric
  - T = 3 Pipe Hot Gas w/ Electric Heater Pan or Warm Fluid w/ Electric Heater Pan for Fluid Air Coolers
  - H = 3 Pipe Hot Gas w/ Hot Gas Loop Pan
  - G = Reverse Cycle w/ Electric Heater Pan
  - R = Reverse Cycle w/ Hot Gas Loop Pan
- Voltage:
  - S2 = 208-230/1/60
  - S4 = 460/1/60
  - S5 = 575/1/60
  - T3 = 208-230/3/60
  - T4 = 460/3/60
  - T5 = 575/3/60
- Generation: A = 1st
- Motor:
  - C = PSC Motors
  - T = SmartSpeed ECM
  - V = Variable Speed EC Motors (Requires a Controller)

Medium Temperature Models - Capacity @ 6 F.P.I. *

Medium Temp. Models KMP			118M	122M	228M	236M	245M	355M	368M	480M	488M *
Number Of Fans			1	1	2	2	2	3	3	4	4
Capacity BTUH (WATTS)	Evap Temp. 25°F (-4°C)	R407A R448A	17100 (5007)	20900 (6118)	26600 (7790)	34200 (9975)	42750 (12540)	52300 (15295)	64600 (18905)	76000 (22230)	83600 (24510)
		R407C	16200 (4743)	19800 (5796)	25200 (7380)	32400 (9450)	40500 (11880)	49500 (14490)	61400 (17910)	72200 (21060)	79400 (23220)
		R404A R507	18000 (5270)	22000 (6440)	28000 (8200)	36000 (10500)	45000 (13200)	55000 (16100)	68000 (19900)	80000 (23400)	88000 (25800)
		R22	17100 (5007)	20900 (6118)	26600 (7790)	34200 (9975)	42800 (12540)	52300 (15295)	64600 (18905)	76000 (22230)	83600 (24510)
		R134a	16200 (4743)	19800 (5796)	25200 (7380)	32400 (9450)	40500 (11880)	49500 (14490)	61200 (17910)	72000 (21060)	79200 (23220)
Air Flow	CFM (L/S)		3430 (1619)	3240 (1529)	7260 (3426)	6870 (3242)	6480 (3058)	10300 (4861)	9720 (4587)	13000 (6135)	12200 (5758)
Refrigerant ** Charge R407A	LB. (KG)		4.0 (1.8)	5.3 (2.4)	4.6 (2.1)	7.7 (3.5)	10.0 (4.5)	11.0 (5.0)	15.0 (6.8)	18.0 (8.2)	18.0 (8.2)

Low Temperature Models - Capacity @ 6 F.P.I. *

Low Temp. Models KMP			116L	119L	225L	232L	240L	348L	356L	471L
Number Of Fans			1	1	2	2	2	3	3	4
Capacity BTUH (WATTS)	Evap Temp. -20°F (-29°C)	R407A R448A	15200 (4456)	18050 (5292)	23750 (6954)	30400 (8902)	38000 (11115)	45600 (13395)	53200 (15580)	67500 (19760)
		R407C	14400 (4221)	17100 (5013)	22500 (6588)	28800 (8433)	36000 (10530)	43200 (12690)	50500 (14760)	64100 (18720)
		R404A R507	16000 (4690)	19000 (5570)	25000 (7320)	32000 (9370)	40000 (11700)	48000 (14100)	56000 (16400)	71000 (20800)
		R22	15200 (4456)	18050 (5292)	23750 (6954)	30400 (8902)	38000 (11115)	45600 (13395)	53200 (15580)	67500 (19760)
		R134a	14400 (4221)	17100 (5013)	22500 (6588)	28800 (8433)	36000 (10530)	43200 (12690)	50400 (14760)	63900 (18720)
Air Flow	CFM (L/S)		3430 (1619)	3240 (1529)	7260 (3426)	6870 (3242)	6480 (3058)	10300 (4861)	9720 (4587)	13000 (6135)
Refrigerant ** Charge R407A	LB. (KG)		4.0 (1.8)	5.3 (2.4)	4.6 (2.1)	7.7 (3.5)	10.0 (4.5)	11.0 (5.0)	15.0 (6.8)	18.0 (8.2)

Low Temperature Models - Capacity @ 4 F.P.I. *

Low Temp. 4 FPI Models KMP			113V	117V	222V	228V	234V	339V	350V	459V
Number Of Fans			1	1	2	2	2	3	3	4
Capacity BTUH (WATTS)	Evap Temp. -20°F (-29°C)	R407A R448A	12350 (3610)	16150 (4731)	20900 (6118)	26600 (7790)	32300 (9462)	37100 (10830)	47500 (13965)	56100 (16435)
		R407C	11700 (3420)	15300 (4482)	19800 (5796)	25200 (7380)	30600 (8964)	35100 (10260)	45100 (13230)	53300 (15570)
		R404A R507	13000 (3800)	17000 (4980)	22000 (6440)	28000 (8200)	34000 (9960)	39000 (11400)	50000 (14700)	59000 (17300)
		R22	12350 (3610)	16150 (4731)	20900 (6118)	26600 (7790)	32300 (9462)	37100 (10830)	47500 (13965)	56100 (16435)
		R134a	11700 (3420)	15300 (4482)	19800 (5796)	25200 (7380)	30600 (8964)	35100 (10260)	45000 (13230)	53100 (15570)
Air Flow	CFM (L/S)		3640 (1718)	3430 (1619)	7690 (3629)	7280 (3436)	6870 (3242)	10900 (5144)	10300 (4861)	13700 (6466)
Refrigerant ** Charge R407A	LB. (KG)		4.0 (1.8)	5.3 (2.4)	4.6 (2.1)	7.7 (3.5)	10.0 (4.5)	11.0 (5.0)	15.0 (6.8)	18.0 (8.2)

Capacities rated using 10°F *(5.6°C)* TD & 100°F *(38°C)* liquid temperature.
Capacities at other TD within a range of 8 to 15 °F *(4.4 to 8.3°C)* are directly proportional to TD, or use formula: Capacity = Rated capacity ÷ 10 x TD.
For capacities at TD outside of range 8 to 15 °F *(4.4 to 8.3°C)*, or liquid temperature lower than 75°F *(24°C)*, consult factory.
Capacities for R448A, R407A and R407C are based on mean temperature. Mean temperature is the average temperature between the saturated suction temperature and the temperature feeding the evaporator. For dew point ratings, consult factory.
For R449A, use R448A data.

*** CAPACITY CORRECTION FACTORS FOR LOW TEMPERATURE UNITS**

SATURATED SUCTION TEMPERATURE °F (°C)	0 (-17.8)	-10 (23.3)	-20 (-28.9)	-30 (-34.4)	-40 (-40)
FACTOR	1.06	1.03	1.0	0.92	0.85

NO CORRECTION FACTOR REQUIRED FOR MEDIUM TEMP. UNITS

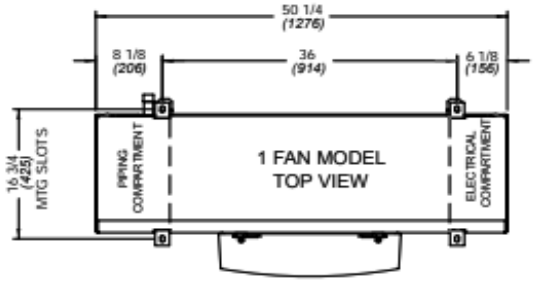
**** REFRIGERANT CHARGE CONVERSION FACTORS**

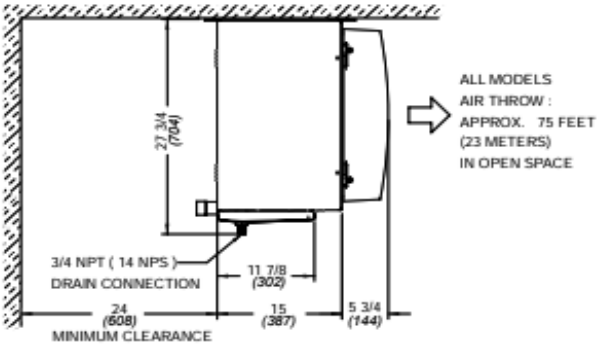
R448A	R407C	R404A	R507	R22	R134a
0.96	0.99	0.92	0.93	1.02	1.03

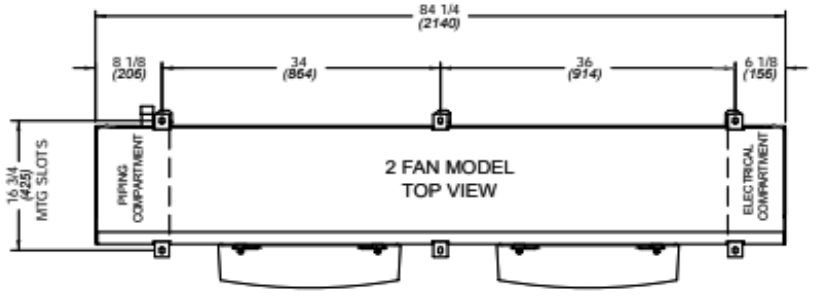
WALK-IN UNIT COOLERS

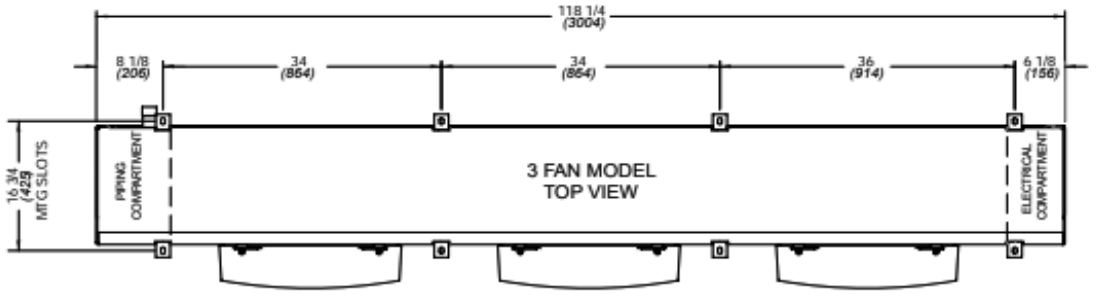
KEEPRITE REFRIGERATION

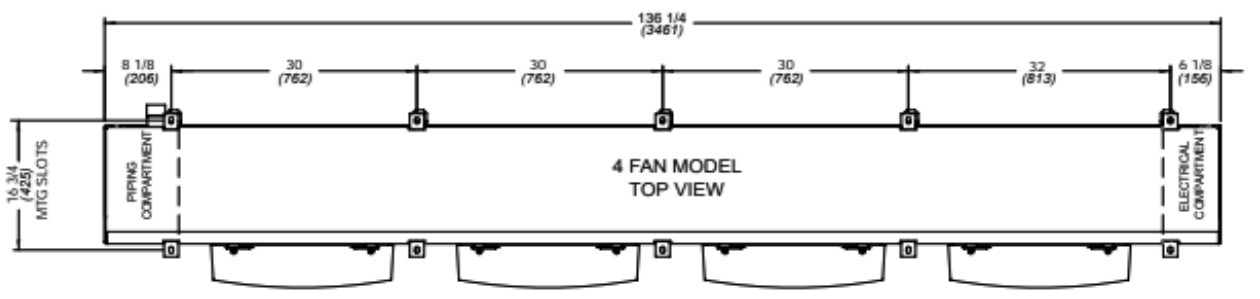
KMP Medium Profile Evaporators











WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KEP Extended Profile Evaporators



NOMENCLATURE

KEP 115 M A - S2 A - T

Extended Profile Evaporator

Nominal Capacity:
x 1000 @ 10°F TD, Btu/H (R404A)

Application Range:
H = High Temp 7 FPI (25°F + Evap Temp)
M = Medium Temp 6 FPI (10°F to 35°F Evap Temp)
L = Low Temp 6 FPI (-40°F to 0°F Evap Temp)
V = Low Temp 4 FPI (-40°F to 0°F Evap Temp)
W = Fluid Air Cooler (with water or glycol)

Defrost:
A = Air E = Electric
T = 3 Pipe Hot Gas w/ Electric Heater Pan
or Warm Fluid w/ Electric Heater Pan for Fluid Air Coolers
H = 3 Pipe Hot Gas w/ Hot Gas Loop Pan
G = Reverse Cycle w/ Electric Heater Pan
R = Reverse Cycle w/ Hot Gas Loop Pan

Voltage:
S2 = 208-230/1/60 T3 = 208-230/3/60
S4 = 460/1/60 T4 = 460/3/60
S5 = 575/1/60 T5 = 575/3/60

Generation: A = 1st

Motor:
C = PSC Motors
T = SmartSpeed ECM
V = Variable Speed EC Motors (Requires a Controller)

High Temperature Models - Capacity @ 7 F.P.I. *

High Temp. Models KEP			028H	033H	043H	056H	065H	084H	098H	124H
Number Of Fans			1	1	2	2	2	3	3	4
Capacity BTUH (WATTS)	Evap Temp. 25°F (-4°C)	R407A R448A	26600 (7800)	31400 (9200)	40900 (12000)	53200 (15600)	61800 (18100)	79800 (23400)	93100 (27300)	117800 (34500)
		R407C	25200 (7400)	29700 (8700)	38700 (11300)	50400 (14800)	58500 (17100)	75600 (22200)	88200 (25800)	111600 (32700)
		R404A R507	28000 (8200)	33000 (9700)	43000 (12600)	56000 (16400)	65000 (19000)	84000 (24600)	98000 (28700)	124000 (36300)
		R22	26600 (7800)	31400 (9200)	40900 (12000)	53200 (15600)	61800 (18100)	79800 (23400)	93100 (27300)	117800 (34500)
		R134a	25200 (7400)	29700 (8700)	38700 (11300)	50400 (14800)	58500 (17100)	75600 (22200)	88200 (25800)	111600 (32700)
Air Flow	CFM (L/S)		4620 (2180)	4370 (2060)	9800 (4630)	9250 (4370)	8730 (4120)	13870 (6550)	13100 (6180)	17210 (8120)
Refrigerant ** Charge R407A	LB. (KG)		10.0 (4.5)	13.3 (6.0)	11.5 (5.2)	19.3 (8.7)	25.0 (11.3)	27.5 (12.5)	37.5 (17.0)	45.0 (20.4)

Medium Temperature Models - Capacity @ 6 F.P.I. *

Med. Temp. Models KEP			026M	031M	038M	052M	062M	079M	093M	115M
Number Of Fans			1	1	2	2	2	3	3	4
Capacity BTUH (WATTS)	Evap Temp. 25°F (-4°C)	R407A R448A	24700 (7200)	29500 (8600)	36100 (10600)	49400 (14500)	58900 (17300)	75100 (22000)	88400 (25900)	109300 (32000)
		R407C	23400 (6900)	27900 (8200)	34200 (10000)	46800 (13700)	55800 (16300)	71100 (20800)	83700 (24500)	103500 (30300)
		R404A R507	26000 (7600)	31000 (9100)	38000 (11100)	52000 (15200)	62000 (18200)	79000 (23100)	93000 (27200)	115000 (33700)
		R22	24700 (7200)	29500 (8600)	36100 (10600)	49400 (14500)	58900 (17300)	75100 (22000)	88400 (25900)	109300 (32000)
		R134a	23400 (6900)	27900 (8200)	34200 (10000)	46800 (13700)	55800 (16300)	71100 (20800)	83700 (24500)	103500 (30300)
Air Flow	CFM (L/S)		4720 (2230)	4450 (2100)	10000 (4720)	9440 (4460)	8910 (4210)	14160 (6680)	13360 (6310)	17560 (8290)
Refrigerant ** Charge R407A	LB. (KG)		10.0 (4.5)	13.3 (6.0)	11.5 (5.2)	19.3 (8.7)	25.0 (11.3)	27.5 (12.5)	37.5 (17.0)	45.0 (20.4)

Capacities rated using 10°F *(5.6°C)* TD & 100°F *(38°C)* liquid temperature.
Capacities at other TD within a range of 8 to 15 °F *(4.4 to 8.3°C)* are directly proportional to TD, or use formula: Capacity = Rated capacity ÷ 10 x TD.
For capacities at TD outside of range 8 to 15 °F *(4.4 to 8.3°C)*, or liquid temperature lower than 75°F *(24°C)*, consult factory.
Capacities for R448A, R407A and R407C are based on mean temperature. Mean temperature is the average temperature between the saturated suction temperature and the temperature feeding the evaporator. For dew point ratings, consult factory.
For R449A, use R448A data.

*** CAPACITY CORRECTION FACTORS FOR LOW TEMPERATURE UNITS**

SATURATED SUCTION TEMPERATURE °F (°C)	0 (-17.8)	-10 (23.3)	-20 (-28.9)	-30 (-34.4)	-40 (-40)
FACTOR	1.06	1.03	1.0	0.92	0.85

NO CORRECTION FACTOR REQUIRED FOR MEDIUM TEMP. UNITS

**** REFRIGERANT CHARGE CONVERSION FACTORS**

R448A	R407C	R404A	R507	R22	R134a
0.96	0.99	0.92	0.93	1.02	1.03

WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KEP Extended Profile Evaporators

Low Temperature Models - Capacity @ 6 F.P.I. *

Low Temp. Models KEP			023L	028L	035L	047L	056L	070L	084L	100L
Number Of Fans			1	1	2	2	2	3	3	4
Capacity BTUH (WATTS)	Evap Temp. -20°F (-29°C)	R407A R448A	21900 (6400)	26600 (7800)	33300 (9800)	44700 (13100)	53200 (15600)	66500 (19500)	79800 (23400)	95000 (27800)
		R407C	20700 (6100)	25200 (7400)	31500 (9200)	42300 (12400)	50400 (14800)	63000 (18500)	75600 (22200)	90000 (26400)
		R404A R507	23000 (6700)	28000 (8200)	35000 (10300)	47000 (13800)	56000 (16400)	70000 (20500)	84000 (24600)	100000 (29300)
		R22	21900 (6400)	26600 (7800)	33300 (9800)	44700 (13100)	53200 (15600)	66500 (19500)	79800 (23400)	95000 (27800)
		R134a	20700 (6100)	25200 (7400)	31500 (9200)	42300 (12400)	50400 (14800)	63000 (18500)	75600 (22200)	90000 (26400)
Air Flow	CFM (L/S)		4620 (2180)	4350 (2050)	9790 (4620)	9240 (4360)	8710 (4110)	13860 (6540)	13070 (6170)	17180 (8110)
Refrigerant ** Charge R407A	LB. (KG)		10.0 (4.5)	13.3 (6.0)	11.5 (5.2)	19.3 (8.7)	25.0 (11.3)	27.5 (12.5)	37.5 (17.0)	45.0 (20.4)

Low Temperature Models - Capacity @ 4 F.P.I. *

Low Temp. Models KEP			020V	024V	030V	040V	048V	060V	072V	088V
Number Of Fans			1	1	2	2	2	3	3	4
Capacity BTUH (WATTS)	Evap Temp. -20°F (-29°C)	R407A R448A	19000 (5600)	22800 (6700)	28500 (8400)	38000 (11100)	45600 (13400)	57000 (16700)	68400 (20000)	83600 (24500)
		R407C	18000 5300	21600 6300	27000 7900	36000 10500	43200 12700	54000 15800	64800 19000	79200 23200
		R404A R507	20000 (5900)	24000 (7000)	30000 (8800)	40000 (11700)	48000 (14100)	60000 (17600)	72000 (21100)	88000 (25800)
		R22	19000 (5600)	22800 (6700)	28500 (8400)	38000 (11100)	45600 (13400)	57000 (16700)	68400 (20000)	83600 (24500)
		R134a	18000 (5300)	21600 (6300)	27000 (7900)	36000 (10500)	43200 (12700)	54000 (15800)	64800 (19000)	79200 (23200)
Air Flow	CFM (L/S)		4760 (2250)	4490 (2120)	10090 (4760)	9520 (4490)	8970 (4230)	14270 (6730)	13460 (6350)	17700 (8350)
Refrigerant ** Charge R407A	LB. (KG)		10.0 (4.5)	13.3 (6.0)	11.5 (5.2)	19.3 (8.7)	25.0 (11.3)	27.5 (12.5)	37.5 (17.0)	45.0 (20.4)

Capacities rated using 10°F *(5.6°C)* TD & 100°F *(38°C)* liquid temperature.
Capacities at other TD within a range of 8 to 15 °F *(4.4 to 8.3°C)* are directly proportional to TD, or use formula: Capacity = Rated capacity ÷ 10 x TD.
For capacities at TD outside of range 8 to 15 °F *(4.4 to 8.3°C)*, or liquid temperature lower than 75°F *(24°C)*, consult factory.
Capacities for R448A, R407A and R407C are based on mean temperature. Mean temperature is the average temperature between the saturated suction temperature and the temperature feeding the evaporator. For dew point ratings, consult factory.
For R449A, use R448A data.

*** CAPACITY CORRECTION FACTORS FOR LOW TEMPERATURE UNITS**

SATURATED SUCTION TEMPERATURE °F *(°C)*	0 *(-17.8)*	-10 *(23.3)*	-20 *(-28.9)*	-30 *(-34.4)*	-40 *(-40)*
FACTOR	1.06	1.03	1.0	0.92	0.85

NO CORRECTION FACTOR REQUIRED FOR MEDIUM TEMP. UNITS

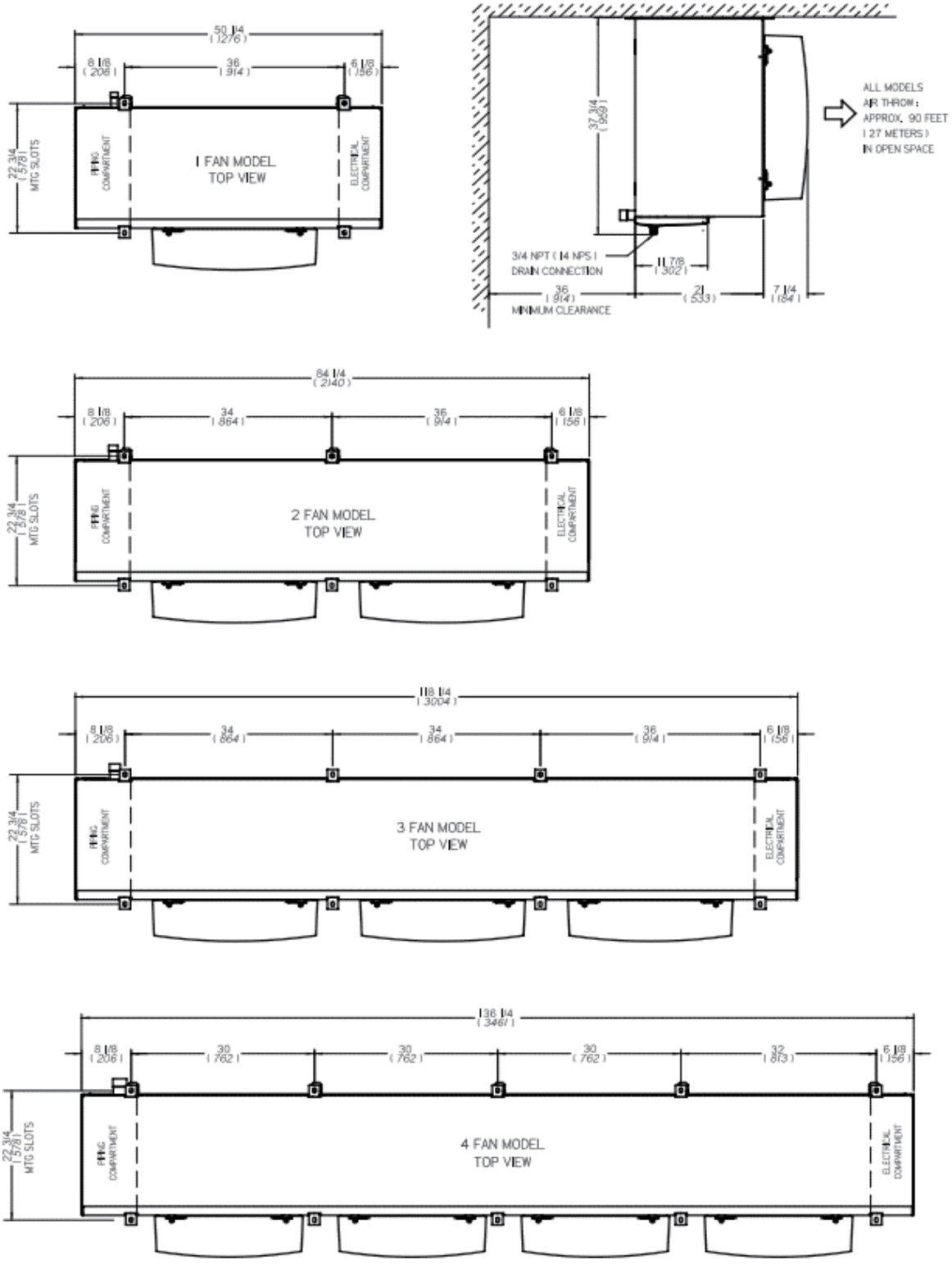
**** REFRIGERANT CHARGE CONVERSION FACTORS**

R448A	R407C	R404A	R507	R22	R134a
0.96	0.99	0.92	0.93	1.02	1.03

WALK-IN UNIT COOLERS

KEEPRITE REFRIGERATION

KEP Extended Profile Evaporators



CONDENSING UNITS

KEEPRITE REFRIGERATION

KEH Condensing Units 'New Generation D'

Includes NRCAN Compliant Models

NOMENCLATURE — KEH - HERMETIC CONDENSING UNITS

KEH A 010 M 8 - H T3 D - A

Model Series
KEH = Excel Hermetic Air Cooled Condensing Unit Line

Compressor Manufacturer
A = Copeland
T = Tecumseh

Nominal HP
005 - 035 = 1/2 - 3.5 HP

Application Range
M = Medium Temp
L = Low Temp

Refrigerant*
6 = R404A / R507
8 = R404A / R407A / R448A

Enclosure
H = Outdoor
I = Indoor

Voltage*
S2 = 208/230-1-60
S3 = 230-1-60
S6 = 200/220-1-50
S7 = 200-1-50
T3 = 208/230-3-60
T4 = 460-3-60
T5 = 575-3-60
T7 = 200/220-3-50
T9 = 380/400-3-50

* subject to compressor availability

Design Generation
D = Latest Catalog Series

Pre-Selected Factory Mounted Option Packages
See detail on next page

R407A Medium Temperature

Model KEH	Saturated Suction Temperature		Capacity BTU/h — Refrigerant: R407A — Ambient Temperature											
			85°F (29.4°C)		90°F (32.2°C)		95°F (35°C)		100°F (37.8°C)		105°F (40.6°C)		110°F (43.3°C)	
	°F	°C	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew
KEHA015M8	30	-1.1	16800	16200	15900	15300	15000	14400	14000	13500	13100	12600	12200	11700
	25	-3.9	15000	14400	14000	13500	13200	12700	12400	11900	11500	11100	10700	10300
	20	-6.7	13100	12600	12400	11900	11500	11100	10800	10400	10000	9630	9260	8900
Compressor	15	-9.4	11400	11000	10700	10300	10000	9620	9300	8940	8590	8260	7890	7590
Model	10	-12.2	9860	9480	9190	8840	8540	8210	7880	7580	7240	6960	6600	6350
CS10K6E	5	-15.0	8370	8050	7760	7460	7160	6880	6550	6300	5960	5730	5380	5170
	0	-17.8	6990	6720	6430	6180	5860	5630	5300	5100	4750	4570	4220	4060
KEHA020M8	30	-1.1	18800	18100	17900	17200	16800	16200	15800	15200	14900	14300	13800	13300
	25	-3.9	16700	16100	15800	15200	14900	14300	13900	13400	13100	12600	12200	11700
	20	-6.7	14800	14200	13900	13400	13100	12600	12300	11800	11400	11000	10600	10200
Compressor	15	-9.4	12900	12400	12100	11600	11300	10900	10600	10200	9850	9470	9120	8770
Model	10	-12.2	11100	10700	10400	10000	9720	9350	9070	8720	8410	8090	7770	7470
CS12K6E	5	-15.0	9440	9080	8840	8500	8250	7930	7660	7370	7100	6830	6550	6300
	0	-17.8	7970	7660	7430	7140	6920	6650	6410	6160	5930	5700	5460	5250
KEHA025M8	30	-1.1	23800	22900	22700	21800	21500	20700	20400	19600	19100	18400	18000	17300
	25	-3.9	21200	20400	20100	19300	19000	18300	17900	17200	16800	16200	15700	15100
	20	-6.7	18600	17900	17600	16900	16500	15900	15600	15000	14600	14000	13500	13000
Compressor	15	-9.4	16100	15500	15200	14600	14200	13700	13300	12800	12400	11900	11500	11100
Model	10	-12.2	13700	13200	12900	12400	12100	11600	11200	10800	10500	10100	9770	9390
CS14K6E	5	-15.0	11600	11200	10900	10500	10200	9780	9500	9130	8860	8520	8280	7960
	0	-17.8	9710	9340	9120	8770	8560	8230	8040	7730	7570	7280	7170	6890
KEHA030M8	30	-1.1	29800	28700	28400	27300	26800	25800	25400	24400	23900	23000	22500	21600
	25	-3.9	26300	25300	25000	24000	23600	22700	22200	21300	20800	20000	19600	18800
	20	-6.7	23000	22100	21700	20900	20500	19700	19200	18500	18000	17300	16800	16200
Compressor	15	-9.4	20000	19200	18800	18100	17700	17000	16600	16000	15500	14900	14500	13900
Model	10	-12.2	17300	16600	16200	15600	15200	14600	14100	13600	13200	12700	12300	11800
CS18K6E	5	-15.0	14700	14100	13800	13300	12900	12400	12100	11600	11200	10800	10400	10000
	0	-17.8	12400	11900	11600	11200	10800	10400	10100	9730	9430	9070	8800	8460
KEHA035M8	30	-1.1	33000	31700	31300	30100	29700	28600	28100	27000	26500	25500	24900	23900
	25	-3.9	29100	28000	27700	26600	26200	25200	24800	23800	23300	22400	21800	21000
	20	-6.7	25700	24700	24400	23500	23100	22200	21700	20900	20400	19600	19000	18300
Compressor	15	-9.4	22600	21700	21400	20600	20200	19400	18900	18200	17700	17000	16500	15900
Model	10	-12.2	19800	19000	18600	17900	17500	16800	16400	15800	15300	14700	14100	13600
CS20K6E	5	-15.0	17100	16400	16000	15400	15000	14400	13900	13400	12900	12400	11900	11400
	0	-17.8	14600	14000	13600	13100	12600	12100	11500	11100	10600	10200	9550	9180

NOTE: Mean temperature is the average temperature between the saturated suction vapor temperature (dew point) and the temperature feeding the evaporator. To be consistent with the evaporator selection method, Mean rating capacities are recommended.

CONDENSING UNITS

KEEPRITE REFRIGERATION

KEH Condensing Units 'New Generation D'

Includes NRCAN Compliant Models

R448A Medium Temperature

Model KEH	Saturated Suction Temperature		Capacity BTU/h Refrigerant: R448A Ambient Temperature											
			85°F (29.4°C)		90°F (32.2°C)		95°F (35°C)		100°F (37.8°C)		105°F (40.6°C)		110°F (43.3°C)	
	°F	°C	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew
KEHA015M8	30	-1.1	17400	16700	16400	15800	15500	14900	14700	14100	13700	13200	12800	12300
	25	-3.9	15500	14900	14700	14100	13700	13200	12900	12400	12100	11600	11200	10800
	20	-6.7	13600	13100	12900	12400	12100	11600	11300	10900	10500	10100	9800	9420
Compressor	15	-9.4	12000	11500	11200	10800	10500	10100	9810	9430	9110	8760	8420	8100
Model	10	-12.2	10400	9960	9700	9330	9050	8700	8400	8080	7760	7460	7130	6860
CS10K6E	5	-15.0	8880	8540	8280	7960	7680	7380	7080	6810	6500	6250	5930	5700
	0	-17.8	7520	7230	6960	6690	6410	6160	5870	5640	5320	5120	4800	4620
KEHA020M8	30	-1.1	19300	18600	18400	17700	17400	16700	16400	15800	15400	14800	14500	13900
	25	-3.9	17300	16600	16300	15700	15400	14800	14600	14000	13600	13100	12700	12200
	20	-6.7	15200	14600	14400	13800	13500	13000	12800	12300	12000	11500	11100	10700
Compressor	15	-9.4	13300	12800	12600	12100	11900	11400	11100	10700	10400	9980	9650	9280
Model	10	-12.2	11500	11100	10900	10500	10200	9840	9590	9220	8950	8610	8330	8010
CS12K6E	5	-15.0	9940	9560	9360	9000	8800	8460	8240	7920	7700	7400	7170	6890
	0	-17.8	8510	8180	8010	7700	7530	7240	7060	6790	6610	6360	6190	5950
KEHA025M8	30	-1.1	25000	24000	23800	22900	22600	21700	21400	20600	20200	19400	19000	18300
	25	-3.9	22200	21300	21100	20300	20000	19200	18800	18100	17700	17000	16600	16000
	20	-6.7	19400	18700	18400	17700	17400	16700	16400	15800	15400	14800	14400	13800
Compressor	15	-9.4	17000	16300	15900	15300	15000	14400	14000	13500	13200	12700	12300	11800
Model	10	-12.2	14500	13900	13600	13100	12800	12300	12000	11500	11200	10800	10400	10000
CS14K6E	5	-15.0	12300	11800	11500	11100	10800	10400	10200	9760	9510	9140	8910	8570
	0	-17.8	10300	9950	9740	9370	9180	8830	8650	8320	8170	7860	7760	7460
KEHA030M8	30	-1.1	30800	29600	29100	28000	27600	26500	26000	25000	24500	23600	23100	22200
	25	-3.9	27200	26200	25800	24800	24300	23400	23000	22100	21600	20800	20400	19600
	20	-6.7	24100	23200	22800	21900	21400	20600	20200	19400	19000	18300	17900	17200
Compressor	15	-9.4	21200	20400	20000	19200	18800	18100	17700	17000	16500	15900	15600	15000
Model	10	-12.2	18500	17800	17400	16700	16300	15700	15300	14700	14400	13800	13400	12900
CS18K6E	5	-15.0	16000	15400	15000	14400	14000	13500	13100	12600	12300	11800	11400	11000
	0	-17.8	13600	13100	12700	12200	11900	11400	11000	10600	10200	9850	9560	9190
KEHA035M8	30	-1.1	34000	32700	32400	31200	30800	29600	29100	28000	27600	26500	25900	24900
	25	-3.9	30500	29300	29000	27900	27600	26500	26000	25000	24500	23600	23100	22200
	20	-6.7	27200	26200	25800	24800	24400	23500	23100	22200	21700	20900	20400	19600
Compressor	15	-9.4	24100	23200	22900	22000	21500	20700	20300	19500	19000	18300	17800	17100
Model	10	-12.2	21200	20400	20100	19300	18800	18100	17700	17000	16400	15800	15300	14700
CS20K6E	5	-15.0	18400	17700	17400	16700	16200	15600	15100	14500	14000	13500	12900	12400
	0	-17.8	15800	15200	14800	14200	13700	13200	12700	12200	11600	11200	10600	10200

NOTE: Mean temperature is the average temperature between the saturated suction vapor temperature (dew point) and the temperature feeding the evaporator. To be consistent with the evaporator selection method, Mean rating capacities are recommended.

- For R449A, use R448A data.

AWEF RATINGS

Annual Walk-In Energy Factor Ratings - High/Medium Temperature

If a numerical value is listed in the table below, the following statement applies to that corresponding model: " This refrigeration system is designed and certified for use in walk-in cooler applications."

Base Unit Model KEH	Outdoor Models			Indoor Models		
	R404A R507	R407A	R448A	R404A R507	R407A	R448A
KEHT006M8	7.60	–	–	–	–	–
KEHA015M8	7.60	7.60	7.60	–	–	–
KEHA020M8	7.60	7.60	7.60	–	–	–
KEHA025M8	7.60	7.60	7.60	5.61	5.61	5.61
KEHA030M8	7.60	7.60	7.60	5.61	–	5.61
KEHA035M8	7.60	7.60	7.60	5.61	–	5.61

– = Non-compliant model

For R449A, use R448A data.

CONDENSING UNITS

KEEPRITE REFRIGERATION

KEZ Condensing Units 'New Generation D'

Includes NRCAN Compliant Models

NOMENCLATURE — KEZ - SCROLL CONDENSING UNITS

KEZ A 075 H 8 - H T4 D - A

Model Series
KEZ = Excel Scroll Air Cooled Condensing Unit Line

Compressor Manufacturer
A = Copeland

Nominal HP
007 - 170 = 3/4 - 17 HP

Application Range
H = High and Med Temp
L = Low Temp

Refrigerant*
8 = R407A, R407C, R448A, R449A, R404A, R507

Enclosure
H = Outdoor
I = Indoor

Voltage*
S2 = 208/230-1-60
S3 = 230-1-60
S6 = 200/220-1-50
S7 = 200-1-50
T3 = 208/230-3-60
T4 = 460-3-60
T5 = 575-3-60
T7 = 200/220-3-50
T9 = 380/400-3-50
* subject to compressor availability

Design Generation
D = Latest Catalog Series

Pre-Selected Factory Mounted Option Packages
See detail on next page

R407A High Temperature

Model KEZA	Saturated Suction Temperature		Capacity BTU/h Refrigerant: R407A Ambient Temperature											
			85°F (29.4°C)		90°F (32.2°C)		95°F (35°C)		100°F (37.8°C)		105°F (40.6°C)		110°F (43.3°C)	
	°F	°C	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew
	40	4.4	11800	11300	11400	11000	11000	10600	10600	10200	10300	9870	9900	9520
	35	1.7	10800	10400	10500	10100	10200	9760	9800	9420	9450	9090	9100	8750
KEZA008H8	30	-1.1	9930	9550	9610	9240	9290	8930	8960	8620	8640	8310	8320	8000
	25	-3.9	9040	8690	8740	8400	8440	8120	8140	7830	7840	7540	7540	7250
Compressor	20	-6.7	8170	7860	7900	7600	7620	7330	7340	7060	7050	6780	6770	6510
Model	15	-9.4	7350	7070	7090	6820	6830	6570	6560	6310	6290	6050	6010	5780
ZB07KAE	10	-12.2	6560	6310	6320	6080	6070	5840	5810	5590	5540	5330	5270	5070
	5	-15.0	5820	5600	5600	5380	5350	5140	5100	4900	4830	4640	4540	4370
	0	-17.8	5130	4930	4900	4710	4660	4480	4400	4230	4140	3980	3850	3700
	40	4.4	13200	12700	12700	12200	12300	11800	11900	11400	11300	10900	10900	10500
	35	1.7	12300	11800	11900	11400	11400	11000	10900	10500	10500	10100	10100	9700
KEZA009H8	30	-1.1	11300	10900	10900	10500	10500	10100	10100	9740	9720	9350	9310	8950
	25	-3.9	10400	9980	10000	9640	9670	9300	9300	8940	8920	8580	8550	8220
Compressor	20	-6.7	9480	9120	9160	8810	8830	8490	8490	8160	8140	7830	7800	7500
Model	15	-9.4	8610	8280	8310	7990	8010	7700	7700	7400	7380	7100	7060	6790
ZB08KAE	10	-12.2	7750	7450	7480	7190	7200	6920	6920	6650	6640	6380	6350	6110
	5	-15.0	6910	6640	6660	6400	6410	6160	6160	5920	5910	5680	5660	5440
	0	-17.8	6080	5850	5870	5640	5650	5430	5420	5210	5200	5000	4980	4790
	40	4.4	16300	15700	15800	15200	15300	14700	14700	14100	14100	13600	13500	13000
	35	1.7	14900	14300	14500	13900	13900	13400	13400	12900	12900	12400	12300	11800
KEZA010H8	30	-1.1	13500	13000	13100	12600	12700	12200	12200	11700	11600	11200	11200	10800
	25	-3.9	12400	11900	12000	11500	11500	11100	11000	10600	10600	10200	10200	9790
Compressor	20	-6.7	11200	10800	10800	10400	10400	10000	10000	9660	9650	9280	9260	8900
Model	15	-9.4	10200	9770	9820	9440	9460	9100	9110	8760	8760	8420	8390	8070
ZS09KAE	10	-12.2	9190	8840	8890	8550	8570	8240	8260	7940	7940	7630	7610	7320
	5	-15.0	8310	7990	8030	7720	7750	7450	7460	7170	7180	6900	6880	6620
	0	-17.8	7480	7190	7230	6950	6980	6710	6720	6460	6460	6210	6210	5970
	40	4.4	19100	18400	18400	17700	17800	17100	17100	16400	16400	15800	15700	15100
	35	1.7	17500	16800	16800	16200	16200	15600	15600	15000	15000	14400	14400	13800
KEZA011H8	30	-1.1	15900	15300	15300	14700	14800	14200	14200	13700	13600	13100	13100	12600
	25	-3.9	14500	13900	13900	13400	13400	12900	12900	12400	12400	11900	11900	11400
Compressor	20	-6.7	13100	12600	12700	12200	12300	11800	11800	11300	11300	10900	10800	10400
Model	15	-9.4	12000	11500	11500	11100	11100	10700	10700	10300	10300	9870	9840	9460
ZS11KAE	10	-12.2	10800	10400	10500	10100	10100	9690	9700	9330	9320	8960	8930	8590
	5	-15.0	9800	9420	9460	9100	9120	8770	8780	8440	8430	8110	8090	7780
	0	-17.8	8830	8490	8530	8200	8230	7910	7910	7610	7610	7320	7300	7020
	40	4.4	21300	20500	20600	19800	19800	19000	19000	18300	18200	17500	17500	16800
	35	1.7	19400	18700	18800	18100	18100	17400	17400	16700	16600	16000	15900	15300
KEZA015H8	30	-1.1	17800	17100	17200	16500	16500	15900	15900	15300	15200	14600	14600	14000
	25	-3.9	16200	15600	15600	15000	15100	14500	14500	13900	13800	13300	13300	12800
Compressor	20	-6.7	14800	14200	14200	13700	13700	13200	13200	12700	12700	12200	12100	11600
Model	15	-9.4	13400	12900	13000	12500	12500	12000	12000	11500	11500	11100	11000	10600
ZS13KAE	10	-12.2	12200	11700	11800	11300	11300	10900	10900	10500	10500	10100	10000	9640
	5	-15.0	11000	10600	10600	10200	10300	9870	9880	9500	9480	9120	9100	8750
	0	-17.8	9950	9570	9610	9240	9270	8910	8910	8570	8570	8240	8230	7910
	40	4.4	25200	24200	24200	23300	23300	22400	22400	21500	21400	20600	-	-
	35	1.7	23000	22100	22200	21300	21300	20500	20500	19700	19600	18800	18700	18000
KEZA020H8	30	-1.1	21000	20200	20300	19500	19400	18700	18700	18000	17900	17200	17100	16400
	25	-3.9	19100	18400	18400	17700	17800	17100	17100	16400	16300	15700	15600	15000
Compressor	20	-6.7	17400	16700	16700	16100	16100	15500	15400	14800	14800	14200	14100	13600
Model	15	-9.4	15700	15100	15100	14500	14600	14000	13900	13400	13300	12800	12800	12300
ZS15KAE	10	-12.2	14000	13500	13600	13100	13100	12600	12600	12100	12100	11600	11400	11000
	5	-15.0	12600	12100	12200	11700	11800	11300	11200	10800	10700	10300	10300	9870
	0	-17.8	11200	10800	10800	10400	10400	10000	10000	9620	9570	9200	9120	8770
	40	4.4	30600	29400	29500	28400	28500	27400	27500	26400	26400	25400	25300	24300
	35	1.7	27800	26700	26800	25800	25900	24900	25000	24000	24000	23100	23000	22100
KEZA025H8	30	-1.1	25300	24300	24400	23500	23500	22600	22700	21800	21700	20900	20900	20100
	25	-3.9	23000	22100	22200	21300	21400	20600	20600	19800	19800	19000	18900	18200
Compressor	20	-6.7	20800	20000	20100	19300	19400	18700	18700	18000	17900	17200	17200	16500
Model	15	-9.4	18800	18100	18200	17500	17600	16900	17000	16300	16200	15600	15600	15000
ZS19KAE	10	-12.2	17100	16400	16500	15900	15900	15300	15300	14700	14700	14100	14100	13600
	5	-15.0	15400	14800	14900	14300	14400	13800	13800	13300	13300	12800	12800	12300
	0	-17.8	13800	13300	13400	12900	12900	12400	12500	12000	12000	11500	11400	11000

NOTE: Mean temperature is the average temperature between the saturated suction vapor temperature (dew point) and the temperature feeding the evaporator.
To be consistent with the evaporator selection method, Mean rating capacities are recommended.
Shaded Area Restriction: 20°F Max Superheat

table continues on next page >>>

CONDENSING UNITS

KEEPRITE REFRIGERATION

KEZ Condensing Units 'New Generation D'

Includes NRCAN Compliant Models

R407A High Temperature *(cont'd)*

Model KEZA	Saturated Suction Temperature		Capacity BTU/h Refrigerant: R407A Ambient Temperature											
	85°F (29.4°C)		90°F (32.2°C)		95°F (35°C)		100°F (37.8°C)		105°F (40.6°C)		110°F (43.3°C)	
	°F	°C	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew
KEZA030H8 Compressor Model ZS21KAE	40	4.4	39100	37600	37800	36300	36400	35000	34900	33600	33600	32300	32100	30900
	35	1.7	35700	34300	34400	33100	33200	31900	31900	30700	30600	29400	29300	28200
	30	-1.1	32400	31200	31300	30100	30200	29000	29000	27900	27900	26800	26700	25700
	25	-3.9	29500	28400	28500	27400	27500	26400	26400	25400	25400	24400	24300	23400
	20	-6.7	26800	25800	25900	24900	25000	24000	24000	23100	23100	22200	22000	21200
	15	-9.4	24300	23400	23500	22600	22700	21800	21800	21000	20900	20100	20100	19300
	10	-12.2	22000	21200	21300	20500	20600	19800	19800	19000	19000	18300	18200	17500
	5	-15.0	20000	19200	19200	18500	18600	17900	17900	17200	17200	16500	16500	15900
	0	-17.8	18000	17300	17400	16700	16700	16100	16100	15500	15500	14900	14900	14300
KEZA035H8 Compressor Model ZS26KAE	40	4.4	43300	41600	41700	40100	40100	38600	38600	37100	37000	35600	35400	34000
	35	1.7	39500	38000	38100	36600	36700	35300	35300	33900	33800	32500	32300	31100
	30	-1.1	36000	34600	34700	33400	33500	32200	32100	30900	30900	29700	29500	28400
	25	-3.9	32700	31400	31500	30300	30400	29200	29200	28100	28000	26900	26800	25800
	20	-6.7	29500	28400	28500	27400	27600	26500	26500	25500	25400	24400	24200	23300
	15	-9.4	26600	25600	25800	24800	24900	23900	23900	23000	22900	22000	21900	21100
	10	-12.2	23900	23000	23200	22300	22400	21500	21500	20700	20600	19800	19800	19000
	5	-15.0	21400	20600	20800	20000	20000	19200	19200	18500	18500	17800	17700	17000
	0	-17.8	19100	18400	18500	17800	17900	17200	17200	16500	16500	15900	15700	15100
KEZA040H8 Compressor Model ZS29KAE	40	4.4	48800	46900	47100	45300	45300	43600	43700	42000	41900	40300	40100	38600
	35	1.7	44500	42800	43000	41300	41400	39800	39700	38200	38200	36700	36600	35200
	30	-1.1	40500	38900	39100	37600	37600	36200	36200	34800	34700	33400	33300	32000
	25	-3.9	36800	35400	35600	34200	34200	32900	33000	31700	31600	30400	30300	29100
	20	-6.7	33500	32200	32300	31100	31100	29900	30000	28800	28700	27600	27600	26500
	15	-9.4	30400	29200	29300	28200	28300	27200	27100	26100	26100	25100	25000	24000
	10	-12.2	27600	26500	26500	25500	25600	24600	24600	23700	23600	22700	22700	21800
	5	-15.0	24900	23900	24000	23100	23200	22300	22300	21400	21400	20600	20500	19700
	0	-17.8	22400	21500	21600	20800	20900	20100	20100	19300	19200	18500	18500	17800
KEZA045H8 Compressor Model ZS33KAE	40	4.4	54400	52300	52500	50500	50500	48600	48600	46700	46600	44800	44600	42900
	35	1.7	49600	47700	47900	46100	46100	44300	44300	42600	42500	40900	40700	39100
	30	-1.1	45200	43500	43700	42000	42000	40400	40400	38800	38700	37200	37000	35600
	25	-3.9	41200	39600	39700	38200	38300	36800	36800	35400	35300	33900	33800	32500
	20	-6.7	37500	36100	36200	34800	34800	33500	33500	32200	32100	30900	30800	29600
	15	-9.4	34100	32800	32900	31600	31600	30400	30500	29300	29200	28100	28000	26900
	10	-12.2	30900	29700	29800	28700	28700	27600	27600	26500	26500	25500	25400	24400
	5	-15.0	28000	26900	26900	25900	26000	25000	25000	24000	24000	23100	23000	22100
	0	-17.8	25200	24200	24300	23400	23400	22500	22600	21700	21600	20800	20800	20000
KEZA050H8 Compressor Model ZB38KCE	40	4.4	63200	60800	60800	58500	58300	56100	55800	53700	53200	51200	-	-
	35	1.7	57900	55700	55700	53600	53500	51400	51200	49200	48800	46900	-	-
	30	-1.1	52800	50800	50900	48900	48800	46900	46600	44800	44400	42700	42200	40600
	25	-3.9	47900	46100	46200	44400	44200	42500	42300	40700	40400	38800	38300	36800
	20	-6.7	43400	41700	41700	40100	39900	38400	38200	36700	36400	35000	34500	33200
	15	-9.4	39000	37500	37400	36000	35900	34500	34300	33000	32700	31400	31100	29900
	10	-12.2	34800	33500	33500	32200	32000	30800	30600	29400	29200	28100	27800	26700
	5	-15.0	31000	29800	29700	28600	28500	27400	27200	26200	26000	25000	24800	23800
	0	-17.8	27500	26400	26300	25300	25200	24200	24000	23100	23000	22100	21900	21100
KEZA060H8 Compressor Model ZB45KCE	40	4.4	72300	69500	69600	66900	66800	64200	63900	61400	60900	58600	57900	55700
	35	1.7	66200	63700	63800	61300	61200	58800	58400	56200	55700	53600	53000	51000
	30	-1.1	60400	58100	58100	55900	55700	53600	53400	51300	50900	48900	48300	46400
	25	-3.9	54900	52800	52700	50700	50500	48600	48400	46500	46100	44300	43800	42100
	20	-6.7	49600	47700	47600	45800	45700	43900	43600	41900	41500	39900	39400	37900
	15	-9.4	44500	42800	42700	41100	41000	39400	39100	37600	37200	35800	35400	34000
	10	-12.2	39800	38300	38200	36700	36600	35200	34900	33600	33200	31900	31500	30300
	5	-15.0	35500	34100	34000	32700	32400	31200	31000	29800	29500	28400	28000	26900
	0	-17.8	31400	30200	30100	28900	28700	27600	27400	26300	26100	25100	24800	23800
KEZA061H8 Compressor Model ZB48KCE	40	4.4	79900	76800	76800	73800	73600	70800	70300	67600	67000	64400	-	-
	35	1.7	73300	70500	70500	67800	67500	64900	64500	62000	61500	59100	-	-
	30	-1.1	67000	64400	64400	61900	61700	59300	58900	56600	56100	53900	53100	51100
	25	-3.9	60900	58600	58400	56200	56000	53800	53500	51400	50900	48900	48300	46400
	20	-6.7	55100	53000	52800	50800	50600	48700	48300	46400	46000	44200	43600	41900
	15	-9.4	49500	47600	47500	45700	45400	43700	43400	41700	41300	39700	39200	37700
	10	-12.2	44300	42600	42500	40900	40700	39100	38800	37300	36900	35500	35000	33700
	5	-15.0	39500	38000	37900	36400	36200	34800	34500	33200	32900	31600	31200	30000
	0	-17.8	35000	33700	33500	32200	32000	30800	30600	29400	29100	28000	27700	26600

NOTE: Mean temperature is the average temperature between the saturated suction vapor temperature (dew point) and the temperature feeding the evaporator.
To be consistent with the evaporator selection method, Mean rating capacities are recommended.
Shaded Area Restriction: 20°F Max Superheat

CONDENSING UNITS

KEEPRITE REFRIGERATION

KEZ Condensing Units 'New Generation D'

Includes NRCAN Compliant Models

R448A High Temperature

Model KEZA	Saturated Suction Temperature		Capacity BTU/h Refrigerant: R448A Ambient Temperature											
			85°F (29.4°C)		90°F (32.2°C)		95°F (35°C)		100°F (37.8°C)		105°F (40.6°C)		110°F (43.3°C)	
	°F	°C	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew
	40	4.4	10300	9870	9910	9530	9560	9190	9200	8850	8840	8500	8490	8160
	35	1.7	9390	9030	9070	8720	8750	8410	8410	8090	8080	7770	7750	7450
KEZA007H8	30	-1.1	8570	8240	8270	7950	7970	7660	7660	7370	7350	7070	7050	6780
	25	-3.9	7780	7480	7500	7210	7230	6950	6950	6680	6670	6410	6390	6140
Compressor	20	-6.7	7030	6760	6780	6520	6530	6280	6270	6030	6010	5780	5750	5530
Model	15	-9.4	6330	6090	6100	5870	5880	5650	5640	5420	5410	5200	5160	4960
ZB06KAE	10	-12.2	5680	5460	5470	5260	5260	5060	5050	4860	4840	4650	4620	4440
	5	-15.0	5060	4870	4890	4700	4700	4520	4500	4330	4310	4140	4110	3950
	0	-17.8	4510	4340	4350	4180	4180	4020	4000	3850	3830	3680	3640	3500
	40	4.4	12200	11700	11800	11300	11200	10800	10800	10400	10400	10000	9960	9580
	35	1.7	11100	10700	10700	10300	10300	9930	9930	9550	9530	9160	9130	8780
KEZA008H8	30	-1.1	10100	9740	9780	9400	9410	9050	9060	8710	8690	8360	8340	8020
	25	-3.9	9190	8840	8870	8530	8550	8220	8230	7910	7900	7600	7580	7290
Compressor	20	-6.7	8310	7990	8020	7710	7730	7430	7450	7160	7160	6880	6860	6600
Model	15	-9.4	7480	7190	7220	6940	6960	6690	6700	6440	6440	6190	6180	5940
ZB07KAE	10	-12.2	6700	6440	6470	6220	6240	6000	6010	5780	5780	5560	5540	5330
	5	-15.0	5980	5750	5780	5560	5570	5360	5370	5160	5160	4960	4960	4770
	0	-17.8	5320	5120	5150	4950	4960	4770	4780	4600	4600	4420	4420	4250
	40	4.4	13900	13400	13300	12800	12800	12300	12300	11800	11800	11300	11100	10700
	35	1.7	12800	12300	12300	11800	11800	11300	11300	10900	10800	10400	10300	9910
KEZA009H8	30	-1.1	11600	11200	11200	10800	10800	10400	10400	9960	9910	9530	9470	9110
	25	-3.9	10600	10200	10200	9830	9840	9460	9440	9080	9060	8710	8660	8330
Compressor	20	-6.7	9610	9240	9270	8910	8920	8580	8580	8250	8240	7920	7890	7590
Model	15	-9.4	8660	8330	8360	8040	8060	7750	7760	7460	7460	7170	7140	6870
ZB08KAE	10	-12.2	7780	7480	7510	7220	7250	6970	6980	6710	6720	6460	6450	6200
	5	-15.0	6960	6690	6730	6470	6490	6240	6260	6020	6020	5790	5790	5570
	0	-17.8	6220	5980	6010	5780	5800	5580	5600	5380	5390	5180	5190	4990
	40	4.4	16100	15500	15600	15000	15100	14500	14600	14000	13900	13400	13300	12800
	35	1.7	14500	13900	14000	13500	13600	13100	13100	12600	12600	12100	12000	11500
KEZA010H8	30	-1.1	13100	12600	12700	12200	12300	11800	11900	11400	11300	10900	10800	10400
	25	-3.9	11800	11300	11400	11000	11100	10700	10700	10300	10300	9870	9780	9400
Compressor	20	-6.7	10600	10200	10300	9910	9990	9610	9660	9290	9280	8920	8840	8500
Model	15	-9.4	9530	9160	9280	8920	9020	8670	8730	8390	8390	8070	8010	7700
ZS09KAE	10	-12.2	8570	8240	8350	8030	8130	7820	7880	7580	7600	7310	7270	6990
	5	-15.0	7700	7400	7520	7230	7330	7050	7130	6860	6880	6620	6600	6350
	0	-17.8	6900	6630	6750	6490	6600	6350	6440	6190	6240	6000	6000	5770
	40	4.4	18900	18200	18300	17600	17700	17000	17000	16300	16200	15600	15400	14800
	35	1.7	17100	16400	16500	15900	16000	15400	15400	14800	14700	14100	13900	13400
KEZA011H8	30	-1.1	15400	14800	15000	14400	14500	13900	13900	13400	13300	12800	12600	12100
	25	-3.9	13900	13400	13500	13000	13100	12600	12600	12100	12100	11600	11400	11000
Compressor	20	-6.7	12500	12000	12200	11700	11800	11300	11300	10900	10900	10500	10300	9940
Model	15	-9.4	11300	10900	11000	10600	10700	10300	10300	9900	9880	9500	9390	9030
ZS11KAE	10	-12.2	10200	9780	9920	9540	9640	9270	9330	8970	8980	8630	8540	8210
	5	-15.0	9150	8800	8940	8600	8720	8380	8460	8130	8150	7840	7780	7480
	0	-17.8	8220	7900	8050	7740	7860	7560	7660	7370	7400	7120	7090	6820
	40	4.4	21100	20300	20400	19600	19700	18900	18800	18100	17900	17200	16800	16200
	35	1.7	19100	18400	18500	17800	17800	17100	17100	16400	16200	15600	15300	14700
KEZA015H8	30	-1.1	17300	16600	16700	16100	16100	15500	15500	14900	14700	14100	13800	13300
	25	-3.9	15600	15000	15200	14600	14600	14000	14000	13500	13300	12800	12600	12100
Compressor	20	-6.7	14100	13600	13700	13200	13200	12700	12700	12200	12200	11700	11400	11000
Model	15	-9.4	12700	12200	12400	11900	12000	11500	11500	11100	11000	10600	10400	10000
ZS13KAE	10	-12.2	11400	11000	11100	10700	10800	10400	10500	10100	10000	9640	9500	9130
	5	-15.0	10300	9940	10100	9710	9830	9450	9510	9140	9130	8780	8670	8340
	0	-17.8	9300	8940	9100	8750	8880	8540	8630	8300	8320	8000	7940	7630
	40	4.4	24500	23600	23700	22800	22700	21800	21600	20800	20500	19700	19100	18400
	35	1.7	22400	21500	21500	20700	20700	19900	19700	18900	18600	17900	17500	16800
KEZA020H8	30	-1.1	20300	19500	19600	18800	18800	18100	17900	17200	17000	16300	15900	15300
	25	-3.9	18400	17700	17800	17100	17100	16400	16300	15700	15400	14800	14500	13900
Compressor	20	-6.7	16600	16000	16100	15500	15500	14900	14900	14300	14000	13500	13200	12700
Model	15	-9.4	15100	14500	14700	14100	14100	13600	13500	13000	12800	12300	12100	11600
ZS15KAE	10	-12.2	13600	13100	13200	12700	12800	12300	12300	11800	11800	11300	11000	10600
	5	-15.0	12300	11800	12000	11500	11600	11200	11200	10800	10700	10300	10100	9730
	0	-17.8	11100	10700	10800	10400	10600	10200	10200	9830	9800	9420	9280	8920

NOTE: Mean temperature is the average temperature between the saturated suction vapor temperature (dew point) and the temperature feeding the evaporator.
To be consistent with the evaporator selection method, Mean rating capacities are recommended.

Shaded Area Restriction: 20°F Max Superheat

CONDENSING UNITS

KEEPRITE REFRIGERATION

KEZ Condensing Units 'New Generation D'

Includes NRCAN Compliant Models

R448A High Temperature *(cont'd)*

Model KEZA	Saturated Suction Temperature		Capacity BTU/h Refrigerant: R448A Ambient Temperature											
			85°F (29.4°C)		90°F (32.2°C)		95°F (35°C)		100°F (37.8°C)		105°F (40.6°C)		110°F (43.3°C)	
	°F	°C	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew
	40	4.4	30000	28800	29100	28000	28200	27100	27100	26100	26000	25000	24800	23800
	35	1.7	26900	25900	26200	25200	25300	24300	24300	23400	23400	22500	22300	21400
KEZA025H8	30	-1.1	24200	23300	23500	22600	22800	21900	21900	21100	21000	20200	20100	19300
	25	-3.9	21800	21000	21200	20400	20600	19800	19900	19100	19000	18300	18100	17400
Compressor	20	-6.7	19800	19000	19100	18400	18600	17900	17900	17200	17200	16500	16300	15700
Model	15	-9.4	17800	17100	17300	16600	16700	16100	16200	15600	15600	15000	14900	14300
ZS19KAE	10	-12.2	16000	15400	15600	15000	15200	14600	14700	14100	14100	13600	13500	13000
	5	-15.0	14500	13900	14100	13600	13700	13200	13300	12800	12800	12300	12300	11800
	0	-17.8	13000	12500	12700	12200	12400	11900	12000	11500	11500	11100	11000	10600
	40	4.4	40700	39100	39300	37800	38000	36500	36500	35100	35200	33800	33600	32300
	35	1.7	37200	35800	36100	34700	34800	33500	33500	32200	32100	30900	30800	29600
KEZA030H8	30	-1.1	34100	32800	33000	31700	31800	30600	30600	29400	29300	28200	28100	27000
	25	-3.9	31100	29900	30100	28900	28900	27800	27900	26800	26600	25600	25500	24500
Compressor	20	-6.7	28200	27100	27200	26200	26200	25200	25200	24200	24100	23200	23000	22100
Model	15	-9.4	25500	24500	24600	23700	23700	22800	22800	21900	21700	20900	20600	19800
ZS21KAE	10	-12.2	23000	22100	22200	21300	21300	20500	20400	19600	19400	18700	18400	17700
	5	-15.0	20600	19800	19900	19100	19000	18300	18200	17500	17300	16600	16300	15700
	0	-17.8	18300	17600	17700	17000	16800	16200	16000	15400	15200	14600	14200	13700
	40	4.4	44200	42500	42600	41000	41000	39400	39200	37700	37200	35800	35200	33800
	35	1.7	40200	38700	38900	37400	37300	35900	35600	34200	33800	32500	31700	30500
KEZA035H8	30	-1.1	36600	35200	35300	33900	33800	32500	32200	31000	30500	29300	28600	27500
	25	-3.9	33200	31900	31900	30700	30600	29400	29100	28000	27500	26400	25600	24600
Compressor	20	-6.7	30000	28800	28800	27700	27600	26500	26200	25200	24600	23700	23000	22100
Model	15	-9.4	27000	26000	26000	25000	24900	23900	23500	22600	22000	21200	20500	19700
ZS26KAE	10	-12.2	24200	23300	23300	22400	22300	21400	21100	20300	19800	19000	18200	17500
	5	-15.0	21700	20900	20900	20100	20000	19200	18800	18100	17600	16900	16200	15600
	0	-17.8	19400	18700	18700	18000	17900	17200	16800	16200	15700	15100	14500	13900
	40	4.4	51600	49600	49900	48000	48200	46300	46400	44600	44600	42900	42700	41100
	35	1.7	47300	45500	45800	44000	44200	42500	42500	40900	40900	39300	39100	37600
KEZA040H8	30	-1.1	43300	41600	41800	40200	40400	38800	38900	37400	37200	35800	35700	34300
	25	-3.9	39400	37900	38100	36600	36700	35300	35400	34000	33900	32600	32300	31100
Compressor	20	-6.7	35800	34400	34500	33200	33300	32000	32000	30800	30700	29500	29200	28100
Model	15	-9.4	32300	31100	31200	30000	30100	28900	28800	27700	27600	26500	26200	25200
ZS29KAE	10	-12.2	29100	28000	28100	27000	27000	26000	25900	24900	24600	23700	23400	22500
	5	-15.0	26100	25100	25200	24200	24100	23200	23100	22200	21900	21100	20700	19900
	0	-17.8	23300	22400	22400	21500	21400	20600	20400	19600	19200	18500	18100	17400
	40	4.4	56200	54000	54300	52200	52300	50300	50300	48400	48400	46500	46300	44500
	35	1.7	51600	49600	49800	47900	48000	46200	46200	44400	44300	42600	42300	40700
KEZA045H8	30	-1.1	47100	45300	45600	43800	43900	42200	42200	40600	40500	38900	38600	37100
	25	-3.9	43000	41300	41500	39900	40000	38500	38500	37000	36800	35400	35000	33700
Compressor	20	-6.7	39100	37600	37800	36300	36300	34900	34800	33500	33300	32000	31700	30500
Model	15	-9.4	35400	34000	34100	32800	32800	31500	31400	30200	30000	28800	28500	27400
ZS33KAE	10	-12.2	31800	30600	30700	29500	29400	28300	28200	27100	26800	25800	25400	24400
	5	-15.0	28500	27400	27500	26400	26300	25300	25200	24200	23800	22900	22500	21600
	0	-17.8	25500	24500	24400	23500	23400	22500	22300	21400	21000	20200	19700	18900
	40	4.4	62600	60200	60300	58000	57900	55700	55600	53500	53400	51300	51000	49000
	35	1.7	57300	55100	55200	53100	53000	51000	51000	49000	48800	46900	46600	44800
KEZA050H8	30	-1.1	52300	50300	50400	48500	48500	46600	46500	44700	44500	42800	42500	40900
	25	-3.9	47600	45800	45900	44100	44100	42400	42200	40600	40500	38900	38700	37200
Compressor	20	-6.7	43300	41600	41600	40000	39900	38400	38300	36800	36600	35200	34900	33600
Model	15	-9.4	39100	37600	37500	36100	36100	34700	34500	33200	33000	31700	31500	30300
ZB38KCE	10	-12.2	35200	33800	33800	32500	32300	31100	31000	29800	29500	28400	28200	27100
	5	-15.0	31400	30200	30200	29000	28800	27700	27600	26500	26200	25200	25000	24000
	0	-17.8	27900	26800	26700	25700	25500	24500	24200	23300	23000	22100	21800	21000
	40	4.4	73700	70900	71000	68300	68200	65600	65400	62900	62700	60300	59900	57600
	35	1.7	67600	65000	65100	62600	62500	60100	60000	57700	57400	55200	54900	52800
KEZA060H8	30	-1.1	61800	59400	59500	57200	57100	54900	54800	52700	52400	50400	50100	48200
	25	-3.9	56300	54100	54200	52100	52000	50000	49900	48000	47700	45900	45600	43800
Compressor	20	-6.7	51100	49100	49200	47300	47200	45400	45200	43500	43300	41600	41300	39700
Model	15	-9.4	46200	44400	44400	42700	42600	41000	40800	39200	39000	37500	37100	35700
ZB45KCE	10	-12.2	41600	40000	39900	38400	38300	36800	36600	35200	34800	33500	33200	31900
	5	-15.0	37100	35700	35700	34300	34100	32800	32600	31300	31000	29800	29400	28300
	0	-17.8	33000	31700	31500	30300	30100	28900	28600	27500	27100	26100	25700	24700

NOTE: Mean temperature is the average temperature between the saturated suction vapor temperature (dew point) and the temperature feeding the evaporator.
To be consistent with the evaporator selection method, Mean rating capacities are recommended.

Shaded Area Restriction: 20°F Max Superheat

CONDENSING UNITS

KEEPRITE REFRIGERATION

KEZ Condensing Units 'New Generation D'

Includes NRCAN Compliant Models

R407C High Temperature

Model KEZA	Saturated Suction Temperature		Capacity BTU/h Refrigerant: R407C Ambient Temperature											
			85°F (29.4°C)		90°F (32.2°C)		95°F (35°C)		100°F (37.8°C)		105°F (40.6°C)		110°F (43.3°C)	
	°F	°C	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew
KEZA009H8 Compressor Model ZB08KAE	40	4.4	13000	12500	12500	12000	12000	11500	11500	11100	11000	10600	10500	10100
	35	1.7	11900	11400	11400	11000	10900	10500	10500	10100	10100	9720	9700	9330
	30	-1.1	10700	10300	10400	9970	9990	9610	9610	9240	9250	8890	8890	8550
	25	-3.9	9760	9380	9410	9050	9080	8730	8760	8420	8430	8110	8130	7820
	20	-6.7	8820	8480	8520	8190	8230	7910	7950	7640	7680	7380	7400	7120
	15	-9.4	7940	7630	7680	7380	7430	7140	7180	6900	6950	6680	6720	6460
	10	-12.2	7110	6840	6880	6620	6670	6410	6460	6210	6260	6020	6070	5840
	5	-15.0	6340	6100	6150	5910	5960	5730	5770	5550	5610	5390	5450	5240
	0	-17.8	5630	5410	5450	5240	5280	5080	5130	4930	4980	4790	4850	4660
KEZA015H8 Compressor Model ZS13KAE	40	4.4	20700	19900	20100	19300	19600	18800	18900	18200	18300	17600	17700	17000
	35	1.7	19000	18300	18500	17800	17900	17200	17400	16700	16800	16200	16200	15600
	30	-1.1	17400	16700	16800	16200	16400	15800	15900	15300	15400	14800	14900	14300
	25	-3.9	15800	15200	15400	14800	15000	14400	14500	13900	14000	13500	13500	13000
	20	-6.7	14200	13700	13900	13400	13500	13000	13100	12600	12700	12200	12300	11800
	15	-9.4	12800	12300	12500	12000	12200	11700	11800	11300	11300	10900	10900	10500
	10	-12.2	11400	11000	11100	10700	10800	10400	10400	10000	10100	9700	9700	9330
	5	-15.0	10100	9690	9800	9420	9500	9130	9170	8820	8830	8490	8480	8150
	0	-17.8	8780	8440	8520	8190	8230	7910	7920	7620	7600	7310	7250	6970
KEZA020H8 Compressor Model ZS15KAE	40	4.4	24200	23300	23500	22600	22800	21900	22000	21200	21300	20500	20600	19800
	35	1.7	22400	21500	21600	20800	21000	20200	20400	19600	19700	18900	19000	18300
	30	-1.1	20500	19700	19900	19100	19200	18500	18600	17900	18100	17400	17500	16800
	25	-3.9	18600	17900	18100	17400	17600	16900	17100	16400	16400	15800	15900	15300
	20	-6.7	16800	16200	16400	15800	15900	15300	15400	14800	14900	14300	14400	13800
	15	-9.4	15200	14600	14800	14200	14400	13800	13800	13300	13400	12900	12900	12400
	10	-12.2	13500	13000	13200	12700	12800	12300	12400	11900	11900	11400	11400	11000
	5	-15.0	12000	11500	11600	11200	11200	10800	10800	10400	10400	10000	9970	9590
	0	-17.8	10400	10000	10100	9710	9740	9370	9370	9010	8960	8620	8530	8200
KEZA025H8 Compressor Model ZS19KAE	40	4.4	29500	28400	28600	27500	27800	26700	26900	25900	26100	25100	25300	24300
	35	1.7	26900	25900	26200	25200	25400	24400	24600	23700	23900	23000	23200	22300
	30	-1.1	24400	23500	23800	22900	23200	22300	22500	21600	21800	21000	21100	20300
	25	-3.9	22200	21300	21600	20800	21000	20200	20400	19600	19800	19000	19100	18400
	20	-6.7	20000	19200	19400	18700	18900	18200	18400	17700	17800	17100	17300	16600
	15	-9.4	17900	17200	17400	16700	17000	16300	16400	15800	15900	15300	15400	14800
	10	-12.2	15800	15200	15500	14900	15000	14400	14600	14000	14000	13500	13600	13100
	5	-15.0	13900	13400	13600	13100	13200	12700	12800	12300	12300	11800	11900	11400
	0	-17.8	12200	11700	11800	11300	11400	11000	11000	10600	10600	10200	10100	9720
KEZA030H8 Compressor Model ZS21KAE	40	4.4	38500	37000	37400	36000	36300	34900	35200	33800	34000	32700	33000	31700
	35	1.7	35300	33900	34300	33000	33300	32000	32200	31000	31300	30100	30300	29100
	30	-1.1	32100	30900	31300	30100	30400	29200	29400	28300	28600	27500	27700	26600
	25	-3.9	29200	28100	28400	27300	27600	26500	26700	25700	25900	24900	25100	24100
	20	-6.7	26300	25300	25600	24600	25000	24000	24100	23200	23400	22500	22700	21800
	15	-9.4	23600	22700	23000	22100	22400	21500	21600	20800	21000	20200	20300	19500
	10	-12.2	21000	20200	20400	19600	19900	19100	19200	18500	18500	17800	17900	17200
	5	-15.0	18500	17800	18000	17300	17400	16700	16800	16200	16200	15600	15600	15000
	0	-17.8	16000	15400	15600	15000	15100	14500	14600	14000	13900	13400	13300	12800
KEZA035H8 Compressor Model ZS26KAE	40	4.4	42200	40600	41000	39400	39700	38200	38500	37000	37300	35900	36000	34600
	35	1.7	38700	37200	37600	36200	36500	35100	35400	34000	34200	32900	33100	31800
	30	-1.1	35400	34000	34300	33000	33400	32100	32300	31100	31300	30100	30300	29100
	25	-3.9	32000	30800	31200	30000	30400	29200	29400	28300	28500	27400	27600	26500
	20	-6.7	29000	27900	28200	27100	27400	26300	26600	25600	25700	24700	24900	23900
	15	-9.4	26000	25000	25300	24300	24500	23600	23800	22900	23100	22200	22300	21400
	10	-12.2	23100	22200	22500	21600	21800	21000	21100	20300	20400	19600	19700	18900
	5	-15.0	20400	19600	19800	19000	19100	18400	18500	17800	17900	17200	17100	16400
	0	-17.8	17700	17000	17200	16500	16600	16000	16000	15400	15300	14700	14600	14000
KEZA040H8 Compressor Model ZS29KAE	40	4.4	47900	46100	46600	44800	45200	43500	43800	42100	42400	40800	41100	39500
	35	1.7	43900	42200	42600	41000	41400	39800	40200	38700	38900	37400	37600	36200
	30	-1.1	40000	38500	38900	37400	37900	36400	36700	35300	35600	34200	34400	33100
	25	-3.9	36300	34900	35400	34000	34300	33000	33400	32100	32300	31100	31200	30000
	20	-6.7	32800	31500	31900	30700	31000	29800	30100	28900	29100	28000	28200	27100
	15	-9.4	29300	28200	28600	27500	27800	26700	26900	25900	26100	25100	25200	24200
	10	-12.2	26100	25100	25400	24400	24600	23700	23900	23000	23100	22200	22300	21400
	5	-15.0	23000	22100	22400	21500	21600	20800	20900	20100	20200	19400	19300	18600
	0	-17.8	20000	19200	19300	18600	18700	18000	18100	17400	17400	16700	16500	15900

NOTE: Mean temperature is the average temperature between the saturated suction vapor temperature (dew point) and the temperature feeding the evaporator.
To be consistent with the evaporator selection method, Mean rating capacities are recommended.

Shaded Area Restriction: 20°F Max Superheat

CONDENSING UNITS

KEEPRITE REFRIGERATION

KEZ Condensing Units 'New Generation D'

Includes NRCAN Compliant Models

R407C High Temperature *(cont'd)*

Model KEZA	Saturated Suction Temperature		Capacity BTU/h Refrigerant: R407C Ambient Temperature											
			85°F (29.4°C)		90°F (32.2°C)		95°F (35°C)		100°F (37.8°C)		105°F (40.6°C)		110°F (43.3°C)	
	°F	°C	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew
KEZA045H8 Compressor Model ZS33KAE	40	4.4	52500	50500	51000	49000	49500	47600	47900	46100	46400	44600	44800	43100
	35	1.7	48200	46300	46800	45000	45300	43600	44000	42300	42600	41000	41200	39600
	30	-1.1	43900	42200	42700	41100	41500	39900	40200	38700	39000	37500	37600	36200
	25	-3.9	39800	38300	38800	37300	37600	36200	36600	35200	35400	34000	34200	32900
	20	-6.7	36000	34600	35000	33700	34000	32700	33100	31800	31900	30700	30900	29700
	15	-9.4	32200	31000	31400	30200	30500	29300	29600	28500	28600	27500	27600	26500
	10	-12.2	28700	27600	28000	26900	27100	26100	26200	25200	25400	24400	24400	23500
	5	-15.0	25300	24300	24500	23600	23800	22900	23000	22100	22200	21300	21200	20400
	0	-17.8	22000	21200	21300	20500	20600	19800	19900	19100	19000	18300	18100	17400
KEZA050H8 Compressor Model ZB38KCE	40	4.4	59600	57300	57600	55400	55600	53500	53700	51600	51700	49700	49700	47800
	35	1.7	54500	52400	52700	50700	50900	48900	49100	47200	47200	45400	45400	43700
	30	-1.1	49700	47800	48000	46200	46400	44600	44700	43000	43100	41400	41400	39800
	25	-3.9	45100	43400	43700	42000	42200	40600	40700	39100	39100	37600	37500	36100
	20	-6.7	41000	39400	39600	38100	38200	36700	36800	35400	35400	34000	33900	32600
	15	-9.4	36900	35500	35800	34400	34400	33100	33200	31900	31800	30600	30400	29200
	10	-12.2	33300	32000	32100	30900	31000	29800	29700	28600	28400	27300	27100	26100
	5	-15.0	29800	28700	28700	27600	27700	26600	26400	25400	25300	24300	24000	23100
	0	-17.8	26500	25500	25600	24600	24500	23600	23400	22500	22300	21400	21000	20200
KEZA060H8 Compressor Model ZB45KCE	40	4.4	71700	68900	69300	66600	66700	64100	64200	61700	61500	59100	58800	56500
	35	1.7	65500	63000	63200	60800	60800	58500	58400	56200	56100	53900	53600	51500
	30	-1.1	59600	57300	57500	55300	55300	53200	53100	51100	50900	48900	48600	46700
	25	-3.9	54000	51900	52000	50000	50000	48100	48000	46200	46000	44200	43900	42200
	20	-6.7	48700	46800	46900	45100	45000	43300	43300	41600	41400	39800	39500	38000
	15	-9.4	43700	42000	42000	40400	40500	38900	38800	37300	37100	35700	35600	34200
	10	-12.2	39000	37500	37500	36100	36100	34700	34600	33300	33300	32000	31800	30600
	5	-15.0	34600	33300	33400	32100	32100	30900	30900	29700	29700	28600	28600	27500
	0	-17.8	30800	29600	29600	28500	28600	27500	27600	26500	26600	25600	25700	24700
KEZA061H8 Compressor Model ZB48KCE	40	4.4	75100	72200	72400	69600	69600	66900	66700	64100	63600	61200	60500	58200
	35	1.7	68100	65500	65600	63100	63000	60600	60400	58100	57600	55400	54800	52700
	30	-1.1	61400	59000	59200	56900	56800	54600	54400	52300	51900	49900	49300	47400
	25	-3.9	55000	52900	53000	51000	50900	48900	48700	46800	46400	44600	44000	42300
	20	-6.7	49100	47200	47200	45400	45200	43500	43300	41600	41200	39600	38900	37400
	15	-9.4	43400	41700	41700	40100	39900	38400	38100	36600	36200	34800	34100	32800
	10	-12.2	38100	36600	36500	35100	34900	33600	33200	31900	31400	30200	29500	28400
	5	-15.0	33200	31900	31700	30500	30200	29000	28600	27500	26900	25900	25200	24200
	0	-17.8	28500	27400	27100	26100	25800	24800	24200	23300	22700	21800	21100	20300
KEZA070H8 Compressor Model ZB57KCE	40	4.4	93500	89900	91000	87500	88400	85000	85700	82400	83000	79800	80100	77000
	35	1.7	85200	81900	82900	79700	80500	77400	78000	75000	75400	72500	72800	70000
	30	-1.1	77500	74500	75300	72400	73100	70300	70700	68000	68400	65800	65900	63400
	25	-3.9	70100	67400	68100	65500	66000	63500	64000	61500	61800	59400	59500	57200
	20	-6.7	63200	60800	61400	59000	59500	57200	57600	55400	55600	53500	53600	51500
	15	-9.4	56800	54600	55100	53000	53400	51300	51700	49700	49800	47900	48000	46200
	10	-12.2	50800	48800	49300	47400	47700	45900	46200	44400	44600	42900	43000	41300
	5	-15.0	45200	43500	43900	42200	42500	40900	41100	39500	39700	38200	38400	36900
	0	-17.8	40100	38600	38900	37400	37800	36300	36500	35100	35400	34000	34200	32900
KEZA076H8 Compressor Model ZB66K5E	40	4.4	109000	105000	106000	102000	103000	99300	99900	96100	96600	92900	93200	89600
	35	1.7	99600	95800	96800	93100	93900	90300	90900	87400	87800	84400	84600	81300
	30	-1.1	90500	87000	87800	84400	85100	81800	82300	79100	79500	76400	76500	73600
	25	-3.9	81800	78700	79400	76300	76900	73900	74400	71500	71700	68900	69000	66300
	20	-6.7	73800	71000	71600	68800	69300	66600	66900	64300	64500	62000	62000	59600
	15	-9.4	66400	63800	64300	61800	62200	59800	60000	57700	57700	55500	55400	53300
	10	-12.2	59400	57100	57500	55300	55500	53400	53600	51500	51500	49500	49400	47500
	5	-15.0	53000	51000	51300	49300	49500	47600	47600	45800	45700	43900	43800	42100
	0	-17.8	47200	45400	45600	43800	43900	42200	42100	40500	40400	38800	38600	37100

NOTE: Mean temperature is the average temperature between the saturated suction vapor temperature (dew point) and the temperature feeding the evaporator.
To be consistent with the evaporator selection method, Mean rating capacities are recommended.

Shaded Area Restriction: 20°F Max Superheat

CONDENSING UNITS

KEEPRITE REFRIGERATION

KEZ Condensing Units 'New Generation D'

Includes NRCAN Compliant Models

R407A Low Temperature

Model KEZA	Saturated Suction Temperature		Capacity BTU/h Refrigerant: R407A Ambient Temperature											
			85°F (29.4°C)		90°F (32.2°C)		95°F (35°C)		100°F (37.8°C)		105°F (40.6°C)		110°F (43.3°C)	
	°F	°C	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew
KEZA008L8 Compressor Model ZF03KAE	0	-17.8	4830	4600	4650	4430	4470	4260	4310	4100	4150	3950	4000	3810
	-5	-20.6	4310	4100	4150	3950	4000	3810	3850	3670	3720	3540	3590	3420
	-10	-23.3	3830	3650	3700	3520	3570	3400	3450	3290	3340	3180	3230	3080
	-15	-26.1	3410	3250	3300	3140	3190	3040	3090	2940	2990	2850	2900	2760
	-20	-28.9	3030	2890	2940	2800	2850	2710	2760	2630	2680	2550	2600	2480
	-25	-31.7	2710	2580	2630	2500	2540	2420	2470	2350	2390	2280	2330	2220
	-30	-34.4	2420	2300	2340	2230	2270	2160	2210	2100	2140	2040	2080	1980
	-35	-37.2	2160	2060	2090	1990	2030	1930	1960	1870	1900	1810	1850	1760
	-40	-40.0	1920	1830	1860	1770	1800	1710	1730	1650	1680	1600	1630	1550
KEZA010L8 Compressor Model ZF04KAE	0	-17.8	6590	6280	6350	6050	6100	5810	5850	5570	5590	5320	5320	5070
	-5	-20.6	5840	5560	5630	5360	5410	5150	5180	4930	4950	4710	4710	4490
	-10	-23.3	5160	4910	4960	4720	4770	4540	4570	4350	4370	4160	4170	3970
	-15	-26.1	4530	4310	4360	4150	4190	3990	4020	3830	3840	3660	3660	3490
	-20	-28.9	3960	3770	3810	3630	3680	3500	3530	3360	3370	3210	3210	3060
	-25	-31.7	3470	3300	3340	3180	3210	3060	3090	2940	2960	2820	2840	2700
	-30	-34.4	3030	2890	2930	2790	2820	2690	2720	2590	2610	2490	2500	2380
	-35	-37.2	2680	2550	2590	2470	2510	2390	2420	2300	2330	2220	2240	2130
	-40	-40.0	2390	2280	2330	2220	2260	2150	2180	2080	2110	2010	2030	1930
KEZA015L8 Compressor Model ZF05KAE	0	-17.8	7720	7350	7430	7080	7140	6800	6850	6520	6540	6230	6240	5940
	-5	-20.6	6860	6530	6600	6290	6340	6040	6070	5780	5810	5530	5530	5270
	-10	-23.3	6060	5770	5830	5550	5600	5330	5370	5110	5120	4880	4880	4650
	-15	-26.1	5320	5070	5120	4880	4910	4680	4710	4490	4500	4290	4290	4090
	-20	-28.9	4650	4430	4480	4270	4310	4100	4130	3930	3950	3760	3760	3580
	-25	-31.7	4060	3870	3920	3730	3760	3580	3610	3440	3450	3290	3300	3140
	-30	-34.4	3540	3370	3410	3250	3290	3130	3160	3010	3030	2890	2900	2760
	-35	-37.2	3090	2940	2990	2850	2890	2750	2780	2650	2680	2550	2570	2450
	-40	-40.0	2720	2590	2640	2510	2550	2430	2480	2360	2390	2280	2310	2200
KEZA020L8 Compressor Model ZF07KAE	0	-17.8	11200	10700	10700	10200	10200	9760	9740	9280	9220	8780	8660	8250
	-5	-20.6	10100	9620	9680	9220	9250	8810	8800	8380	8330	7930	7830	7460
	-10	-23.3	9080	8650	8730	8310	8340	7940	7940	7560	7520	7160	7080	6740
	-15	-26.1	8150	7760	7830	7460	7500	7140	7140	6800	6760	6440	6360	6060
	-20	-28.9	7280	6930	7000	6670	6710	6390	6390	6090	6060	5770	5700	5430
	-25	-31.7	6470	6160	6230	5930	5960	5680	5690	5420	5390	5130	5070	4830
	-30	-34.4	5700	5430	5490	5230	5260	5010	5010	4770	4750	4520	4450	4240
	-35	-37.2	4970	4730	4780	4550	4580	4360	4360	4150	4120	3920	3850	3670
	-40	-40.0	4250	4050	4080	3890	3910	3720	3710	3530	3490	3320	3240	3090
KEZA025L8 Compressor Model ZF08K4E	0	-17.8	14100	13400	13500	12900	13100	12500	12600	12000	12100	11500	11400	10900
	-5	-20.6	12600	12000	12200	11600	11800	11200	11300	10800	10800	10300	10300	9850
	-10	-23.3	11300	10800	10900	10400	10500	10000	10100	9660	9710	9250	9270	8830
	-15	-26.1	10100	9580	9730	9270	9390	8940	9030	8600	8650	8240	8260	7870
	-20	-28.9	8900	8480	8620	8210	8320	7920	8000	7620	7670	7300	7320	6970
	-25	-31.7	7830	7460	7580	7220	7320	6970	7050	6710	6750	6430	6450	6140
	-30	-34.4	6860	6530	6640	6320	6410	6100	6160	5870	5900	5620	5640	5370
	-35	-37.2	5960	5680	5780	5500	5570	5300	5360	5100	5130	4890	4900	4670
	-40	-40.0	5170	4920	4990	4750	4810	4580	4620	4400	4420	4210	4220	4020
KEZA030L8 Compressor Model ZF09K4E	0	-17.8	15500	14800	15000	14300	14600	13900	14100	13400	13400	12800	12800	12200
	-5	-20.6	13700	13000	13200	12600	12800	12200	12300	11700	11800	11200	11200	10700
	-10	-23.3	12000	11400	11700	11100	11200	10700	10800	10300	10300	9840	9820	9350
	-15	-26.1	10500	10000	10200	9720	9850	9380	9460	9010	9040	8610	8580	8170
	-20	-28.9	9230	8790	8940	8510	8620	8210	8280	7890	7920	7540	7500	7140
	-25	-31.7	8060	7680	7810	7440	7540	7180	7250	6900	6930	6600	6560	6250
	-30	-34.4	7010	6680	6790	6470	6570	6260	6330	6030	6060	5770	5750	5480
	-35	-37.2	6050	5760	5880	5600	5700	5430	5510	5250	5300	5050	5050	4810
	-40	-40.0	5160	4910	5030	4790	4910	4680	4780	4550	4620	4400	4430	4220
KEZA035L8 Compressor Model ZF11K4E	0	-17.8	18900	18000	18300	17400	17600	16800	16900	16100	16100	15300	15100	14400
	-5	-20.6	16600	15800	16100	15300	15500	14800	14800	14100	14100	13400	13200	12600
	-10	-23.3	14700	14000	14200	13500	13700	13000	13000	12400	12400	11800	11700	11100
	-15	-26.1	12900	12300	12400	11800	12000	11400	11400	10900	10800	10300	10200	9670
	-20	-28.9	11200	10700	10900	10400	10500	9970	10000	9530	9480	9030	8890	8470
	-25	-31.7	9850	9380	9520	9070	9170	8730	8780	8360	8330	7930	7800	7430
	-30	-34.4	8580	8170	8310	7910	8020	7640	7700	7330	7320	6970	6880	6550
	-35	-37.2	7420	7070	7210	6870	6990	6660	6740	6420	6440	6130	6080	5790
	-40	-40.0	6360	6060	6220	5920	6060	5770	5880	5600	5670	5400	5400	5140
KEZA045L8 Compressor Model ZF13K4E	0	-17.8	23000	21900	22300	21200	21500	20500	20700	19700	20000	19000	19100	18200
	-5	-20.6	20600	19600	19800	18900	19200	18300	18500	17600	17700	16900	16900	16100
	-10	-23.3	18300	17400	17600	16800	17000	16200	16300	15500	15600	14900	14900	14200
	-15	-26.1	16100	15300	15500	14800	14900	14200	14300	13600	13700	13000	13000	12400
	-20	-28.9	14200	13500	13700	13000	13000	12400	12500	11900	12000	11400	11300	10800
	-25	-31.7	12400	11800	11900	11300	11400	10900	10900	10400	10400	9910	9860	9390
	-30	-34.4	10800	10300	10400	9900	10000	9520	9580	9120	9140	8700	8670	8260
	-35	-37.2	9500	9050	9190	8750	8860	8440	8530	8120	8160	7770	7780	7410
	-40	-40.0	8520	8110	8270	7880	8040	7660	7790	7420	7520	7160	7210	6870
KEZA055L8 Compressor Model ZF15K4E	0	-17.8	28100	26800	27200	25900	26300	25000	25400	24200	24400	23200	23400	22300
	-5	-20.6	25100	23900	24400	23200	23500	22400	22600	21500	21700	20700	20800	19800
	-10	-23.3	22400	21300	21600	20600	20800	19800	20100	19100	19200	18300	18400	17500
	-15	-26.1	19700	18800	19100	18200	18400	17500	17600	16800	16900	16100	16100	15300
	-20	-28.9	17400	16600	16800	16000	16200	15400	15500	14800	14800	14100	14100	13400
	-25	-31.7	15300	14600	14800	14100	14300	13600	13700	13000	13000	12400	12300	11700
	-30	-34.4	13500	12900	13000	12400	12600	12000	12100	11500	11400	10900	10800	10300
	-35	-37.2	12100	11500	11700	11100	11200	10700	10700	10200	10200	9730	9650	9190
	-40	-40.0	10900	10400	10500	10000	10200	9670	9740	9280	9290	8850	8790	8370
KEZA060L8 Compressor Model ZF18K4E	0	-17.8	33200	31600	32100	30600	31100	29600	30000	28600	29000	27600	27800	26500
	-5	-20.6	29800	28400	28900	27500	27900	26600	26900	25600	25900	24700	24900	23700
	-10	-23.3	26600	25300	25700	24500	24900	23700	23900	22800	23000	21900	22100	21000
	-15	-26.1	23500	22400	22800	21700	22100	21000	21200	20200	20400	19400	19400	18500
	-20	-28.9	20800	19800	20200	19200	19400	18500	18700	17800	18000	17100	17100	16300
	-25	-31.7	18400	17500	17700	16900	17100	16300	16500	15700	15800	15000	15000	14300
	-30	-34.4	16200	15400	15600	14900	15100	14400	14500	13800	13900	13200	13200	12600
	-35	-37.2	14400	13700	13900	13200	13400	12800	12900	12300	12400	11800	11800	11200
	-40	-40.0	12900	12300	12500	11900	12200	11600	11700	11100	11200	10700	10700	10200

CONDENSING UNITS

KEEPRITE REFRIGERATION

KEZ Condensing Units 'New Generation D'

Includes NRCAN Compliant Models

R448A Low Temperature

Model KEZA	Saturated Suction Temperature		Capacity BTU/h Refrigerant: R448A Ambient Temperature											
			85°F (29.4°C)		90°F (32.2°C)		95°F (35°C)		100°F (37.8°C)		105°F (40.6°C)		110°F (43.3°C)	
	°F	°C	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew
	0	-17.8	5090	4850	4910	4680	4740	4510	4570	4350	4400	4190	4230	4030
	-5	-20.6	4540	4320	4390	4180	4230	4030	4080	3890	3940	3750	3800	3620
KEZA008L8	-10	-23.3	4050	3860	3920	3730	3790	3610	3650	3480	3530	3360	3410	3250
	-15	-26.1	3610	3440	3500	3330	3390	3230	3280	3120	3170	3020	3070	2920
Compressor	-20	-28.9	3220	3070	3130	2980	3030	2890	2930	2790	2850	2710	2750	2620
Model	-25	-31.7	2880	2740	2790	2660	2710	2580	2630	2500	2540	2420	2460	2340
ZF03KAE	-30	-34.4	2560	2440	2490	2370	2420	2300	2340	2230	2270	2160	2190	2090
	-35	-37.2	2280	2170	2220	2110	2140	2040	2070	1970	2000	1900	1930	1840
	-40	-40.0	2020	1920	1950	1860	1880	1790	1820	1730	1740	1660	1680	1600
	0	-17.8	6900	6570	6660	6340	6420	6110	6160	5870	5910	5630	5660	5390
	-5	-20.6	6140	5850	5920	5640	5710	5440	5490	5230	5270	5020	5040	4800
KEZA010L8	-10	-23.3	5440	5180	5250	5000	5060	4820	4870	4640	4670	4450	4470	4260
	-15	-26.1	4800	4570	4630	4410	4460	4250	4290	4090	4130	3930	3960	3770
Compressor	-20	-28.9	4210	4010	4070	3880	3930	3740	3780	3600	3630	3460	3490	3320
Model	-25	-31.7	3690	3510	3570	3400	3440	3280	3320	3160	3200	3050	3080	2930
ZF04KAE	-30	-34.4	3220	3070	3130	2980	3020	2880	2920	2780	2810	2680	2710	2580
	-35	-37.2	2840	2700	2750	2620	2670	2540	2580	2460	2490	2370	2400	2290
	-40	-40.0	2510	2390	2440	2320	2360	2250	2300	2190	2230	2120	2150	2050
	0	-17.8	8070	7690	7790	7420	7510	7150	7210	6870	6920	6590	6620	6300
	-5	-20.6	7220	6880	6970	6640	6710	6390	6450	6140	6180	5890	5910	5630
KEZA015L8	-10	-23.3	6420	6110	6200	5900	5960	5680	5730	5460	5500	5240	5260	5010
	-15	-26.1	5670	5400	5480	5220	5280	5030	5070	4830	4860	4630	4650	4430
Compressor	-20	-28.9	4990	4750	4820	4590	4640	4420	4460	4250	4280	4080	4100	3900
Model	-25	-31.7	4370	4160	4220	4020	4070	3880	3920	3730	3760	3580	3600	3430
ZF05KAE	-30	-34.4	3810	3630	3690	3510	3560	3390	3420	3260	3290	3130	3150	3000
	-35	-37.2	3330	3170	3210	3060	3110	2960	2990	2850	2880	2740	2760	2630
	-40	-40.0	2910	2770	2810	2680	2720	2590	2630	2500	2530	2410	2440	2320
	0	-17.8	11600	11000	11100	10600	10600	10100	10200	9700	9720	9260	9260	8820
	-5	-20.6	10400	9880	9990	9510	9600	9140	9190	8750	8780	8360	8370	7970
KEZA020L8	-10	-23.3	9330	8890	8990	8560	8640	8230	8280	7890	7930	7550	7570	7210
	-15	-26.1	8380	7980	8090	7700	7780	7410	7480	7120	7160	6820	6840	6510
Compressor	-20	-28.9	7510	7150	7250	6900	6980	6650	6720	6400	6450	6140	6170	5880
Model	-25	-31.7	6700	6380	6480	6170	6250	5950	6020	5730	5790	5510	5550	5290
ZF07KAE	-30	-34.4	5940	5660	5740	5470	5550	5290	5360	5100	5160	4910	4960	4720
	-35	-37.2	5210	4960	5040	4800	4880	4650	4700	4480	4540	4320	4360	4150
	-40	-40.0	4490	4280	4350	4140	4200	4000	4050	3860	3910	3720	3750	3570
	0	-17.8	14800	14100	14400	13700	14000	13300	13400	12800	12900	12300	12400	11800
	-5	-20.6	13300	12700	12900	12300	12500	11900	12100	11500	11700	11100	11200	10700
KEZA025L8	-10	-23.3	12000	11400	11600	11000	11200	10700	10800	10300	10500	9970	10100	9580
	-15	-26.1	10600	10100	10300	9850	10000	9550	9690	9230	9360	8910	9000	8570
Compressor	-20	-28.9	9460	9010	9190	8750	8900	8480	8620	8210	8320	7920	8010	7630
Model	-25	-31.7	8360	7960	8130	7740	7880	7500	7620	7260	7360	7010	7100	6760
ZF08K4E	-30	-34.4	7360	7010	7150	6810	6930	6600	6710	6390	6480	6170	6250	5950
	-35	-37.2	6460	6150	6270	5970	6070	5780	5870	5590	5670	5400	5460	5200
	-40	-40.0	5640	5370	5460	5200	5280	5030	5100	4860	4920	4690	4740	4510
	0	-17.8	15800	15000	15200	14500	14800	14100	14400	13700	13900	13200	13300	12700
	-5	-20.6	14200	13500	13900	13200	13400	12800	13000	12400	12600	12000	12200	11600
KEZA030L8	-10	-23.3	12800	12200	12500	11900	12200	11600	11900	11300	11400	10900	11000	10500
	-15	-26.1	11600	11000	11200	10700	11000	10500	10700	10200	10300	9840	9950	9480
Compressor	-20	-28.9	10300	9840	10100	9620	9860	9390	9590	9130	9280	8840	8940	8510
Model	-25	-31.7	9200	8760	9010	8580	8790	8370	8550	8140	8260	7870	7950	7570
ZF09K4E	-30	-34.4	8140	7750	7960	7580	7770	7400	7550	7190	7290	6940	6990	6660
	-35	-37.2	7120	6780	6960	6630	6780	6460	6570	6260	6330	6030	6040	5750
	-40	-40.0	6140	5850	6000	5710	5820	5540	5620	5350	5380	5120	5090	4850
	0	-17.8	19300	18400	18600	17700	18000	17100	17200	16400	16500	15700	15800	15000
	-5	-20.6	17400	16600	16800	16000	16300	15500	15600	14900	14900	14200	14300	13600
KEZA035L8	-10	-23.3	15600	14900	15100	14400	14600	13900	14100	13400	13400	12800	12900	12300
	-15	-26.1	14100	13400	13500	12900	13100	12500	12600	12000	12200	11600	11700	11100
Compressor	-20	-28.9	12500	11900	12200	11600	11800	11200	11300	10800	10900	10400	10400	9920
Model	-25	-31.7	11100	10600	10800	10300	10500	9970	10100	9620	9710	9250	9310	8870
ZF11K4E	-30	-34.4	9900	9430	9610	9150	9300	8860	8980	8550	8650	8240	8300	7900
	-35	-37.2	8770	8350	8510	8100	8240	7850	7960	7580	7680	7310	7370	7020
	-40	-40.0	7740	7370	7520	7160	7280	6930	7040	6700	6780	6460	6520	6210

NOTE: Mean temperature is the average temperature between the saturated suction vapor temperature (dew point) and the temperature feeding the evaporator.
To be consistent with the evaporator selection method, Mean rating capacities are recommended.

- For R449A, use R448A data.

CONDENSING UNITS

KEEPRITE REFRIGERATION

KEZ Condensing Units 'New Generation D'

Includes NRCAN Compliant Models

R448A Low Temperature *(cont'd)*

Model KEZA	Saturated Suction Temperature		Capacity BTU/h Refrigerant: R448A Ambient Temperature											
			85°F (29.4°C)		90°F (32.2°C)		95°F (35°C)		100°F (37.8°C)		105°F (40.6°C)		110°F (43.3°C)	
	°F	°C	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew	Mean	Dew
KEZA045L8 Compressor Model ZF13K4E	0	-17.8	24600	23400	23700	22600	22700	21600	21700	20700	20700	19700	19600	18700
	-5	-20.6	22100	21000	21200	20200	20400	19400	19400	18500	18500	17600	17500	16700
	-10	-23.3	19600	18700	18900	18000	18200	17300	17300	16500	16500	15700	15600	14900
	-15	-26.1	17400	16600	16800	16000	16100	15300	15400	14700	14700	14000	14000	13300
	-20	-28.9	15300	14600	14800	14100	14200	13500	13700	13000	13000	12400	12500	11900
	-25	-31.7	13400	12800	12900	12300	12500	11900	12000	11400	11600	11000	11100	10600
	-30	-34.4	11800	11200	11300	10800	10900	10400	10600	10100	10300	9780	9940	9470
	-35	-37.2	10200	9710	9900	9430	9630	9170	9390	8940	9180	8740	8990	8560
	-40	-40.0	8850	8430	8650	8240	8490	8090	8370	7970	8280	7890	8240	7850
KEZA055L8 Compressor Model ZF15K4E	0	-17.8	30000	28600	28900	27500	27700	26400	26500	25200	25200	24000	23900	22800
	-5	-20.6	27000	25700	25900	24700	24900	23700	23800	22700	22800	21700	21600	20600
	-10	-23.3	24000	22900	23200	22100	22300	21200	21400	20400	20400	19400	19400	18500
	-15	-26.1	21400	20400	20700	19700	19800	18900	19100	18200	18300	17400	17400	16600
	-20	-28.9	19000	18100	18400	17500	17600	16800	17000	16200	16300	15500	15500	14800
	-25	-31.7	16800	16000	16200	15400	15600	14900	15100	14400	14500	13800	14000	13300
	-30	-34.4	14700	14000	14300	13600	13900	13200	13300	12700	12900	12300	12500	11900
	-35	-37.2	12900	12300	12600	12000	12200	11600	11900	11300	11600	11000	11200	10700
	-40	-40.0	11300	10800	11000	10500	10800	10300	10500	10000	10300	9810	10100	9620
KEZA060L8 Compressor Model ZF18K4E	0	-17.8	35200	33500	33800	32200	32400	30900	31100	29600	29700	28300	28200	26900
	-5	-20.6	31700	30200	30600	29100	29400	28000	28100	26800	26900	25600	25600	24400
	-10	-23.3	28500	27100	27400	26100	26500	25200	25400	24200	24300	23100	23200	22100
	-15	-26.1	25400	24200	24600	23400	23700	22600	22800	21700	21800	20800	21000	20000
	-20	-28.9	22600	21500	21800	20800	21100	20100	20400	19400	19600	18700	18900	18000
	-25	-31.7	20000	19000	19400	18500	18800	17900	18200	17300	17600	16800	17000	16200
	-30	-34.4	17600	16800	17100	16300	16700	15900	16200	15400	15800	15000	15300	14600
	-35	-37.2	15400	14700	15100	14400	14700	14000	14400	13700	14100	13400	13900	13200
	-40	-40.0	13400	12800	13200	12600	13000	12400	12800	12200	12600	12000	12500	11900
KEZA075L8 Compressor Model ZF25K4E	0	-17.8	44100	42000	42600	40600	41100	39100	39400	37500	37800	36000	36100	34400
	-5	-20.6	39600	37700	38200	36400	36800	35000	35400	33700	33900	32300	32600	31000
	-10	-23.3	35300	33600	34000	32400	32900	31300	31600	30100	30300	28900	29200	27800
	-15	-26.1	31400	29900	30200	28800	29200	27800	28200	26900	27200	25900	26100	24900
	-20	-28.9	27700	26400	26900	25600	25900	24700	25100	23900	24300	23100	23500	22400
	-25	-31.7	24500	23300	23700	22600	23000	21900	22400	21300	21700	20700	21200	20200
	-30	-34.4	21500	20500	20900	19900	20400	19400	20000	19000	19500	18600	19200	18300
	-35	-37.2	18900	18000	18500	17600	18100	17200	17900	17000	17600	16800	17500	16700
	-40	-40.0	16600	15800	16400	15600	16200	15400	16100	15300	16100	15300	16200	15400
KEZA085L8 Compressor Model ZF28K4E	0	-17.8	50600	48200	48700	46400	46800	44600	44900	42800	43100	41000	41200	39200
	-5	-20.6	45500	43300	43800	41700	42100	40100	40500	38600	38900	37000	37200	35400
	-10	-23.3	40600	38700	39200	37300	37700	35900	36300	34600	34900	33200	33500	31900
	-15	-26.1	36100	34400	35000	33300	33700	32100	32400	30900	31300	29800	30100	28700
	-20	-28.9	32000	30500	31000	29500	29900	28500	29000	27600	28000	26700	27100	25800
	-25	-31.7	28200	26900	27400	26100	26600	25300	25800	24600	25200	24000	24600	23400
	-30	-34.4	24900	23700	24300	23100	23600	22500	23100	22000	22700	21600	22400	21300
	-35	-37.2	21900	20900	21400	20400	21100	20100	20800	19800	20600	19600	20500	19500
	-40	-40.0	19300	18400	19100	18200	18900	18000	18900	18000	18900	18000	19100	18200
KEZA100L8 Compressor Model ZF34K5E	0	-17.8	55200	52600	53300	50800	51300	48900	49400	47000	47100	44900	44900	42800
	-5	-20.6	49900	47500	48200	45900	46400	44200	44500	42400	42600	40600	40600	38700
	-10	-23.3	44800	42700	43400	41300	41800	39800	40100	38200	38400	36600	36600	34900
	-15	-26.1	40100	38200	38700	36900	37400	35600	35900	34200	34400	32800	32900	31300
	-20	-28.9	35600	33900	34400	32800	33300	31700	32000	30500	30800	29300	29400	28000
	-25	-31.7	31500	30000	30500	29000	29400	28000	28400	27000	27300	26000	26100	24900
	-30	-34.4	27600	26300	26700	25400	25800	24600	25000	23800	24000	22900	23200	22100
	-35	-37.2	23900	22800	23200	22100	22500	21400	21700	20700	21000	20000	20400	19400
	-40	-40.0	20500	19500	19800	18900	19300	18400	18800	17900	18300	17400	17700	16900
KEZA130L8 Compressor Model ZF41K5E	0	-17.8	71300	67900	69100	65800	66900	63700	64500	61400	62100	59100	59500	56700
	-5	-20.6	64400	61300	62400	59400	60400	57500	58300	55500	56100	53400	53900	51300
	-10	-23.3	57900	55100	56200	53500	54300	51700	52500	50000	50500	48100	48500	46200
	-15	-26.1	51800	49300	50200	47800	48600	46300	47000	44800	45300	43100	43600	41500
	-20	-28.9	46100	43900	44700	42600	43400	41300	41900	39900	40400	38500	38900	37000
	-25	-31.7	40700	38800	39600	37700	38300	36500	37100	35300	35800	34100	34500	32900
	-30	-34.4	35700	34000	34800	33100	33700	32100	32700	31100	31600	30100	30500	29000
	-35	-37.2	31100	29600	30200	28800	29300	27900	28500	27100	27600	26300	26700	25400
	-40	-40.0	26800	25500	26000	24800	25300	24100	24600	23400	23800	22700	23100	22000

NOTE: Mean temperature is the average temperature between the saturated suction vapor temperature (dew point) and the temperature feeding the evaporator.
To be consistent with the evaporator selection method, Mean rating capacities are recommended.

- For R449A, use R448A data.

CONDENSING UNITS

KEEPRITE REFRIGERATION

AWEF RATINGS

KEZ - SCROLL CONDENSING UNITS

Annual Walk-In Energy Factor Ratings - High/Medium Temperature

If a numerical value is listed in the table below, the following statement applies to that corresponding model: " This refrigeration system is designed and certified for use in walk-in cooler applications."

Base Unit Model KEZA	Outdoor Models				Indoor Models			
	R404A R507	R407A	R448A	R407C	R404A R507	R407A	R448A	R407C
KEZA007H8	7.6	–	7.6	–	–	–	–	–
KEZA008H8	7.6	7.6	7.6	–	–	–	–	–
KEZA009H8	7.6	7.6	7.6	7.6	–	–	–	–
KEZA010H8	7.6	7.6	7.6	–	–	–	–	–
KEZA011H8	7.6	7.6	7.6	–	–	5.61	5.61	5.61
KEZA015H8	7.6	7.6	7.6	7.6	–	5.61	–	–
KEZA020H8	7.6	7.6	7.6	7.6	–	–	–	–
KEZA025H8	7.6	7.6	7.6	7.6	5.61	5.61	5.61	5.61
KEZA030H8	7.6	7.6	7.6	7.6	5.61	5.61	5.61	5.61
KEZA035H8	7.6	7.6	7.6	7.6	5.61	5.61	5.61	5.61
KEZA040H8	7.6	7.6	7.6	7.6	5.61	5.61	5.61	5.61
KEZA045H8	7.6	7.6	7.6	7.6	5.61	5.61	5.61	5.61
KEZA050H8	7.6	7.6	7.6	7.6	–	5.61	5.61	5.61
KEZA060H8	7.6	7.6	7.6	7.6	5.61	5.61	5.61	5.61
KEZA061H8	7.6	7.6	7.6	7.6	5.61	5.61	5.61	5.61
KEZA070H8	7.6	7.6	7.6	7.6	5.61	5.61	5.61	5.61
KEZA076H8	7.6	7.6	7.6	7.6	5.61	5.61	5.61	5.61
KEZA085H8	7.6	7.6	7.6	7.6	–	5.61	5.61	5.61
KEZA110H8	7.6	7.6	7.6	7.6	5.61	5.61	5.61	5.61
KEZA150H8	7.6	7.6	7.6	7.6	–	–	5.61	5.61

Annual Walk-In Energy Factor Ratings - Low Temperature

If a numerical value is listed in the table below, the following statement applies to that corresponding model: " This refrigeration system is designed and certified for use in walk-in freezer applications."

Base Unit Model KEZA	Outdoor Models				Indoor Models			
	R404A R507	R407A	R448A	R407C	R404A R507	R407A	R448A	R407C
KEZA008L8	2.88	2.87	2.88	–	–	–	–	–
KEZA010L8	2.93	2.91	2.92	–	–	–	–	–
KEZA015L8	2.97	2.94	2.96	–	–	–	–	–
KEZA020L8	3.08	3.06	3.07	–	–	–	–	–
KEZA025L8	3.15	3.15	3.15	–	–	–	–	–
KEZA030L8	3.15	3.15	3.15	–	–	–	–	–
KEZA035L8	3.15	3.15	3.15	–	–	–	–	–
KEZA045L8	3.15	3.15	3.15	–	2.4	–	–	–
KEZA055L8	3.15	3.15	3.15	–	2.4	–	–	–
KEZA060L8	3.15	3.15	3.15	–	2.4	–	–	–
KEZA075L8	3.15	3.15	3.15	–	2.4	–	–	–
KEZA085L8	3.15	3.15	3.15	–	2.4	–	–	–
KEZA100L8	3.15	3.15	3.15	–	2.4	–	2.4	–
KEZA130L8	3.15	3.15	3.15	–	2.4	–	2.4	–
KEZA150L8	3.15	3.15	3.15	–	2.4	–	2.4	–
KEZA170L8	3.15	3.15	3.15	–	2.4	–	2.4	–

– = Non-compliant model For R449A, use R448A data.

CONDENSERS

KEEPRITE REFRIGERATION

KCS SERIES AIR COOLED CONDENSERS

HORIZONTAL / VERTICAL AIR

- Refrigeration or Air Conditioning Duty
- Indoor or outdoor application
- 2 tons to 24 tons THR at 25 °F TD

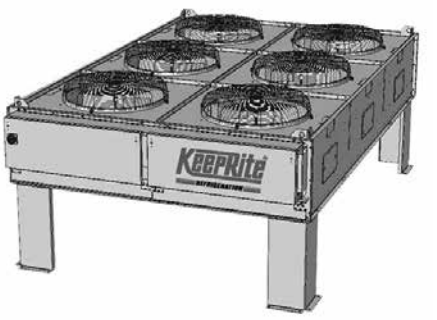




KCM SERIES AIR COOLED CONDENSERS

HORIZONTAL / VERTICAL AIR

- Refrigeration or Air Conditioning Duty
- Indoor or outdoor application
- 9 tons to 49 tons THR at 25 °F TD



KCL SERIES AIR COOLED CONDENSERS

VERTICAL AIR

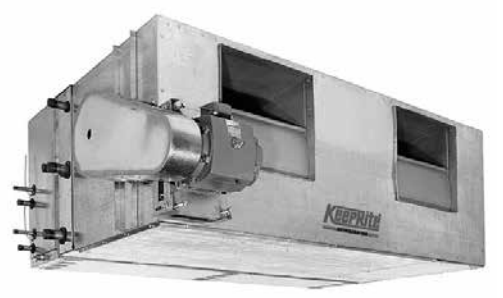
- Refrigeration or Air Conditioning Duty
- 7 to 270 Tons (R404A, 25ºF TD, 60 Hz)
- 1 to 14 Fan Models
- Single width and double width models available
- 550, 850, or 1140 RPM or EC motors



KCC SERIES CENTRIFUGAL FAN AIR COOLED CONDENSER

Ideal for conditions requiring flexible CFM and varied static pressures

- From 4 to 90 nominal tons THR
- Built to suit a wide range of applications by varying coil depth, fin spacing and air flow through the unit.
- Wide range of arrangements are available to meet installation requirements



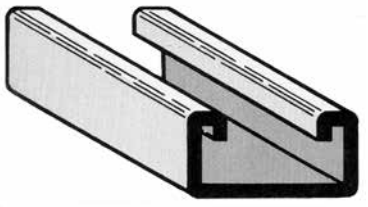
For More Product Details, Specification And Pricing, Please Contact Your Local Branch.

SUSPENSION SYSTEMS

Channel

Channel Type	Channel Dimensions		Material & Thickness	LIST
	Height	Width	Steel	
P1000T/ E1000T	1-5/8" (41.3)	1-5/8" (41.3)	12 Ga. Slotted	51.70
P1000 / E1000	1-5/8" (41.3)	1-5/8" (41.3)	12 Ga.	51.70
P3300 / E3300	13/16" (20.6)	1-5/8" (41.3)	12 Ga.	44.40
P3300T / E3300T	13/16" (20.6)	1-5/8" (41.3)	12 Ga. Slotted	44.40

Also available in alum and stainless steel



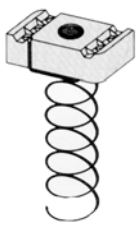
Channel Nuts

Part #	Description	LIST
FN-224	cone nut 1/4" - 20	3.30
P1008	spring nut 3/8" - 16	2.80
3/8-CONE-NUT	3/8" cone nut for connecting (3/8" - 16) rod to channel	8.20
P1010	spring nut 1/2" - 13	2.80
TN-225	1/2" cone nut for connecting (1/2" - 13) rod to channel	7.60
PS3500 (See Seismic)	rod stiffeners for channel	9.70
K1063	3/8" Kwik nut/washer	5.30

PS3500



K1063



SPRING NUT

Cush - A - Clamps

Part #	Copper & Steel Tubing OD Size	Tubing Size Nominal ID	LIST
HT04	1/4"	1/8"	5.00
HT06	3/8"	1/4"	5.00
HT08	1/2"	3/8"	5.00
HT10	5/8"	1/2"	5.10
HT12	3/4"	5/8"	5.60
HT14	7/8"	3/4"	6.20
HT18	1-1/8"	1"	7.30
HT22	1-3/8"	1-1/4"	8.40
HT26	1-5/8"	1-1/2"	9.60
HT34	2-1/8"	2"	17.70
HT42	2-5/8"	2-1/2"	20.00
HT50	3-1/8"	3"	28.20
HT58	3-5/8"	3-1/2"	36.50
HT66	4-1/8"	4"	50.80



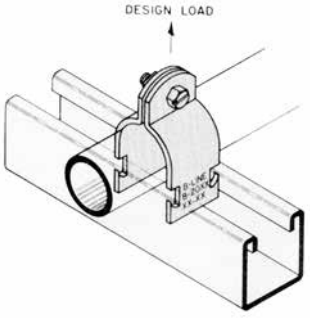
* Temperature rating up to 340°F

Standard Finish: Yellow Zinc Chromate / Includes cushion, clamp, screw and nut Electrogalvanized, also available in stainless steel

- Endures both high (+300°F) and low (-40°F) temperatures
- Dampens vibration and noise
- Eliminates galvanic metal to metal contact
- Resists most industrial oils and solvents
- Reduces thermal loss and gain
- Secures tubing firmly to the channel (strut)

Pipe Clamp

Part #	OD Size	LIST	Part #	OD Size	LIST	Part #	OD Size	LIST
P2024	1/4"	3.60	P2035	1-5/8"	4.80	P2055	4-1/8"	20.30
P2025	3/8"	4.10	P2037	1-7/8"	6.70	P2059	4-5/8"	24.10
P2026	1/2"	4.10	P2038	2"	7.40	P1115	1-1/2" IPS	6.00
P2027	5/8"	4.10	P2039	2-1/8"	8.40	P1117	2" IPS	6.90
P2028	3/4"	4.10	P2040	2-1/4"	8.80	P1118	2-1/2" IPS	7.50
P2029	7/8"	4.30	P2043	2-5/8"	9.20	P1119	3" IPS	10.50
P2030	1"	4.50	P2044	2-3/4"	10.00	P1120	3-1/2" IPS	18.70
P2031	1-1/8"	4.80	P2047	3-1/8"	10.40	P1121	4" IPS	14.00
P2032	1-1/4"	4.80	P2048	3-1/4"	11.30	P1123	5" IPS	20.40
P2033	1-3/8"	4.80	P2051	3-5/8"	19.40	P1124	6" IPS	23.00
P2034	1-1/2"	4.80						

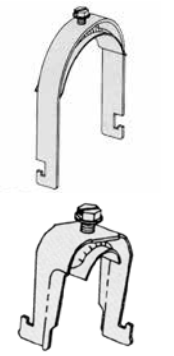


SUSPENSION SYSTEMS

MU Pipe Clamps (One piece)

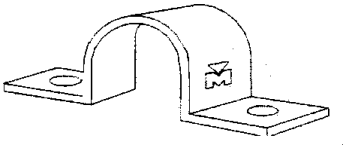
Part #	OD TUBING (COPPER/ STEEL)	NOM. PIPE (IP/RIGID CONDUIT)	LIST
MU025	3/8"	1/4"	3.20
MU037	1/2"	3/8"	3.50
MU050	5/8 & 3/4	1/2"	3.80
MU075	7/8"	3/4"	5.30
MU100	1-1/8"	1"	6.00
MU125	1-3/8"	1-1/4"	6.30

Part #	OD TUBING (COPPER/ STEEL)	NOM. PIPE (IP/RIGID CONDUIT)	LIST
MU150	1-5/8"	1-1/2"	7.70
MU200	2-1/8"	2"	10.10
MU250	2-5/8"	2-1/2"	13.60
MU300	3-1/8"	3"	16.40
MU350	3-5/8"	3-1/2"	19.60
MU400	4-1/8"	4"	19.50



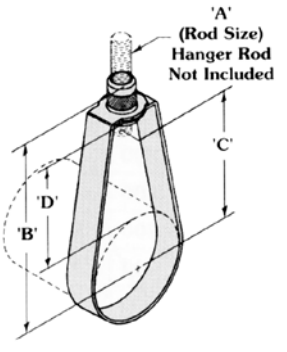
Copper Tube Strap - 2-Hole

Part #	Size	LIST
A1203	1/4"	0.70
A1278	3/8"	0.70
A1366	1/2"	0.70
A2529	5/8"	0.80
A1467	3/4"	0.70
A2574	7/8"	1.30
A2614	1-1/8"	1.40
A2650	1-3/8"	1.50
A2675	1-5/8"	1.90
A2708	2-1/8"	2.10



Adjustable Swivel Pipe Hangers (Galvinized or Coated Copper)

Part # (S*)	Part # (C*)	Nominal Tubing Size	Rod Size "A"	LIST(S*)	LIST(C*)
41-1/2	42-1/2	1/2"	3/8" - 16	1.60	
41-3/4	42-3/4	3/4"	3/8" - 16	1.60	3.30
41-1	42-1	1"	3/8" - 16	1.60	3.80
41-1-1/2	42-1-1/2	1-1/2"	3/8" - 16	2.00	4.10
	42-1-1/4	1-1/4"	3/8" - 16		3.80
41-2	42-2	2"	3/8" - 16	2.00	6.00
41-2-1/2	42-2-1/2	2-1/2"	3/8" - 13	3.80	8.20
41-3	42-3	3"	3/8" - 13	4.10	10.40
41-4	42-4	4"	3/8" - 13	4.90	11.60
41-5		5"	3/8" - 13	11.60	
41-6		6"	3/8" - 13	14.50	
S*= Standard C*= Coated					



All Round Suspension Strap

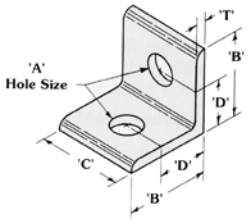
Part #	Material	Size & Gauge	Feet per coil	LIST
3/4-25-GALV	Galv.	3/4 24 GA	25	8.90
1/2-25	Copper	1/2 22 GA	25	41.30
3/4-25	Copper	3/4 24 GA	25	51.00
1/2-25-GALV	Galv.	1/2 22 GA	25	10.40



SUSPENSION SYSTEMS

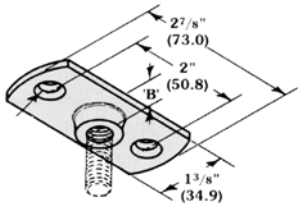
Side Beam Angle Bracket

Part #	Rod Size "A"	Rod Size "B"	Rod Size "C"	LIST
P1026	7/16"	2-3/16"	2"	5.10



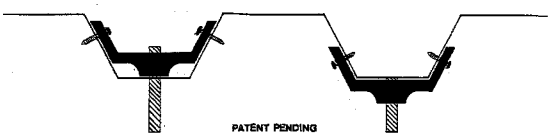
Ceiling Flange

Part #	Thread Size "A" Rod	LIST
28R-3/8(B3199R-3/8)	3/8" - 16	4.10
28R-1/2(B3199R-1/2)		5.50



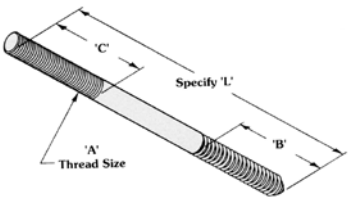
Q Deck Hanger

Part #	Description	LIST
QD-1/4	Q Deck Hanger	7.70
QD-3/8	Q Deck Hanger	5.30



Coach Screw Rod

Part #	Thread Size "A"	Standard Rod Lengths	LIST
B3213 - 3/8- 3	3/8	3-1/2	2.30
B3213 - 3/8 - 8	3/8	8	3.50
B3213 - 3/8 -12	3/8	12	5.60



Maleable Iron C-Clamp

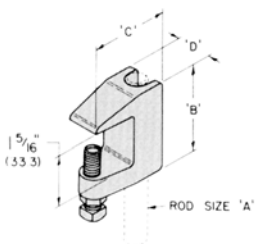
Part # (with locknut)		Rod Size "A"	Rod Size "B"	Rod Size "C"	LIST
301-3/8	B3036L-3/8	3/8" - 16	1-3/4"	1-3/4"	6.80
301-1/2	B3036L-1/2	1/2" - 3	1-3/4"	1-3/4"	

Wide Mouth Top Beam C-Clamp

Part #	Rod Size "A"	Rod Size "B"	Rod Size "C"	LIST
407-3/8	3/8" - 16	2-1/8"	1-15/16"	7.00

Top Beam C-Clamp

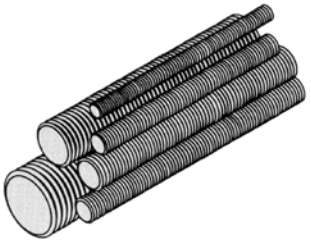
Part #	Rod Size "A"	Rod Size "B"	Rod Size "C"	LIST
406-3/8	3/8" - 16	1-7/16"	1-3/4"	3.70



Setscrew and Locknut included.

FASTENERS

All Threaded Rod

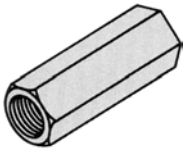


Part #	Threads Per Inch	LIST
1/4 - 3FT - PLTD	20	2.10
1/4 - 10FT - PLTD	20	7.20
3/8 - 3FT - PLTD	16	3.40
3/8 - 10FT - PLTD	16	10.00
1/2 - 10FT - PLTD	13	23.80
5/8 - 10FT - PLTD	11	36.90

Rod Coupling

Part #	Alt #	LIST
141-914	CN-1/4	0.30/EA
141-918	CN-3/8	1.10/EA
141-922	CN-1/2	1.80/EA

*25/PACK





Nuts

Part #	Description	LIST
083-014	ZINC HEX NUT 1/4 - 100PK	4.80
087-016	ZINC HEX NUT 5/16" - 100/PK	7.70
087-018	ZINC HEX NUT 3/8" - 100/PK	11.30
083-022	ZINC HEX NUT 1/2 50/PK	11.20
087-024	ZINC HEX NUT 5/8 - 25/PK	12.50







Washers

Part #	Description	LIST
148-014	PAULIN FLAT WASHER 1/4 - 100PK	5.50
148-016	FLAT WASHER - 5/16 - 100/PK	10.00
148-018	FLAT WASHER - 3/8" - 100/PK	12.60
148-022	PAULIN FLAT WASHER 1/2 - 100PK	18.00
157-014	PAULIN LOCKWASHER 1/4 - 100PK	1.90
157-016	PAULIN LOCKWASHER 5/16 - 100PK	2.90
157-018	LOCKWASHER 3/8" - 100/PK	4.30
162-393	PAULIN FENDER WASHER 3/16 X 1 - 100PK	5.40
162-395	FENDER WASHER 1/4X1-1/4 100/PK	10.80
162-397	LILY FENDERWASHER 5/16 X 1-1/4	10.20
162-398	PAULIN FENDERWASHER 3/8 X 1-1/2 100PK	15.00
162-400	FENDER WASHER 1/2X2 100/PK	27.10
WASHER KITS		
39516	HEX NUT KIT	50.20
020-047	PAULIN LOCK-WASHER KIT	46.60
020-057	PAULIN FENDER WASHER KIT	42.90



Lag Bolts

Part #	Description	LIST
135-316	ZINC LAG BOLT 1/4 X 2	0.30
135-451	ZINC LAG BOLT 5/16 X 2	0.30
135-453	ZINC LAG BOLT 5/16 X 2-1/2	0.40
135-455	ZINC LAG BOLT 5/16 X 3	0.50
135-459	ZINC LAG BOLT 5/16 X 4	0.60
135-500	ZINC LAG BOLT 3/8 X 3	0.70









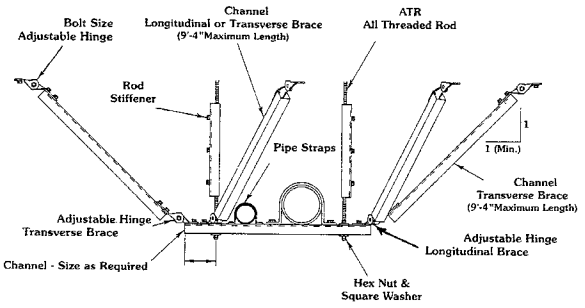
Also available in various sizes but not listed:

- machine screws
- capscrews
- lock nuts
- lock washers
- nyloc nuts
- coach screws
- lag bolts
- concrete inserts
- unistrut accesories
- wall anchors

Find these in plastic, zinc or stainless steel depending on availability and application.

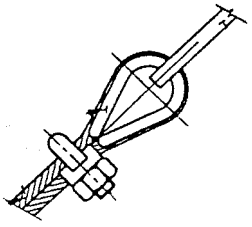
SUSPENSION SYSTEMS

Seismic Restraints



Seismic Kit

Part #	Description	LIST
1/8-SEISMIC-KIT	400 lb load limit seismic kit c/w 4-10 ft. cables with 1 completed end, 4 brackets & buckles	92.40
3/16-SEISMIC-KIT		137.80



Adjustable Seismic Hinge

Part #	Hole Diameter H	LIST
P1843	9/16"	

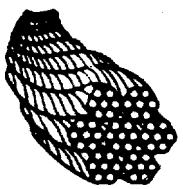
Seismic Angle Bracket

Part #	A	LIST
P1546	45°	5.70
PS3500	Rod Stiffener 3/8 - 5/8 rod	9.70

WIRE ROPE & ACCESSORIES

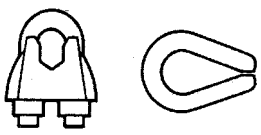
High Strength Cable with Zinc Finish

Part #	Size (in.)	Type Const.	Working Load Limit (lb)	LIST
7000427	1/8	7 x 7	340	0.40 /ft
7000627	3/16	7 x 19	840	0.70 /ft



Wire Rope Clips & Thimbles (malleable iron, zinc plated)

Part #	Size (in.)	Description	LIST
B7670419	1/8	wire rope clips	0.70
B7670429	3/16	wire rope clips	0.90
B7670439	1/4	wire rope clips	1.50
B7670609	1/8	wire rope thimbles	0.60
B7670619	3/16	wire rope thimbles	0.70
B7670629	1/4	wire rope thimbles	0.70

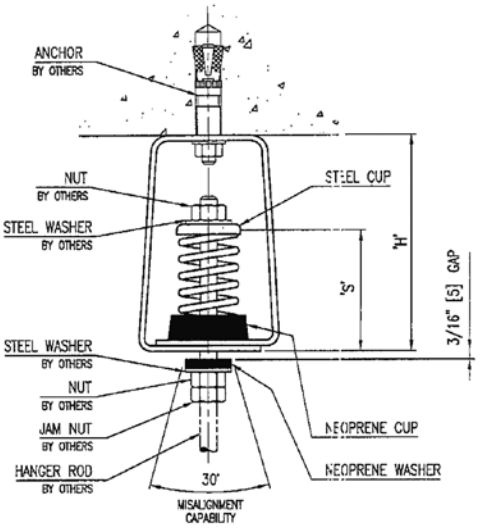


Wire Rope & Cable Cutter

Part #	Description	LIST
95-61-190-SBA	• Blades prevent wire rope from fanning out, and allows for burr free cutting • Cuts medium hard wire cables up to 6mm in diameter	189.50



Spring Isolators - Ceiling Mount



Hanger Type	A		S		H	
	in	mm	in	mm	in	mm
SHA	2.63	67	3.50	89	5.25	133
SHB	4.75	120	5.00	1.27	7.00	178

Part #	Max Load		Max Defection		Spring Constant		Spring Color	LIST
	lb	kg	in	mm	lb/in	kg/mm		
SHA-25	25	11	1.2	30	21	0.4	Black	47.00
SHA-50	50	23	1.3	33	38	0.7	Beige	47.00
SHA-100	100	45	1.3	33	77	1.4	Red	47.00
SHA-250	250	113	1.3	33	192	3.4	White	47.00
SHB-200	440	200	1.0	25	440	8.0	White	87.40

ANCHORS

Drop-In Anchors



Part #	Size	LIST
227-200	1/4	0.80
227-202	3/8	0.90
227-204	1/2	1.80

Setting Tool (for drop-in anchor)



Part #	Size	LIST
227-210	1/4	4.90
227-212	3/8	7.70

Lag Screw Shields



Part #	Size	LIST
135-808	3/8 Short	1.10
135-810	3/8 Long	1.50

Lead Shields



Part #	Size	LIST
135-830	6/8 x 3/4	
135-832	6/8 x 1	0.30/EA
135-838	10-12-14 x 1	0.40/EA

*100/Pack

Wedge Anchors



Part #	Size	LIST
227-150	3/8 x 2-3/4	1.10
227-152	3/8 x 3	1.20
227-154	3/8 x 3-3/4	1.30

Hangermate Anchors



Part #	Size	LIST
59616E	3/8" for metal	
59617E	3/8 concrete/wood	

Sleeve Anchors



Part #	Size	LIST
227-180	Hex nut 3/8 x 1-7/8	1.30
227-182	3/8 x 3	1.70

Concrete Inserts & Anchors



Part #	Description	LIST
537-346	PLASTIC ANCHOR - 450PK	45.10
537-355	E-Z WALL ANCHOR 8-10 - 350PK	43.30
537-356	E-Z ANCHOR(NYLON) 150/PACK	36.90
537-357	E-Z ANCHOR(ZINC) 150/PACK	55.60

Plastic Anchors



Part #	Size	Box Qty	LIST
227-046	6-8	100	1.60
227-050	10-12	100	2.20
227-054	14-16	50	2.70

Hollow Wall Anchors



Part #	Size	Wall Thickness	LIST
227-122	1/8S	1/8-1/2	22.30
227-132E	1/4S	1/8-5/8	46.10

COPPER TUBING

ACR Copper Tubing (12 and 20 ft. lengths)

ACR copper tubing - hard temper - is ideal for refrigeration and air conditioning installations. It is cleaned, dried and sealed with pressure tight plugs, each length mates perfectly with wrot copper or cast brass fittings for easy-to-make, trouble free solder joints.

Size O.D.	Wall	RATED INTERNAL WORKING PRESSURE (PSIG)	
		200°F	400°F
1/4-ACR			
3/8-ACR	.030	729	456
1/2-ACR	.035	623	389
5/8-ACR	.040	577	361
3/4-ACR	.042	505	316
7/8-ACR	.045	466	291
1-1/8-ACR	.050	395	247
1-3/8-ACR	.055	351	219
1-5/8-ACR	.060	327	204
2-1/8-ACR	.070	291	182
2-5/8-ACR	.080	269	168
3-1/8-ACR	.090	254	159
3-5/8-ACR	.100	243	152
4-1/8-ACR	.110	235	147



Seamless Soft Copper Tubing (50 ft. coils)

Our dehydrated and sealed copper tubing is of excellent quality and of a consistent dead soft temper. Each coil is bright and thoroughly dried, packaged in individual cartons and clearly labelled as to length, size, etc.
You may be sure that this tubing contains no moisture or particles of foreign matter that may cause trouble or inconvenience in a refrigerating system. All dehydrated seamless soft copper tubing is furnished in coils of 50 ft. lengths plus sealed ends. Tubing is available in OD sizes of 1/8" to 1-5/8", including some 16th inch sizes.

Size		Rated Internal Working Pressure (PSIG)		50 FT.	
O.D.	Wall	250°F	400°F	Coil Dia.	Wt/Coil
1/8-SD	.030	2459	1537	10-3/4	1.74
3/16-SD	.030	1548	968	11-3/4	2.88
1/4-SD	.030	1125	703	13-1/2	4.02
5/16-SD	.032	957	598	15-1/2	5.45
3/8-SD	.032	787	492	17	6.70
1/2-SD	.032	581	363	19-7/8	9.10
5/8-SD	.035	494	309	21-1/4	12.55
3/4-SD	.035	409	256	23-1/4	15.25
7/8-SD	.045	466	291	26-1/4	22.75
1-1/8-SD	.050	395	247	34-1/4	32.75
1-3/8-SD	.055	351	219	45	44.20
1-5/8-SD	.060	327	204	45	57.00



Copper Capillary Tubing

This capillary tubing, used to meter refrigerant flow, is of soft temper. Many manufacturers recommend specific lengths and diameters of capillary tubing for their units, but these specific tube sizes are not always readily available to the serviceman. A capillary tube length conversion chart is available in the references section at the back of this catalog.

Model No.	Dia I.D	OD	Model No.	Dia I.D	OD	Model No.	Dia I.D	OD
TC26	.026	.072	TC50	.050	.114	TC75	.075	.125
TC31	.031	.083	TC54	.054	.106	TC80	.080	.145
TC36	.036	.087	TC55	.055	.125	TC85	.085	.145
TC42	.042	.093	TC59	.059	.112	TC90	.090	.145
TC44	.044	.109	TC64	.064	.125	TC100	.100	.156
TC49	.049	.099	TC70	.070	.125			

Please call your local branch for pricing

PIPE INSULATION

Black Pipe Insulation (available in white colour)

Tubing Insulation Size (ID)	3/8" Wall ID			1/2" Wall ID			3/4" Wall ID			1" Wall ID		
	Lengths per ctn	Part #	LIST (/ 6ft)	Lengths per ctn	Part #	LIST (/ 6ft)	Lengths per ctn	Part #	LIST (/ 6ft)	Lengths per ctn	Part #	LIST (/ 6ft)
1/4"	100	3/8W-1/4	9.30	-	-		-	-		-	-	
3/8	100	3/8W-3/8	9.90	75	1/2W-3/8	15.10	40	3/4W-3/8	22.70	-	-	
1/2	80	3/8W-1/2	10.60	66	1/2W-1/2	16.00	38	3/4W-1/2	24.70	-	-	
5/8	65	3/8W-5/8	12.30	54	1/2W-5/8	17.80	28	3/4W-5/8	27.00	20	1W-5/8	48.00
3/4	55	3/8W-3/4	13.00	44	1/2W-3/4	18.30	23	3/4W-3/4	29.40	15	1W-3/4	53.30
7/8	50	3/8W-7/8	13.60	35	1/2W-7/8	19.80	22	3/4W-7/8	32.30	15	1W-7/8	59.40
1-1/8	35	3/8W-1-1/8	15.50	28	1/2W-1-1/8	22.10	16	3/4W-1-1/8	39.30	13	1W-1-1/8	72.10
1-3/8	30	3/8W-1-3/8	17.50	20	1/2W-1-3/8	24.40	12	3/4W-1-3/8	44.90	10	1W-1-3/8	83.50
1-5/8	20	3/8W-1-5/8	21.70	15	1/2W-1-5/8	27.90	10	3/4W-1-5/8	59.50	8	1W-1-5/8	92.60
2-1/8	16	3/8W-2-1/8	25.90	10	1/2W-2-1/8	35.70	9	3/4W-2-1/8	72.40	6	1W-2-1/8	111.40
2-5/8	12	3/8W-2-5/8	38.90	10	1/2W-2-5/8	48.30	8	3/4W-2-5/8	91.40	6	1W-2-5/8	157.40
3-1/8	9	3/8W-3-1/8	47.90	7	1/2W-3-1/8	56.70	7	3/4W-3-1/8	104.70	5	1W-3-1/8	190.60
3-5/8	-	-		6	1/2W-3-5/8	74.70	5	3/4W-3-5/8	126.80	4	1W-3-5/8	208.40
4-1/8	-	-		4	1/2W-4-1/8	82.70	4	3/4W-4-1/8	136.50	3	1W-4-1/8	244.70

*** INSULATION IS AVAILABLE IN WHITE COLOUR**
*** INSULATION IS ALSO AVAILABLE IN 1-1/2" & 2" WALL ID**
*** CONTACT YOUR LOCAL BRANCH FOR MORE INFORAMTION**

Sheet Insulation



Model No. (in.)	Sheets per ctn	LIST (per sheet)
1/4W-36-48	24	65.80
3/8W-36-48	16	86.80
1/2W-36-48	12	91.80
3/4W-36-48	8	137.90
1W-36-48	6	167.00
3/4W-48-50FT	roll (200 sqft)	2,299.00

FLAMMABILITY TENDENCIES:

Armacell insulations have been evaluated for typical flame-spread classification and smoke-developed rating by ASTM E 84-(84A) Method of Test for "Surface-Burning Characteristics of Building Materials"**

- Armacell Pipe Insulation in thicknesses of 1" or less has a flame-spread rating of 25 or less and a smoke-developed rating of 50 or less
- Armacell Sheet Insulation in thicknesses of 3/4" or less has a flame-spread rating of 25 or less and a smoke-developed rating of 50 or less. 1" Armacell sheet has a flame-spread rating of 25 or less and a smoke-developed rating of 200 or less.

** Numerical flammability ratings alone may not define the performance of products under actual fire conditions. They are provided only for use in the selection of products to meet limits specified.

520 Adhesive



Model No.	LIST
520-1/2PT-BT	17.10
520-1PT-BT	26.10
520-1QT	41.40
520-1GAL	143.30

520 Black Low Voc Adhesive



Model No.	LIST
520-BLV-1PT-BT	36.40

Armacell Water Base Finish



Model No.	Description	LIST
WBF8530005	**1 Quart**	67.30
WBF8530006	**1 Gallon**	207.10

ArmaFlex® Shield

Continuous Coil Pipe Insulation



New ArmaFlex® Shield flexible foam insulation is a moistureresistant and UV-resistant product with a durable protective jacket specially designed for line set, HVAC and refrigeration applications. This tough coating can take the abuse of challenging installations and stands up to extreme elements like UV, heat and cold, making it a great choice for outdoor applications.

- Protection against thermal losses, condensation and moisture ingress
- Meets code requirements for installation in plenums
- Comes in continuous coils for fast installation with fewer seams

Wall (inches)	1/2" (13 mm)	3/4" (19 mm)
ID (inches)	1/4", 3/8", 1/2", 5/8", 3/4", 7/8" and 1-1/8" (6, 10, 13, 16, 19, 22, 28 mm)	3/8", 1/2", 5/8", 3/4", 7/8" and 1-1/8" (6, 10, 13, 16, 19, 22, 28 mm)
Length (feet) corresponds to ID above	1/4" = 155', 3/8" = 115', 1/2" = 105', 5/8" = 95', 3/4" = 85', 7/8" = 75', 1-1/8" = 55'	3/8" = 80', 1/2" = 70', 5/8" = 60', 3/4" = 40', 7/8" = 40', 1-1/8" = 35'

Typical Properties

Property	Value	Test Method
Flame Spread and Smoke Developed Index through 1" wall thickness	25/50 rated	ASTM E 84 CAN ULC S102.2*

* CAN ULC S102.2 for up to 3/4" wall thickness.

Armaflex Shield Pipe Insulation - Norminal 1/2" Wall

Part #	Copper Tubing Sizing			LIST
	Norminal ID	Outside Diameter	Wall Thickness	
IPPCT01412CL	-	1/4"	1/2"	3.20
IPPCT03812CL	1/4"	3/8"	1/2"	3.50
IPPCT01212CL	3/8"	1/2"	1/2"	3.60
IPPCT05812CL	1/2"	5/8"	1/2"	3.90
IPPCT03412CL	5/8"	3/4"	1/2"	4.60
IPPCT07812CL	3/4"	7/8"	1/2"	5.00
IPPCT11812CL	1"	1-1/8"	1/2"	5.80

Armaflex Shield Pipe Insulation - Norminal 3/4" Wall

Part #	Copper Tubing Sizing			LIST
	Norminal ID	Outside Diameter	Wall Thickness	
IPPCT03834CL	1/4"	3/8"	3/4"	6.90
IPPCT01234CL	3/8"	1/2"	3/4"	9.10
IPPCT05834CL	1/2"	5/8"	3/4"	9.70
IPPCT03434CL	5/8"	3/4"	3/4"	10.30





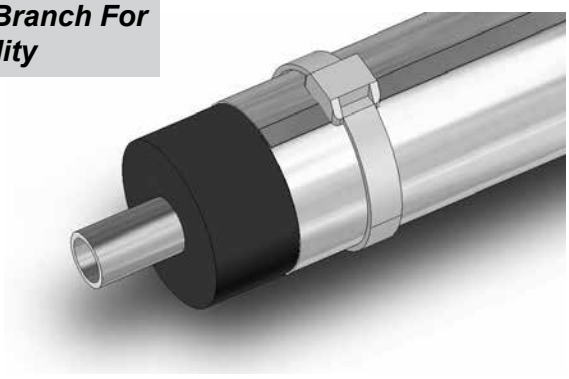
SHUR-FIT

Aluminum Jacketed Insulation Protection System

Shur-Fit has developed this new product to protect exposed insulation in outdoor applications and harsh environments.

The product is available in smooth or textured (stucco) finish in a variety of sizes for a multitude of applications.

Contact Your Local Branch For Pricing and Availability



Small Dia. Aluminum Jacketing



Part #	Description	LIST
313.02.016	1-7/8" od max x 12" length	4.80
313.04.016	2-3/8" od max x 18" length	7.20
313.06.016	2-7/8" od max x 18" length	7.20

Small Dia. Aluminum 90° & 45° Elbows



Part #	Description	LIST
314.02.90	90deg. Elbow cover up to 1-7/8"od	20.50
314.04.90	90deg. Elbow cover up to 2-3/8"od	20.50
314.06.90	90deg. Elbow cover up to 2-7/8"od	20.50

Small Dia. Aluminum Tees



Part #	Description	LIST
314.03.T	This "T" fits 313.01/02/03.016	51.70
314.06.T	This "T" fits 313.04/05/06.016	56.90

Low Profile Tie Strap

Part #	Description	LIST
106.44	SRFT CABLE TIES 3-1/2 INCH OD 100PK	145.40

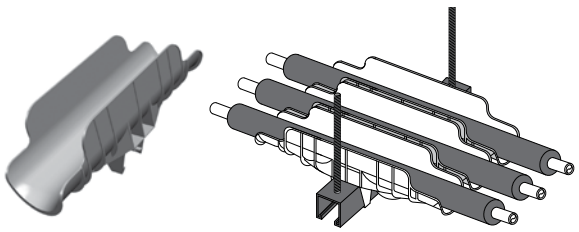
- Other sizes are available on request, 3-4 day delivery
- The larger the size of the diameters allows for longer length
- This product is sold by the length not the foot

INSULATED PIPE SUPPORTS

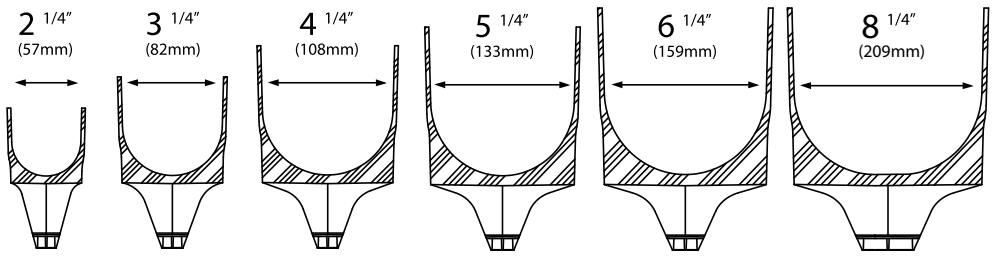
INSUGUARD

Insuguard

- designed to accommodate movement of the pipes generated by thermal expansion and vibration
- allows the pipe to slide easily in the protector
- fits the standard channel used in the industry
- protects your piping system and improves its appearance



INSUGUARD



Part #	Alt #	Description	LIST
225B	I225B	Black Insuguard saddle 2 1/4" (57mm)	9.90
325B	I325B	Black Insuguard saddle 3 1/4" (82mm)	11.90
425B	I425B	Black Insuguard saddle 4 1/4" (108mm)	12.80
525B	I525B	Black Insuguard saddle 5 1/4" (133mm)	13.70
625B	I625B	Black Insuguard saddle 6 1/4" (159mm)	16.20
825B	I825B	Black Insuguard saddle 8 1/4" (209mm)	23.70
225W	I225W	White Insuguard saddle 2 1/4" (57mm)	9.90
325W	I325W	White Insuguard saddle 3 1/4" (82mm)	11.90
425W	I425W	White Insuguard saddle 4 1/4" (108mm)	12.80
525W	I525W	White Insuguard saddle 5 1/4" (133mm)	13.70
625W	I625W	White Insuguard saddle 6 1/4" (159mm)	16.20
825W	I825W	White Insuguard saddle 8 1/4" (209mm)	23.70

InsuClip

The dual-strap fasteener is first fixed to the pipe and then easily slid inside the Clevis Hanger upper space where it is attached to the cross-bolt. Both plastic straps are easily tightened and securely locked into place, just like you would do with a tie-wrap. The InsuClip fastener will not interfere with the swinging movement of the lower U-shaped metal strap as it is only attached to the cross-bolt.

* Consult with local branch for further information and pricing.



INSULATED PIPE SUPPORTS

INSUGUARD

InsuguardMulti®

- Allow use on various sizes of strut, Clevis, steel angle, H-Beam/I-Beam mountings and floor adaptor.



Part #	Alt #	Description	LIST
IM250G		Grey InsuguardMulti saddle 2 1/2" (60mm)	9.30
IM350G		Grey InsuguardMulti saddle 3 1/2" (88mm)	13.50
IM450G		Grey InsuguardMulti saddle 4 1/2" (114mm)	15.30
IM550G		Grey InsuguardMulti saddle 5 1/2" (140mm)	20.10
IM650G		Grey InsuguardMulti saddle 6 1/2" (165mm)	22.50
IM850G		Grey InsuguardMulti saddle 8 1/2" (219mm)	28.50
IM1050G		Grey InsuguardMulti saddle 10 1/2" (271mm)	44.60
IM1250G		Grey InsuguardMulti saddle 12 1/2" (321mm)	50.90
CL200EG*		Clevis Hanger (Require: 3/8" Reddi Rod)	7.90
CL300EG*		Clevis Hanger (Require: 1/2" Reddi Rod)	16.40
CL400EG*		Clevis Hanger (Require: 5/8" Reddi Rod)	10.90
INSUGUARD Multi Adaptors**			
IM42X42	IM42X42G	Grey strut adaptor 1 5/8" (42mm) x 1 5/8" (42mm)	2.90
IM2-5/8	IM2-5/8G	Grey steel angle adaptor opens from 1/2" to 2 5/8" (13mm to 87mm)	10.90
IMCLEVIS	IMCLEVISG	Grey Clevis Hanger adaptor	2.50
IMSTAB1050G		Grey strut stabilizer for IM1050G saddle	6.20
IMSTAB1250G		Grey strut stabilizer for IM1250G saddle	6.20

** Consult with local branch for requirements and pricing.*
*** Insugaurd adaptors are available in a multitude of configurations to mount the Insugaurd saddles on all sized of Strut, beams, decking and even the floor, please contact your local branch for pricing and availability.*

InsuCover

Insugaurd top covers are available to fit all sizes of saddles

* Consult with local branch for further information and pricing.



SHOCKTECH

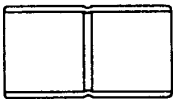
Water hammer problems create extensive piping damages in various industries. The magnetic shock detection device is a great tool to help maintenance crew detecting water hammer areas BEFORE pipe damage occurs.

* Consult with local branch for further information and pricing.



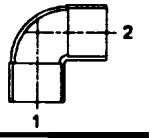
COPPER FITTINGS

Coupling Rolled Stop C x C



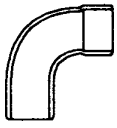
Part #	Size	Pcs / Pkg	LIST
W1000	1/8	100	1.90
W1001	3/16	100	2.40
W1003	1/4	100	1.30
W1009	3/8	50	1.10
W1017	1/2	50	1.30
W1022	5/8	100	1.00
W1028	3/4	25	3.10
W1034	7/8	50	2.10
W1047	1-1/8	25	4.40
W1055	1-3/8	25	7.40
W1063	1-5/8	10	9.80
W1072	2-1/8	1	17.20
W1082	2-5/8	1	
W1092	3-1/8	1	
W10100	3-5/8	1	
W10107	4-1/8	1	

90° ELL Short Radius C x C



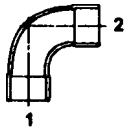
Part #	Size	Pcs / Pkg	LIST
W2003	1/4	50	4.10
W2009	3/8	50	3.90
W2017	1/2	50	4.10
W2022	5/8	100	4.60
W2028	3/4	50	7.60
W2034	7/8	50	8.40
W2047	1-1/8	25	11.10
W2084	1-3/8	25	12.30
W2085	1-5/8	10	17.00
W2086	2-1/8	10	30.90
W2087	2-5/8	5	
W2088	3-1/8	5	
W2089	3-5/8	2	
W2090	4-1/8	2	
W2097	6-1/8	1	

90° ELL Short Radius Street FTG x C



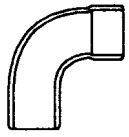
Part #	Size	Pcs / Pkg	LIST
W2305	1/4	50	7.00
W2312	3/8	50	6.90
W2321	1/2	50	5.30
W2326	5/8	50	5.90
W2330	3/4	25	7.80
W2334	7/8	25	9.50
W2344	1-1/8	25	11.50
W2384	1-3/8	25	17.50
W2385	1-5/8	10	22.90
W2386	2-1/8	10	49.90
W2387	2-5/8	5	
W2388	3-1/8	2	
W2389	3-5/8	1	
W2390	4-1/8	2	

90° ELL Long Radius C x C



Part #	Size	Pcs / Pkg	LIST
W2701	3/16	100	15.70
W2715	1/4	50	7.40
W2710	5/16	50	7.60
W2716	3/8	50	5.90
W2717	1/2	50	7.70
W2722	5/8	50	3.20
W2728	3/4	50	5.30
W2734	7/8	25	7.70
W2747	1-1/8	10	13.70
W2055	1-3/8	10	21.90
W2063	1-5/8	5	29.40
W2072	2-1/8	5	77.40
W2082	2-5/8	5	
W2092	3-1/8	2	
W2093	3-5/8	1	
W2095	4-1/8	1	

90° ELL Long Radius - Street FTG x C



Part #	Size	Pcs / Pkg	LIST
W2809	3/8	50	6.70
W2817	1/2	50	12.90
W2822	5/8	50	4.90
W2828	3/4	25	5.90
W2834	7/8	25	10.20
W2847	1-1/8	10	19.60
W2350	1-3/8	10	29.00
W2355	1-5/8	5	40.40
W2359	2-1/8	5	65.80
W2363	2-5/8	5	
W2368	3-1/8	2	
W2393	3-5/8	1	
W2395	4-1/8	1	

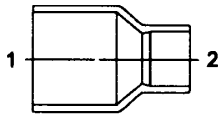
Symbols used to describe fittings ends are as follows:

C Copper (cup) manufactured to receive copper tube diameter

FTG Fitting end made to copper tube diameter

COPPER FITTINGS

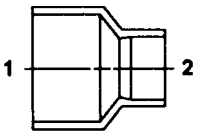
Coupling Reducing C x C



Part #	Size	Pcs / Box	LIST
W1004	1/4 x 3/16	50	11.40
W1005	1/4 x 1/8	50	12.20
W1010	3/8 x 5/16	50	6.60
W1011	3/8 x 1/4	50	6.20
W1019	1/2 x 3/8	50	2.20
W1021	1/2 x 1/4	50	3.00
W1023	5/8 x 1/2	50	2.20
W1025	5/8 x 3/8	50	2.60
W1027	5/8 x 1/4	100	2.90
W1029	3/4 x 5/8	100	5.30
W1030	3/4 x 1/2	100	6.60
W1031	3/4 x 3/8	100	5.40
W1035	7/8 x 3/4	100	3.80
W1036	7/8 x 5/8	50	3.50
W1037	7/8 x 1/2	50	4.70
W1038	7/8 x 3/8	50	4.60
W1049	1-1/8 x 7/8	25	6.90
W1050	1-1/8 x 3/4	25	7.30
W1051	1-1/8 x 5/8	25	8.10
W1052	1-1/8 x 1/2	25	7.90
W1056	1-3/8 x 1-1/8	10	9.60
W1058	1-3/8 x 7/8	10	9.60
W1060	1-3/8 x 5/8	10	9.20
W1064	1-5/8 x 1-3/8	10	16.00
W1065	1-5/8 x 1-1/8	10	16.00
W1067	1-5/8 x 7/8	10	16.00
W1069	1-5/8 x 5/8	10	16.00
W1073	2-1/8 x 1-5/8	100	24.70
W1074	2-1/8 x 1-3/8	100	24.70
W1075	2-1/8 x 1-1/8	100	26.10
W1077	2-1/8 x 7/8	100	34.20
W1079	2-1/8 x 5/8	75	31.00
W1083	2-5/8 x 2-1/8	50	
W1084	2-5/8 x 1-5/8	50	
W1085	2-5/8 x 1-3/8	50	
W1086	2-5/8 x 1-1/8	50	
W1093	3-1/8 x 2-5/8	25	
W1094	3-1/8 x 2-1/8	25	
W1095	3-1/8 x 1-5/8	25	
W10101	3-5/8 x 3-1/8	25	
W10108	4-1/8 x 3-5/8	20	
W10109	4-1/8 x 3-1/8	20	
W10110	4-1/8 x 2-5/8	15	
W10111	4-1/8 x 2-1/8	20	

Symbols used to describe fittings ends are as follows:
C Copper (cup) manufactured to receive copper tube diameter
FTG Fitting end made to copper tube diameter

Bushing Reducing FTG x C



Part #	Size	Pcs / Box	LIST
W1302	1/4 x 1/8	50	4.30
W1306	3/8 x 1/4	50	3.00
W1312	1/2 x 3/8	50	3.10
W1314	1/2 x 1/4	50	3.70
W1315	5/8 x 1/2	50	2.40
W1317	5/8 x 3/8	50	2.70
W1320	3/4 x 5/8	100	5.90
W1321	3/4 x 1/2	100	6.00
W1322	3/4 x 3/8	100	7.90
W1325	7/8 x 3/4	100	3.80
W1326	7/8 x 5/8	50	3.50
W1327	7/8 x 1/2	50	4.90
W1328	7/8 x 3/8	50	6.90
W1337	1-1/8 x 7/8	25	5.70
W1338	1-1/8 x 3/4	25	6.90
W1339	1-1/8 x 5/8	25	7.50
W1340	1-1/8 x 1/2	20	7.10
W1343	1-3/8 x 1-1/8	10	10.50
W1345	1-3/8 x 7/8	10	10.50
W1347	1-3/8 x 5/8	10	10.50
W1350	1-5/8 x 1-3/8	10	13.70
W1351	1-5/8 x 1-1/8	10	13.70
W1353	1-5/8 x 7/8	10	13.70
W1355	1-5/8 x 5/8	10	13.70
W1358	2-1/8 x 1-5/8	100	25.90
W1359	2-1/8 x 1-3/8	100	25.90
W1360	2-1/8 x 1-1/8	100	27.30
W1362	2-1/8 x 7/8	100	25.30
W1364	2-1/8 x 5/8	100	27.10
W1367	2-5/8 x 2-1/8	50	
W1368	2-5/8 x 1-5/8	50	
W1369	2-5/8 x 1-3/8	50	
W1370	2-5/8 x 1-1/8	50	
W1376	3-1/8 x 2-5/8	25	
W1377	3-1/8 x 2-1/8	25	
W1378	3-1/8 x 1-5/8	50	
W1379	3-1/8 x 1-3/8	50	
W1381	3-5/8 x 3-1/8	20	
W1382	3-5/8 x 2-5/8	20	
W1383	3-5/8 x 2-1/8	20	
W1386	4-1/8 x 3-5/8	20	
W1387	4-1/8 x 3-1/8	15	
W1388	4-1/8 x 2-5/8	15	
W1389	4-1/8 x 2-1/8	15	

COPPER FITTINGS

45° ELL FTG x FTG



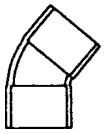
Part #	Size	Pcs / Box	LIST
W3621	1/2	50	
W3626	5/8	50	28.30
W3634	7/8	25	31.80
W3644	1-1/8	10	31.80

Cap (WC-415) C



Part #	Size	Pcs / Box	LIST
W7002	1/4	50	1.90
W7004	3/8	50	1.30
W7006	1/2	50	2.00
W7007	5/8	100	1.00
W7008	3/4	50	2.40
W7009	7/8	50	1.70
W7011	1-1/8	50	4.00
W7012	1-3/8	25	5.90
W7013	1-5/8	25	8.70
W7014	2-1/8	100	16.00
W7015	2-5/8	50	
W7016	3-1/8	50	
W7017	3-5/8	25	
W7018	4-1/8	20	

45° ELL C x C



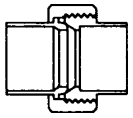
Part #	Size	Pcs / Box	LIST
W3005	1/4	50	10.40
W3012	3/8	50	7.40
W3021	1/2	50	6.60
W3026	5/8	50	2.40
W3030	3/4	50	11.40
W3034	7/8	25	4.20
W3044	1-1/8	25	10.50
W3050	1-3/8	10	15.00
W3055	1-5/8	10	18.10
W3059	2-1/8	10	30.20
W3063	2-5/8	5	
W3067	3-1/8	2	
W3070	3-5/8	2	
W3073	4-1/8	1	

45° ELL Street FTG x C



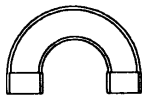
Part #	Size	Pcs / Box	LIST
W3312	3/8	100	11.50
W3321	1/2	100	9.00
W3326	5/8	50	2.70
W3330	3/4	50	17.30
W3334	7/8	25	4.20
W3344	1-1/8	25	14.70
W3350	1-3/8	10	18.50
W3355	1-5/8	10	22.60
W3359	2-1/8	5	35.90
W3363	2-5/8	2	
W3368	3-1/8	2	
W3373	4-1/8	1	

Coupling (Union C-107) C x C



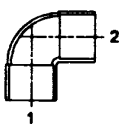
Part #	Size	Pcs / Box	LIST
W8001	3/8	25	23.90
W8002	1/2	25	32.20
W8003	5/8	25	17.00
W8004	7/8	10	20.30
W8005	1-1/8	10	39.60

Return Bend C x C



Part #	Size	Pcs / Box	LIST
W6025	3/8 x 4-1/2	25	
W6020	3/8 x 1-1/2	25	8.50
W6048	1/2 x 6	100	
W6045	1/2 x 4	200	
W6041	1/2 x 3	25	10.60
W6036	1/2 x 2	50	11.10
W6032	1/2 x 1-1/2	50	7.10
W6062	5/8 x 3-3/8	10	
W6060	5/8 x 3	25	17.50
W6058	5/8 x 2-1/2	25	11.60
W6056	5/8 x 2-1/4	25	22.10
W6053	5/8 x 1-7/8	25	19.10
W6051	5/8 x 1-9/16	25	19.00
W6084	3/4 x 4	120	
W6081	3/4 x 3-3/8	10	
W6077	3/4 x 2-1/2	10	40.40
W6074	3/4 x 2-1/8	10	27.30
W6073	3/4 x 2	10	44.20
W6095	7/8 x 3-3/8	10	28.70
W6092	7/8 x 2-1/2	10	20.60
W60111	1-1/8 x 3-1/4	5	44.00
W60110	1-1/8 x 3	5	44.60
W60121	1-3/8 x 3-3/4	5	73.40
W60131	1-5/8 x 4-1/2	25	92.10
W60140	2-1/8 x 5-1/2	5	240.40

90° ELL Reducing Short Radius C x C



Part #	Size	Pcs / Box	LIST
W2011	3/8 x 1/4	50	11.30
W2019	1/2 x 3/8	50	11.00
W2023	5/8 x 1/2	50	10.60
W2025	5/8 x 3/8	50	19.80
W2029	3/4 x 5/8	50	18.00
W2030	3/4 x 1/2	50	
W2035	7/8 x 3/4	50	12.60
W2036	7/8 x 5/8	50	10.70
W2037	7/8 x 1/2	50	14.60
W2049	1-1/8 x 7/8	25	19.20
W2050	1-1/8 x 3/4	25	
W2051	1-1/8 x 5/8	25	
W2052	1-1/8 x 1/2	25	
W2056	1-3/8 x 1-1/8	20	49.00
W2077	1-5/8 x 1-3/8	10	51.70
W2078	2-1/8 x 1-5/8	5	80.70

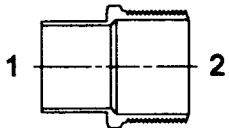
Symbols used to describe fittings ends are as follows:

C Copper (cup) manufactured to receive copper tube diameter

FTG Fitting end made to copper tube diameter

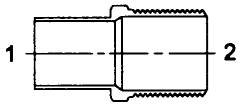
COPPER FITTINGS

Male Adapters C x MPT



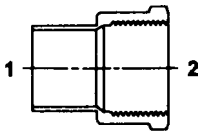
Part #	Size	Pcs / Box	LIST
W1105	1/4 x 3/8	50	23.50
W1106	1/4 x 1/4	50	20.20
W1107	1/4 x 1/8	100	19.90
W1110	5/16 x 1/4	50	
W1113	3/8 x 1/2	50	7.90
W1114	3/8 x 3/8	50	21.80
W1115	3/8 x 1/4	50	18.60
W1116	3/8 x 1/8	50	13.40
W1123	1/2 x 3/4	25	17.00
W1124	1/2 x 1/2	50	9.60
W1125	1/2 x 3/8	50	7.10
W1126	1/2 x 1/4	50	21.20
W1129	5/8 x 1	25	73.80
W1130	5/8 x 3/4	25	8.40
W1131	5/8 x 1/2	50	2.90
W1132	5/8 x 3/8	50	7.30
W1133	5/8 x 1/4	25	11.90
W1138	3/4 x 3/4	25	10.80
W1139	3/4 x 1/2	25	15.10
W1145	7/8 x 1	25	17.10
W1146	7/8 x 3/4	50	4.80
W1147	7/8 x 1/2	25	8.40
W1161	1-1/8 x 1-1/2	10	67.20
W1162	1-1/8 x 1-1/4	10	36.00
W1163	1-1/8 x 1	25	11.80
W1164	1-1/8 x 3/4	10	18.50
W1165	1-1/8 x 1/2	10	31.00
W1170	1-3/8 x 1-1/2	10	57.00
W1171	1-3/8 x 1-1/4	20	18.50
W1172	1-3/8 x 1	10	27.60
W1173	1-3/8 x 3/4	10	42.30
W1178	1-5/8 x 2	50	106.80
W1179	1-5/8 x 1-1/2	10	21.20
W1180	1-5/8 x 1-1/4	10	57.20
W1181	1-5/8 x 1	10	67.80
W1187	2-1/8 x 2	50	35.90
W1188	2-1/8 x 1-1/2	50	83.10
W1189	2-1/8 x 1-1/4	50	204.70
W1196	2-5/8 x 2-1/2	20	
W1197	2-5/8 x 2	20	
W1198	2-5/8 x 1-1/2	20	
W1199	3-1/8 x 3	20	
W1150	4-1/8 x 4	2	

Adapter FTG x MPT



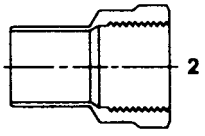
Part #	Size	Pcs / Box	LIST
W1414	3/8 x 3/8	50	14.80
W1425	1/2 x 3/8	50	13.80
W1431	5/8 x 1/2	50	17.00
W1432	5/8 x 3/8	50	
W1446	7/8 x 3/4	50	21.80
W1447	7/8 x 1/2	50	
W1463	1-1/8 x 1	25	28.00
W1464	1-1/8 x 3/4	25	47.50
W1471	1-3/8 x 1-1/4	10	
W1479	1-5/8 x 1-1/2	10	89.70
W1487	2-1/8 x 2	50	169.30
W1496	2-5/8 x 2-1/2	20	

Female Adapters C x FPT



Part #	Size	Pcs / Box	LIST
W1204	1/4 x 1/2	100	12.80
W1205	1/4 x 3/8	100	8.00
W1206	1/4 x 1/4	100	3.10
W1207	1/4 x 1/8	100	9.70
W1214	3/8 x 3/8	50	19.80
W1215	3/8 x 1/4	50	8.40
W1216	3/8 x 1/8	100	16.20
W1223	1/2 x 3/4	50	15.20
W1224	1/2 x 1/2	50	9.30
W1225	1/2 x 3/8	50	9.50
W1226	1/2 x 1/4	50	12.50
W1230	5/8 x 3/4	50	9.20
W1231	5/8 x 1/2	50	4.30
W1232	5/8 x 3/8	50	9.50
W1233	5/8 x 1/4	50	9.60
W1238	3/4 x 3/4	50	10.80
W1239	3/4 x 1/2	50	102.80
W1245	7/8 x 1	25	19.70
W1246	7/8 x 3/4	25	5.90
W1247	7/8 x 1/2	50	9.90
W1263	1-1/8 x 1	25	14.50
W1264	1-1/8 x 3/4	25	26.00
W1265	1-1/8 x 1/2	25	35.50
W1270	1-3/8 x 1-1/2	10	348.00
W1271	1-3/8 x 1-1/4	10	19.50
W1272	1-3/8 x 1	10	59.60
W1278	1-5/8 x 2	60	112.00
W1279	1-5/8 x 1-1/2	10	33.20
W1280	1-5/8 x 1-1/4	10	65.50
W1287	2-1/8 x 2	50	41.30
W1296	2-5/8 x 2-1/2	25	
W1297	3-1/8 x 3	15	

Adapter (Fitting WC-405) FTG x FPT



Part #	Size	Pcs / Box	LIST
W1514	3/8 x 3/8	50	
W1524	1/2 x 1/2	50	
W1525	1/2 x 3/8	50	
W1526	1/2 x 1/4	50	11.60
W1531	5/8 x 1/2	50	12.10
W1532	5/8 x 3/8	50	
W1546	7/8 x 3/4	50	15.60
W1547	7/8 x 1/2	50	60.40
W1563	1-1/8 x 1	25	
W1564	1-1/8 x 3/4	25	
W1571	1-3/8 x 1-1/4	10	
W1579	1-5/8 x 1-1/2	10	
W1587	2-1/8 x 2	50	
W1596	2-5/8 x 2-1/2	25	

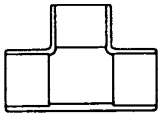
Symbols used to describe fittings ends are as follows:

C Copper (cup) manufactured to receive copper tube diameter

FTG Fitting end made to copper tube diameter

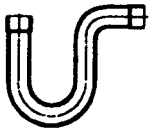
COPPER FITTINGS

Tee C x C x C



Part #	Size	Pcs / Box	LIST
W40300	1/8	50	
W40302	3/16	50	11.50
W40306	1/4	100	7.80
W40313	5/16	50	15.00
W4000	3/8	50	8.30
W4001	1/2	50	6.90
W4006	5/8	50	2.50
W4017	3/4	25	15.20
W4031	7/8	25	5.70
W4048	1-1/8	10	16.60
W4068	1-3/8	5	23.90
W4084	1-5/8	5	36.90
W40102	2-1/8	5	57.50
W40123	2-5/8	2	
W40152	3-1/8	2	
W40190	3-5/8	1	
W40200	4-1/8	1	
W40400	5-1/8	1	
W40500	6-1/8	1	

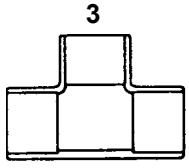
P-Trap (Suction Line) C x C



Part #	Size	Pcs / Box	LIST
W60999	5/8	10	41.50
W61008	3/4	10	61.90
W61000	7/8	5	46.20
W61001	1-1/8	3	70.10
W61002	1-3/8	4	127.50
W61003	1-5/8	4	193.30
W61009	2-1/8	3	396.00

Symbols used to describe fittings ends are as follows:
C Copper (cup) manufactured to receive copper tube diameter
FTG Fitting end made to copper tube diameter

Reducing Tee C x C x C



Part #	Size (1 x 2 x 3)	Pcs / Box	LIST	Part #	Size (1 x 2 x 3)	Pcs / Box	LIST
W40368	1/4 x 1/4 x 3/8	50	23.90	W4027	3/4 x 1/2 x 1/2	25	41.60
W40308	1/4 x 1/4 x 3/16	50		W4065	7/8 x 7/8 x 1-1/8	10	17.50
W40334	5/16 x 5/16 x 3/8	50		W4032	7/8 x 7/8 x 3/4	25	10.30
W4016	3/8 x 3/8 x 5/8	50		W4033	7/8 x 7/8 x 5/8	25	5.40
W4005	3/8 x 3/8 x 1/2	50	18.80	W4034	7/8 x 7/8 x 1/2	25	9.40
W40324	3/8 x 3/8 x 1/4	50	13.40	W4035	7/8 x 7/8 x 3/8	25	7.70
W40325	3/8 x 3/8 x 3/16	50		W4036	7/8 x 3/4 x 7/8	25	
W40330	3/8 x 1/4 x 3/8	50	21.50	W4037	7/8 x 3/4 x 3/4	25	14.30
W40332	3/8 x 1/4 x 1/4	50	29.20	W4041	7/8 x 5/8 x 7/8	25	12.70
W4015	1/2 x 1/2 x 5/8	50		W4042	7/8 x 5/8 x 3/4	25	
W4002	1/2 x 1/2 x 3/8	50	12.50	W4043	7/8 x 5/8 x 5/8	25	6.70
W4003	1/2 x 3/8 x 1/2	50	31.90	W4044	7/8 x 5/8 x 1/2	25	11.20
W4004	1/2 x 3/8 x 3/8	50	19.50	W4045	7/8 x 5/8 x 3/8	25	
W40358	1/2 x 3/8 x 1/4	50		W40230	7/8 x 1/2 x 7/8	25	20.80
W40363	1/2 x 1/4 x 1/2	50		W40231	7/8 x 1/2 x 5/8	25	
W40364	1/2 x 1/4 x 3/8	50	41.40	W40232	7/8 x 1/2 x 1/2	25	
W40366	1/2 x 1/4 x 1/4	50	39.20	W40101	1-1/8 x 1-1/8 x 1-5/8	5	
W4067	5/8 x 5/8 x 1-1/8	10		W4082	1-1/8 x 1-1/8 x 1-3/8	5	
W4047	5/8 x 5/8 x 7/8	25	10.90	W4049	1-1/8 x 1-1/8 x 7/8	10	17.60
W4007	5/8 x 5/8 x 1/2	50	12.10	W4050	1-1/8 x 1-1/8 x 3/4	10	42.50
W4008	5/8 x 5/8 x 3/8	50	11.60	W4051	1-1/8 x 1-1/8 x 5/8	10	20.30
W4014	5/8 x 5/8 x 1/4	50		W4052	1-1/8 x 1-1/8 x 1/2	10	27.50
W4009	5/8 x 1/2 x 5/8	50		W4055	1-1/8 x 7/8 x 1-1/8	10	
W4010	5/8 x 1/2 x 1/2	50		W4056	1-1/8 x 7/8 x 7/8	10	20.90
W4011	5/8 x 1/2 x 3/8	50		W4057	1-1/8 x 7/8 x 3/4	10	
W4012	5/8 x 3/8 x 5/8	50		W4058	1-1/8 x 7/8 x 5/8	10	27.80
W40367	5/8 x 3/8 x 1/2	50		W4059	1-1/8 x 7/8 x 1/2	10	
W4013	5/8 x 3/8 x 3/8	50		W40233	1-1/8 x 3/4 x 1-1/8	10	
W4046	3/4 x 3/4 x 7/8	25		W40234	1-1/8 x 3/4 x 7/8	10	
W4018	3/4 x 3/4 x 5/8	25	39.20	W40235	1-1/8 x 3/4 x 3/4	10	
W4019	3/4 x 3/4 x 1/2	25	23.30	W40236	1-1/8 x 3/4 x 5/8	10	
W4020	3/4 x 3/4 x 3/8	25	36.00	W4061	1-1/8 x 5/8 x 1-1/8	10	19.70
W4021	3/4 x 5/8 x 3/4	25	39.50	W4062	1-1/8 x 5/8 x 7/8	10	
W4022	3/4 x 5/8 x 5/8	25	39.50	W4063	1-1/8 x 5/8 x 5/8	10	
W4023	3/4 x 5/8 x 1/2	25	42.40	W40122	1-3/8 x 1-3/8 x 2-1/8	2	
W4025	3/4 x 1/2 x 3/4	25		W40100	1-3/8 x 1-3/8 x 1-5/8	5	90.90
W4026	3/4 x 1/2 x 5/8	25		W4069	1-3/8 x 1-3/8 x 1-1/8	5	25.90

COPPER FITTINGS

Reducing Tee C x C x C cont'd

Part #	Size	Pcs / Box	LIST	Part #	Size	Pcs / Box	LIST
W4070	1-3/8 x 1-3/8 x 7/8	5	27.00	W40134	2-5/8 x 2-1/8 x 1-1/8	4	
W4071	1-3/8 x 1-3/8 x 5/8	5	29.60	W40135	2-5/8 x 2-1/8 x 7/8	4	
W4072	1-3/8 x 1-3/8 x 1/2	5	48.80	W40136	2-5/8 x 2-1/8 x 5/8	4	
W4073	1-3/8 x 1-1/8 x 1-3/8	5		W40137	2-5/8 x 1-5/8 x 2-5/8	4	
W4074	1-3/8 x 1-1/8 x 1-1/8	5	34.70	W40138	2-5/8 x 1-5/8 x 2-1/8	4	
W4075	1-3/8 x 1-1/8 x 7/8	5	35.60	W40139	2-5/8 x 1-5/8 x 1-5/8	4	
W4076	1-3/8 x 1-1/8 x 5/8	5		W40140	2-5/8 x 1-5/8 x 1-3/8	4	
W4078	1-3/8 x 7/8 x 1-3/8	5	34.90	W40141	2-5/8 x 1-5/8 x 1-1/8	4	
W4079	1-3/8 x 7/8 x 1-1/8	5		W40142	2-5/8 x 1-5/8 x 7/8	4	
W4080	1-3/8 x 7/8 x 7/8	5		W40143	2-5/8 x 1-5/8 x 5/8	4	
W4081	1-3/8 x 7/8 x 5/8	5		W40220	2-5/8 x 1-3/8 x 2-5/8	4	
W4083	1-3/8 x 5/8 x 1-3/8	5		W40250	2-5/8 x 1-3/8 x 2-1/8	4	
W40121	1-5/8 x 1-5/8 x 2-1/8	5		W40251	2-5/8 x 1-3/8 x 1-5/8	4	
W4085	1-5/8 x 1-5/8 x 1-3/8	2	27.50	W40252	2-5/8 x 1-3/8 x 1-3/8	4	
W4086	1-5/8 x 1-5/8 x 1-1/8	5	35.80	W40253	2-5/8 x 1-3/8 x 1-1/8	4	
W4087	1-5/8 x 1-5/8 x 7/8	5	31.30	W40254	2-5/8 x 1-3/8 x 7/8	4	
W4088	1-5/8 x 1-5/8 x 5/8	5	24.60	W40255	2-5/8 x 1-3/8 x 5/8	4	
W4089	1-5/8 x 1-5/8 x 1/2	5	50.80	W40221	2-5/8 x 1-1/8 x 2-5/8	4	
W4090	1-5/8 x 1-3/8 x 1-5/8	5	77.20	W40256	2-5/8 x 1-1/8 x 2-1/8	4	
W4091	1-5/8 x 1-3/8 x 1-3/8	5		W40257	2-5/8 x 1-1/8 x 1-5/8	4	
W4092	1-5/8 x 1-3/8 x 1-1/8	5	59.00	W40258	2-5/8 x 1-1/8 x 1-3/8	4	
W4093	1-5/8 x 1-3/8 x 7/8	5	59.10	W40259	2-5/8 x 1-1/8 x 1-1/8	4	
W4094	1-5/8 x 1-3/8 x 5/8	5	76.70	W40222	2-5/8 x 7/8 x 2-5/8	4	
W4095	1-5/8 x 1-1/8 x 1-5/8	5	95.60	W40151	3-1/8 x 3-1/8 x 2-5/8	2	
W4096	1-5/8 x 1-1/8 x 1-3/8	5		W40150	3-1/8 x 3-1/8 x 2-1/8	2	
W4097	1-5/8 x 1-1/8 x 1-1/8	5		W40149	3-1/8 x 3-1/8 x 1-5/8	2	
W4098	1-5/8 x 1-1/8 x 7/8	5		W40148	2-1/8 x 3-1/8 x 1-3/8	2	
W40237	1-5/8 x 1-1/8 x 5/8	5		W40147	3-1/8 x 3-1/8 x 1-1/8	2	
W4099	1-5/8 x 7/8 x 1-5/8	5	62.70	W40146	3-1/8 x 3-1/8 x 7/8	2	
W40239	1-5/8 x 7/8 x 1-3/8	5	122.00	W40145	3-1/8 x 3-1/8 x 5/8	2	
W40240	1-5/8 x 7/8 x 1-1/8	5		W40159	3-1/8 x 2-5/8 x 3-1/8	2	
W40238	1-5/8 x 7/8 x 7/8	5	77.50	W40158	3-1/8 x 2-5/8 x 2-5/8	2	
W40243	1-5/8 x 7/8 x 5/8	5		W40157	3-1/8 x 2-5/8 x 2-1/8	2	
W40244	1-5/8 x 5/8 x 1-5/8	5		W40156	3-1/8 x 2-5/8 x 1-5/8	2	
W40144	2-1/8 x 2-1/8 x 2-5/8	1	347.00	W40155	3-1/8 x 2-5/8 x 1-3/8	2	
W40103	2-1/8 x 2-1/8 x 1-5/8	1	44.80	W40154	3-1/8 x 2-5/8 x 1-1/8	2	
W40104	2-1/8 x 2-1/8 x 1-3/8	5		W40167	3-1/8 x 2-1/8 x 3-1/8	2	
W40105	2-1/8 x 2-1/8 x 1-1/8	5	61.40	W40165	3-1/8 x 2-1/8 x 2-5/8	2	
W40106	2-1/8 x 2-1/8 x 7/8	5	56.20	W40164	3-1/8 x 2-1/8 x 2-1/8	2	
W40107	2-1/8 x 2-1/8 x 5/8	5		W40163	3-1/8 x 2-1/8 x 1-5/8	2	
W40108	2-1/8 x 2-1/8 x 1/2	5		W40162	3-1/8 x 2-1/8 x 1-3/8	2	
W40109	2-1/8 x 1-5/8 x 2-1/8	2	124.70	W40161	3-1/8 x 2-1/8 x 1-1/8	2	
W40110	2-1/8 x 1-5/8 x 1-5/8	2		W40174	3-1/8 x 1-5/8 x 3-1/8	2	
W40111	2-1/8 x 1-5/8 x 1-3/8	2		W40181	3-1/8 x 1-3/8 x 3-1/8	2	
W40112	2-1/8 x 1-5/8 x 1-1/8	2		W40178	3-1/8 x 1-1/8 x 3-1/8	2	
W40113	2-1/8 x 1-5/8 x 7/8	2		W40179	3-1/8 x 7/8 x 3-1/8	2	
W40114	2-1/8 x 1-5/8 x 5/8	25		W40198	4-1/8 x 4-1/8 x 3-1/8	1	
W40115	2-1/8 x 1-3/8 x 2-1/8	2		W40197	4-1/8 x 4-1/8 x 2-5/8	1	
W40116	2-1/8 x 1-3/8 x 1-5/8	2	103.80	W40196	4-1/8 x 4-1/8 x 2-1/8	1	
W40117	2-1/8 x 1-3/8 x 1-3/8	2		W40195	4-1/8 x 4-1/8 x 1-5/8	1	
W40118	2-1/8 x 1-3/8 x 1-1/8	2	604.00	W40194	4-1/8 x 4-1/8 x 1-3/8	1	
W40119	2-1/8 x 1-3/8 x 7/8	5		W40193	4-1/8 x 4-1/8 x 1-1/8	1	
W40120	2-1/8 x 1-3/8 x 5/8	5		W40192	4-1/8 x 4-1/8 x 7/8	1	
W40245	2-1/8 x 1-1/8 x 2-1/8	5		W40191	4-1/8 x 4-1/8 x 5/8	1	
W40247	2-1/8 x 1-1/8 x 1-1/8	5		W40208	4-1/8 x 3-1/8 x 4-1/8	1	
W40248	2-1/8 x 7/8 x 2-1/8	5	95.80	W40206	4-1/8 x 3-1/8 x 3-1/8	1	
W40249	2-1/8 x 5/8 x 2-1/8	5		W40205	4-1/8 x 3-1/8 x 2-5/8	1	
W40124	2-5/8 x 2-5/8 x 2-1/8	2		W40204	4-1/8 x 3-1/8 x 2-1/8	1	
W40125	2-5/8 x 2-5/8 x 1-5/8	2	162.60	W40212	4-1/8 x 2-5/8 x 4-1/8	1	
W40126	2-5/8 x 2-5/8 x 1-3/8	2		W40216	4-1/8 x 2-1/8 x 4-1/8	1	
W40127	2-5/8 x 2-5/8 x 1-1/8	2	163.70	W40215	4-1/8 x 1-5/8 x 4-1/8	1	
W40128	2-5/8 x 2-5/8 x 7/8	1		W40214	4-1/8 x 1-3/8 x 4-1/8	1	
W40129	2-5/8 x 2-5/8 x 5/8	1		W40213	4-1/8 x 1-1/8 x 4-1/8	1	
W40130	2-5/8 x 2-1/8 x 2-5/8	4		W40503	6-1/8 x 6-1/8 x 3-1/8	1	
W40131	2-5/8 x 2-1/8 x 2-1/8	2	169.50	W40504	6-1/8 x 6-1/8 x 2-5/8	1	
W40132	2-5/8 x 2-1/8 x 1-5/8	4	210.70	W40505	6-1/8 x 6-1/8 x 2-1/8	1	
W40133	2-5/8 x 2-1/8 x 1-3/8	4					

SPORLAN BRAZE-FREE FITTINGS

ZOOMLOCK™

Features

- Lightweight design increases productivity
- Short pressing cycle, 5-7 seconds
- Compact design and 350° jaw rotation allows technician to install in tight spaces
- Automatic piston return
- Safety feature that allows crimp cycle to be interrupted
  - Feature allows manual release of piston, if needed
- High-quality, powerful Makita Li-Ion technology for lasting, battery-powered pressing
  - 100-150 Crimps per charge
  - Short charging time of just 15 minutes (2.0 Ah)
  - Makita batteries and chargers available worldwide.
- Tool service indicated via imbedded LEDs, illuminates at 10,000 cycles
- Tool Warranty is 24 months from date of purchase
- Crimp tools are not sold separately



Klauke® 19 kN

MODEL MAP2L19

- **Available in Tool Kit:**
  0 Jaw Tool Kit
  PZK-TK190, P/N 770026
  5 Jaw Tool Kit
  PZK-TK195, P/N 770028;
- **For use with KJ Series Jaws**
- **8-Jaw Kit & Individual Jaws Sold Separately**
- **Approved Copper Tubing Types:**
  Hard Copper (Drawn)
  - 1/4" – 1-3/8" Type ACR, M, L, K

  Soft Copper (Annealed)
  - 1/4" – 1-3/8" Type ACR, L, K



Klauke® 15 kN

MODEL MAP2LCER

- **Available in Tool Kits:**
  0 Jaw Tool Kit
  PZK-TK0, P/N 770000;
  5 Jaw Tool Kit
  PZK-TK5, P/N 770002;
- **For use with J Series Jaws**
- **8 Jaw Kit & Individual Jaws Sold Separately**
- **Approved Copper Tubing Types:**
  Hard Copper (Drawn)
  - 1/4" – 1-1/8" Type ACR, M, L
  - Type K only up to 7/8"

  Soft Copper (Annealed)
  - 1/4" – 1-1/8" Type ACR, L
  - Type K only up to 7/8"

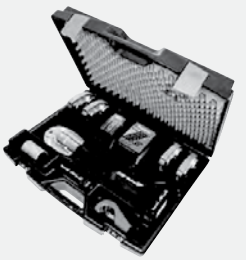
5 Jaw Tool Kits

Includes the Klauke crimping tool (choose from 2 models), 5 jaws, and tool kit contents, listed at below right.

- **Description:** PZK-TK5
- **Part Number:** 770002
- **Jaw Sizes (Inches):** 3/8, 1/2, 5/8, 7/8, 1-1/8
- **Includes Crimping Tool:** Klauke 15 kN MAP2LCER

- **Description:** PZK-TK195
- **Part Number:** 770028
- **Jaw Sizes (Inches):** 3/8, 1/2, 5/8, 7/8, 1-1/8
- **Includes Crimping Tool:** Klauke 19 kN MAP2L19

Tool Kits



0 Jaw Tool Kits

Includes a Klauke crimping tool and the tool kit contents, listed at below right.

- **Description:** PZK-TK0
- **Part Number:** 770000
- **Includes Crimping Tool:** Klauke 15 kN MAP2LCER

- **Description:** PZK-TK190
- **Part Number:** 770026
- **Includes Crimping Tool:** Klauke 19 kN MAP2L19

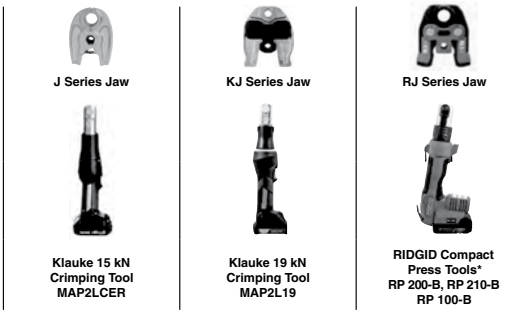
JAW KITS / PART NUMBER			
8 PIECE JAW KITS	J4-J18 770208 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1-1/8	KJ4-KJ22 770239 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1-1/8, 1-3/8	RJ4-RJ22 770219 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1-1/8, 1-3/8
JAW CASE (EMPTY)	770240 (9 empty slots)		770220 (8 empty slots)

Klauke Tool Kit Contents

- Klauke Crimping Tool
- Tubing Cutter
- Deburring Tool
- RLS Crimp Gauge
- RLS Depth Gauge
- Stainless Steel Brush
- Abrasive Pad
- Permanent Marker
- Battery Charger
- (2) Lithium-Ion Rechargeable Batteries



Crimping Tools and Jaw Selection





RIDGID 8 Jaw Kit

8 piece RIDGID jaw kit in hard plastic carrying case includes tube cutter, deburring tools, crimp gauge, depth gauge, stainless steel brush, abrasive pad, and permanent marker.

- **Description:** RJ4-RJ22 RIDGID
- **Part Number:** 770219 RJ Series Jaws
- **Jaw Sizes (Inches):** 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1-1/8, 1-3/8 (5/16 jaw sold separately)
- **Compatible with RIDGID**
- **Compact Press Tool Models:** RP 100-B, RP 200-B, RP 210-B (Sold through RIDGID distributors)



Klauke 8 Jaw Kits

8 piece Klauke 15 kN jaw kit in hard plastic carrying case.

- **Description:** J4-J18 Klauke
- **Part Number:** 770208 J Series Jaws
- **Jaw Sizes (Inches):** 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1-1/8
- **Compatible with Klauke Model:** 15 kN MAP2LCER

8 piece Klauke 19 kN jaw kit in hard plastic carrying case.

- **Description:** KJ4-KJ22 Klauke
- **Part Number:** 770239 KJ Series Jaws
- **Jaw Sizes (Inches):** 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1-1/8, 1-3/8 (5/16 jaw sold separately)
- **Compatible with Klauke Model:** 19 kN MAP2L19

SPORLAN BRAZE-FREE FITTINGS

ZOOMLOCK™

Y Joint



Size	Part Number	Description
3/8	771102	PZK-Y6-NA
1/2	771103	PZK-Y8-NA
5/8	771104	PZK-Y10-NA
3/4	771105	PZK-Y12-NA
7/8	771106	PZK-Y14-NA
1-1/8	771107	PZK-Y18-NA

Caps



Size	Part Number	Description
1/4	770900	PZK-CP4-HNBR
5/16	770901	PZK-CP5-HNBR
3/8	770902	PZK-CP6-HNBR
1/2	770903	PZK-CP8-HNBR
5/8	770904	PZK-CP10-HNBR
3/4	770905	PZK-CP12-HNBR
7/8	770906	PZK-CP14-HNBR
1-1/8	770907	PZK-CP18-HNBR
1-3/8*	770908	PZK-CP22-HNBR

Flare Adapter



Size	Part Number	Description
1/4	771000	PZK-F4-HNBR
3/8	771002	PZK-F6-HNBR
1/2	771003	PZK-F8-HNBR
5/8	771004	PZK-F10-HNBR
3/4	771005	PZK-F12-HNBR

45° Elbow



Size	Part Number	Description
3/8	771402	PZK-45E6-HNBR
1/2	771403	PZK-45E8-HNBR
5/8	771404	PZK-45E10-HNBR
3/4	771405	PZK-45E12-HNBR
7/8	771406	PZK-45E14-HNBR
1-1/8	771407	PZK-45E18-HNBR
1-3/8	771408	PZK-45E22-HNBR

Long Radius Street Elbow -90°



Size	Part Number	Description
3/8	771302	PZK-90SE6-HNBR
1/2	771303	PZK-90SE8-HNBR
5/8	771304	PZK-90SE10-HNBR
3/4	771305	PZK-90SE12-HNBR
7/8	771306	PZK-90SE14-HNBR
1-1/8	771307	PZK-90SE18-HNBR
1-3/8	771308	PZK-90SE22-HNBR

Reducing Bushing



Size	Part Number	Description
1/2 to 3/8	771502	PZK-B86-HNBR
5/8 to 1/2	771505	PZK-B108-HNBR
3/4 to 5/8	771507	PZK-B1210-HNBR
7/8 to 3/4	771510	PZK-B1412-HNBR
1-1/8 to 7/8	771514	PZK-B1814-HNBR
1-3/8 to 1-1/8	771519	PZK-B2218-HNBR

P-Trap



Size	Part Number	Description
1/2	771203	PZK-PT8-NA
5/8	771204	PZK-PT10-NA
3/4	771205	PZK-PT12-NA
7/8	771206	PZK-PT14-NA
1-1/8	771207	PZK-PT18-NA
1-3/8	771208	PZK-PT22-NA

Coupling



Size	Part Number	Description
1/4	770500	PZK-C4-HNBR
5/16	770501	PZK-C5-HNBR
3/8	770502	PZK-C6-HNBR
1/2	770503	PZK-C8-HNBR
5/8	770504	PZK-C10-HNBR
3/4	770505	PZK-C12-HNBR
7/8	770506	PZK-C14-HNBR
1-1/8	770507	PZK-C18-HNBR
1-3/8*	770508	PZK-C22-HNBR

Slip Coupling



Size	Part Number	Description
1/4	770550	PZK-RC4-HNBR
3/8	770552	PZK-RC6-HNBR
1/2	770553	PZK-RC8-HNBR
5/8	770554	PZK-RC10-HNBR
3/4	770555	PZK-RC12-HNBR
7/8	770556	PZK-RC14-HNBR
1-1/8	770557	PZK-RC18-HNBR
1-3/8*	770558	PZK-RC22-HNBR

Elbow



Size	Part Number	Description
1/4	770600	PZK-90E4-HNBR
5/16	770601	PZK-90E5-HNBR
3/8	770602	PZK-90E6-HNBR
1/2	770603	PZK-90E8-HNBR
5/8	770604	PZK-90E10-HNBR
3/4	770605	PZK-90E12-HNBR
7/8	770606	PZK-90E14-HNBR
1-1/8	770607	PZK-90E18-HNBR
1-3/8*	770608	PZK-90E22-HNBR

Tee



Size	Part Number	Description
3/8	770702	PZK-T6-HNBR
1/2	770703	PZK-T8-HNBR
5/8	770704	PZK-T10-HNBR
3/4	770705	PZK-T12-HNBR
7/8	770706	PZK-T14-HNBR
1-1/8	770707	PZK-T18-HNBR
1-3/8*	770708	PZK-T22-HNBR

Reducer



Size	Part Number	Description
3/8 in to 1/4	770800	PZK-R64-HNBR
1/2 in to 1/4	770808	PZK-R84-HNBR
1/2 in to 3/8	770801	PZK-R86-HNBR
5/8 in to 1/4	770809	PZK-R104-HNBR
5/8 in to 3/8	770810	PZK-R106-HNBR
5/8 in to 1/2	770802	PZK-R108-HNBR
3/4 in to 1/2	770811	PZK-R128-HNBR
3/4 in to 5/8	770803	PZK-R1210-HNBR
7/8 in to 1/2	770812	PZK-R148-HNBR
7/8 in to 5/8	770804	PZK-R1410-HNBR
7/8 in to 3/4	770805	PZK-R1412-HNBR
1-1/8 in to 1/2	770813	PZK-R188-HNBR
1-1/8 in to 5/8	770814	PZK-R1810-HNBR
1-1/8 in to 3/4	770806	PZK-R1812-HNBR
1-1/8 in to 7/8	770807	PZK-R1814-HNBR

Zoomlock compatible components:
SOLENOID, CATCH-ALL, BALL VALVE, SEE-ALL

All available with ODM fittings for using with Zoomlock coupling.

Approved Refrigerants

- 1234yf
- 1234ze
- 125
- 134a
- 143a
- 404A
- 407A
- 407C
- 407F
- 410A
- 447A
- 448A
- 449A
- 450A
- 452A
- 452B
- 507
- 513A
- 718
- 32*
- 290*
- 600*
- 600a*

Product Parameters

- Continuous Operating Temperature:
  250°F / 121°C
- O-Ring Temperature Rating:
  -40°F to +300°F
  -40°C to +149°C
- Maximum Rated Pressure (MRP):
  700 psi / 48 bar
- Minimum Burst Pressure (UL 207):
  2,100 psi / 145 bar
- Vacuum Pressure Capability:
  20 Microns
- External Leak Rate:
  <0.1 Ounces of Helium per Year at Operating Pressure Range
- Vibration Resistance:
  Conforms to UL109
- Size Availability (Inches):
  1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1-1/8, 1-3/8

Applications

- High Pressure HVAC/R
- Glycol
- Non-Potable Water

Fitting Materials

- Fitting Body:
  Refrigerant Grade Copper, per ASTM-B75 or ASTM-B743
- O-Ring:
  HNBR

Fitting Warranty

- 5 years from date of install.

Agency Approvals and Certifications

- UL 207, SA#33958, SDTW(7)
- ICC-ES, PMG-1296
  - 2015 IMC (International Mechanical Code)
  - 2015 IRC (International Residential Code)
  - 2015 UMC (Uniform Mechanical Code)
- CRN
  - Approved for couplings and 90 degree elbows
- **Approved Copper Tubing Types for Use with Klauke® 15 kN Compatible Jaws:**
  Hard Copper (Drawn)
  - 1/4" – 1-1/8" Type ACR, M, L
  - Type K only up to 7/8"

  Soft Copper (Annealed)
  - 1/4" – 1-1/8" Type ACR, L
  - Type K only up to 7/8"
- **Approved Copper Tubing Types for Use with Klauke® 19 kN and RIDGID® Compatible Jaws:**
  Hard Copper (Drawn)
  - 1/4" – 1-3/8" Type ACR, M, L, K

  Soft Copper (Annealed)
  - 1/4" – 1-3/8" Type ACR, L, K

ZOOMLOCK COMPATIBLE COMPONENTS



Compatible Components

To make a system convenient to install ODM x ODM ZoomLock compatible components are available including:

- **Ball Valves**
- **Filter-Driers**
- **Moisture and Liquid Indicators**
- **Solenoid Valves**



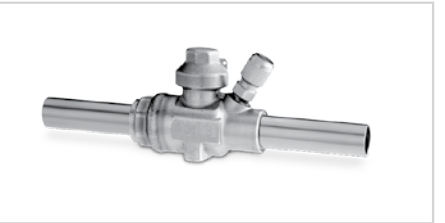
Description	Connection Size (ODM x ODM)	Part Number
C-083-PZK	3/8″	761000
C-163-PZK	3/8″	761200
C-164-PZK	1/2″	761201
C-165-PZK	5/8″	761202
C-167-PZK-T-HH	7/8″	761203
C-147-PZK-TT-HH	7/8″	761100
C-304-PZK	1/2″	761300
C-305-PZK	5/8″	761301
C-309-PZK-T-HH	1-1/18″	761302
C-417-PZK	7/8″	761400
HPC-103-PZK	3/8″	761500
HPC-104-PZK	1/2″	761501
HPC-163-PZK-HH	3/8″	761600
HPC-164-PZK-HH	1/2″	761601
HPC-165-PZK-HH	5/8″	761602



Description	Connection Size (ODM x ODM)	Part Number
E2S123-PZK-HP	1/4″	4603-00
E3S123-PZK	1/4″	4604-00
E3S133-PZK	3/8″	4605-00
E5S133-PZK-HP	3/8″	4606-00
E6S133-PZK-HP	3/8″	4607-00
ME6S133-PZK-HP	3/8″	4610-00
E8S143-PZK-HP	1/2″	4608-00
ME8S143PZK-HP	1/2″	4611-00
ME10S153-PZK-HP	5/8″	4612-00
ME14S253-PZK-HP	5/8″	4613-00
E19S273-PZK-HP	7/8″	4609-00
ME19S273-PZK	7/8″	4614-00
ME19S273-PZK-HP	7/8″	4615-00
ME25S293-PZK	1-1/8″	4616-00
ME25S293-PZK-HP	1-1/8″	4617-00



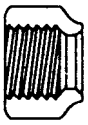
Description	Connection Size (ODM x ODM)	Part Number
SA-13-PZK	3/8″	761700
SA-14-PZK	1/2″	761701
SA-15-PZK	5/8″	761702
SA-17-PZK	7/8″	761703



Description	Connection Size (ODM x ODM)	Part Number
EBVP-1023-PZK	1/4″	502159
EBVP-1033-PZK	3/8″	502160
EBVP-1043-PZK	1/2″	502161
EBVP-1053-PZK	5/8″	502162
EBVP-1063-PZK	3/4″	502163
EBVP-1073-PZK	7/8″	502164
EBVP-1093-PZK	1-1/8″	502165

REFRIGERATION FLARE FITTINGS

Nut (Short Forged-Internal Flare to Tube)(40 Series)



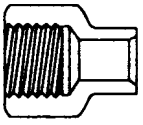
Part #	Size	Pcs / Box	LIST
NS4-3	3/16	50	7.80
NS4-4	1/4	50	1.80
NS4-5	5/16	25	3.50
NS4-6	3/8	25	2.40
NS4-8	1/2	15	3.30
NS4-10	5/8	10	5.30
NS4-12	3/4	10	12.60
NS4-14	7/8	10	36.40

Nut (Short Forged Reducing - Internal Flare to Tube)(40R Series)



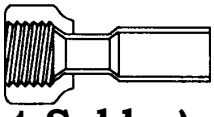
Part #	Size	Pcs / Box	LIST
NRS4-43	1/4 x 3/16	10	15.60
NRS4-54	5/16 x 1/4	10	19.60
NRS4-64	3/8 x 1/4	25	5.50
NRS4-65	3/8 x 5/16	10	7.90
NRS4-86	1/2 x 3/8	15	4.40
NRS4-108	5/8 x 1/2	15	10.60

Nut (Long Forged-Internal Flare to Tube)(39 Series)



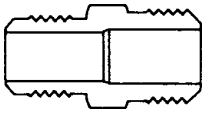
Part #	Size	Pcs / Box	LIST
N4-4	1/4	25	4.00
N4-5	5/16	25	17.40
N4-6	3/8	25	3.20
N4-8	1/2	10	5.70
N4-10	5/8	5	10.30
N4-12	3/4	5	15.70

Extension (Internal Flare to Ext Solder)



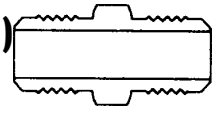
Part #	Size	Pcs / Pk	LIST (per pk)
A15725	1/4 x 1/4	1	6.80
A15726	3/8 x 3/8	1	10.80
A15727	1/2 x 1/2	1	13.40
A15728	5/8 x 5/8	1	11.50
A15729	3/4 x 3/4	1	25.40

Connector (Half Union - Flare to MPT) (48 Series)



Part #	Size	Pcs / Box	LIST
U1-3A	3/16 x 1/8	25	1.80
U1-4A	1/4 x 1/8	25	1.60
U1-4B	1/4 x 1/4	25	2.20
U1-4C	1/4 x 3/8	25	3.40
U1-4D	1/4 x 1/2	25	6.70
U1-5A	5/16 x 1/8	25	2.30
U1-5B	5/16 x 1/4	25	2.60
U1-5C	5/16 x 3/8	25	5.50
U1-6A	3/8 x 1/8	25	2.90
U1-6B	3/8 x 1/4	25	2.50
U1-6C	3/8 x 3/8	25	3.20
U1-6D	3/8 x 1/2	25	4.50
U1-8A	1/2 x 1/8	10	
U1-8B	1/2 x 1/4	10	4.10
U1-8C	1/2 x 3/8	10	4.80
U1-8D	1/2 x 1/2	10	4.20
U1-8E	1/2 x 3/4	10	7.70
U1-10B	5/8 x 1/4	10	
U1-10C	5/8 x 3/8	10	7.90
U1-10D	5/8 x 1/2	10	6.00
U1-10E	5/8 x 3/4	5	7.90
U1-12C	3/4 x 3/8	5	
U1-12D	3/4 x 1/2	5	9.50
U1-12E	3/4 x 3/4	5	11.90

Union (Flare to Flare) (42 Series)



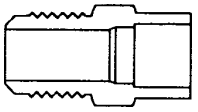
Part #	Size	Pcs / Box	LIST
U2-3	3/16	25	5.10
U2-4	1/4	25	1.80
U2-5	5/16	25	3.40
U2-6	3/8	25	3.90
U2-8	1/2	15	4.10
U2-10	5/8	10	7.50
U2-12	3/4	10	16.00

Reducing Union (Flare to Flare) (42R Series)

Part #	Size	Pcs / Box	LIST
UR2-43	1/4 x 3/16	15	9.80
UR2-54	5/16 x 1/4	10	11.60
UR2-64	3/8 x 1/4	15	5.60
UR2-65	3/8 x 5/16	10	11.10
UR2-84	1/2 x 1/4	15	9.80
UR2-86	1/2 x 3/8	25	9.80
UR2-106	5/8 x 3/8	10	8.70
UR2-108	5/8 x 1/2	15	13.00
UR2-128	3/4 x 1/2	10	20.30
UR2-1210	3/4 x 5/8	10	

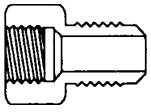
REFRIGERATION FLARE FITTINGS

Connector (Half Union - Flare to Solder)



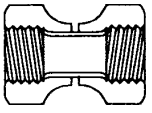
Part #	Size	Pcs / Box	LIST
US3-44	1/4 x 1/4		2.70
US3-45	1/4 x 5/16		5.80
US3-46	1/4 x 3/8		9.80
US3-64	3/8 x 1/4		5.80
US3-65	3/8 x 5/16		11.80
US3-66	3/8 x 3/8		4.80
US3-68	3/8 x 1/2		10.80
US3-610	3/8 x 5/8		13.30
US3-86	1/2 x 3/8		10.80
US3-88	1/2 x 1/2		10.80
US3-810	1/2 x 5/8		13.30
US3-108	5/8 x 1/2		13.30
US3-1010	5/8 x 5/8		9.30
US3-1012	5/8 x 3/4		31.20
US3-1014	5/8 x 7/8		14.00
US3-1212	3/4 x 3/4		12.70
US3-1214	3/4 x 7/8		16.00

Union (Internal Flare to Flare) (35 Series)



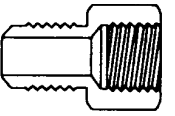
Part #	Size	Pcs / Box	LIST
UR3-43	1/4 x 3/16	10	21.20
UR3-46	1/4 x 3/8	15	6.80
UR3-48	1/4 x 1/2	10	10.80
UR3-64	3/8 x 1/4	15	6.00
UR3-68	3/8 x 1/2	15	8.70
UR3-84	1/2 x 1/4	15	8.50
UR3-86	1/2 x 3/8	15	8.50
UR3-810	1/2 x 5/8	10	9.50
UR3-108	5/8 x 1/2	10	17.40
UR3-1012	5/8 x 3/4	10	17.40
UR3-1210	3/4 x 5/8	10	17.40

Swivel Union (Internal Flare)(34 Series)



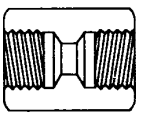
Part #	Size	Pcs / Box	LIST
US4-4	1/4	15	9.80
US4-5	5/16	15	14.10
US4-6	3/8	15	6.90
US4-8	1/2	15	8.90
US4-10	5/8	15	11.80

Connector (Half Union - Flare to FPT) (46 Series)



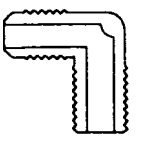
Part #	Size	Pcs / Box	LIST
U3-4A	1/4 x 1/8	25	2.00
U3-4B	1/4 x 1/4	25	2.80
U3-4C	1/4 x 3/8	15	7.60
U3-6A	3/8 x 1/8	10	2.80
U3-6B	3/8 x 1/4	25	3.40
U3-6C	3/8 x 3/8	15	4.20
U3-6D	3/8 x 1/2	15	5.60
U3-8B	1/2 x 1/4	15	14.40
U3-8C	1/2 x 3/8	15	4.80
U3-8D	1/2 x 1/2	15	6.90
U3-10C	5/8 x 3/8	10	13.20
U3-10D	5/8 x 1/2	10	7.80
U3-10E	5/8 x 3/4	10	11.40

Union (Internal Flare) (32 Series)



Part #	Size	Pcs / Box	LIST
U4-4	1/4	10	10.80
U4-6	3/8	10	18.20
U4-8	1/2	10	18.20

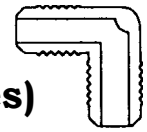
90° Elbow (Half Union - Flare to MPT)(49 Series)



Part #	Size	Pcs / Box	LIST
E1-4A	1/4 x 1/8	25	4.00
E1-4B	1/4 x 1/4	25	4.00
E1-4C	1/4 x 3/8	25	4.70
E1-6A	3/8 x 1/8	25	4.70
E1-6B	3/8 x 1/4	25	4.50
E1-6C	3/8 x 3/8	25	3.90
E1-6D	3/8 x 1/2	25	6.50
E1-8B	1/2 x 1/4	10	6.40
E1-8C	1/2 x 3/8	15	5.50
E1-8D	1/2 x 1/2	15	7.40
E1-8E	1/2 x 3/4	10	12.40
E1-10C	5/8 x 3/8	10	10.20
E1-10D	5/8 x 1/2	10	11.70
E1-10E	5/8 x 3/4	10	13.70
E1-12D	3/4 x 1/2	10	16.90
E1-12E	3/4 x 3/4	10	17.80

REFRIGERATION FLARE FITTINGS

90° Elbow (Union - Flare to Flare)(55 Series)

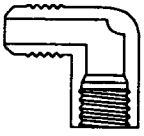


Part #	Size	Pcs / Box	LIST
E2-4	1/4	25	4.40
E2-6	3/8	25	5.80
E2-8	1/2	15	8.70
E2-10	5/8	10	10.50
E2-12	3/4	5	32.90

Reducing Elbow (Flare to Flare) (55R Series)

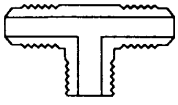
Part #	Size	Pcs / Box	LIST
ER2-64	3/8 x 1/4	25	10.30
ER2-84	1/2 x 1/4	25	14.50
ER2-86	1/2 x 3/8	15	7.70

90° Elbow (Flare to Internal Flare)



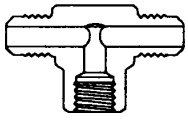
Part #	Size	Pcs / Box	LIST
E4-44	1/4	25	9.90
E4-66	3/8	25	18.70
E4-88	1/2	15	30.30

Tee (Two Way - Flare to Flare to MPT) (45 Series)



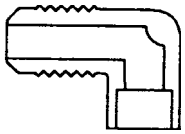
Part #	Size	Pcs / Box	LIST
T1-4A	1/4 x 1/4 x 1/8	25	6.40
T1-4B	1/4 x 1/4 x 1/4	25	8.10
T1-4C	1/4 x 1/4 x 3/8	15	18.30
T1-6B	3/8 x 3/8 x 1/4	25	9.30
T1-6C	3/8 x 3/8 x 3/8	15	12.80
T1-8B	1/2 x 1/2 x 1/4	15	22.10
T1-8C	1/2 x 1/2 x 3/8	15	16.60
T1-8D	1/2 x 1/2 x 1/2	10	26.50
T1-10C	5/8 x 5/8 x 3/8	10	22.90
T1-10D	5/8 x 5/8 x 1/2	10	29.70

Tee (1/4 Tube OD x 1/4 Female Pipe)



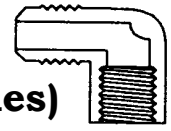
Part #	Size	Pcs / Box	LIST
T6-4	1/4	25	11.40

90° Solder Elbow (Half Union - Flare to Solder)



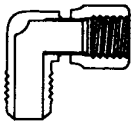
Part #	Size	LIST
ES2-44	1/4 x 1/4	8.30
ES2-66	3/8 x 3/8	10.70
ES2-88	1/2 x 1/2	21.00

90° Elbow (Flare to FPT)(50 Series)



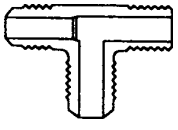
Part #	Size	Pcs / Box	LIST
E3-4A	1/4 x 1/8	25	5.70
E3-4B	1/4 x 1/4	25	11.70
E3-6B	3/8 x 1/4	25	6.20
E3-6C	3/8 x 3/8	25	5.70
E3-8D	1/2 x 1/2	15	8.30

90° Swivel Elbow (Flare to Internal Flare)



Part #	Size	Pcs / Box	LIST
ES4-44	1/4	4	22.40
ES4-66	3/8	4	25.20
ES4-88	1/2	4	

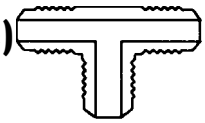
Tee (Flare to MPT to Flare)(51 Series)



Part #	Size	Pcs / Box	LIST
T3-4A	1/4 x 1/8 x 1/4	25	10.50
T3-4B	1/4 x 1/4 x 1/4	25	10.20
T3-6B	3/8 x 1/4 x 3/8	25	11.90
T3-6C	3/8 x 3/8 x 3/8	25	8.40

REFRIGERATION FLARE FITTINGS

Tee (Three Way - Flare) (44 Series)

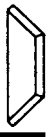


Part #	Size	Pcs / Box	LIST
T2-4	1/4	25	5.40
T2-5	5/16	25	9.20
T2-6	3/8	15	6.50
T2-8	1/2	15	9.00
T2-10	5/8	10	11.90
T2-12	3/4	5	47.50

Reducing Tee (Flare) (44R Series)

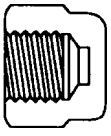
Part #	Size	Pcs / Box	LIST
TR2-46	1/4 x 1/4 x 3/8	25	34.80
TR2-64	3/8 x 3/8 x 1/4	25	6.20
TR2-68	3/8 x 3/8 x 1/2	15	12.90
TR2-84	1/2 x 1/2 x 1/4	10	63.00
TR2-86	1/2 x 1/2 x 3/8	15	7.60
TR2-810	1/2 x 1/2 x 5/8	10	13.30

Gasket (Copper Flare - Flare) (59 Series)



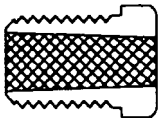
Part #	Size	Pcs / Box	LIST
B2-3	3/16	50	
B2-4	1/4	100	0.80
B2-5	5/16	50	6.40
B2-6	3/8	100	0.80
B2-8	1/2	100	1.30
B2-10	5/8	50	1.00
B2-12	3/4	25	3.90

Cap (Flare Seal - Internal Flare-Hex)(56 Series)



Part #	Size	Pcs / Box	LIST
N5-4	1/4	50	1.10
N5-5	5/16	25	3.90
N5-6	3/8	25	2.30
N5-8	1/2	25	2.50
N5-10	5/8	10	4.80
N5-12	3/4	10	15.50

Fusible Pipe Plug (MPT) 283°F / 210°F / 168°F



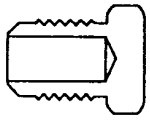
Part #	Size	Pcs / Box	LIST
FP-A	1/8	10	19.50
FP-B	1/4	15	25.10
FP-C	3/8	15	30.70

Seal Bonnet (Copper Flare - Flare)(57 Series)



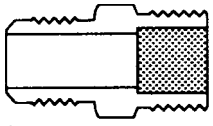
Part #	Size	Pcs / Box	LIST
B1-3	3/16	50	7.50
B1-4	1/4	100	1.60
B1-5	5/16	50	10.00
B1-6	3/8	100	2.00
B1-8	1/2	100	3.40
B1-10	5/8	20	2.70
B1-12	3/4	25	8.50

Plug (Brass - Flare) (58 Series)



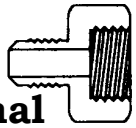
Part #	Size	Pcs / Box	LIST
P2-3	3/16	15	3.20
P2-4	1/4	25	1.80
P2-5	5/16	15	7.30
P2-6	3/8	25	2.70
P2-8	1/2	25	4.10
P2-10	5/8	15	7.70
P2-12	3/4	10	8.40

Fusible Connector (Half Union - Flare to MPT) 283°F / 210°F / 168°F



Part #	Size	Pcs / Box	LIST
FU-4B	1/4 x 1/4	10	21.90
FU-4C	1/4 x 3/8	10	
FU-6C	3/8 x 3/8	10	27.60

Drum Adapter (Refrigerant-Flare-Internal Pipe (NPSM)) (w/gasket)



Part #	Size	Pcs / Box	LIST
K11	1/4 x 3/4	10	15.30
K13	3/8 x 3/4	10	13.30
K15	1/2 x 3/4	10	28.60
K18	1/4 x 1/2	10	60.80

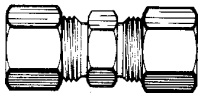
BRASS COMPRESSION FITTINGS

Standard Sleeve



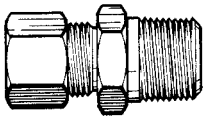
Part #	Tube	LIST
60-3	3/16	0.20
60-4	1/4	0.20
60-5	5/16	0.20
60-6	3/8	0.30
60-8	1/2	0.50
60-10	5/8	0.70
60-12	3/4	1.10

Union Coupling



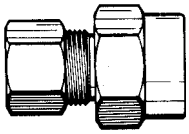
Part #	Tube	LIST
62-2	1/8	2.40
62-3	3/16	2.60
62-4	1/4	2.70
62-5	5/16	2.70
62-6	3/8	3.70
62-8	1/2	6.30
62-10	5/8	8.60
62-12	3/4	19.50
62-14	7/8	22.20

Connector (Tube to Male Pipe)



Part #	Tube	Pipe	LIST
68-2A	1/8	1/8	1.90
68-4A	1/4	1/8	2.00
68-4B	1/4	1/4	2.40
68-4C	1/4	3/8	2.90
68-4D	1/4	1/2	5.80
68-5A	5/16	1/8	3.00
68-5B	5/16	1/4	3.20
68-6A	3/8	1/8	3.50
68-6B	3/8	1/4	2.40
68-6C	3/8	3/8	3.10
68-6D	3/8	1/2	4.40
68-6E	3/8	3/4	15.50
68-8B	1/2	1/4	4.20
68-8C	1/2	3/8	4.20
68-8D	1/2	1/2	6.20
68-8E	1/2	3/4	11.10
68-10C	5/8	3/8	7.30
68-10D	5/8	1/2	6.70
68-10E	5/8	3/4	11.70
68-12D	3/4	1/2	10.70
68-12E	3/4	3/4	12.50
68-14E	7/8	3/4	13.50

Connector (Tube to Female Pipe)



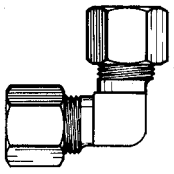
Part #	Tube	Pipe	LIST
66-4B	1/4	1/4	2.50
66-6B	3/8	1/4	3.20

Standard Nut



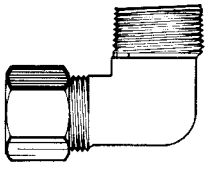
Part #	Tube	LIST
61-4	1/4	0.70
61-5	5/16	0.90
61-6	3/8	0.90
61-8	1/2	1.80
61-10	5/8	2.40
61-12	3/4	3.90

90° Elbow (Tube to Tube)



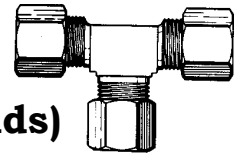
Part #	Tube	LIST
65-3	3/16	11.20
65-4	1/4	4.80
65-5	5/16	7.30
65-6	3/8	7.00
65-8	1/2	12.20

90° Elbow (Tube to Male Pipe)



Part #	Tube	Pipe	LIST
69-4A	1/4	1/8	4.50
69-4B	1/4	1/4	5.50
69-4C	1/4	3/8	6.90
69-4D	1/4	1/2	11.60
69-6A	3/8	1/8	5.90
69-6B	3/8	1/4	5.70
69-6C	3/8	3/8	6.90
69-6D	3/8	1/2	12.00
69-8B	1/2	1/4	8.30
69-8C	1/2	3/8	8.80
69-8D	1/2	1/2	6.90

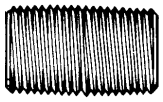
Tee (Tube Three Ends)



Part #	Tube	LIST
64-3	3/16	6.80
64-4	1/4	5.60
64-5	5/16	9.60
64-6	3/8	7.00
64-8	1/2	13.00

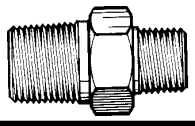
BRASS PIPE FITTINGS

Close Nipple



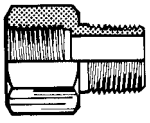
Part #	Pipe	LIST
112-A	1/8	1.00
112-B	1/4	1.30
112-C	3/8	1.90
112-D	1/2	3.60
112-E	3/4	5.50

Reducing Nipple



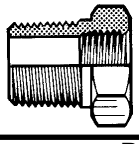
Part #	Pipe	LIST
122-BA	1/4 x 1/8	2.40
122-CA	3/8 x 1/8	3.00
122-CB	3/8 x 1/4	3.50
122-DB	1/2 x 1/4	6.30
122-DC	1/2 x 3/8	7.10
122-ED	3/4 x 1/2	10.00

Adapter



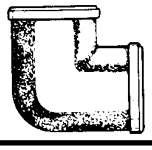
Part #	Pipe	LIST
120-AA	1/8 x 1/8	1.50
120-BB	1/4 x 1/4	2.80

Bushing



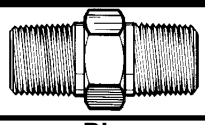
Part #	Pipe	LIST
110-BA	1/4 x 1/8	1.20
110-CA	3/8 x 1/8	2.30
110-CB	3/8 x 1/4	1.50
110-DA	1/2 x 1/8	4.40
110-DB	1/2 x 1/4	3.30
110-DC	1/2 x 3/8	3.10
110-EA	3/4 X 1/8	15.60
110-EB	3/4 x 1/4	6.30
110-EC	3/4 x 3/8	5.20
110-ED	3/4 x 1/2	5.20
110-HC	1 x 3/8	11.20
110-HD	1 x 1/2	11.80
110-HE	1 x 3/4	9.00

Brass 90° Elbow



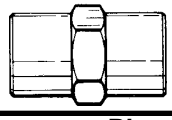
Part #	Pipe	LIST
100-A	1/8	3.40
100-B	1/4	4.50
100-C	3/8	7.10
100-D	1/2	10.70
100-E	3/4	33.00

Hex Nipple



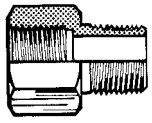
Part #	Pipe	LIST
122-A	1/8	1.60
122-B	1/4	1.70
122-C	3/8	4.30
122-D	1/2	8.10
122-E	3/4	8.10

Coupling



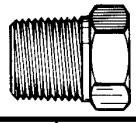
Part #	Pipe	LIST
103-A	1/8	2.80
103-B	1/4	5.40
103-C	3/8	4.90
103-D	1/2	7.10
103-E	3/4	7.80

Reducing Adapter (female pipe listed first)



Part #	Pipe	LIST
120-BA	1/4 x 1/8	2.40
120-CA	3/8 x 1/8	4.00
120-CB	3/8 x 1/4	4.10
120-DB	1/2 x 1/4	7.20
120-DC	1/2 x 3/8	6.90
120-ED	3/4 x 1/2	11.70

Plug (Hex Head)



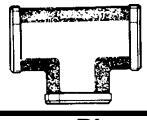
Part #	Cored	Pipe	LIST
121-A	YES	1/8	0.90
121-B	YES	1/4	1.50
121-C	YES	3/8	2.40
121-D	YES	1/2	5.60
121-E	YES	3/4	6.70

90° Street Elbow



Part #	Pipe	LIST
116-A	1/8	5.40
116-B	1/4	5.10
116-C	3/8	7.60
116-D	1/2	11.60
116-E	3/4	19.60

Tee



Part #	Pipe	LIST
101-A	1/8	3.80
101-B	1/4	5.50
101-C	3/8	7.80
101-D	1/2	12.70
101-E	3/4	34.10

BRASS WATER HOSE FITTINGS

Connector (3/4" Male Hose)



Part #	Hose I.D.	LIST
193-8	1/2 - Barb	5.70
193-10	5/8 - Barb	7.10
196-D	1/2 - MPT	5.30
196-E	3/4 - MPT	6.30

Swivel Connector (3/4" Female Hose)



Part #	Hose I.D.	LIST
195-8	1/2 - Barb	6.30
195-10	5/8 - Barb	7.50
194-D	1/2 - MPT	7.70

BRASS GAS APPLIANCE ORIFICES

Pilot Nut (Breakaway Type)

Part #	Tube Size	LIST	Part #	Tube Size	LIST
81-3N	3/16	10.10	81-4N	1/4	4.40

GEAR CLAMPS



Part #	Clamp Size (max)	LIST	Part #	Clamp Size (max)	LIST	Part #	Clamp Size (max)	LIST
HC6-4TB*	5/8	0.80	HC6-10	1-1/16	1.30	HC6-32	2-1/2	1.60
HC6-6TB	7/8	0.90	HC6-12	1-1/4	1.30	HC6-40	3	1.70
HC6-6	7/8	1.30	HC6-16	1-1/2	1.30	HC6-64	4-1/2	2.20
HC6-8	1	1.30	HC6-24	2	1.50			

* Denotes thin band. TB Series has a 5/16 inch wide band.

NYLON PIPE FITTINGS

Nylon Adapter



Part #	Description	LIST
TAA-2416	3/4" MPT x 1/2" BARB	2.20
TAA-2420	3/4" MPT x 5/8" BARB	3.50

Nylon Tee



Part #	Description	LIST
TTA-202020	5/8" BARB x 5/8" BARB x 5/8" BARB	5.00
TTB-161616	1/2" BARB x 1/2" MPT x 1/2" BARB	2.50

Nylon Bushing

Part #	Description	LIST
TRA-2416	3/4" MPT x 1/2" FPT (100)	2.90

Nylon Elbow



Part #	Description	LIST
TEA-2412	3/4" MPT x 3/8" BARB	2.50
TEA-2416	3/4" MPT x 1/2" BARB	3.70
TEA-2420	3/4" MPT x 5/8" BARB	4.50
TEA-2424	3/4" MPT x 3/4" BARB	4.50
TEB-2416	3/4" FPT x 1/2" BARB	9.00
TEB-2420	3/4" FPT x 5/8" BARB	3.90

Nylon Plug

Part #	Description	LIST
TPA-24	3/4" MPT (100)	3.40

636 PIPE AND FITTINGS

IPEX

SYSTEM 636 PVC

System 636 PVC is classified as Type BH Class II A vent, suitable for use on appliances with flue gas temperatures up to and including 65ºC (149ºF).

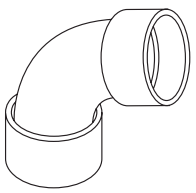
System 636 PVC has specially certified Cements and Primers which are an integral part of the "system certification" of the product line. Substitutions shall not be made for any component of a System 636 PVC system, this includes pipe, fittings, cements and primers.





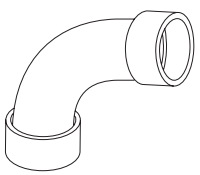
PVC Gas Vent Pipe (10ft length)

Part #	Dimension	LIST
194000	2"	49.80
194001	3"	116.60



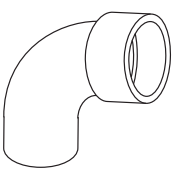
PVC FGV 90° Elbow

Part #	Dimension	LIST
196035	2"	7.60
196025	3"	20.90



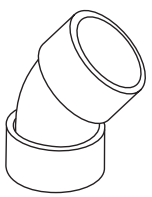
PVC - FGV 90º Extra Long Elbow

Part #	Dimension	LIST
196022	2" Extra long	8.30
196023	3" Extra long	22.10



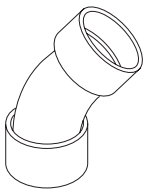
PVC - FGV 90º Street Elbow

Part #	Dimension	LIST
196232	2"	6.60
196233	3"	19.00



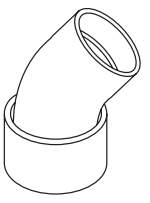
PVC - FGV 45º Elbow

Part #	Dimension	LIST
196242	2"	6.50
196243	3"	18.00



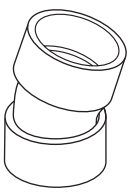
PVC - FGV 45º Long Elbow

Part #	Dimension	LIST
196010	2" long	7.60
196011	3" long	20.10



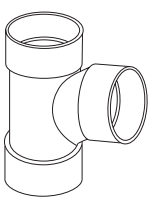
PVC - FGV 45º Elbow

Part #	Dimension	LIST
196071	2"	8.00



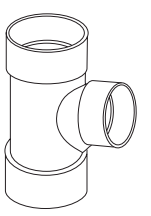
PVC - FGV 22-1/2º Elbow

Part #	Dimension	LIST
196252	2"	11.30



PVC - FGV Sanitary Tee

Part #	Dimension	LIST
196082	2"	13.30
196083	3"	24.00

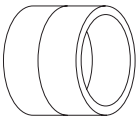


PVC - FGV Reducer Tee

Part #	Dimension	LIST
196056	2" x 1-1/2"	10.90
196061	3" x 1-1/2"	23.50

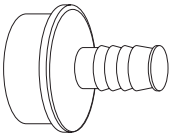
636 PIPE AND FITTINGS

IPEX



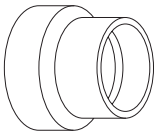
PVC - FGV Coupling

Part #	Dimension	LIST
196352	2"	4.40
196353	3"	10.20



PVC - FGV Reducer Bushing Sp x Hose Barb

Part #	Dimension	LIST
196278	1-1/2" x 1-1/2"	3.80



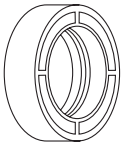
PVC - FGV Increaser Coupling

Part #	Dimension	LIST
196364	3" x 2"	16.20



PVC - FGV Deep Socket Coupling

Part #	Dimension	LIST
196453	2"	7.40



PVC - FGV Reducer Bushing

Part #	Dimension	LIST
196282	2" x 1-1/2"	3.80
196284	3" x 2"	7.90
196673	3" x 2-1/2"	8.40

System 636 Accessories, Cements & Primers



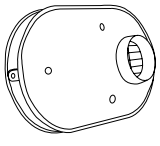
FGV Concentric Vent Kit

Part #	Dimension	LIST
196005	2" x 16" PVC	162.30
196125	2" x 40" PVC	202.10
196006	3" x 20" PVC	218.90



PVC Cement

Part #	Volume	LIST
196040	1 pint	22.10



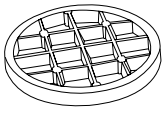
PVC - FGV Low Profile Termination Kit (Beige)

Part #	Dimension	LIST
1HT0902-636	2"	64.20
1HT0901-636	3"	64.20



Transition Cement

Part #	Volume	LIST
196044	1 pint	23.60



Termination Vent Screens

Part #	Dimension	LIST
196050	2"	5.80
196051	3"	14.90



PVC / CPVC Primer Low Voc

Part #	Volume	LIST
196042	1 pint (purple)	25.10
196017	1 pint (clear)	27.40

PVC SCH 40 PIPE AND FITTINGS

Pipe

Part #	Description	LIST
PVC-3/4-10FT	3/4" 10FT 480 PSI PIPE	5.50
PVC-1-10FT	1" 10FT 450 PSI PIPE	5.50
PVC-1-1/4-20FT	1-1/4" 20FT 370 PSI PIPE	24.70
PVC-1-1/2-10FT	1-1/2" 10FT 330 PSI PIPE	50.50

Coupling - S X S

Part #	Description	LIST
035449	3/4"	0.70
035450	1"	1.10
035451	1-1/4"	1.50
035452	1-1/2"	1.70

90 DEG Elbow - S X S

Part #	Description	LIST
035520	3/4"	0.70
035521	1"	1.50
035522	1-1/4"	2.50
035523	1-1/2"	2.70

90 DEG Elbow - S X FPT

Part #	Description	LIST
035507	3/4"	1.10
035508	1"	1.80
035509	1-1/4"	3.00
035510	1-1/2"	3.30

90 DEG Elbow Street

Part #	Description	LIST
035545	3/4"	2.30
035546	1"	3.90
035547	1-1/4"	4.60
035548	1-1/2"	5.10

90 DEG Elbow Street - MPT X S

Part #	Description	LIST
035501	3/4"	1.80
035502	1"	3.00
035503	1-1/4"	4.10
035504	1-1/2"	4.20

Cap

Part #	Description	LIST
035408	3/4"	0.80
035409	1"	1.20
035410	1-1/4"	1.70
035411	1-1/2"	1.80

Condensate Traps

Part #	Description	LIST
0356	3/4" P-TRAP	3.70
0357	3/4" R-TRAP	3.50
13655	3/4" J-TRAP	3.20
16082	1" P-TRAP	5.30

45 DEG Elbow - S X S

Part #	Description	LIST
035482	3/4"	1.80
035483	1"	2.10
035484	1-1/4"	3.00
035485	1-1/2"	3.70

Female Adapter - S X FPT

Part #	Description	LIST
035560	3/4"	1.10
035561	1"	1.20
035562	1-1/4"	1.80
035563	1-1/2"	2.10

Male Adapter - S X MPT

Part #	Description	LIST
035603	3/4"	0.80
035604	1"	1.40
035605	1-1/4"	1.50
035606	1-1/2"	2.10

Tee

Part #	Description	LIST
035776	3/4"	1.10
035777	1"	1.80
035778	1-1/4"	2.90
035779	1-1/2"	3.50

Union - S X S

Part #	Description	LIST
035901	3/4"	7.50
035902	1"	7.60
035903	1-1/4"	24.50
035904	1-1/2"	25.40

Plug - MPT

Part #	Description	LIST
TPA-24	3/4"	3.40
035624	1"	3.20

Reducing Bushing

Part #	Description	LIST
035646	3/4" X 1/2"	0.80
035648	1" X 1/2"	1.40
035649	1" X 3/4"	1.40
035651	1-1/4" X 3/4"	1.80
035652	1-1/4" X 1"	1.80
035654	1-1/2" X 3/4"	1.80
035655	1-1/2" X 1"	1.80
035656	1-1/2" X 1-1/4"	1.80

Reducing Coupling - S X S

Part #	Description	LIST
035759	3/4" X 1/2"	1.20
035760	1" X 3/4"	2.00
035761	1-1/4" X 1"	3.20
035762	1-1/2" X 1-1/4"	3.40
035764	2" X 1-1/2"	5.40

Pipe Strap

Part #	Description	LIST
036000	1/2"	1.00
036001	3/4"	1.20
036002	1"	1.50
036003	1-1/4"	1.80
036004	1-1/2"	2.00
036005	2"	3.00

PIPE CLEANERS / PRIMERS / CEMENTS

Whitlam Primer Cleaner





Whitlam Clear Pipe Cement





Part #	Description	LIST
PPL8	Purple Primer Cleaner removes any glaze often found on plastic pipe/fittings. Softens plastic to accept the appropriate solvent cement. 1/2 pt Dauber Top Can	11.00
PCL16	Clear Primer is a low VOC solvent cement primer for use on all PVC, ABS and CPVC pipe and fittings. 1 pt Dauber Top Can	17.60

Part #	Description	LIST
PL8	Clear Medium Bodied Cement formulated for smaller and medium diameter solvent weld PVC pipe and fittings. 1/2 pt Dauber Top Can	12.10
APR8	All Purpose Clear Heavy-Duty Cement for use through 6" diameter Sch. 40 & Sch. 80 ABS, PVC and Sch. 40 CPVC pipe. 1/2 pt Dauber Top Can	11.60

PVC BRAIDED HOSE

Polyvinyl-Chloride braided hose is manufactured from F.D.A. approved resins.

It has an open mesh nylon braid to withstand higher pressures. It is transparent (blockages can be easily detected), flexible, light, and non conductive.

It is suitable for use with air, mineral salts, plating solution, water, salt water, and hydrocarbons.

PACKAGING: 100 ft. coils all sizes

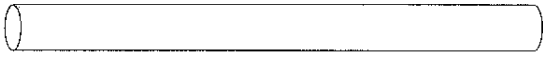
TEMPERATURE: -5°F to +160°F, -21°C to +71°C



NSF CERTIFIED UNDER STANDARD 51 and 61

Part #	Outside Dia	Inside Dia.	W.P. P.S.I.	LIST
PVC-106	.600	3/8	225	1.70/ft
PVC-128	.750	1/2	200	2.10/ft
PVC-1410	.875	5/8	200	3.00/ft
PVC-1712	1.025	3/4	150	3.50/ft
PVC-2116	1.312	1	125	5.50/ft
PVC-2820	1.620	1-1/4	100	

KURI-TEC HEAVY DUTY VINYL TUBING



NSF CERTIFIED UNDER STANDARD 51 and 61

Clear polyvinyl-chloride tubing is manufactured from F.D.A. approved resins.

It is clear, flexible, easy to clean, abrasion resistant and non-contaminating.

It is suitable for the conveyance of air, and water and is used extensively where foodstuffs and beverages are conveyed.

PACKAGING: 100 ft. coils

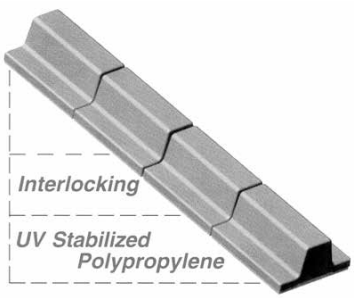
TEMPERATURE: +25°F to +149°F, -4°C to +65°C

Part #	Outside Dia	Inside Dia.	W.P. P.S.I.	LIST
VT-1/8	1/4	1/8	65	0.50/ft
VT-3/16	3/8	3/16	65	1.10/ft
VT-1/4	3/8	1/4	55	0.70/ft
VT-3/8	5/8	3/8	55	2.10/ft
VT-5/8	7/8	5/8	40	2.90/ft
VT-3/4	1	3/4	35	3.50/ft
VT-7/8	1-1/4	7/8	35	7.60/ft
VT-1	1-1/4	1	25	4.20/ft

ROOF PIER

Quick-Block

- Designed to evenly distribute weight
- Eliminate the worries of supporting equipment feeds on a flat roof
- Interlock for multiple feed installation
- No labour costs building wood blocks
- Tested at extreme weight & temperature
- Environmentally friendly
- Limited lifetime warranty
- 450 lbs max. capacity. 3/8" thick top for screw mounting w/interlocking edges.



Part #	Dimensions	LIST
QUICK-BLOCK	12"L x 10"W x 5"H	15.60

Special Note: Do not apply directly over PVC roofing membranes - Call for available alternate solutions

ROOF PIER

C-Port

C-Series





Specifications:
- Base with 14 ga. Galv. Channel (13/16” high)
- Dimensions - 4-7/8" High x 6" Wide x 9.6" to 48" Length (base length)
- Material - 100% recycled rubber, UV resistant
- Maximum Load - 750 lbs./ft.

C-Port *C-Series channel support is designed for superior support of gas and refrigeration pipping systems, cable tray, electrical conduit, multiple lines, HVAC equipment and many other applications. The* ***C-Port*** *is UV resistant and suitable for installation on any type of roofing material or other flat surfaces. Can be used as a curb (sleeper) replacement.*

Part #	Height	Width	Length	Weight	LIST
C5	4-7/8" (124mm)	6" (152mm)	5" (127mm)	3.32 lbs.	22.40
C10	4-7/8" (122mm)	6" (152mm)	9.6" (244mm)	5.30lbs	29.60
C20	4-7/8" (122mm)	6" (152mm)	19" (482.60mm)	11.23lbs	75.60

CX-Value Series

CXP



Specifications:
- Base Only Dimensions: 4” high x 6” wide x 9.6” long
- Material: 100% recycled rubber, UV resistant
- Maximum Load: 500 lbs.

C-Port *CXP channel support is designed as an economical support of gas piping systems, electrical conduit, HVAC equipment and many other applications. The* ***C-Port*** *is UV resistant and appropriate for many types of roofing material or other flat surfaces. Material effectively accepts screw fasteners for securing one (1) or two (2) hole straps (not included).*

CXM MINI-PORT



Specifications:
- Base Only Dimensions: 4” high x 6” wide x 4.5” long (base length)
- Material: 100% recycled rubber, UV resistant
- Maximum Load: 150 lbs.

C-Port *CXM Mini-Port is perfect for conduit and small piping.*

Part #	Height	Width	Length	Weight	LIST
CXP	4” (101mm)	6” (152mm)	9.6” (244mm)	4.56 lbs.	21.60
CXM	4” (101mm)	6" (152mm)	4.5” (113mm)	2.60 lbs.	16.30

CE-Extension Series

Specifications:
- Base with two (2) 1/2" Electro Zinc All Threaded Rod Risers and 1/4 ga. Galv. Channel (7/8” high)
- Dimensions - Overall height as specified
  Base - 4” Height x 6” Width x 9.6” Length (base length) or
  Base - 2-5/8” Height x 12” Width x 12” Length
- Material - 100% recycled rubber, UV resistant
- Load Coating - Range from 400 to 800 lbs.





C-Port *CE-Series channel support is designed for as a superior extended support for gas and refrigeration pipping systems, cable tray, conduit and many other applications. The CE series is designed to be adjustable from 8" - 16". The* ***C-Port*** *is UV resistant and suitable for installation on any type of roofing material or other flat surfaces.*
A wide range of pipe clamps and straps can be used with this support.

Part #	Height	Width	Length	Riser High	Weight	LIST
CE10-12	4-7/8" (124mm)	6" (152mm)	5" (127mm)	12"	3.32 lbs.	62.50
CE10-8	4-7/8" (124mm)	6" (152mm)	5" (127mm)	8"	3.32 lbs.	60.50

VIBRATION PADS

The E.V.A. Pad - Extreme Vibration Attenuation



- Outperforms cork and rubber by a margin of greater than 3:1
- Outperforms our competitor's "waffle" pad by a margin of greater than 8:1 !
- Composite foam is much more structurally sound than cork.
- Not affected by oils or chemicals that can sometimes break down cork
- Designed to withstand 50 psi.

Part #	Description	LIST
MP-2E	2" x 2" x 7/8" EVA pad	2.00
MP-4E	4" x 4" x 7/8" EVA pad	7.60
MP-6E	6" x 6" x 7/8" EVA pad	15.20
MP-18	18" x 18" x 3/8" Rubber pad	52.90
MP-18E	18" x 18" x 7/8" EVA pad	127.40

GAS APPLIANCE CONNECTORS (STATIONARY) FOR DOMESTIC APPLIANCES



- CAN / CGA 6.10-M88 "Metal Connectors for Gas Appliances"
- ANSI Z21.24 "Metal Connectors for Gas Appliances"

1/2" FP x 1/2" FP

Part #	Length Inches	LIST
ACS-50FF-12	12	20.40
ACS-50FF-24	24	28.70
ACS-50FF-36	36	33.60
ACS-50FF-48	48	39.10
ACS-50FF-60	60	50.20

3/4" FP x 3/4" FP

Part #	Length Inches	LIST
ACS-75FF-24	24	46.80
ACS-75FF-36	36	59.40
ACS-75FF-48	48	71.20
ACS-75FF-60	60	74.60
ACS-75FF-72	72	94.80

PGP FLEXIBLE GAS PIPING SYSTEM

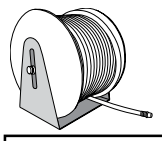
TRACPIPE / COUNTERSTRIKE

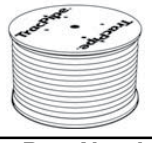
TracPipe® CounterStrike® Flexible Gas Piping by OmegaFlex®

– For Enhanced Lightning Protection

PATENTED

Component	*Material*
TracPipe Flexible Gas Tubing	Corrugated Stainless Steel 300 Series with Polyethylene Jacket
	Plywood Reels for Packaging



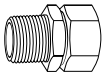


NOTE:
Other lengths available. Consult your local branch for availability.

Description Flexible Piping CSST	Part Number		Size	Pkg. Qty REEL LENGTH	Lb. Reel	LIST
3/8"	CS-375	SS4-375	3/8"	100 ft/reel	13	
1/2"	CS-500	SS4-500	1/2"	100 ft/reel	18	9.50
3/4"	CS-750	SS4-750	3/4"	100 ft/reel	59	12.40
1"	CS-100	SS4-100	1"	100 ft/reel	32	1,767.00
1 1/2"	CS-150	SS4-150	1 1/2"	150 ft/reel	80	

Component	*Material*
Straight Mechanical Fitting	Brass Fitting AutoFlare Insert
Split Rings	Brass
Brass Coupling AutoFlare Insert	Brass
Brass Flange Mount Fittings	Brass
Termination Mount	Brass and Stainless Steel Plate

AutoFlare® Fittings



Straight Fitting

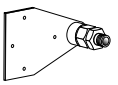


Female Straight



Coupling





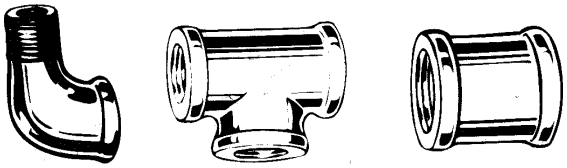
Description Fittings for ***TracPipe***	Part Number	Size	Pkg. Qty	Lb.	LIST
AutoSnap Straight 1/2"	SFST-500	1/2"	24/box	.4	35.20
AutoSnap Straight 3/4"	SFST-750	3/4"	24/box	.4	48.00
Spare Split Rings	RING-375	3/8"	10/pack	.06	
Spare Split Rings	RING-500	1/2"	10/pack	.06	17.70
Spare Split Rings	RING-750	3/4"	10/pack	.06	19.10
Spare Split Rings	RING-1000	1"	10/pack	.06	23.60
Spare Split Rings	RING-1250	1-1/4"	4/pack	.06	
Spare Split Rings	RING-1500	1-1/2"	4/pack	.2	
Spare Split Rings	RING-2000	2"	4/pack	.3	
AutoFlare Female Straight *3/8"*	FSTF-375	3/8"-1/2"NPT	24/box	.25	
AutoFlare Female Straight 1/2"	FSTF-500	1/2"	24/box	.33	40.80
AutoFlare Female Straight 3/4"	FSTF-750	3/4"	16/box	.49	55.50
AutoFlare Female Straight 1"	FSTF-1000	1"	16/box	.61	85.90
Coupling- 3/8"	CPLG-375	3/8"	24/box	.3	
Coupling- 1/2"	CPLG-500	1/2"	24/box	.5	75.00
Coupling- 3/4"	CPLG-750	3/4"	16/box	.7	103.20
Coupling- 1"	CPLG-1000	1"	16/box	.9	159.70
Coupling 1-1/2"	CPLG-1500	1-1/2"	4/box	3.3	
Coupling 2"	CPLG-2000	2"	4/box	5.5	
Flange Fitting 3/8"	BFF-375	3/8"	12/box	.7	
Flange Fitting 1/2"	BFF-500	1/2"	12/box	.7	55.40
Flange Fitting 3/4"	BFF-750	3/4"	8/box	1.3	71.70
Flange Fitting 1"	BFF-1000	1"	8/box	1.5	98.60
Termination Mount 3/8"	TM-375	3/8"	12/box	.9	
Termination Mount 1/2"	TM-500	1/2"	12/box	1	55.40
Termination Mount 3/4"	TM-750	3/4"	8/box	1.1	61.10

TracPipe By TracPipe Outlet

Tee - ***TracPipe*** 1/2"	TF500-T500	1/2 x 1/2"	14/box	1	118.40
Tee - ***TracPipe*** 3/4"	TF750-T750	3/4 x 3/4"	12/box	1.6	156.80

All Prices Are Sold by the Foot

BLACK IRON STEEL PIPE FITTINGS



Black Pipe Fittings - 150 psi

Part #	Description	LIST
BSE-1/2X90	90° Banded Elbow	3.10
BSE-3/4X90	90° Banded Elbow	4.50
BSE-1X90	90° Banded Elbow	6.90
BSSE-1/2 x 90	90° Street Elbow	3.80
BSSE-3/4 x 90	90° Street Elbow	5.60
BSSE-1 x 90	90° Street Elbow	8.20
BSE-1/2X45	45° Banded Elbow	3.10
BSE-3/4X45	45° Banded Elbow	4.70
BSE-1X45	45° Banded Elbow	6.90
BST-1/2	Banded Tee	4.00
BST-3/4	Banded Tee	5.70
BST-1	Banded Tee	9.00
BSCAP-1/2	Banded Cap	2.40
BSCAP-3/4	Banded Cap	3.00
BSCAP-1	Banded Cap	4.10
BSC-1/2X1/2	Banded Coupling	2.40
BSC-3/4X3/4	Banded Coupling	3.30
BSC-1X1	Banded Coupling	5.60
BSC-3/4X1/2	Reducing Coupling	4.10
BSC-1X1/2	Reducing Coupling	6.10
BSC-1X3/4	Reducing Coupling	5.60
BSB-3/4X1/2	Bushing	3.20
BSB-1X3/4	Bushing	4.30
BSU-1/2	Union	15.50
BSU-3/4	Union	19.80
BSU-1	Union	23.30
BSP-1/2	Plug	2.60
BSP-3/4	Plug	3.40
BSP-1	Plug	3.50

Other Sizes Available



Black Welded Steel Pipe Nipples

Part #	LIST
BSN-1/2XCLOSE	2.60
BSN-1/2X1-1/2	2.70
BSN-1/2X2	3.00
BSN-1/2X2-1/2	3.10
BSN-1/2X3	3.50
BSN-1/2X3-1/2	4.00
BSN-1/2X4	4.20
BSN-1/2X4-1/2	4.70
BSN-1/2X5	5.00
BSN-1/2X5-1/2	5.30
BSN-1/2X6	5.60
BSN-3/4XCLOSE	3.20
BSN-3/4X1-1/2	3.40
BSN-3/4X2	3.50
BSN-3/4X2-1/2	3.60
BSN-3/4X3	4.00
BSN-3/4X3-1/2	4.50
BSN-3/4X4	4.80
BSN-3/4X4-1/2	5.20
BSN-3/4X5	5.60
BSN-3/4X5-1/2	6.10
BSN-3/4X6	6.70
BSN-3/4X12	17.10
BSN-3/4X18	25.20
BSN-3/4X24	30.40
BSN-3/4X48	60.40
BSN-3/4X60	75.20
BSN-3/4X72	85.80

NOTE: Steel prices may change

NATURAL GAS BALL VALVES

Pipe (Female to Female)

Part #	Pipe	Temp F.	LIST
BV2103-C-CGA	3/8	-40° to +300°	9.80
BV2103-D-CGA	1/2	-40° to +300°	13.50
BV2103-E-CGA	3/4	-40° to +300°	21.10



ACCESS FITTING TOOLS

Valve Core Tool



Contains 1/4" bit with 6 extra 1/4" valve cores & new thread chaser bit

Part #	Description	LIST
A32004	1/4" valve tool	16.30



Education/Recovery Tool

Designed to quickly attach to and penetrate copper refrigerant lines. Permits speedy recovery of refrigerant before service. Fits all sizes from 1/4" to 7/8" O.D.

Part #	Description	LIST
A32100	Ref'n recovery plier	163.20
A32101	Replacement tip	26.30
19022	Replacement gasket	33.60



Core Storer

All steel valve core remover and storage container. Four replacement cores are included with each tool.

Part #	Description	LIST
VCR-1	Core Remover and Storer	25.80



Kwik-Vise™ Refrigerant Recovery Tool

Line piercing/refrigerant recovery tool pierces, seals and locks on to copper lines in one swift motion.

Part #	Description	LIST
PT-109	Imperial Line Piercing Tool	123.20

4 in 1 Ball Valve Tool

Remove and replace Schrader cores without losing charge.

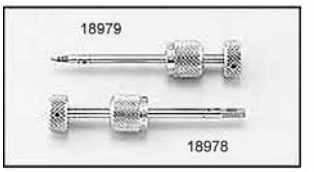
1. **Vacuum valve.** Extra 1/4" side port to attach electronic micron vacuum gauge right at system for greater accuracy.
2. **Core removal access.** Lets you evacuate and charge through an unrestricted line for increased speed and higher vacuum.
3. **Core replacement.**
4. **Recovery valve.** Core removal allows recovery unit to work at maximum efficiency, speeding the recovery process.



A32525N



18975



Part #	Description	LIST
A32525N	Core remover with port	143.50
18975	Vacuum/charge ball valve	181.10
18980	Accessory set - 2 piece	125.10
18978	Schrader rethreading accessory	64.10
18979	Broken Schrader remover acc.	64.10
18997	Grappler rod/nut assembly	60.00
18973	Gasket for 18975 (5pk)	23.00
18974	Seal kit incl. core, cap, 3 "O"-rings, gasket	39.30

Valve Core Torque Tool

Valve core torque tool sets proper torque every time. Calibrated to precise torquing requirements for core valves, the tool will no longer tighten once proper torque is achieved. Eliminates guess work which results in under or over torquing of cores.



Part #	Description	LIST
A32008	1/4" valve core torque tool	53.00

ACCESS VALVES

Quick Tap

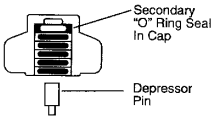
Valve core in the 1/4" male port. Simply pierce the line and back seat the needle. Flow starts when depressor type charging hose is connected.

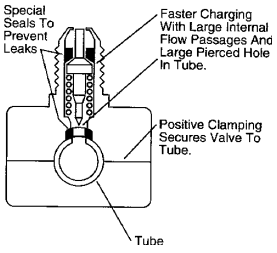


Part #	Description	LIST
QT-1	Quick Tap 1/4", 5/16", 3/8" OD Tube	18.40
QT-2	Quick Tap 1/2", 5/8" OD Tube	22.40

Line Tap Valves

All have depressor valve action for direct charging hose connections. All automatically close when you remove the charging hose. The valve is clamped to the line by 2 socket head screws. The depressor pin pierces the line when the wing cap is threaded on. Removing the wing cap closes the valve and the line is ready for connection of a charging hose.





Part #	Description	LIST
QTM-1	Tubing Size OD - 1/4", 5/16", 3/8"	10.00
QTM-2	Tubing Size OD - 1/2", 5/8"	12.50

Line Taps with Adjustable Flow Control

Valve handle control makes it easy and fast to charge, discharge and test refrigeration and A/C systems. Valves may be easily attached with 3 Phillips head screws under pressure and in any position.



Part #	Description	LIST
QTH-1	Tubing Size OD - 3/16", 1/4", 5/16", 3/8"	47.50
QTH-2	Tubing Size OD - 3/8", 1/2", 5/8"	31.20

Self-Tapping Valves

Valve is constructed of all brass and stainless steel components for water, air and steam applications. Easily taps into any tubing or pipe without shutdown.



Part #	Description	LIST
FTV-12	3/8" SAE Flare Can be used on 1/2" Steel or Brass Pipe Approx. 7/8" OD	89.70

Water Line Tap Valves

No cutting or soldering requiReducer Ideal for use in tapping water lines. Stainless steel piercing needle which cuts a 5/32" hole. Built-in water shut-off.



Part #	Description	LIST
QAV-2	1/4" Compression - 3/8" thru 1-1/4"	19.10

ACCESS VALVES

Bullet Piercing Valves

Install on the high side as a permanent valve on the job. The Bullet Piercing Valve will not leak. Install on round suction lines or uneven tubing.



Part #	Description	LIST
BPV31	1/4", 5/16", 3/8"	9.20
BPV21	1/2", 5/8"	12.80

Access Control Valve

The A33000 Steel Access Control Valve controls the flow of all 1/4" male flare depressor type valves.



Part #	Description	LIST
A33000	Access Control Valve	86.30

Gas Retention Valve

Sturdy valve controls refrigerant flow from access fitting. Closes Schrader before disconnecting. Back seat valve feature to retain gas in hose when disconnecting.

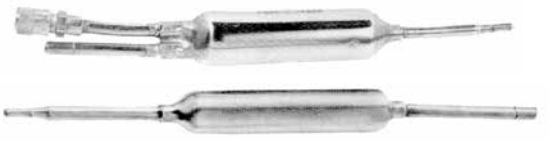


Part #	Description	LIST
18993	Access Control Valve	65.40

DRIERS

Service Driers

- 100% XH-9 molecular sieve is specially formulated for the new refrigerants and blends, including R-134a, R-404a and R-507
- Compatible with mineral oils and the new synthetics (P.O.E's)
- All copper construction for corrosion resistance



Part #	Description	Overall Length	Inlet Tube Size	Outlet Tube Size	Refrig. 12 Water Cap. in Drops		Refrig. 22 Water Cap. in Drops		Refrig. 134a Water Cap. in Drops		Tonnage		LIST
					75°F	125°F	75°F	125°F	75°F	125°F	R-12 & R-134a	R-22	
RSL3	3/4" Non-Directional	7-3/8"	1/4"OD/3/16"ID	1/4"OD/3/16"ID	33	28	30	25	37	35	1/3	1/2	10.80
RSL4	1" Non-Directional Step Down	10-1/2"	1/4"OD/3/16"ID 5/16"OD/1/4"ID 3/8"OD/5/16"ID	1/4"OD/3/16"ID 5/16"OD/1/4"ID 3/8"OD/5/16"ID	66	56	60	50	74	70	3/4	1	10.20
RSL5	1" w/Access Valve	9-1/2"	5/16"OD/1/4"ID	.127/.130 Cap Tube	66	56	60	50	74	70	1	2	20.10

ACCESS FITTINGS



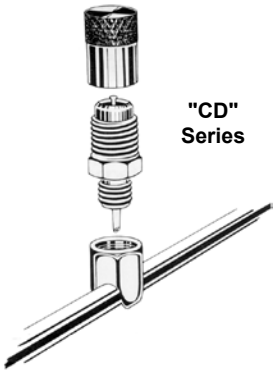
EC39EZ067



VA



A31999



"CD" Series



VAU-24



VAX



VE-2



VS-4

Part #	Alt #	J/B #	Description	LIST
NFT5-4	VC-4		1/4" Flare Cap	1.00
NFT5-5	AVC410		1/2 -20 UNF (5/16) for R410 Mini Split Systems	3.30
NFT5-6			3/8" Flare Cap	3.00
A31999		A31999	Replacement Valve Core 5/pk	7.30
CD-5514	CS-04		Self Tapping, Saddle Access Ftg. 1/4" Tubing	19.10
CD-5516	CS-05		Self Tapping, Saddle Access Ftg. 5/16" Tubing	19.10
CD-5538	CS-06		Self Tapping, Saddle Access Ftg. 3/8" Tubing	19.50
CD-5512	CS-08		Self Tapping, Saddle Access Ftg. 1/2" Tubing	21.00
CD-5558	CS-10		Self Tapping, Saddle Access Ftg. 5/8" Tubing	24.70
CD-5534	CS-12		Self Tapping, Saddle Access Ftg. 3/4" Tubing	29.70
CD-5578	CS-14		Self Tapping, Saddle Access Ftg. 7/8" Tubing	29.70
CD-5518	CS-18		Self Tapping, Saddle Access Ftg. 1-1/8" Tubing	29.70
VA3-346		A31720	For 1/8" O.D. Tubing or 1/4 and 5/16 Solder Ftng	3.50
VA-24	AV-24	A31722	Straight Solder Type 1/8" O.D.S.	6.90
VA-34	AV-34	A31723	Straight Solder Type 3/16" O.D.S. x 1/4" O.D.F.	4.20
VA-46	AV-46	A31724	Straight Solder Type 1/4" O.D.S. x 3/8" O.D.F.	3.60
VA-58		A31725	Straight Solder Type 5/16" O.D.S. x 1/2" O.D.F.	20.00
VA-68		A31726	Straight Solder Type 3/8" O.D.S. x 1/2" O.D.F.	6.70
VAU-24	AVU-24	A31482	Half Union 1/8" MPT	3.80
VAU-45	AVU-45	A31484	Half Union 1/4" MPT	4.20
VAX-2	AVX-2	A31002	Extended Copper Tube 1/8" O.D. Tube	4.30
VAX-3	AVX-3	A31003	Extended Copper Tube 3/16" O.D. x 1/8" I.D.	4.40
VAX-4	AVX-4	A31004	Extended Copper Tube 1/4" O.D. x 3/16" I.D.	4.40
VAX-5	AVX-5	A31005	Extended Copper Tube 5/16" O.D. x 1/4" I.D.	4.60
VAX-6	AVX-6	A31006	Extended Copper Tube 3/8" O.D. x 5/16" I.D.	4.60
VAX-8		A31008	Extended Copper Tube 1/2" O.D.	11.90
VE-2		A31492	Threaded Elbow 1/8" MPT	9.00
VS-4	AVS-4	A31734	1/4" Fem. Flare Forged Swivel Nut with Depressor	14.20
EC39EZ067			Carrier Valve Core	24.10

ACCESS FITTINGS



VST-4



VT-24



VTR-24



VTS-46



VTS-3-10



VU-4



VUR-4



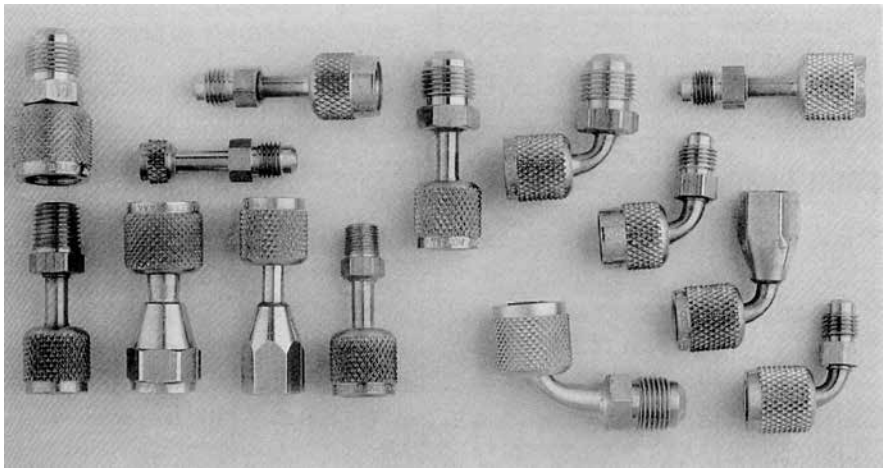
A33600

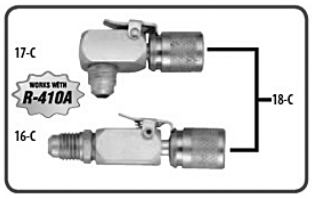


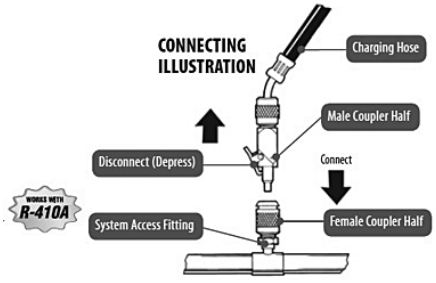
QC-S5

Part #	Alt #	J/B #	Description	LIST
VST-4	AVS-64	A31851	1/4" Acc. on Run x 1/4" Fem. Flare Swivel Tee w/Perm. Depressor	11.70
VST-44	AVS-44	A31852	1/4" Acc. on Run x 1/4" Acc. on Tee Fem. Swivel on Run	11.70
VT-24		A31452	Threaded Tee 1/8" MPT on Branch,1/4" Fl. x 1/4" Fl. Acc. on Run	14.30
VTR-24		A31512	Threaded Tee 1/8" MPT x 1/4" Male Flare on Run x Acc. on Branch	10.20
VTS-10		A31140	Solder Tee Type 5/8" O.D. Tube	17.60
VTS-12		A31142	Solder Tee Type 3/4" O.D. Tube	21.60
VTS-14		A31144	Solder Tee Type 7/8" O.D. Tube	26.60
VTS-46	AVT-4	A31134	Solder Tee Type 1/4" O.D.S. x 5/16" O.D.F.	9.30
VTS-56	AVT-5	A31135	Solder Tee Type 5/16" O.D.S. x 3/8" O.D.F.	13.50
VTS-68	AVT-6	A31136	Solder Tee Type 3/8" O.D.S.	12.40
VTS3-10		A31160	Solder Tube Elbow 5/8" O.D.S.	47.40
VTS3-12		A31162	Solder Tube Elbow 3/4" O.D.S.	48.30
VTS3-14		A31164	Solder Tube Elbow 7/8" O.D.S.	50.90
VTS3-18		A31168	Solder Tube Elbow 1-1/8" O.D.S.	62.60
VU-4		A31614	Fem. Flare Union 1/4" Fem. Flare Furnished with Copper Gasket	8.90
VUR-4	AVU-45	A31424	Full Union 1/4" O.D. Flare Tube Furnished with Forged Flare Nut	11.40
A33600	SF1808		Oil Tap with 12" Tube	36.60
QC-S5S	AD87	A31656	Mini-split Adapter 5/16F x 1/4M Flare	20.40

ACCESS QUICK COUPLERS





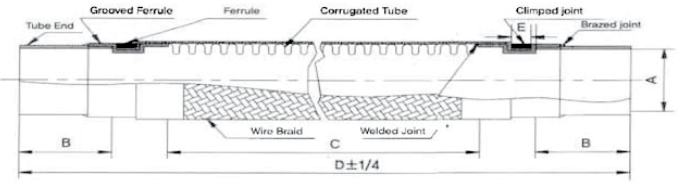


Part #	J/B #	Description	LIST
SEALRIGHT Q/C			
19109	10234	1/4" SealRight Str. x 1/4" Male Flare	50.50
19208		1/4" SealRight 45° x 1/4" Male Flare	52.60
19209	10248	1/4" SealRight 90° x 1/4" Male Flare	51.50
19117	18118	1/4" SealRight Str. x 3/8" Male Flare	61.70
19217		1/4" SealRight 90° x 3/8" Male Flare	62.70
19128		1/4" SealRight Str. x 1/8" Female NPT	61.70
19129		1/4" SealRight Str. x 1/4" Female NPT	64.40
19169		Acme 1/2" SealRight x 1/2" Acme	61.80
19163		Acme 1/2" SealRight x 1/4" Male Flare	62.60
STANDARD Q/C			
19125	CQC-S4A	1/8" Female QC x 1/4" Male Flare (Ford)	48.20
19120		3/16" Female QC x 1/4" Male Flare (GM)	72.90
19101	CQC-S4	1/4" Female QC x 1/4" Male Flare	29.20
19102	13023	1/4" Female QC x 3/8" Male Flare	36.60
19111		1/4" Female QC Str. x 1/8" Male NPT	38.60
19116		1/4" Female QC Str. x 1/4" Male NPT	38.60
19118		1/4" Female QC Str. x 1/4" Female NPT	39.30
19104	CQC-S64	3/8" Female QC x 1/4" Male Flare	54.60
19115		1/2" Female QC x 3/8" Male Flare	100.70
19220		3/16" Female QC 90° x 1/4" Male Flare	77.60
19201	CQC-E4	1/4" Female QC 90° x 1/4" Male Flare	29.20
19203		3/8" Female QC 90° x 3/8" Male Flare	59.30
19110		1/4" Female QC x 1/8" Female NPT	35.20
19210		1/4" Female QC 90° x 1/8" Female NPT	35.60
19161		1/4" Female QC x 1/2" Male Acme	39.80
19162		1/4" Female Hex x 1/2" Male Acme for Permanent Applications	39.80
19166		1/2" Acme Male x 1/2" Acme Female	61.80
19165		1/2" Acme Female x 1/4" Male Flare	44.60
19168		1/2" Acme Female x 1/8" Male NPT	44.60
19158		1/2" Acme Female x 14mm Male	67.10
16C		Straight Coupler (45° Flare) 1/4" Female x 1/4" Male	53.80
17C		90° Elbow Coupler (45° Flare) 1/4" Female x 1/4" Male	71.10
18C		(Set) Includes 16-C and 17-C	120.00

VIBRATION ABSORBERS

Coolmate Vibration Absorbers

Featuring Stainless Steel Corrugated Tubing and High Tensile Wire Braid With Pure Copper Connections



For Refrigeration and Air Conditioning Systems

Part #	To Fit Copper Tube Actual OD (in)	Length (in) ± 1/4"	Maximum Working Pressure	Burst Pressure (PSIG)	LIST
VAS-014	1/4"		650	3250	29.20
VAS-038	3/8"	8.46"	650	3250	31.80
VAS-012	1/2"	8.86"	650	3250	33.80
VAS-058	5/8"	9.72"	650	3250	37.00
VAS-034	3/4"	10.47"	650	3250	49.70
VAS-078	7/8"	11.85"	650	3250	53.20
VAS-118	1-1/8"	12.95"	600	3250	69.10
VAS-138	1-3/8"	15.43"	550	3000	98.10
VAS-158	1-5/8"	16.73"	510	2550	126.60
VAS-2-1/8	2-1/8"	20.47"	400	2000	181.10
VAS-258	2-5/8"	24.13"	400	1750	359.00
VAS-318	3-1/8"	26.77"	320	1600	571.00
VAS-358*	3-5/8"	31.97"	190	570	737.00
VAS-418*	4-1/8"	32.76"	190	570	870.00

* For low side use only.

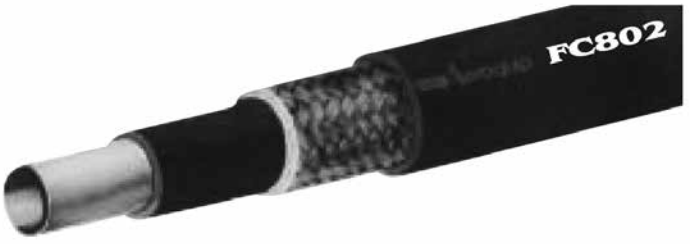
R-410A requires a working pressure of 600 PSI or more. Please note working pressures

FLEXIBLE PULL-OUT HOSE

AEROQUIP

FC802 Flexible Hose

- Compatible for both refrigerant and water supply makes this a good choice for ice machines, freezers and coolers.
- Heat, corrosive and kink resistance
- Maximum effusion resistance
- Max. Operating Pressure: 500 PSI
- Min. Burst Pressure: 2500 PSI
- Temperature Range: -40°F to 250°F



Part #	Description	LIST			
		36" Line Size	48" Line Size	60" Line Size	72" Line Size
FC802-04-4401	1/4" ID HOSE w/ 1/4" FF conn.	90.40	107.80	125.70	184.90
FC802-06-4401	3/8" ID HOSE w/ 3/8" FF conn.	135.10	160.80	186.60	205.30
FC802-08-4401	1/2" ID HOSE w/ 1/2" FF conn.	140.20	179.00	245.90	248.20
FC802-10-4401	5/8" ID HOSE w/ 5/8" FF conn.	195.20	218.80	282.50	324.00

Other Line sizes and Lengths are ***available upon request***. Please allow three to five working days for delivery after order.

NOTE: FC802 is not compatible with R717 but other product is available. Please ask your local branch for more information.

FILTER DRIERS

NDL

NDL Filter Drier with TW



Filter Drier Pre-charge with Tracer Wafer® to help you find the exact source of Refrigerant Leak

- Filter Drier pre-charged with Spectroline TRACER WAFER® impregnated with fluorescent dye.
- OEM approved Filter Drier
- Dye approved by all leading Compressor & Refrigerant manufacturers.
- Compatible with all Refrigerants.
- Proven technology: Over 250 million systems installed till date.

Suction Line Filter & Replaceable Filter Drier Core

Model No.	Recommended Refrigerant Type	Function	R-134A		R-22		R-407C		R-404A / R-507		R-410A		R-502		R-744		LIST
			75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	14°F	75°F	
NA-48-TW	CFC, HCFC, HFC	Premium Universal Replacement	1463	1343	1358	1233	1188	904	1517	1427	1122	813	1532	1323	1362	1596	47.20
NB-48-TW	CFC, HCFC, HFC	Burnout cleanup	445	338	385	260	334	190	480	332	286	150	511	352	377	444	47.20
NC-48-TW	CFC,HCFC	High Acid and water Removal	777	619	687	501	512	328	829	615	437	260	739	546	315	369	47.20
NC-100-TW	CFC,HCFC,HFC	Burnout cleanup	1239	934	1079	714	723	417	1336	911	659	353	1104	762	-	-	106.60
NPE-48-BD-TW	CFC,HCFC,HFC	Filter (Suction with Fabric)	NA														96.70
NSS-48-TW	CFC,HCFC,HFC	Filter (Suction Only)															55.40

1. Water Capacities are based on: Equilibrium Point Dryness (EPD) of:
   - 50 parts per million for R-134a, R404-A/R-410A and R-407C
   - 60 parts per million for R-22
   - 15 parts per million for R-12

2 . 20 drops of water = 1 gram = 1 cc
3. Include one neoprene composite lid gasket and one core gasket.
Al cores include a universal neoprene composite gasket kit which includes 2 sizes of replacement lid gaskets, and gaskets for the top and bottom of the core or filter

Liquid Line Filter Drier - NCH Series (Solid Core Type) Selection Recommendations

Model No.	Connections Inlet/Outlet	Flow Capacity Tan @ 1psi ΔP (for kw multiply Ton by 3.5)				Water Capacity drops of water										LIST
						R-134A		R-22		R-407C		R-410A		R-404A / R-507		
		R-134a	R-22 & R -410A	R-407C	R-404A & R-507	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	
NCH - 032S-TW	1/4" ODF	2	2	2	1.42	80	74	75	69	63	52	53	42	82	78	25.80
NCH - 033S-TW	3/8' ODF	4.85	4.85	5.42	3.7											25.80
NCH - 052F-TW	1/4" SAE	2	2.28	2.28	1.42	201	186	186	136	156	126	131	101	206	196	36.90
NCH - 052S-TW	1/4" ODF															31.80
NCH - 053S-TW	3/8" ODF	5.14	5.42	5.42	4											36.90
NCH - 082F-TW	1/4" SAE	2	2.28	2.28	1.42	265	245	250	225	205	165	170	130	275	260	45.10
NCH - 082S-TW	1/4" ODF															45.10
NCH - 083F-TW	3/8" SAE	5.42	6	6	4											39.00
NCH - 083S-TW	3/8" ODF															39.00
NCH - 084S-TW	1/2' ODF	7.42	8.28	8.28	5.71											45.10
NCH - 163F-TW	3/8" SAE	6.2	6.8	6.8	4.57	396	366	271	336	306	246	256	196	406	286	45.10
NCH - 163S-TW	3/8" ODF															45.10
NCH - 164F-TW	1/2" SAE	8.5	9.4	9.4	6.2											52.20
NCH - 164S-TW	1/2" ODF															52.20
NCH - 165S-TW	5/8" ODF	12.2	13.4	13.4	8.57											52.20
NCH - 303F-TW	3/8" SAE	6	6.57	6.57	4.28	877	812	822	752	687	552	567	432	907	857	78.10
NCH - 303S-TW	3/8" ODF															78.10
NCH - 304F-TW	1/2" SAE	8.85	9.71	9.71	6.28											78.10
NCH - 304S-TW	1/2" ODF															78.10
NCH - 305F-TW	5/8" SAE	12.85	14	14	9.42											78.10
NCH - 305S-TW	5/8" ODF															78.10
NCH - 306S-TW	3/4" ODF	17.71	19.42	19.42	12.85											80.80
NCH - 307S-TW	7/8" ODF															83.60
NCH - 309S-TW	1-1/8" ODF															93.50
NCH - 414F-TW	1/2" SAE	9.14	10	10	6.57	1216	1106	1146	1016	951	746	786	586	1266	1162	
NCH - 415F-TW	5/8' SAE	15.14	16.57	16.57	10.57											93.50
NCH - 415S-TW	5/8" ODF															93.50
NCH-417S-TW	7/8" ODF	26	28.57	28.57	18.57											120.90
NCH-419S-TW	1-1/8" ODF															142.90

All ratngs are in accordance with ANSI/AHRI Standard 710-2009
1. Water in refrigerant at EPD for : R-134a/R-407C/R-410A/R-404A/R-507A is 50 ppm, R-22 is 60 ppm.

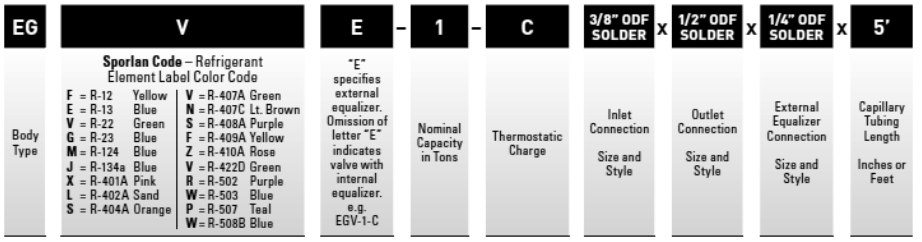
2. Flow Capacities are based on following standard rating
Flow Rate per Ton of Refrigeration at 86°F Liquid & 5.0°F Saturated Vapor for : R-134a is 3.1 lb/min/ton, R-407C is 3.0 lb/min/ton, R-410A is 2.8 lb/min/ton, R-404A is 4.1 lb/min/ton, R-404A is 4.1 lb/min/ton, R-507A is 4.2 lb/min/ton,R-22 is 3.0 lb/min/ton.

SPORLAN NOMENCLATURE BREAKDOWN

For Sporlan and Parker information:
www.sporlanonline.com
www.parker.com

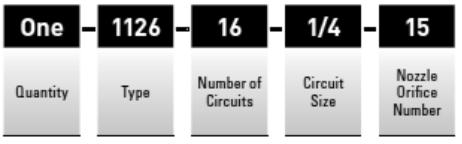
Regional Point of Contact: Jennifer Smith - Jennifer.smith@parker.com

TEV Nomenclature

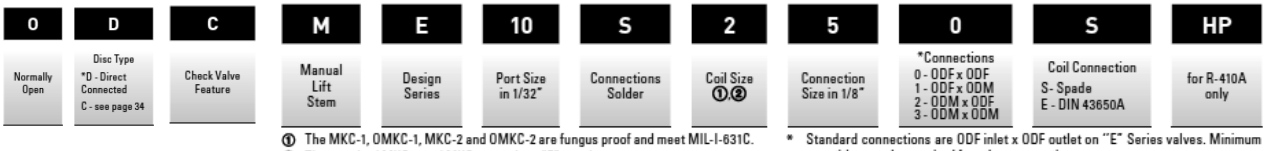


Additional body styles: Q/BQ, EBS, O, ER, RC and other old, obsolete or OEM.

Distributor Nomenclature



Solenoid Nomenclature



① The MKC-1, OMKC-1, MKC-2 and OMKC-2 are fungus proof and meet MIL-I-631C.
② The standard MKC-1 and MKC-2 are class "F" rated.

* Standard connections are ODF inlet x ODF outlet on "E" Series valves. Minimum quantities may be required for other connections.

Catch-All Nomenclature

Significance of the Type Number

The letters and numerals in the Catch-All® type number each have a significance. The "C" indicates Catch-All. The **FIRST TWO OR THREE DIGITS** indicate cubic inches of desiccant. The **LAST ONE OR TWO DIGITS** indicate fitting size in eighths of an inch. For sealed models, a **"-S"** following the last digit indicates solder fittings, and **NO LETTER** indicates a flare fitting. Replaceable core models (C-420 and larger) only have solder connections and the "-S" is omitted. Examples are: C-083 is 8 cu. in. and 3/8" flare, C-309-S is 30 cu. in. and 1-1/8" solder, C-19213-G is 192 cu. in. and 1-5/8" solder.

Other suffix letters indicate special qualities. For example:

"-T" indicates a pressure tap consisting of a Schrader type access valve on the inlet end of the Catch-All.

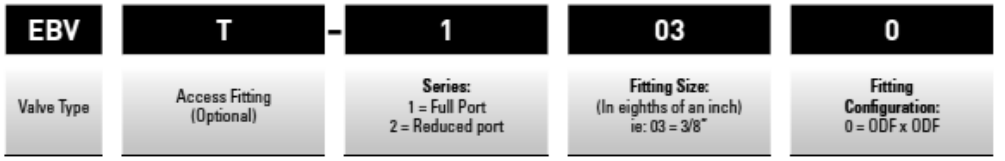
"-HH" indicates a charcoal style core for wax removal and clean-up after a hermetic motor burnout.

"-F" indicates a female flare outlet fitting with a male flare inlet fitting.

"-FM" indicates a female flare inlet fitting with a male flare outlet fitting.

"-CAP" indicates a Catch-All particularly designed for installation on capillary tube systems.

Ball Valves Nomenclature



SPORLAN NOMENCLATURE BREAKDOWN

Pressure Regulating Valves Nomenclature

LAC	4	DS	100/180	3/8"	x	3/8"	x	3/8	ODF
Valve Type: Low Ambient Control	Valve Size	Dual Setting Omit for standard dome element	Valve Setting(s) (psig) Specify one setting for standard dome element	Discharge Connection (Inches)		Condenser Connection (Inches)		Receiver Connection (Inches)	Solder Connections

0	LDR	16	5/50	1-3/8" ODF	120/50-60
Normally Open	Liquid Differential Regulator	Valve Size	Adjustment Range – psi	Connection (Inches)	Electrical Specifications

S	ORI	T	15	0/100	1-3/8" ODF	120/50-60
Solenoid Stop Feature (optional)	Valve Type: Open on Rise of Inlet Pressure	Pressure Tap on Inlet Connection	Valve Size	Adjustment Range – psig*	Connections ODF Solder	Electrical Specifications for Solenoid Stop Feature (optional)

* Other pressure ranges are available.

S	ORI	T	PI	2	7	S	E	0/100	120/50-60
Solenoid Stop Feature (optional)	Valve Type: Open on Rise of Inlet Pressure	Pressure Tap on Inlet Connection	Piloted Internally	Port Size in 1/4 of an Inch	Fitting Size in 1/8 of an Inch	Solenoid Stop Feature (optional)	Electric Open Feature (optional)	Adjustment range psig*	Electrical specifications for Solenoid Stop Feature (optional)

* Other pressure ranges are available.

Electronic Valves Nomenclature

SEH	I	175	1-1/8"	x	2-1/8"	ODF	10	S
Valve Family	Indicating Sightglass (not available on small SER)	Valve Model	Inlet Fitting		Outlet Fitting	Fitting type (ODF only)	Cable Length	Stripped and Tinned cable ends. Custom Connectors available

Family Style could be SER or SEH

CDS	T	17	1-3/8 ODF	20	S
Valve Family	Optional Inlet Pressure Tap	Valve Model	Fitting Size	Cable Length	S = Stripped and tinned cable ends. Custom Connectors available

SDR	4	7/8	10	S
Valve Family	Valve Model	Connections ODF	Cable Length	S = Stripped and tinned cable ends. Custom Connectors available

OEM Specials are denoted by the following:

TEVs – "Y" – ex. **Y1172-BBIS**-1/4-C 2X4 ODF – Y1172 and BBI are OEM descriptors
Catch All – "E" – ex. C-05**E75 –** E75 is an OEM descriptor
Solenoids – "X" – ex. **XUP**-3 W/MH 120/50-60 JAM – XUP is OEM and W/MH is mounting holes

THERMOSTATIC EXPANSION VALVES

Preferred TEVS

VALVE TYPE	SPECS	NOMINAL CAPACITY RANGE (Tons)				CONNECTION TYPES	VALVE DESCRIPTION AND APPLICATION
		R-22	R-134a	R-404A & R-507	R-410A		
RC 	KT-43 R-410A KT-45	1 thru 6	–	–	1 thru 6	Chatleff, SAE Flare, or ODF Solder	Small brass body, externally adjustable valve available for R-22 and R-410A air conditioning and heat pump applications. This valve features a balanced port construction and contains an internal check valve to eliminate the need for an external bypass check valve on heat pump applications. Suitable for replacing OEM type TEVs with or without internal check valve on these applications. Inlet strainer is not included.
ER 	KT-43 R-410A KT-45 OR KT-45-5	1 thru 12	–	–	1 thru 15	ODF Solder	Small brass body, externally adjustable valve available for R-22 and R-410A air conditioning and heat pump applications. This valve features a balanced port construction and is approved for bi-directional operation. Suitable for replacing OEM type TEVs without internal check valve on these applications. A 60 x 50 mesh inlet strainer is included with 3/8" inlet.
Q/BQ 	KT-43 R-410A KT-45	**Q** 1/3 thru 5 **BQ** 1/8 thru 5-1/2	**Q** 1/6 thru 2-1/2 **BQ** 1/8 thru 3	**Q** 1/6 thru 3 **BQ** 1/8 thru 3	**Q** – **BQ** 1/4 thru 6	SAE Flare	The brass body Type Q valve is externally adjustable with a removable cartridge or orifice. The valve body, cartridge and thermostatic element is supplied as independent components. This allows body, cartridge and element to be assembled and matched to specific system requirements. Inlet connection has a 100 mesh removable strainer screen. Typical applications: Refrigeration applications and external equalized versions may be used on air conditioning. Type BQ same as above, with balanced port construction.
EQ/EBQ 	KT-43 R-410A KT-45	**EQ** 1/3 thru 5 **EBQ** 1/8 thru 5-1/2	**EQ** 1/6 thru 2-1/2 **EBQ** 1/8 thru 3	**EQ** 1/6 thru 3 **EBQ** 1/8 thru 3	**EQ** – **EBQ** 1/4 thru 6	Extended ODF Solder	Type EQ same as the Type Q except it features extended ODF connections. A 100 mesh insert strainer is provided with the valve. Type EBQ same as Type EQ with balanced port construction and is approved for bi-directional applications.
SQ/SBQ 	KT-43 R-410A KT-45	**SQ** 1/3 thru 5 **SBQ** 1/8 thru 5-1/2	**SQ** 1/6 thru 2-1/2 **SBQ** 1/8 thru 3	**SQ** 1/6 thru 3 **SBQ** 1/8 thru 3	**SQ** – **SBQ** 1/4 thru 6	Extended ODF Solder	Type SQ same as the Type Q valve except it features ODF solder connections and a forged brass inlet fitting with a removable 100 mesh strainer screen which can be cleaned and/or replaced without removing the valve from the line. Type SBQ is the same as Type SQ with balanced port construction and is approved for bi-directional applications.
EBS 	KT-83	8 thru 20	5 thru 12	6 thru 13	–	Extended ODF Solder	Same physical size as the Type S valve except it features extended ODF connections. This valve features a balanced port construction which, depending on its capacity, makes it suitable for bi-directional operation. See page 28 for details.
O 	KT-83 OR KT-33 R-410 KT-85 OR KT-85-3	15 thru 70	9 thru 40	9 thru 45	20 thru 60	ODF Solder	Brass bar body, externally adjustable valve. Inlet has a permanent 12 mesh strainer. This valve features a balanced port construction, and it is suitable for both air conditioning and refrigeration applications. Optional bi-directional feature available, please contact Sporlan Division of Parker for details.

THERMOSTATIC EXPANSION VALVES

Recommended Thermostatic Charges

Refrigerant	Air Conditioning or Heat Pump	Commercial Refrigeration +50°F to -10°F	Low Temperature Refrigeration 0°F to -40°F	Extreme Low Temperature Refrigeration -40°F to -100°F
12	FCP60	FC	FZ FZP	-
22	VCP100 and VGA	VC	VZ VZP40	VX
134a	JCP60	JC	-	-
502	RCP115	RC	RZ RZP	RX
401A	XCP60	XC		
401B			FZ FZP	
402A		LC	LZ LZP	
402B	RCP115	RC	RZ RZP	
404A	SCP115	SC	SZ SZP	
507		PC	PZ PZP	
R-410A	ZGA			

Refrigerant	Old Refrigerant Code	New Refrigerant Code
R-22	V	V OR N
R-407A, 407C, 407F	N	
R-448A, 449A	D	

APPLICATION FACTORS:
1. The type ZP charges have essentially the same characteristics as the Type Z charge with one exception. They produce a pressure limit (MOP). ZP charges are not intended as replacements for Z charges. Each should be selected for its own unique purpose.
2. All air conditioning and heat pump charges are intended for use with externally equalized valves.
3. Type L liquid charges are also available for most commonly used refrigerants in most element sizes.

Alternative Refrigerants

Alternative Refrigerant		SVC Letter Code	Colour Code	Manufacturer
R-134a		J	sky blue	(many)
R-401A (MP39)		X	coral (pink)	Dupont & Honeywell
R-401B (MP66)		F	light green / gray	
R-402A (HP80)		L	light brown	Dupont
R-402B (HP81)		R	olive	
R-404A (HP62)		S	orange	
R-507 (AZ50)		P	teal (green / blue)	Honeywell
R-407C	(AC9000)			Dupont
	(KLEA 66)			ICI Fluorochemicals
R-410A		Z		Dupont & Honeywell

Selection Example:

Refrigerant 134a
Application: Refrigeration

Design evaporator temperature (°F)	20
Design condensing temperature (°F)	105
Refrigerant liquid temperature entering TEV (°F)	90
Design evaporator capacity (tons)	1.5

Available pressure drop across TEV:

Condensing pressure (psig)	135
Evaporating pressure (psig)	-18
High side pressure loss (psi)	- 7
Distributor and tube loss (psi)*	-25
85	
Refrigerant liquid correction factor	1.07

The EGJE-1-C or EBFJE-A-C has valve capacity of: 1.43 x 1.07 = 1.53 tons at the above conditions which would make either valve a suitable selection.

THERMOSTATIC EXPANSION VALVES

R-22, R-407A, R407C

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT														
		22						422D①						407C		
		RECOMMENDED THERMOSTATIC CHARGE														
		VC, VCP100, VGA			VZ, VZP40			VC, VCP100, VGA			VZ, VZP40			NC, NCP100, NGA		
		EVAPORATOR TEMPERATURE °F														
		40°	20°	0°	-10°	-20°	-40°	40°	20°	0°	-10°	-20°	-40°	40°	20°	0°
BALANCED PORT THERMOSTATIC EXPANSION VALVES																
BF-EBF-SBF	AAA	0.35	0.38	0.33	0.27	0.24	0.18	0.25	0.26	0.22	0.18	0.16	0.11	0.32	0.34	0.30
BF-EBF-SBF	AA	0.75	0.82	0.71	0.68	0.61	0.45	0.54	0.57	0.48	0.45	0.40	0.28	0.69	0.74	0.64
BF-EBF-SBF	A	1.60	1.74	1.52	1.22	1.09	0.81	1.14	1.21	1.02	0.81	0.71	0.51	1.47	1.58	1.36
BF-EBF-SBF	B	2.80	3.05	2.67	2.25	2.01	1.50	2.00	2.12	1.79	1.49	1.31	0.94	2.57	2.76	2.37
BF-EBF-SBF	C	5.20	5.67	4.96	4.04	3.62	2.70	3.71	3.93	3.33	2.67	2.35	1.69	4.78	5.13	4.41
EBS	8	8.51	8.81	7.30	6.15	5.15	3.79	6.06	6.10	4.90	4.06	3.34	2.37	7.81	7.96	6.48
EBS	11	11.5	11.9	9.86	8.32	6.96	5.13	8.20	8.25	6.63	5.50	4.52	3.21	10.6	10.8	8.77
EBS	15	15.5	16.3	12.2	11.1	8.88	6.85	11.0	11.3	8.19	7.33	5.77	4.28	14.2	14.7	10.8
EBS	20	22.3	22.8	16.9	15.4	12.4	8.66	15.9	15.8	11.4	10.2	8.02	5.42	20.5	20.6	15.0
O	15	15.0	15.5	13.0	9.20	8.15	6.14	10.7	10.8	8.75	6.08	5.29	3.84	13.8	14.1	11.6
O	20	22.2	23.0	19.3	16.3	12.0	9.71	15.8	15.9	13.0	10.8	7.81	6.07	20.4	20.8	17.1
O	30	30.5	31.6	26.5	19.4	17.1	14.4	21.7	21.9	17.8	12.8	11.1	8.97	28.0	28.6	23.6
O	40	40.3	43.5	32.0	29.5	26.1	21.8	28.7	30.1	21.5	19.5	17.0	13.6	37.0	39.3	28.5
O	55	55.0	59.3	43.7	39.4	29.9	24.3	39.2	41.1	29.4	26.0	19.4	15.2	50.6	53.7	38.9
O	70	73.0	78.8	58.0	51.5	34.0	26.4	52.0	54.6	39.0	34.0	22.1	16.5	67.1	71.3	51.6
V	52	52.0	56.1	54.0	52.2	37.0	29.5	37.1	38.9	36.3	34.5	24.0	18.4	47.8	50.8	48.0
V	70	73.0	78.8	75.8	71.6	50.7	40.4	52.0	54.6	50.9	47.3	32.9	25.3	67.1	71.3	67.4
V	100	100	108	104	92.2	65.3	52.1	71.3	74.8	69.8	60.9	42.4	32.6	91.9	97.6	92.3
W	135	143	154	148	132	93.5	74.5	102	107	99.7	87.3	60.7	46.6	131	140	132
W	180	180	–	–	–	–	–	128	–	–	–	–	–	165	–	–
VALVE TYPES	**CARTRIDGE NO.**	**REPLACEABLE CARTRIDGE THERMOSTATIC EXPANSION VALVES**														
Q-EQ-SQ	0	1/3	0.35	0.38	0.33	0.27	0.24	0.18	0.25	0.26	0.22	0.18	0.16	0.11	0.32	0.35	0.30
Q-EQ-SQ	1	3/4	0.75	0.82	0.72	0.68	0.61	0.45	0.54	0.57	0.48	0.45	0.40	0.28	0.69	0.74	0.64
Q-EQ-SQ	2	1	1.00	1.09	0.95	0.86	0.77	0.57	0.71	0.76	0.64	0.57	0.50	0.36	0.92	0.99	0.85
Q-EQ-SQ	3	1-1/2	1.50	1.64	1.43	1.10	0.99	0.73	1.07	1.13	0.96	0.73	0.64	0.46	1.38	1.48	1.27
Q-EQ-SQ	4	2-1/2	2.50	2.73	2.38	2.20	1.97	1.47	1.78	1.89	1.60	1.45	1.28	0.92	2.30	2.46	2.12
Q-EQ-SQ	5	3-1/2	3.50	3.82	3.34	3.00	2.69	2.00	2.50	2.64	2.24	1.98	1.74	1.25	3.22	3.45	2.97
Q-EQ-SQ	6	5	4.80	5.24	4.58	3.65	3.27	2.44	3.42	3.63	3.07	2.41	2.12	1.52	4.41	4.73	4.07
BQ-EBQ-SBQ	Balanced port replaceable cartridges, AAA, AA, A, B and C, have the same capacities as the matching nominal capacity of the standard balanced port valves above.															

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °F														
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°
	CORRECTION FACTOR, CF LIQUID TEMPERATURE														
22	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
422D	1.99	1.90	1.80	1.70	1.60	1.50	1.41	1.31	1.20	1.10	1.00	0.90	0.79	0.68	0.57
407C	1.69	1.62	1.55	1.49	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.77	0.69

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an evaporator temperature of 0°F. However, they may be used for any evaporator temperature from -40°F to 40°F since the variation in the actual factors across this range is insignificant.

EVAPORATOR TEMPERATURE °F	PRESSURE DROP ACROSS TEV (psi)											
	30	50	75	100	125	150	175	200	225	250	275	300
	CORRECTION FACTOR, CF PRESSURE DROP											
40°	0.55	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50	1.58	1.66	1.73
20° & 0°	0.49	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34	1.41	1.48	1.55
-10° & -20°	0.45	0.58	0.71	0.82	0.91	1.00	1.08	1.15	1.22	1.29	1.35	1.41
-40°	0.41	0.53	0.65	0.76	0.85	0.93	1.00	1.07	1.13	1.20	1.25	1.31

TEV Capacity = TEV Rating x CF Liquid Temperature x CF Pressure Drop — Example: Actual capacity of a nominal 2 ton R-22 Type S valve at 20°F evaporator, 100 psi pressure drop across the TEV, and 90°F liquid temperature entering the TEV = 2.18 (from rating chart) x 1.06 (CF liquid temperature) x 0.89 (CF pressure drop) = 2.06 tons.

① R-422D can be used in a system with R-22 valves, but the TEV capacity will be reduced. Please verify valve capacity will handle system load.

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT								
		22			422D①			407C		
		RECOMMENDED THERMOSTATIC CHARGE								
		VCP100, VGA②								
		EVAPORATOR TEMPERATURE °F								
		40°	20°	0°	40°	20°	0°	40°	20°	0°
ER, RC	1	1.0	1.1	1.0	0.71	0.76	0.66	0.9	1.0	0.9
ER, RC	1-1/2	1.8	1.9	1.7	1.25	1.32	1.15	1.6	1.7	1.5
ER, RC	2	2.3	2.5	2.2	1.64	1.74	1.51	2.1	2.3	2.0
ER, RC	3	3.2	3.5	3.1	2.28	2.42	2.10	2.9	3.2	2.8
ER, RC	4	4.2	4.6	4.1	2.99	3.17	2.75	3.9	4.1	3.6
ER, RC	5	5.0	5.5	4.9	3.56	3.78	3.27	4.6	4.9	4.3
ER, RC	6	6.0	6.5	5.3	4.28	4.53	3.54	5.5	5.9	4.7
ER	8	8.0	8.7	7.8	5.70	6.04	5.24	7.4	7.9	6.9
ER	10	10.4	11.4	10.2	7.44	7.88	6.83	9.6	10.3	9.0
ER	12	12.1	13.2	11.8	8.62	9.14	7.92	11.1	11.9	10.5

① R-422D can be used in a system with R-22 valves, but the TEV capacity will be reduced. Please verify valve capacity will handle system load.
② The RC valve for R-22 applications is only available with a VGA element.

THERMOSTATIC EXPANSION VALVES

R-404A, R408A

VALVE TYPES		NOMINAL CAPACITY	REFRIGERANT											
			404A						408A					
			RECOMMENDED THERMOSTATIC CHARGE											
			SC, SCP115			SZ, SZP			SC, SCP115			SZ, SZP		
			EVAPORATOR TEMPERATURE °F											
			40°	20°	0°	-10°	-20°	-40°	40°	20°	0°	-10°	-20°	-40°
BALANCED PORT THERMOSTATIC EXPANSION VALVES														
BF-EBF-SBF		AAA	0.23	0.24	0.23	0.24	0.21	0.17	0.31	0.33	0.32	0.34	0.30	0.25
BF-EBF-SBF		AA	0.46	0.49	0.46	0.45	0.39	0.32	0.62	0.66	0.64	0.63	0.55	0.47
BF-EBF-SBF		A	1.02	1.10	1.04	1.10	0.94	0.79	1.37	1.50	1.44	1.54	1.34	1.14
BF-EBF-SBF		B	1.89	1.98	1.66	1.60	1.37	1.14	2.53	2.70	2.30	2.24	1.95	1.66
BF-EBF-SBF		C	2.86	3.00	2.50	2.45	2.10	1.75	3.83	4.08	3.48	3.43	2.98	2.54
EBS		6	5.71	5.63	4.61	4.15	3.28	2.97	7.67	7.66	6.40	5.82	4.66	4.32
EBS		7-1/2	7.75	7.64	6.26	5.28	4.18	3.78	10.4	10.4	8.68	7.41	5.93	5.49
EBS		10	9.54	9.63	7.25	6.72	5.56	4.64	12.8	13.2	10.0	9.42	7.88	6.74
EBS		13	13.6	14.0	10.2	9.54	8.00	6.15	18.3	19.0	14.2	13.4	11.4	8.94
O		9	9.69	9.24	7.24	6.11	5.31	4.43	13.0	12.6	10.1	8.57	7.53	6.44
O		12	13.3	12.6	9.91	9.74	8.46	7.06	17.8	17.2	13.8	13.6	12.0	10.3
O		21	21.4	20.4	14.3	11.7	10.1	8.46	28.8	27.8	19.8	16.4	14.4	12.3
O		30	30.8	32.3	23.0	17.5	15.2	12.7	41.4	44.0	32.0	24.5	21.5	18.4
O		35	35.7	37.4	26.7	19.0	16.5	13.8	47.9	51.0	37.0	26.6	23.4	20.0
O		45	45.9	48.1	34.3	21.9	19.0	15.9	61.6	65.6	47.6	30.7	26.9	23.1
V		38	38.7	39.4	33.6	33.2	30.5	24.1	52.0	53.7	46.6	46.6	43.2	35.1
V		50	52.0	52.9	45.1	47.4	43.5	34.4	69.8	72.1	62.6	66.5	61.7	50.0
V		70	71.4	72.6	62.7	66.4	60.9	48.1	95.8	99.0	87.0	93.1	86.4	70.0
VALVE TYPES	CARTRIDGE NO.	REPLACEABLE CARTRIDGE THERMOSTATIC EXPANSION VALVES												
Q-EQ-SQ	0	1/6	0.20	0.22	0.20	0.20	0.17	0.14	0.27	0.30	0.28	0.28	0.24	0.21
Q-EQ-SQ	1	1/4	0.46	0.49	0.46	0.45	0.39	0.32	0.62	0.66	0.64	0.63	0.55	0.47
Q-EQ-SQ	2	1/2	0.66	0.72	0.67	0.59	0.51	0.42	0.89	0.98	0.94	0.83	0.72	0.61
Q-EQ-SQ	3	1	1.02	1.07	0.89	0.85	0.73	0.61	1.37	1.46	1.24	1.19	1.03	0.88
Q-EQ-SQ	4	1-1/2	1.63	1.71	1.44	1.47	1.26	1.05	2.19	2.33	1.99	2.06	1.79	1.53
Q-EQ-SQ	5	2	2.14	2.25	1.88	1.96	1.68	1.40	2.88	3.06	2.61	2.74	2.38	2.04
Q-EQ-SQ	6	3	2.86	3.00	2.51	2.45	2.11	1.75	3.83	4.08	3.48	3.43	2.98	2.54
BQ-EBQ-SBQ	Balanced port replaceable cartridges, AAA, AA, A, B and C, have the same capacities as the matching nominal capacity of the standard balanced port valves above.													

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °F														
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°
	CORRECTION FACTOR, CF LIQUID TEMPERATURE														
404A	2.04	1.94	1.84	1.74	1.64	1.54	1.43	1.33	1.22	1.11	1.00	0.89	0.77	0.65	0.53
408A	1.66	1.60	1.54	1.47	1.40	1.34	1.27	1.21	1.14	1.07	1.00	0.93	0.86	0.79	0.71

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an evaporator temperature of 0°F. However, they may be used for any evaporator temperature from -40°F to 40°F since the variation in the actual factors across this range is insignificant.

EVAPORATOR TEMPERATURE °F	PRESSURE DROP ACROSS TEV (psi)										
	30	50	75	100	125	150	175	200	225	250	275
	CORRECTION FACTOR, CF PRESSURE DROP										
40°	0.55	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50	1.58	1.66
20° & 0°	0.49	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34	1.41	1.48
-10° & -20°	0.45	0.58	0.71	0.82	0.91	1.00	1.08	1.15	1.22	1.29	1.35
-40°	0.41	0.53	0.65	0.76	0.85	0.93	1.00	1.07	1.13	1.20	1.25

TEV Capacity = TEV Rating x CF Liquid Temperature x CF Pressure Drop — Example: Actual capacity of a nominal 1-1/2 ton R-404A Type EG valve at -20°F evaporator, 125 psi pressure drop across the TEV, and 60°F liquid temperature entering the TEV = 1.26 (from rating chart) x 1.43 (CF liquid temperature) x 0.91 (CF pressure drop) = 1.64 tons.

THERMOSTATIC EXPANSION VALVES

R-402A, R507

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT											
		402A						507					
		RECOMMENDED THERMOSTATIC CHARGE											
		LC			LZ, LZP			PC			PZ, PZP		
		EVAPORATOR TEMPERATURE °F											
		40°	20°	0°	-10°	-20°	-40°	40°	20°	0°	-10°	-20°	-40°
BALANCED PORT THERMOSTATIC EXPANSION VALVES													
BF-EBF-SBF	AAA	0.23	0.24	0.23	0.24	0.21	0.18	0.23	0.24	0.22	0.24	0.21	0.17
BF-EBF-SBF	AA	0.46	0.49	0.46	0.45	0.39	0.33	0.45	0.48	0.45	0.44	0.38	0.32
BF-EBF-SBF	A	1.02	1.10	1.04	1.11	0.95	0.80	1.00	1.08	1.01	1.08	0.93	0.77
BF-EBF-SBF	B	1.88	1.98	1.66	1.61	1.39	1.16	1.85	1.94	1.62	1.57	1.35	1.12
BF-EBF-SBF	C	2.85	3.00	2.52	2.47	2.12	1.78	2.79	2.93	2.45	2.40	2.06	1.72
EBS	6	5.69	5.63	4.63	4.18	3.32	3.01	5.59	5.50	4.52	4.06	3.22	2.92
EBS	7-1/2	7.73	7.64	6.29	5.32	4.23	3.84	7.59	7.47	6.13	5.18	4.10	3.72
EBS	10	9.51	9.64	7.28	6.77	5.62	4.71	9.35	9.43	7.10	6.59	5.46	4.57
EBS	13	13.6	14.0	10.2	9.61	8.08	6.25	13.4	13.7	9.99	9.36	7.85	6.06
O	9	9.66	9.25	7.28	6.16	5.37	4.50	9.48	9.04	7.09	5.99	5.21	4.36
O	12	13.2	12.7	9.96	9.81	8.55	7.17	13.0	12.4	9.71	9.54	8.30	6.95
O	21	21.3	20.4	14.4	11.8	10.2	8.60	21.0	20.0	14.0	11.4	9.95	8.32
O	30	30.7	32.3	23.1	17.6	15.3	12.9	30.1	31.6	22.5	17.1	14.9	12.5
O	35	35.6	37.5	26.8	19.1	16.7	14.0	34.9	36.6	26.1	18.6	16.2	13.5
O	45	45.7	48.2	34.5	22.0	19.2	16.1	44.9	47.1	33.6	21.4	18.6	15.6
V	38	38.6	39.5	33.8	33.5	30.8	24.5	37.9	38.6	32.9	32.6	29.9	23.7
V	50	51.8	52.9	45.3	47.8	44.0	34.9	50.9	51.8	44.2	46.5	42.7	33.8
V	70	71.2	72.7	63.0	66.9	61.5	48.9	69.9	71.0	61.4	65.1	59.8	47.4
VALVE TYPES	**CARTRIDGE NO.**	**REPLACEABLE CARTRIDGE THERMOSTATIC EXPANSION VALVES**											
Q-EQ-SQ	0	1/6	0.20	0.22	0.20	0.20	0.17	0.15	0.20	0.21	0.20	0.20	0.17	0.14
Q-EQ-SQ	1	1/4	0.46	0.49	0.46	0.45	0.39	0.33	0.45	0.48	0.45	0.44	0.38	0.32
Q-EQ-SQ	2	1/2	0.66	0.72	0.67	0.59	0.51	0.43	0.65	0.70	0.66	0.58	0.50	0.42
Q-EQ-SQ	3	1	1.02	1.07	0.89	0.86	0.74	0.62	1.00	1.05	0.88	0.83	0.72	0.60
Q-EQ-SQ	4	1-1/2	1.63	1.71	1.44	1.48	1.27	1.07	1.60	1.67	1.41	1.44	1.24	1.03
Q-EQ-SQ	5	2	2.14	2.25	1.88	1.97	1.70	1.43	2.10	2.20	1.84	1.92	1.65	1.38
Q-EQ-SQ	6	3	2.86	3.00	2.51	2.47	2.13	1.77	2.79	2.93	2.46	2.40	2.07	1.72
BQ-EBQ-SBQ	Balanced port replaceable cartridges, AAA, AA, A, B and C, have the same capacities as the matching nominal capacity of the standard balanced port valves above.												

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °F														
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°
	CORRECTION FACTOR, CF LIQUID TEMPERATURE														
402A	2.01	1.91	1.82	1.72	1.62	1.52	1.42	1.32	1.22	1.11	1.00	0.89	0.77	0.65	0.53
507	1.99	1.89	1.79	1.69	1.59	1.50	1.40	1.30	1.20	1.10	1.00	0.89	0.78	0.66	0.51

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an evaporator temperature of 0°F. However, they may be used for any evaporator temperature from -40°F to 40°F since the variation in the actual factors across this range is insignificant.

EVAPORATOR TEMPERATURE °F	PRESSURE DROP ACROSS TEV (psi)										
	30	50	75	100	125	150	175	200	225	250	275
	CORRECTION FACTOR, CF PRESSURE DROP										
40°	0.55	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50	1.58	1.66
20° & 0°	0.49	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34	1.41	1.48
-10° & -20°	0.45	0.58	0.71	0.82	0.91	1.00	1.08	1.15	1.22	1.29	1.35
-40°	0.41	0.53	0.65	0.76	0.85	0.93	1.00	1.07	1.13	1.20	1.25

TEV Capacity = TEV Rating x CF Liquid Temperature x CF Pressure Drop — Example: Actual capacity of a nominal 1-1/2 ton R-404A Type EG valve at -20°F evaporator, 125 psi pressure drop across the TEV, and 60°F liquid temperature entering the TEV = 1.26 (from rating chart) x 1.43 (CF liquid temperature) x 0.91 (CF pressure drop) = 1.64 tons.

THERMOSTATIC EXPANSION VALVES

R-134A, R-401A, R409A

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT								
		134a			401A			409A		
		RECOMMENDED THERMOSTATIC CHARGE								
		JC, JCP60			XC, XCP60			FC, FCP60		
		EVAPORATOR TEMPERATURE °F								
		40°	20°	0°	40°	20°	0°	40°	20°	0°
BALANCED PORT THERMOSTATIC EXPANSION VALVES										
BF-EBF-SBF	AAA	0.25	0.28	0.26	0.27	0.30	0.29	0.25	0.28	0.27
BF-EBF-SBF	AA	0.54	0.54	0.50	0.58	0.58	0.54	0.55	0.54	0.50
BF-EBF-SBF	A	1.21	1.20	1.10	1.29	1.29	1.20	1.21	1.21	1.12
BF-EBF-SBF	B	2.05	2.03	1.87	2.20	2.20	2.04	2.06	2.05	1.90
BF-EBF-SBF	C	3.62	3.59	3.30	3.88	3.88	3.60	3.63	3.62	3.35
EBS	5	6.12	5.60	4.82	6.57	6.06	5.26	6.15	5.66	4.89
EBS	7	8.44	7.72	6.64	9.06	8.36	7.25	8.47	7.80	6.74
EBS	9	11.2	9.72	7.80	12.0	10.5	8.52	11.2	9.81	7.92
EBS	12	16.0	14.0	10.9	17.2	15.1	11.9	16.1	14.1	11.1
O	9	10.8	10.8	9.33	11.6	11.7	10.2	10.9	10.9	9.48
O	12	14.1	14.0	12.1	15.1	15.1	13.2	14.2	14.1	12.3
O	16	18.7	18.5	16.1	20.1	20.1	17.6	18.8	18.7	16.3
O	23	27.7	30.0	24.7	29.8	32.4	27.0	27.8	30.2	25.1
O	32	38.6	41.7	34.4	41.4	45.1	37.6	38.7	42.1	34.9
O	40	48.2	52.1	43.0	51.8	56.4	47.0	48.4	52.6	43.7
V	35	42.2	41.9	33.2	45.3	45.3	36.3	42.4	42.3	33.7
V	45	54.2	53.8	42.7	58.2	58.3	46.6	54.5	54.3	43.3
V	55	66.3	65.8	52.2	71.2	71.2	57.0	66.6	66.4	53.0
W	80	102	102	75.3	110	110	82.2	103	103	76.4
W	110	137	—	—	148	—	—	138	—	—
VALVE TYPES	**CARTRIDGE NO.**	**REPLACEABLE CARTRIDGE THERMOSTATIC EXPANSION VALVES**								
Q-EQ-SQ	0	1/6	0.24	0.24	0.22	0.26	0.26	0.24	0.24	0.24	0.22
Q-EQ-SQ	1	1/4	0.54	0.54	0.50	0.58	0.58	0.54	0.55	0.54	0.50
Q-EQ-SQ	2	1/2	0.78	0.78	0.72	0.84	0.84	0.78	0.79	0.79	0.73
Q-EQ-SQ	3	1	1.21	1.20	1.10	1.29	1.29	1.20	1.21	1.21	1.12
Q-EQ-SQ	4	1-1/2	1.69	1.67	1.54	1.81	1.81	1.68	1.69	1.69	1.56
Q-EQ-SQ	5	2	2.41	2.39	2.20	2.59	2.59	2.40	2.42	2.42	2.23
Q-EQ-SQ	6	2-1/2	3.25	3.23	2.97	3.49	3.50	3.24	3.27	3.26	3.02
BQ-EBQ-SBQ	Balanced port replaceable cartridges, AAA, AA, A, B and C, have the same capacities as the matching nominal capacity of the standard balanced port valves above.									

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °F														
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°
	CORRECTION FACTOR, CF LIQUID TEMPERATURE														
134a	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
401A	1.60	1.54	1.48	1.43	1.36	1.31	1.25	1.19	1.13	1.06	1.00	0.94	0.87	0.80	0.74
409A	1.55	1.50	1.45	1.39	1.34	1.28	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an evaporator temperature of 0°F. However, they may be used for any evaporator temperature from 0°F to 40°F since the variation in the actual factors across this range is insignificant.

EVAPORATOR TEMPERATURE °F	PRESSURE DROP ACROSS TEV (psi)							
	20	40	60	80	100	120	140	160
	CORRECTION FACTOR, CF PRESSURE DROP							
40°	0.58	0.82	1.00	1.15	1.29	1.41	1.53	1.63
20° & 0°	0.50	0.71	0.87	1.00	1.12	1.22	1.32	1.41

TEV Capacity = TEV Rating x CF Liquid Temperature x CF Pressure Drop — Example: Actual capacity of a nominal 1-1/2 ton R-134a Type EG valve at 20°F evaporator, 100 psi pressure drop across the TEV, and 60°F liquid temperature entering the TEV = 1.91 (from rating chart) x 1.29 (CF liquid temperature) x 1.12 (CF pressure drop) = 2.76 tons.

THERMOSTATIC EXPANSION VALVES

R-410A

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT 410A RECOMMENDED THERMOSTATIC CHARGE ZCP180, ZGA① EVAPORATOR TEMPERATURE °F		
		40°	20°	0°
ER, RC	1	1.2	1.3	1.2
ER, RC	1-1/2	2.1	2.3	2.0
ER, RC	2	2.7	3.0	2.7
ER, RC	3	3.8	4.1	3.7
ER, RC	4	5.0	5.4	4.9
ER, RC	5	5.9	6.5	5.8
ER, RC	6	7.1	7.8	6.3
ER	8	9.5	10.4	9.3
ER	12-1/2	12.3	13.5	12.1
ER	15	14.3	15.7	14.0

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT 410A RECOMMENDED THERMOSTATIC CHARGE ZCP180, ZGA EVAPORATOR TEMPERATURE °F		
		40°	20°	0°
OZE-20	20	19.7	21.6	20.4
OZE-25	25	23.7	25.9	24.5
OZE-35	35	32.6	35.6	33.6
OZE-50	50	49.3	54.0	51.0
OZE-60	60	59.2	64.8	61.2

VALVE TYPES	CARTRIDGE TYPE				
BQ, EBQ, SBQ	AAA	1/3	0.4	0.5	0.4
BQ, EBQ, SBQ	AA	3/4	0.9	1.0	0.9
BQ, EBQ, SBQ	A	1-3/4	1.9	2.1	1.8
BQ, EBQ, SBQ	B	3-1/2	3.4	3.7	3.2
BQ, EBQ, SBQ	C	6	6.2	6.8	5.9

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °F										
	40	50	60	70	80	90	100	110	120	130	140
	CORRECTION FACTOR, CF LIQUID TEMPERATURE										
410A	1.39	1.31	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76

EVAPORATOR TEMPERATURE °F	PRESSURE DROP ACROSS TEV (psi)							
	80	120	160	200	240	280	320	360
	CORRECTION FACTOR, CF PRESSURE DROP							
40°	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50
20° & 0°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34

① The RC valve for R-410A applications is only available with a ZGA element.

PRODUCT BREAKDOWN

Type RC - For refrigerants 22, 410A, Chatleff, SAE Flare & ODF Solder Connections

Sporlan Type RC valve is a small brass body, externally adjustable valve with balanced portconstruction. The RC valves are available for replacement of types CBI and CBBI valves. These valves contain internal check valves to allow reverse flow on heat pump applications. This eliminates the need for an external check valve piped around the TEV for reverse flow. The RC valve can be used on heat pump and air conditioning (cooling only) applications. This allows you to reduce inventory by using the same valve to replace the I, BI and BBI valves. The RC valvescan even be used to replace the RI valve (non-RPB versions only).
Outlet Connections: 1/2" SAE, 1/2" ODF, 5/8" ODF Mating Distributors (See Bulletin 20-10): D260, D262, 1603, 1605, 1606, 1608, 1620, 1622, 1650(R), 1651(R)

Specifications – Element Size No. 43 (R-22) And No. 45 (R-410A), Knife Edge Joint

REFRIGERANT (Sporlan Code)	VALVE TYPE	EXTERNAL EQUALIZER ②, ③	NOMINAL CAPACITY Tons of Refrigeration	THERMOSTATIC ELEMENT SIZE NO.	THERMOSTATIC CHARGES AVAILABLE	STANDARD TUBING LENGTH Inches	CONNECTIONS - Inches ① SAE Flare/ ④ ODF Solder. Blue figures are standard and will be furnished unless otherwise specified.		NET WEIGHT - lbs.	SHIPPING WEIGHT - lbs.
							INLET	OUTLET		
22 (V) 407C (N) 407A (V) 422D (V)	RCVE-1-GA	1/4 SAE 1/4 ODF	1	43	VGA	30	3/8 SAE 3/8 ODF	1/2 SAE 1/2 ODF	1-1/4	1-1/2
	RCVE-1-1/2-GA		1-1/2							
	RCVE-2-GA		2							
	RCVE-3-GA		3				1/2 ODF 1/2 SAE 1/2 ODF	1/2 ODF 1/2 SAE 5/8 ODF		
	RCVE-4-GA		4							
	RCVE-5-GA		5							
	RCVE-6-GA		6							
410A (Z)	RCZE-1-GA	1/4 ODF	1	45	ZGA		3/8 ODF	1/2 ODF		
	RCZE-1-1/2-GA		1-1/2							
	RCZE-2-GA		2							
	RCZE-3-GA		3							
	RCZE-4-GA		4				1/2 ODF	1/2 ODF		
	RCZE-5-GA		5				1/2 ODF	5/8 ODF		
	RCZE-6-GA		6							

① Valves are also available as special order with Chatleff connections.
② Valves with SAE inlet and outlet fittings are available only with the 1/4" SAE flare external equalizer; valves with ODF fittings are available only with the 1/4" ODF external equalizer.
③ Valves with Chatleff fittings are available only with the 1/8" OD X 24" long tube with flare and nut external equalizer.
④ ODF Solder on Type RC valves indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 1/2" ODF will receive 1/2" OD tubing.

SPORLAN TEV CAPACITY DATA

R VALVE CAPACITY DATA

Valve Types	Nominal Capacity	Refrigerant 134a Recommended Thermostatic Charge JC, JCP60 Evap Temp 40	20	0	Refrigerant 401A Recommended Thermostatic Charge XC, XCP60 Evap Temp 40	20	0	Refrigerant 409A Recommended Thermostatic Charge FC, FCP60 Evap Temp 40	20	0
ER-SR	1/6	0.31	0.35	0.30	0.33	0.36	0.31	0.31	0.36	0.31
R-ER-SR	1/4	0.44	0.49	0.43	0.46	0.51	0.45	0.44	0.50	0.44
R-ER-SR	1/2	0.72	0.80	0.70	0.75	0.84	0.74	0.72	0.82	0.73
R-ER-SR	1	1.27	1.40	1.23	1.32	1.47	1.30	1.27	1.44	1.27
R-ER-SR	1 1/2	1.67	1.84	1.61	1.73	1.93	1.71	1.67	1.89	1.67
R-ER-SR	2	2.32	2.56	2.24	2.41	2.68	2.37	2.32	2.63	2.32
R-ER-SR	3	3.62	4.00	3.50	3.77	4.19	3.71	3.62	4.10	3.63
ER	4	4.35	4.80	3.79	4.52	5.03	4.01	4.35	4.92	3.93
ER	5	5.79	6.39	5.60	6.02	6.71	5.93	5.80	6.56	5.80
ER	9	8.76	9.67	8.47	9.11	10.1	8.97	8.76	9.93	8.78

Valve Types	Nominal Capacity	Refrigerant 22 Recommended Thermostatic Charge VC, VCP,100, VGA Evap Temp 40	20	0	VZ, VZP40 -10	-20	-40	Refrigerant 422D Recommended Thermostatic Charge VC, VCP00, VGA Evap Temp 40	20	0	VZ, VZP40 -10	-20	-40	Refrigerant 407C Recommended Thermostatic Charge NC, NCP100, NGA Evap Temp 40	20	0
R-ER-SR	1/3	0.43	0.47	0.41	0.34	0.30	0.22	0.31	0.33	0.28				0.39	0.42	0.37
R-ER-SR	1/2	0.61	0.67	0.60	0.55	0.49	0.37	0.44	0.46	0.40				0.56	0.60	0.53
R-ER-SR	1	1.00	1.09	0.97	0.86	0.77	0.57	0.71	0.76	0.66				0.91	0.98	0.86
R-ER	1 1/2	1.75	1.91	1.71	1.22	1.09	0.81	1.25	1.32	1.15				1.59	1.71	1.51
R-ER-SR	2	2.30	2.51	2.24	1.60	1.43	1.07	1.64	1.74	1.51				2.09	2.25	1.99
R-ER-SR	3	3.21	3.49	3.12	2.30	2.06	1.53	2.28	2.42	2.10				2.91	3.13	2.77
R-ER	4	4.21	4.58	4.09	3.00	2.69	2.00	2.99	3.17	2.75				3.81	4.11	3.63
R-ER-SR	5	5.01	5.45	4.87	3.43	3.07	2.29	3.56	3.78	3.27				4.54	4.89	4.32
R-ER	6	6.01	6.54	5.28	3.80	3.18	2.34	4.28	4.53	3.54				5.45	5.87	4.68
ER	8	8.01	8.73	7.80	4.40	3.68	2.71	5.70	6.04	5.24				7.26	7.83	6.92
ER	12 1/2	10.4	11.4	10.2				7.44	7.88	6.83				9.47	10.2	9.02
ER	12	12.1	13.2	11.8				8.62	9.14	7.92				11.0	11.8	10.5

Valve Types	Nominal Capacity	Refrigerant 410A Recommended ZCP200, ZGA Evap Temp 40	20	0
ER	1/3	0.51	0.56	0.49
ER	1/2	0.73	0.79	0.71
ER	1	1.19	1.30	1.16
ER	1 1/2	2.08	2.27	2.03
ER	2	2.73	2.99	2.67
ER	3	3.80	4.16	3.72
ER	4	4.99	5.46	4.88
ER	5	5.94	6.50	5.81
ER	6	7.13	7.79	6.29
ER	8	9.50	10.4	9.29
ER	10	12.4	13.5	12.1
ER	15	14.4	15.7	14.1

Valve Types	Nomincal Capacity	404A Recommended Thermostatic Charge SC,SCP115 Evap Temp 40	20	10	SZ,SZP -10	-20	-40
ER-SR	1/6	0.224	0.238	0.225	0.239	0.205	0.172
R-ER-SR	1/4	0.385	0.409	0.386	0.386	0.336	0.254
R-ER-SR	1/2	0.6	0.63	0.6	0.6	0.53	0.41
R-ER-SR	1	1.13	1.2	1.13	1.08	0.94	0.8
R-ER-SR	1 1/2	1.49	1.58	1.49	1.42	1.24	1.06
R-ER-SR	2	2.07	2.2	2.07	1.98	1.72	1.47
R-ER-SR	3	2.71	2.88	2.72	2.6	2.26	1.93
R-ER-SR	3 1/2	3.23	3.43	3.24	3.09	2.69	2.3
ER	4	3.88	4.12	3.88	3.71	3.23	2.76
ER	6	5.17	5.49	5.18	4.95	4.3	3.68
ER	ΔP (PSI)	100	125	125	150	150	175

DIRECT REPLACEMENT FROM OLD TO NEW TEV:

FROM	REPLACE WITH	OPTION 2
E, G	BQ OR R	Q
EF, EG	EBQ, SBQ OR ER, SR	EQ OR SQ
BF	R OR BQ	
SBF, EBF	SBQ, EBQ OR ER, SR	
S	ER, SR OR EBQ, SBQ	

SPORLAN TEV CAPACITY DATA

448A/449A TEV CAPACITY INFORMATION

***N Charge or V Charge - Both will work**

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT											
		R448A						R449A					
		RECOMMENDED THERMOSTATIC CHARGE											
		DC, DCP100, DGA			DZ, DZP40			DC, DCP100, DGA			DZ, DZP40		
		EVAPORATOR TEMPERATURE °F											
		40°	20°	0°	-10°	-20°	-40°	40°	20°	0°	-10°	-20°	-40°
R-ER-SR	1/3	0.30	0.32	0.31	0.33	0.29	0.25	0.30	0.32	0.31	0.33	0.29	0.24
R-ER-SR	1/2	0.52	0.56	0.53	0.54	0.47	0.37	0.51	0.55	0.53	0.53	0.47	0.36
R-ER-SR	3/4	0.80	0.86	0.76	0.72	0.64	0.47	0.79	0.85	0.75	0.71	0.63	0.46
R-ER-SR	1-1/2	1.52	1.63	1.44	1.03	0.91	0.67	1.50	1.61	1.42	1.01	0.90	0.66
R-ER-SR	2	2.00	2.15	1.90	1.33	1.18	0.87	1.97	2.12	1.87	1.31	1.17	0.85
R-ER-SR	2-1/2	2.77	2.99	2.63	1.92	1.71	1.26	2.74	2.94	2.59	1.90	1.69	1.24
R-ER-SR	3-1/2	3.65	3.92	3.47	2.52	2.24	1.64	3.60	3.88	3.41	2.49	2.20	1.61
R-ER-SR	4	4.34	4.67	4.10	2.88	2.56	1.88	4.29	4.62	4.07	2.84	2.52	1.85
R-ER-SR	5	5.21	5.61	4.46	3.23	2.68	1.94	5.15	5.53	4.41	3.18	2.65	1.92
R-ER-SR	6	6.95	7.48	6.60	3.70	3.06	2.22	6.86	7.38	6.51	3.65	3.03	2.18
BQ - EBQ - SBQ	AAA	0.30	0.32	0.31	0.33	0.29	0.25	0.30	0.32	0.31	0.33	0.28	0.24
BQ - EBQ - SBQ	AA	0.60	0.65	0.62	0.62	0.54	0.46	0.60	0.64	0.61	0.61	0.53	0.45
BQ - EBQ - SBQ	A	1.34	1.47	1.41	1.51	1.30	1.11	1.32	1.45	1.39	1.49	1.29	1.10
BQ - EBQ - SBQ	B	2.48	2.64	2.25	2.19	1.90	1.63	2.44	2.60	2.21	2.16	1.87	1.60
BQ - EBQ - SBQ	C	3.75	3.99	3.40	3.35	2.92	2.48	3.70	3.94	3.36	3.31	2.88	2.45
BF- EBF - SBF	AAA	0.30	0.32	0.31	0.33	0.29	0.25	0.30	0.32	0.31	0.33	0.28	0.24
BF- EBF - SBF	AA	0.60	0.65	0.62	0.62	0.54	0.46	0.60	0.64	0.61	0.61	0.53	0.45
BF- EBF - SBF	A	1.34	1.47	1.41	1.51	1.30	1.11	1.32	1.45	1.39	1.49	1.29	1.10
BF- EBF - SBF	B	2.48	2.64	2.25	2.19	1.90	1.63	2.44	2.60	2.21	2.16	1.87	1.60
BF- EBF - SBF	C	3.75	3.99	3.40	3.35	2.92	2.48	3.70	3.94	3.36	3.31	2.88	2.45
EBS	7	7.49	7.50	6.27	5.69	4.55	4.22	7.40	7.40	6.17	5.61	4.49	4.15
EBS	10	10.2	10.2	8.50	7.25	5.80	5.37	10.0	10.0	8.38	7.14	5.71	5.29
EBS	12	12.5	12.9	9.85	9.22	7.72	6.60	12.4	12.7	9.72	9.10	7.62	6.50
EBS	17	17.9	18.7	13.9	13.2	11.1	8.75	17.7	18.4	13.7	12.9	11.0	8.62
O (Small)	12	12.7	12.4	9.84	8.38	7.37	6.30	12.6	12.2	9.70	8.26	7.26	6.20
O (Small)	17	17.4	16.8	13.5	13.4	11.7	10.1	17.2	16.6	13.3	13.2	11.6	9.9
O (Small)	28	28.1	27.3	19.4	16.0	14.1	12.0	27.7	26.8	19.2	15.7	13.9	11.8
O (Large)	40	40.4	43.1	31.2	24.0	21.0	18.0	39.9	42.5	30.8	23.6	20.8	17.8
O (Large)	45	46.8	49.9	36.2	26.0	22.9	19.5	46.2	49.3	35.7	25.7	22.6	19.2
O (Large)	60	60.2	64.2	47.6	30.0	26.4	22.5	59.5	63.3	45.9	29.6	26.0	22.2

R-290 ALTERNATIVE REFRIGERANTS CAPACITIES

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT 290 RECOMMENDED THERMOSTATIC CHARGE OC,OCP100, OGA / OZ, OZP40 EVAPORATOR TEMPERATURE °F 40°	20°	0°	-10°	-20°	-40°
R-ER-SR	1/3	0.39	0.42	0.36	0.29	0.26	0.19
R-ER-SR	1/2	0.67	0.72	0.62	0.50	0.44	0.32
R-ER-SR	1	1.12	1.20	1.05	0.92	0.81	0.59
R-ER	1 1/2	1.97	2.10	1.84	1.30	1.16	0.84
R-ER-SR	2	2.58	2.76	2.42	1.71	1.51	1.10
R-ER-SR	3	3.59	3.84	3.37	2.46	2.18	1.59
R-ER	4	4.72	5.04	4.42	3.21	2.84	2.07
R-ER-SR	5	5.62	6.00	5.26	3.67	3.25	2.37
R-ER	6	6.74	7.20	5.69	4.06	3.36	2.42
ER	8	8.99	9.61	8.41	4.70	3.89	2.80
ER	10	11.7	12.5	11.0			
ER	12	13.6	14.5	12.7			
EBQ-SBQ-BQ	AAA	0.39	0.42	0.36	0.29	0.26	0.19
EBQ-SBQ-BQ	AA	0.84	0.90	0.77	0.73	0.64	0.47
EBQ-SBQ-BQ	A	1.80	1.92	1.65	1.30	1.16	0.84
EBQ-SBQ-BQ	B	3.15	3.36	2.88	2.40	2.13	1.55
EBQ-SBQ-BQ	C	5.84	6.24	5.35	4.32	3.82	2.79
EBS	8	9.55	9.70	7.87	6.57	5.44	3.92
EBS	11	12.9	13.1	10.7	8.89	7.36	5.30
EBS	15	17.4	17.9	13.2	11.8	9.39	7.08
EBS	20	25.1	25.2	18.3	16.5	13.1	8.96
O (Small)	15	16.9	17.1	14.1	9.83	8.61	6.35
O (Small)	20	24.9	25.3	20.8	17.4	12.7	10.0
O (Small)	30	34.3	34.8	28.6	20.7	18.1	14.8
O (Large)	40	45.3	47.9	34.6	31.5	27.6	22.6
O (Large)	55	61.8	65.4	47.2	42.1	31.6	25.1
O (Large)	70	82.0	86.8	62.6	55.0	35.9	27.3

R290 EVAPORATOR TEMPERATURE °F	PRESSURE DROP ACROSS TEV (PSI) 30	50	75	100	125	150	175	200	225	250	275	300
	CORRECTION FACTOR, CF PRESSURE DROP											
40°	0.55	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50	1.58	1.66	1.73
20° & 0°	0.49	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34	1.41	1.48	1.55
-10° & -20°	0.45	0.58	0.71	0.82	0.91	1.00	1.08	1.15	1.22	1.29	1.35	1.41
-40°	0.41	0.53	0.65	0.76	0.85	0.93	1.00	1.07	1.13	1.20	1.25	1.31

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °F 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
	CORRECTION FACTOR, CF LIQUID TEMPERATURE														
290	1.69	1.63	1.56	1.49	1.42	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70

SPORLAN TEV FIELD CONVERSIONS

Field Conversion of the Thermostatic Expansion Valves with Replaceable Thermostatic Elements

We recognize the fact that occasionally a valve must be converted from one refrigerant to another to satisfy an emergency situation. We feel this practice should be the exception rather than the rule.

The information below provides the necessary data required for field conversion of thermostatic expansion valves from one refrigerant to another by changing power elements. It does not take into account the different springs that are necessary with different refrigerants. But in general, the superheat adjustment on the valve will allow compensation on an operating unit for different spring wire sizes. For further spring information contact SPORLAN.

VALVES WITH NOMINAL CAPACITIES ON THE SAME HORIZONTAL LINE HAVE THE SAME PORT DIAMETER AND PIN ANGLE.

VALVE TYPE	ELEMENT SIZE	NOMINAL VALVE CAPACITY			
		REFRIGERANT			
		134a, 401A, 409A	22, 422D, 407C	402A, 404A, 408A, 507	410A
(E)F (Internal Equalized)	43	-	1/5	-	Not Approved
		1/8	-	1/8	
		1/6	1/3	1/6	
		1/4	1/2	1/4	
		1/2	1	1/2	
		1	1-1/2	1	
		1-1/2	2-1/2	1-1/2	
(E)F (External Equalized)		-	1/5	-	Not Approved
		1/8	-	1/8	
		1/6	1/3	1/6	
		1/4	1/2	1/4	
		1/2	1	1/2	
		1	1-1/2	1	
		1-1/2	2	1-1/2	
		2	3	2	
		3	5	3	
BF(E), EBF(E), & SBF(E)		AAA	AAA	AAA	Not Approved
		AA	AA	AA	
		A	A	A	
		B	B	B	
		C	C	C	
(E)G (Internal Equalized)	53	-	1/5	-	Not Approved
		1/8	1/4	1/8	
		1/6	1/3	1/6	
		-	1/2	-	
		1/4	3/4	1/4	
		1/2	1	1/2	
		1	1-1/2	1	
		1-1/2	2-1/2	1-1/2	
(E)G (External Equalized)		-	1/5	-	Not Approved
		1/8	1/4	1/8	
		1/6	1/3	1/6	
		-	1/2	-	
		1/4	3/4	1/4	
		1/2	1	1/2	
		1	1-1/2	1	
		1-1/2	2	1-1/2	
		2	3	2	
		-	4	-	
R(E) & BBI(E) (OEM Only)	43 & 45 (R410A)	1/2	1	1/2	1
		1	1-1/2	1	1-1/2
		1-1/2	2	1-1/2	2
		2	3	2	3
		2-1/2	4	3	4
		3	5	3-1/2	5
		4	6	4	6
		5	8	6	8
		7	10	7	12-1/2
		9	12	9	15
RC(E) & CBBI(E) (OEM Only)		1/2	1	1/2	1
		1	1-1/2	1	1-1/2
		1-1/2	2	1-1/2	2
		2	3	2	3
		2-1/2	4	3	4
		3	5	3-1/2	5
		4	6	-	6
P,H (After Oct 1970)	33	1-1/2	2-1/2	1-1/2	Not Approved
		3	5-1/2	-	
		4	7	4	
		5	11	6-1/2	
		8	16	9	
		12	20	12	

SPORLAN TEV FIELD CONVERSIONS

Field Conversion of the Thermostatic Expansion Valves with Replaceable Thermostatic Elements (Con't)

VALVE TYPE	ELEMENT SIZE	NOMINAL VALVE CAPACITY			
		REFRIGERANT			
		134a, 401A, 409A	22, 422D, 407C	402A, 404A, 408A, 507	410A
C, S	83	1/8	1/4	1/8	Not Approved
		1/4	1/2	1/4	
		1/2	1	1/2	
		1	1-1/2	1	
		1-1/2	2	1-1/2	
		2	3	2	
		2-1/2	4	3	
		3	5	4	
C, S (External Equalized)		5	8	6	
S (External Equalized)		6	10	7	
		10	15	10	
EBS		5	8	6	
		7	11	7-1/2	
		9	15	10	
		12	20	13	
M	63	5	8	6	Not Approved
		7-1/2	12	9	
		11	18	13	
		13	21	15	
		15	26	20	
		20	34	25	
		25	42	30	
O	83 & 85 (R410A)	6	10	6	-
		-	-	-	20
		9	15	9	-
		-	-	-	25
		12	20	12	-
		16	30	21	35
	33	23	40	30	-
		32	55	35	-
		40	70	45	-
	85-3	-	-	-	50
		-	-	-	60
V	63	35	52	38	Not Approved
		45	70	50	
		55	100	70	
W	7	80	135	100	Not Approved
		110	180	130	

Some valves are obsolete, but listed here as a historical reference.

APPLICATION	REFRIGERANT														ACTUAL THERMOSTATIC CHARGE
	"F"	"V"	"J"	X"	"L"	"S"	"V"	"N"	"R"	"F"	"Z"	"V"	"R"	"P"	
	12	22	134a	401A	402A	404A	407A	407C	408A	409A	410A	422D	502	507	
AIR CONDITIONING	X		X	X						X					JCP60
		X					X	X							VCP100
		X					X	X							VGA
											X				ZGA
											X				ZCP200
						X			X				X		SCP115
COMMERICAL REFRIGERATION +50°F to -10°F	X		X	X						X					JC
		X					X	X				X			VC ①②
						X			X				X		SC ①②
											X				ZCP200
					X									X	PC ①②
LOW TEMP REFRIGERATION 0°F to -40°F	X		X												JZ
	X		X												JZP
		X					X					X			VZ
		X					X					X			VZP40
					X	X			X				X	X	SZ
					X	X			X				X	X	SZP

① The "C" charge may be used on applications down to -30°F on R-22, R-404A and R-507.
② For dual temperature applications, use the "C" charge.

SPORLAN TEV QUICK REFERENCE GUIDE

Q/BQ Build a Valve Instructions

Type Q & BQ Valves

For Refrigerants 22-134a-404A-410A*-507 – SAE Flare & Extended ODF Solder Connections

*Type Q, EQ, and SQ are not approved for R-410A applications.

The Sporlan Q & BQ series are replaceable cartridge style valves designed for small refrigeration systems, such as refrigerated cases, coolers, and freezers. The externally equalized versions of these valves are ideal for air conditioning and heat pump systems. BQ valves are balanced ported, engineered specifically for systems with a wide range of operating conditions and may be applied on bi-directional applications.

Q & BQ valves are supplied as three individual component parts: the **thermostatic element**, the **valve body**, and the **replaceable cartridge** or orifice. The interchangeable nature of the Q & BQ family make it ideal for reducing inventory, while increasing valve options — so, the right valve is always on hand.

BODY FEATURES

Q & BQ brass body type valves feature Sporlan's traditional knife edge, metal-to-metal thermostatic element to valve body construction, which ensures a leak-proof joint.

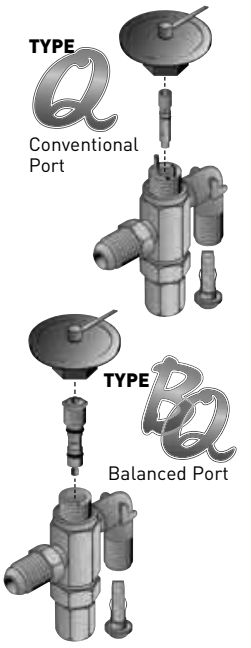
SELECTIVE CHARGES

Sporlan selective thermostatic charges are specifically designed for low temperature, medium temperature, and air conditioning applications. The elements are manufactured with a large flat diaphragm to reduce diaphragm stresses and provide precise control. And, because Q & BQ valve bodies and thermostatic elements are supplied as independent components, the installer is able to select the best possible thermostatic charge for the application.

INTERNAL PORT DESIGN

Refrigerant flow through the valve port opposes the pin movement in all type Q and BQ valves. This provides improved stability at light loads, when the pin modulates to a position close to the port. Additionally, charge migration, is reduced or eliminated by the Q & BQ valve design. By engineering the liquid flow to enter through the top of the valve body, the liquid refrigerant warms the thermostatic element and minimizes the potential for charge migration.

For complete details of construction, see page 35.



SELECTING COMPONENTS STEP ONE: SELECT BODY STYLE

BODY

Flare Connections	Extended Solder Connections	Extended Solder Connections with Forged Inlet and Replaceable Strainer
Q SAE (Internally Equalized) **QE** SAE (Externally Equalized)	**EQ** ODF (Internally Equalized) **EQE** ODF (Externally Equalized)	**SQ** ODF (Internally Equalized) **SQE** ODF (Externally Equalized)
BQ SAE (Internally Equalized) **BQE** SAE (Externally Equalized)	**EBQ** ODF (Internally Equalized) **EBQE** ODF (Externally Equalized)	**SBQ** ODF (Internally Equalized) **SBQE** ODF (Externally Equalized)

SPORLAN TEV QUICK REFERENCE GUIDE

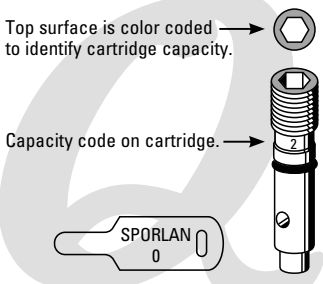
Type Q & BQ Valves

For Refrigerants 22-134a-404A-410A*-507 – SAE Flare & Extended ODF Solder Connections

STEP TWO: SELECT CAPACITY CARTRIDGE

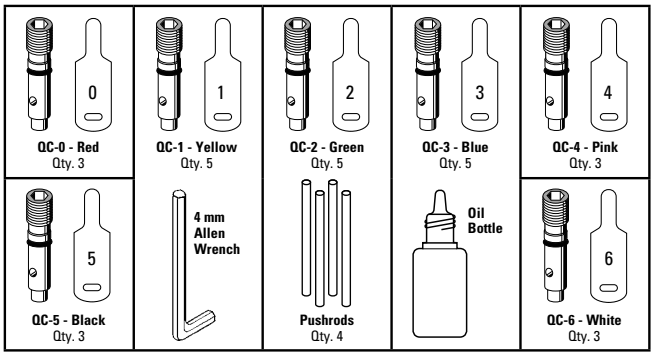
*Type Q, EQ, and SQ are not approved for R-410A applications.

CARTRIDGE



Identification tag with cartridge number (bends around capillary tubing).

Q CARTRIDGE SERVICE KIT PART NUMBER 184000

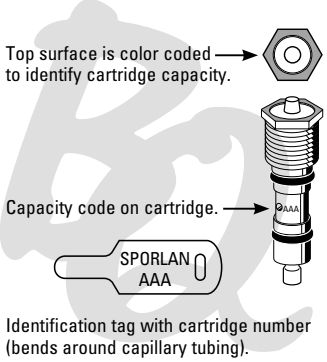


INDIVIDUAL REPLACEMENT PARTS

PART NUMBER	SIZE	COLOR CODE
CARTRIDGE and I.D. TAG		
QC-0	0	Red
QC-1	1	Yellow
QC-2	2	Green
QC-3	3	Blue
QC-4	4	Pink
QC-5	5	Black
QC-6	6	White
MISCELLANEOUS PARTS		
OB-1	Oil Bottle (With Oil)	
AW-1	4 mm Allen Wrench	
CSK-1	Q Cartridge Service Kit (Empty)	
184000	Q Cartridge Service Kit (Complete as noted above)	

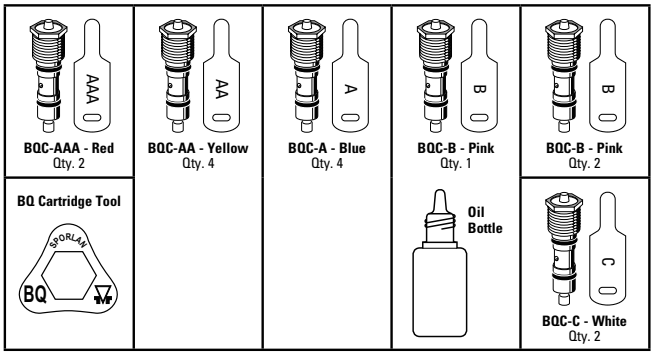
CAPACITIES

NOMINAL CAPACITY (TONS) of SPORLAN VALVE TO BE REPLACED									Q VALVE CARTRIDGE	
R-12	R-22, R-422D	R-134a	R-401A	R-402A	R-404A	R-410A	R-502	R-507	SIZE	COLOR CODE
1/8	1/4	1/8	1/8	1/8	1/8	NOT APPROVED	1/8	1/8	0	Red
1/6	1/3	1/6	1/6	1/6	1/6		1/6	1/6		
1/4	1/2	1/4	1/4	1/4	1/4		1/4	1/4	1	Yellow
	3/4									
1/2	1	1/2	1/2	1/2	1/2		1/2	1/2	2	Green
1	1-1/2	1	1	1	1		1	1	3	Blue
1-1/2	2	1-1/2	1-1/2	1-1/2	1-1/2		1-1/2	1-1/2	4	Pink
	2-1/2									
2	3	2	2	2	2		2	2	5	Black
2-1/2	4	2-1/2	2-1/2	3	3		3	3	6	White
3	5	3	3							



Identification tag with cartridge number (bends around capillary tubing).

BQ CARTRIDGE SERVICE KIT PART NUMBER 184007



INDIVIDUAL REPLACEMENT PARTS

PART NUMBER	SIZE	COLOR CODE
CARTRIDGE and I.D. TAG*		
BQC-AAA	AAA	Red
BQC-AA	AA	Yellow
BQC-A	A	Blue
BQC-B	B	Pink
BQC-C	C	White
MISCELLANEOUS PARTS		
OB-1	Oil Bottle (With Oil)	
4444-000	BQ Cartridge Tool	
CSK-1	BQ Cartridge Service Kit (Empty)	
184007	BQ Cartridge Service Kit (Complete as noted above)	

*BQC with B15 (15% bleed port) is available.

CAPACITIES

NOMINAL CAPACITY (TONS) of SPORLAN VALVE TO BE REPLACED									BQ VALVE CARTRIDGE	
R-12	R-22, R-422D	R-134a	R-401A	R-402A	R-404A	R-410A	R-502	R-507	SIZE	COLOR CODE
1/8 thru 1/5	1/8 thru 1/3	1/8 thru 1/5	1/8 thru 1/5	1/8 thru 1/5	1/8 thru 1/5	1/4 thru 1/3	1/8 thru 1/5	1/8 thru 1/5	AAA	Red
1/4 thru 1/3	1/2 thru 2/3	1/4 thru 1/3	1/4 thru 1/3	1/4 thru 1/3	1/4 thru 1/3	1/2 thru 3/4	1/4 thru 1/3	1/4 thru 1/3	AA	Yellow
1/2 thru 1	3/4 thru 1-1/2	1/2 thru 1	1/2 thru 1	1/2 thru 1	1/2 thru 1	1 thru 1-3/4	1/2 thru 1	1/2 thru 1	A	Blue
1-1/4 thru 1-3/4	1-3/4 thru 3	1-1/4 thru 1-3/4	1-1/4 thru 1-3/4	1-1/4 thru 2	1-1/4 thru 2	2 thru 3-1/2	1-1/4 thru 2	1-1/4 thru 2	B	Pink
2 thru 3	3-1/4 thru 5-1/2	2 thru 3	2 thru 3	2-1/4 thru 3	2-1/4 thru 3	4 thru 6	2-1/4 thru 3	2-1/4 thru 3	C	White

SPORLAN TEV Q/BQ CAPACITY

Type Q & BQ Valves

For Refrigerants 22-134a-404A-410A*-507 – SAE Flare & Extended ODF Solder Connections

*Type Q, EQ, and SQ are not approved for R-410A applications.

Q SPECIFICATIONS ELEMENT SIZE NO. 43, KNIFE EDGE JOINT

REFRIGERANT (Sporlan Code)	BODY TYPE - CARTRIDGE: SAE Flare, Internal Equalizer ①	SAE Flare, External Equalizer ②	Extended ODF Solder, Internal Equalizer ①	Extended ODF Solder, External Equalizer ②	Extended ODF Solder, Internal Equalizer ①	Extended ODF Solder, External Equalizer ②	CARTRIDGE	NOMINAL CAPACITY Tons of Refrigeration	THERMOSTATIC CHARGES AVAILABLE	STANDARD TUBING LENGTH	CONNECTIONS Inches Blue figures are standard and will be furnished unless otherwise specified. INLET x OUTLET	NET WEIGHT	SHIPPING WEIGHT
22 (V) 407C (N) 407A (V) 422D (V)	Q-0	QE-0	EQ-0	EQE-0	SQ-0	SQE-0	0	1/3	Refer to Recommended Thermostatic Elements on Page 19	5 ft. 1.5 m	**Q & QE Only** 1/4 x 3/8 SAE 90° Angle Inlet or 1/4 x 1/2 SAE 90° Angle Inlet or **3/8 x 1/2 SAE 90° Angle Inlet** **EQ Only** **3/8 x 1/2 ODF Straight Thru** **EQE Only** **3/8 x 1/2 ODF Straight Thru** or 3/8 x 5/8 ODF Straight Thru or 1/2 x 5/8 ODF Straight Thru or 1/2 x 7/8 ODF Straight Thru **SQ & SQE Only** **3/8 x 1/2 ODF 90° Angle Inlet**	1 lb. 454 g	1-1/2 lbs. 680 g
	Q-1	QE-1	EQ-1	EQE-1	SQ-1	SQE-1	1	3/4					
	Q-2	QE-2	EQ-2	EQE-2	SQ-2	SQE-2	2	1					
	Q-3	QE-3	EQ-3	EQE-3	SQ-3	SQE-3	3	1-1/2					
	Q-4	QE-4	EQ-4	EQE-4	SQ-4	SQE-4	4	2-1/2					
	Q-5	QE-5	EQ-5	EQE-5	SQ-5	SQE-5	5	3-1/2					
	Q-6	QE-6	EQ-6	EQE-6	SQ-6	SQE-6	6	5					
134a (J) 12 (F) 401A (X) 409A (F)	Q-0	QE-0	EQ-0	EQE-0	SQ-0	SQE-0	0	1/6					
	Q-1	QE-1	EQ-1	EQE-1	SQ-1	SQE-1	1	1/4					
	Q-2	QE-2	EQ-2	EQE-2	SQ-2	SQE-2	2	1/2					
	Q-3	QE-3	EQ-3	EQE-3	SQ-3	SQE-3	3	1					
	Q-4	QE-4	EQ-4	EQE-4	SQ-4	SQE-4	4	1-1/2					
	Q-5	QE-5	EQ-5	EQE-5	SQ-5	SQE-5	5	2					
	Q-6	QE-6	EQ-6	EQE-6	SQ-6	SQE-6	6	2-1/2					
404A (S) 502 (R) 408A (R)	Q-0	QE-0	EQ-0	EQE-0	SQ-0	SQE-0	0	1/6					
	Q-1	QE-1	EQ-1	EQE-1	SQ-1	SQE-1	1	1/4					
	Q-2	QE-2	EQ-2	EQE-2	SQ-2	SQE-2	2	1/2					
	Q-3	QE-3	EQ-3	EQE-3	SQ-3	SQE-3	3	1					
	Q-4	QE-4	EQ-4	EQE-4	SQ-4	SQE-4	4	1-1/2					
	Q-5	QE-5	EQ-5	EQE-5	SQ-5	SQE-5	5	2					
	Q-6	QE-6	EQ-6	EQE-6	SQ-6	SQE-6	6	3					
507 (P) 402A (L)	Q-0	QE-0	EQ-0	EQE-0	SQ-0	SQE-0	0	1/6					
	Q-1	QE-1	EQ-1	EQE-1	SQ-1	SQE-1	1	1/4					
	Q-2	QE-2	EQ-2	EQE-2	SQ-2	SQE-2	2	1/2					
	Q-3	QE-3	EQ-3	EQE-3	SQ-3	SQE-3	3	1					
	Q-4	QE-4	EQ-4	EQE-4	SQ-4	SQE-4	4	1-1/2					
	Q-5	QE-5	EQ-5	EQE-5	SQ-5	SQE-5	5	2					
	Q-6	QE-6	EQ-6	EQE-6	SQ-6	SQE-6	6	3					

BALANCE PORTED BQ VALVE PREFERRED

BQ SPECIFICATIONS ELEMENT SIZE NO. 43 (R-22) and N0. 45 (R-410A), KNIFE EDGE JOINT

REFRIGERANT (Sporlan Code)	BODY TYPE - CARTRIDGE: SAE Flare, Internal Equalizer ①	SAE Flare, External Equalizer ②	Extended ODF Solder, Internal Equalizer ①	Extended ODF Solder, External Equalizer ②	Extended ODF Solder, Internal Equalizer ①	Extended ODF Solder, External Equalizer ②	CARTRIDGE	NOMINAL CAPACITY Tons of Refrigeration	THERMOSTATIC CHARGES AVAILABLE	STANDARD TUBING LENGTH	CONNECTIONS Inches Blue figures are standard and will be furnished unless otherwise specified. INLET x OUTLET	NET WEIGHT	SHIPPING WEIGHT
22 (V) 407C (N) 407A (V) 422D (V)	BQ-AAA	BQE-AAA	EBQ-AAA	EBQE-AAA	SBQ-AAA	SBQE-AAA	AAA	1/8 thru 1/3	Refer to Recommended Thermostatic Elements on Page 19	5 ft. 1.5 m	**BQ & BQE** 1/4 x 3/8 SAE 90° Angle Inlet or 1/4 x 1/2 SAE 90° Angle Inlet or **3/8 x 1/2 SAE ③ 90° Angle Inlet** **EBQ Only** **3/8 x 1/2 ODF ④ Straight Thru** **EBQE Only** **3/8 x 1/2 ODF ④ Straight Thru** or 3/8 x 1/2 ODF ④ 90° Angle Inlet or 1/2 x 5/8 ODF ④ Straight Thru or 1/2 x 7/8 ODF ④ Straight Thru **SBQ & SBQE Only** **3/8 x 1/2 ODF ④ 90° Angle Inlet**	1 lb. 454 g	1-1/2 lbs. 680 g
	BQ-AA	BQE-AA	EBQ-AA	EBQE-AA	SBQ-AA	SBQE-AA	AA	1/2 thru 2/3					
	BQ-A	BQE-A	EBQ-A	EBQE-A	SBQ-A	SBQE-A	A	3/4 thru 1-1/2					
	BQ-B	BQE-B	EBQ-B	EBQE-B	SBQ-B	SBQE-B	B	1-3/4 thru 3					
	BQ-C	BQE-C	EBQ-C	EBQE-C	SBQ-C	SBQE-C	C	3-1/4 thru 5-1/2					
134a (J) 12 (F) 401A (X) 409A (F)	BQ-AAA	BQE-AAA	EBQ-AAA	EBQE-AAA	SBQ-AAA	SBQE-AAA	AAA	1/8 thru 1/5					
	BQ-AA	BQE-AA	EBQ-AA	EBQE-AA	SBQ-AA	SBQE-AA	AA	1/4 thru 1/3					
	BQ-A	BQE-A	EBQ-A	EBQE-A	SBQ-A	SBQE-A	A	1/2 thru 1					
	BQ-B	BQE-B	EBQ-B	EBQE-B	SBQ-B	SBQE-B	B	1-1/4 thru 1-3/4					
	BQ-C	BQE-C	EBQ-C	EBQE-C	SBQ-C	SBQE-C	C	2 thru 3					
404A (S) 502 (R) 408A (R)	BQ-AAA	BQE-AAA	EBQ-AAA	EBQE-AAA	SBQ-AAA	SBQE-AAA	AAA	1/8 thru 1/5					
	BQ-AA	BQE-AA	EBQ-AA	EBQE-AA	SBQ-AA	SBQE-AA	AA	1/4 thru 1/3					
	BQ-A	BQE-A	EBQ-A	EBQE-A	SBQ-A	SBQE-A	A	1/2 thru 1					
	BQ-B	BQE-B	EBQ-B	EBQE-B	SBQ-B	SBQE-B	B	1-1/4 thru 2					
	BQ-C	BQE-C	EBQ-C	EBQE-C	SBQ-C	SBQE-C	C	2-1/4 thru 3					
410A (Z)	BQ-AAA	BQE-AAA	EBQ-AAA	EBQE-AAA	SBQ-AAA	SBQE-AAA	AAA	1/4 thru 1/3					
	BQ-AA	BQE-AA	EBQ-AA	EBQE-AA	SBQ-AA	SBQE-AA	AA	1/2 thru 3/4					
	BQ-A	BQE-A	EBQ-A	EBQE-A	SBQ-A	SBQE-A	A	1 thru 1-3/4					
	BQ-B	BQE-B	EBQ-B	EBQE-B	SBQ-B	SBQE-B	B	2 thru 3-1/12					
	BQ-C	BQE-C	EBQ-C	EBQE-C	SBQ-C	SBQE-C	C	4 thru 6					
507 (P) 402A (L)	BQ-AAA	BQE-AAA	EBQ-AAA	EBQE-AAA	SBQ-AAA	SBQE-AAA	AAA	1/8 thru 1/5					
	BQ-AA	BQE-AA	EBQ-AA	EBQE-AA	SBQ-AA	SBQE-AA	AA	1/4 thru 1/3					
	BQ-A	BQE-A	EBQ-A	EBQE-A	SBQ-A	SBQE-A	A	1/2 thru 1					
	BQ-B	BQE-B	EBQ-B	EBQE-B	SBQ-B	SBQE-B	B	1-1/4 thru 2					
	BQ-C	BQE-C	EBQ-C	EBQE-C	SBQ-C	SBQE-C	C	2-1/4 thru 3					

① Valves listed in the column are NOT AVAILABLE with MOP type air conditioning charges.
② Standard External Equalizer 1/4" SAE (Q and BQ Body), 1/4" ODF (SQ, SBQ, EQ and EBQ Body).
③ The 3/8" SAE inlet fitting has a long taper on the flare surface. A 3/8" x 1/4" reducing flare nut will allow 1/4" OD tubing to be attached to this fitting.
④ ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 1/2" ODF will receive 1/2" OD tubing.

SPORLAN R-410A GUIDE

410A GUIDE – FOR INDEPTH INFORMATION SEE CATALOG R410A

TEVs – ER, RC, BQ, O
DISTRIBUTORS & AUXILARY SIDE CONNECTORS SOLENOIDS – '-HP'
3 WAY VALVE – ALL MODELS WITH SOLENOIDS
CATCH-ALLS –ALL MODELS
- **REVERSABLE HEAT PUMP CATCH ALL**
- **SFD-163 FOR RETROFIT APPLICATIONS**

3 WAY VALVE – ALL MODELS WITH SOLENOIDS
SUCTION FILTERS – RSF MODELS
SEE-ALL –ALL MODELS

ELECTRONICS –
- **EEV – SER SERIES**
- **EPR – CDS SERIES**
- **EHGBP – SDR SERIES**
- **ALL CONTROLLERS**

PRESSURE REGULATING VALVES
- **LAC 4,5,6**
- **HGBP 1,5,6,8**

410A TEV INFO

Sporlan offers thermostatic expansion valves in R-410A nominal capacities between 1/3 and 60 tons (1.17 and 210 kW). The models offered are externally equalized, have straight through or angle configuration, and ODF connections.

The Sporlan refrigerant code for R-410A is the letter "**Z**", which is found in valve nomenclature.

The ERZE models have the advantage of a balanced port construction, which makes them ideally suited for systems with a wide range of operating conditions.

See Bulletin 10-10-8 for additional information regarding the complete line of Type R thermostatic expansion valves including the R(E) with SAE fare fittings, the SR(E) with the removable strainer and the new fractional capacity valves.

The RCZE model is similar to the ERZE but has an internal check valve to allow refrigerant flow to bypass the expansion valve port in the reverse flow direction in heat pump systems. The integral check valve means fewer connections, easier installation, and increased reliability.

The Sporlan TEVs designed for R-410A have replaceable thermostatic elements designed for the higher pressures associated with R-410A.

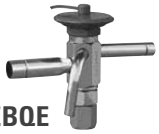
Replaceable thermostatic elements are designated by:

KT	–	45	–	ZGA	–	5'
Kit		Element Size		Charge		Length

ZGA – Has similar performance to the VGA charge used in R-22 or NGA charge used in R-407C systems. The constituents and heavy thermal ballasts in the charge provide excellent anti-hunt characteristics by dampening the valve in the opening direction. The maximum operating pressure or MOP of this charge is not as defined as the ZCP180 charge, an alternate charge for R-410A air conditioning and heat pump applications.

ZCP180 – Has similar performance to the VCP100 charge used in R-22 systems or the NCP100 charge used in R-407C systems. The maximum operating pressure or MOP of this charge takes effect around 60°F (16°C) evaporator temperature. The ZCP180 charge has a mild thermal ballast that dampens the valve in the opening direction.

Contact the nearest Sporlan sales office if you have an application that requires a valve or charge that is not listed.

VALVE TYPE	CONNECTIONS - Inches		EXTERNAL EQUALIZER	VALVE DESCRIPTION AND APPLICATION
	Inlet	Outlet		
 ERZE	3/8 ODF 1/2 ODF 5/8 ODF 7/8 ODF	3/8 ODF 1/2 ODF 5/8 ODF 7/8 ODF 1-1/8 ODF 1-3/8 ODF	1/4" ODF or 1/8" ODF Capillary Tube Lengths Available With OR Without 1/4" SAE Flare Nut	Small brass body valve available with either angle style or straight through connection pattern. ERZE valves are available externally adjustable. The ERZE has a balanced port construction, which makes it ideal for applications with a wide range of operating conditions. May be applied in bi-directional applications.
 RCZE	3/8 ODF 1/2 ODF Chatleff	3/8 ODF 1/2 ODF 5/8 ODF Chatleff		In addition to the features described above for the ERZE valve, the RCZE has a built-in check valve to allow bypass flow in the reverse direction. This feature makes this valve type ideally suited for heat pump applications. RCZE valves are available externally adjustable.
 O	7/8 ODF 1-1/8 ODF	1-1/8 ODF 1-3/8 ODF 1-5/8 ODF	1/4" ODF	Brass bar body, externally adjustable valve. Inlet has a permanent 12 mesh strainer. This valve features a balanced port construction, and it is suitable for both air conditioning and refrigeration applications.
 SBQE	3/8 ODF 90° Angle Inlet	1/2 ODF	1/4" ODF Pointed Toward Bottom Cap	Features ODF solder connections and a forged brass inlet fitting with a removable 100 mesh strainer which can be cleaned and/or replaced without removing the valve from the line. May be applied in bi-directional applications.
 EBQE	3/8 ODF 1/2 ODF Straight Through	1/2 ODF 5/8 ODF 7/8 ODF		Features extended ODF connections. A 100 mesh insert strainer is provided with the valve. May be applied in bi-directional applications.

Note: Not all fitting combinations are available.

SPORLAN R-410A GUIDE

R410A BQ Capacity Table

Specifications

TYPE EBQE	TYPE SBQE	CARTRIDGE CODE (Port Size)	NOMINAL CAPACITY RANGE		CONNECTIONS - Inches BOLD figures are standard and will be furnished unless otherwise specified.	
EXTENDED ODF SOLDER	EXTENDED ODF SOLDER (with replaceable strainer)					
EXTERNAL EQUALIZER			TONS	kW	INLET X OUTLET	EXTERNAL EQUALIZER
EBQE-AAA	SBQE-AAA	AAA	1/4 – 1/3	0.88 – 1.17	EBQE **3/8 x 1/2 ODF** 1/2 x 5/8 ODF 1/2 x 7/8 ODF Straight Thru SBQE **3/8 x 1/2 ODF** 90° Angle Inlet	1/4" ODF Pointed Toward Bottom Cap
EBQE-AA	SBQE-AA	AA	1/2 – 3/4	1.76 – 2.64		
EBQE-A	SBQE-A	A	1 – 1-3/4	3.52 – 6.15		
EBQE-B	SBQE-B	B	2 – 3-1/2	7.03 – 12.3		
EBQE-C	SBQE-C	C	4 – 6	14.1 – 21.1		

Capacities

Tons ▪ psi ▪ °F

CARTRIDGE TYPE	NOMINAL CAPACITY (Tons)	EVAPORATOR TEMPERATURE °F		
		40	20	0
		PRESSURE DROP ACROSS VALVE (psi)		
		160	200	200
AAA	1/3	0.419	0.458	0.4
AA	2/3	0.899	0.981	0.857
A	1-1/2	1.92	2.09	1.83
B	3	3.36	3.66	3.20
C	5-1/2	6.23	6.80	5.94

LIQUID TEMPERATURE ENTERING TEV °F										
40	50	60	70	80	90	100	110	120	130	140
CORRECTION FACTOR, CF LIQUID TEMPERATURE										
1.47	1.39	1.32	1.23	1.16	1.09	1.00	0.93	0.83	0.75	0.64

EVAPORATOR TEMPERATURE °F	PRESSURE DROP ACROSS TEV (psi)							
	80	120	160	200	240	280	320	360
	CORRECTION FACTOR, CF PRESSURE DROP							
40°	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50
20°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34
0°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34

kW ▪ bar ▪ °C

CARTRIDGE TYPE	NOMINAL CAPACITY (kW)	EVAPORATOR TEMPERATURE °C		
		5	-5	-15
		PRESSURE DROP ACROSS VALVE (bar)		
		11	14	14
AAA	1.47	1.47	1.62	1.46
AA	3.15	3.15	3.48	3.14
A	6.72	6.72	7.42	6.69
B	11.8	11.8	13.0	11.7
C	21.8	21.8	24.1	21.7

LIQUID TEMPERATURE ENTERING TEV °C											
5	10	15	20	25	30	35	40	45	50	55	60
CORRECTION FACTOR, CF LIQUID TEMPERATURE											
1.46	1.39	1.32	1.25	1.18	1.11	1.04	0.97	0.89	0.81	0.72	0.62

EVAPORATOR TEMPERATURE °C	PRESSURE DROP ACROSS TEV (bar)								
	8	10	11	12	13	14	16	18	20
	CORRECTION FACTOR, CF PRESSURE DROP								
5°	0.85	0.95	1.00	1.04	1.09	1.13	1.21	1.28	1.35
-5°	0.76	0.85	0.89	0.93	0.96	1.00	1.07	1.13	1.20
-15°	0.76	0.85	0.89	0.93	0.96	1.00	1.07	1.13	1.20

R-410A ACCESSORIES/FITTINGS

For better performance and energy efficiency, the Sporlan SEER Upgrade Components has everything you need to upgrade air conditioning and heat pump systems quickly and easily.


Chatleff


Aero-Style


SAE 3/8"

Part #	Description	LIST
183367	5/8" ODF x Aeroquip FTN	58.20
183368	Aeroquip x 1/2" ODM	54.10
183369	5/8" ODF x Chatleff FTN	58.20
183370	Chatleff x 1/2" ODM	54.10
183371	3/8" SAE x 1/2" ODM FTN	49.70
183899	Chatleff Gasket	28.10
184011	1/4" ODM x 1/8" EE FTN	

Replacement Parts for Refrigerant Retrofit Bulletin 122-10, April 2013

THERMOSTATIC EXPANSION VALVES - NON-ADJUSTABLE

When changing refrigerants, an adjustable bottom cap assembly is required to change the superheat setting.

Product	Replacement Parts Needed	Description P/N	Item Number
Y1150 EF valve	Y1150 EF valve bottom cap kit	KA-4	183006
BI valve	BI valve bottom cap kit	KA-I/BI	183013

SOLENOID VALVES

The Enclosing Tube Gasket and Manual Lift Stem are potential leak points when changing refrigerants. The enclosing tube design and gasket changed in 1998-1999 to the Wolverine style. The older style (before 6-99) requires replacement of the enclosing tube and gasket. See information below.

NOTE: Wolverine Gaskets may not require changing.

Normally Closed Product	Replacement Parts Needed	Description P/N	Item Number
(M)B6/(M)E6*	MB/ME6 Enclosing Tube Kit (includes enclosing tube and gasket)	KE-6	382435
	Manual Lift Stem Kit	KM-1	382460
(C)(M)B9/(C)(M)E9*	MB/ME9 Enclosing Tube Kit (includes enclosing tube and gasket)	KE-9	382355
	Manual Lift Stem Kit	KM-2	382470
(C)(M)B10*	MB/ME10 Enclosing Tube Kit (includes enclosing tube and gasket)	KE-10/14	382390
	Manual Lift Stem Kit	KM-3	382480
(C)(M)E10*	MB/ME10 Enclosing Tube Kit (includes enclosing tube and gasket)	KE-10/14	382390
	Manual Lift Stem Kit	KM-5	382500
(C)(M)B14*	MB/ME14 Enclosing Tube Kit (includes enclosing tube and gasket)	KE-10/14	382390
	Manual Lift Stem Kit	KM-3	382480
(C)(M)E14*	MB/ME14 Enclosing Tube Kit (includes enclosing tube and gasket)	KE-10/14	382390
	Manual Lift Stem Kit	KM-4	382490
(C)(M)B19/(C)(M)E19*	MB/ME19 Enclosing Tube Kit (includes enclosing tube and gasket)	KE-19	382365
	Manual Lift Stem Kit	KM-5	382500
(M)B25/(M)E25*	MB/ME25 Enclosing Tube Kit (includes enclosing tube and gasket)	KE-25	382400
	Manual Lift Stem Kit	KM-6	382510
(M)E34*	ME34 Enclosing Tube Kit (includes enclosing tube and gasket)	KE-9	382355
	ME34 Body Flange (Tetraseal)	2645-000	183675
	Manual Lift Stem Kit	KM-5	382500
(M)E35	ME35 Parts Kit (includes enclosing tube, gasket, and o-ring)	KS-E35	381118
	Manual Lift Stem Kit	KM-7	382511
(M)E42*	ME42 Enclosing Tube Kit (includes enclosing tube and gasket)	KE-9	382355
	ME42 Body Flange (Tetraseal)	938-1	183710
	Manual Lift Stem Kit	KM-8	382512

Manual Lift Stem information, if required, is shown above.

Normally Open Product	Replacement Parts Needed	Description P/N	Item Number
OB9/OE9*	OB9/OE9 Enclosing Tube Kit	KE-OB9/OE9	381404
OB10/OE10*	OB10/OE10 Parts Kit	KS-OB10/OE10	381353
OB14/OE14*	OB14/OE14 Parts Kit	KS-OB14/OE14	381366
OB19/OE19*	OB19/OE19 Parts Kit	KS-OB19/OE19	381379
OB25/OE25*	OB25/OE25 Parts Kit	KS-OB25/OE25	381392
OE35	OE35 Parts Kit	KS-OE35	381130
OE34*	Enclosing Tube Kit	KE-OB9/OE9	381404
	OE34 Body Flange (Tetraseal)	2645-000	183675
OE42*	Enclosing Tube Kit	KE-OB9/OE9	381404
	OE42 Body Flange Tetraseal	938-1	183710

*For solenoid valves 6-99 and newer, replacement Wolverine Gasket available if needed. (See P/Ns on following page.)

SOLENOID VALVES - REPLACEMENT WOLVERINE GASKETS

Product	Replacement Parts Needed	Description P/N	Item Number
(M)B6/(M)E6, (M)E35	Enclosing Tube Gasket **(Wolverine)**	14000-1	380103
(C)(M)B9/(C)(M)E9, (M)E34, (M)E42, OB9/OE9, OE34, OE42	Enclosing Tube Gasket **(Wolverine)**	14000-2	380104
(C)(M)B10/(C)(M)E10, (C)(M)B14/(C)(M)E14, OB10/OE10, OB14/OE14	Enclosing Tube Gasket **(Wolverine)**	14000-3	380100
(C)(M)B19/(C)(M)E19, OB19/OE19	Enclosing Tube Gasket **(Wolverine)**	14000-4	380101
(C)(M)B25/(C)(M)E25, OB25/OE25	Enclosing Tube Gasket **(Wolverine)**	14000-5	380102

Solenoid Accessories

Solenoid Magnet - 310250
Solenoid Manual Lift Stem - 958121

REPLACEABLE CORE SHELLS and OIL FILTERS

Product	Replacement Parts Needed	Description P/N	Item Number
CA Shell	Replaceable Filter-Drier Core(s), Secondary Filter	Various	–
	End Plate Gasket (C-480 through C-1920)	1288-001	481125
	End Plate Gasket (C-30000 and C-40000)	1288-013	480096
RSF Shell	Replaceable Filter-Drier Core(s) or Replaceable Pleated Element	Various	–
	End Plate Gasket (1/16" thick)	1288-001	481125
ROF Shell	Replaceable Oil Filter Cartridge	OFE-1	960015
	End Plate Gasket (1/16" thick)	1288-005	481103

Sight Glass Accessories

K-SA-4 Indicator Paper - 780002

OIL LEVEL CONTROLS

NOTE: AOL Oil Level Adaptor Kits may require seal replacement. Consult compressor manufacturer and/or Sporlan for seal information.

Product	Replacement Parts Needed	Description P/N	Item Number
OL-60	Oil Level Control O-Ring *2 Required*	621-125	968019
	Oil Level Control Quad Ring	JP-1222-000	968003

SPORLAN REPLACEMENT PARTS

3-Way Valves (Heat Reclaim, Split Condenser, and Defrost)

Appropriate seals shown below. Sporlan recommends replacing body flange style 3-way valves due to the time associated with disassembly, changing the body o-ring, and rebuilding the valve.

Product	Replacement Parts Needed	Description P/N	Item Number
8D	8D/12D Enclosing Tube Kit	KE-8D/12D	382327
	Pilot Assembly Gasket (Prior to 3-00)	2645-000	183675
	Pilot Assembly Gasket (3-00 to Present) **(Wolverine)**	14000-5	380102
	Lower Body O-ring (6-97 and older)	623-128	183785
	Lower Body O-ring (7-97 to Present)	14000-6	380106
12D	8D/12D Enclosing Tube Kit	KE-8D/12D	382327
	Pilot Assembly Gasket (Prior to 3-00)	2645-000	183675
	Pilot Assembly Gasket (3-00 to Present) **(Wolverine)**	14000-5	380102
	Lower Body O-ring	623-137	183785
16D	KE-6 Enclosing Tube Kit (12-03 to Present)	KE-6	382435
	KE-9 Enclosing Tube Kit (Prior to 12-03)	KE-9	382355
	Pilot Assembly Gasket (Prior to 3-00)	2645-000	183675
	Pilot Assembly Gasket (3-00 to Present) **(Wolverine)**	14000-5	380102
	Lower Body O-ring (Prior to 6-06)	1335-235	183717
10G	10G Enclosing Tube	KE-6	382435
	Pilot Assembly Gasket (Prior to 3-00) *2 Required*	2645-000	183675
	Pilot Assembly Gasket (3-00 to Present) **(Wolverine)** *2 Required*	14000-5	380102

(S)ORIT VALVES

SORIT Valves have used 3 different enclosing tube gasket/o-ring designs. Depending on the manufacturing date, one of the following was used. Replace with same design.

Product	Replacement Parts Needed	Description P/N	Item Number
ORIT-12/ORIT-15	Adaptor Gasket (Tetraseal)	2645-000	183675
ORIT-20	Adaptor Gasket **(Wolverine)**	2539-000	183604
SORIT-12/SORIT-15	Adaptor Gasket (Tetraseal)	2645-000	183675
	Enclosing Tube O-Ring (4 screw style)	621-014	183685
	Enclosing Tube O-Ring	621-016	183690
	Enclosing Tube Gasket Date Code 3898 to present **(Wolverine)**	4323-000	183184
SORIT-20	Adaptor Gasket **(Wolverine)**	2539-000	183604
	Enclosing Tube O-Ring (4 screw style)	621-014	183685
	Enclosing Tube O-Ring	621-016	183690
	Enclosing Tube Gasket Date Code 3898 to present **(Wolverine)**	4323-000	183184

(S)ORIT-PI VALVES

Product	Replacement Parts Needed	Description P/N	Item Number
ORIT-PI-2/ORIT-PI-3/ ORIT-PI-4/ORIT-PI-5	O-Ring Kit (2 Body & 2 Guide Pin)	KG-(S)ORIT-PI	380901
SORIT-PI-2/SORIT-PI-3/ SORIT-PI-4/SORIT-PI-5	O-Ring Kit (2 Body & 2 Guide Pin)	KG-(S)ORIT-PI	380901
	Enclosing Tube O-Ring	621-016	183690
	Enclosing Tube Gasket Date Code 3598 to present **(Wolverine)**	4323-000	183184
	A4 Element (Subcooler EPR)	A4 75/150	908073

DEFROST DIFFERENTIAL VALVES

Product	Replacement Parts Needed	Description P/N	Item Number
LDR-15/XTM	O-Ring	4508-008	958148
	Body Flange Tetraseal Gasket	2645-000	183675
	Enclosing Tube Parts Kit (Prior to 3-99)	KE-OB9/OE9	381404
	Enclosing Tube Gasket (3-99 to Present) **(Wolverine)**	14000-2	380104
OLDR-15	O-Ring	4508-008	958148
	Body Flange Tetraseal Gasket	2645-000	183675
	Enclosing Tube Kit	KE-9	382355
LDR-16	Small O-Ring *2 Required*	621-11	183608
	Large O-Ring	621-036	968030
	Enclosing Tube Gasket **(Wolverine)**	14000-1	380103
OLDR-16	Small O-Ring *2 Required*	621-11	183608
	Large O-Ring	621-036	968030
	Enclosing Tube Kit	KE-6	382435
LDR-20/XTO	Body Flange Gasket	938-1	183710
	Enclosing Tube Parts Kit (Prior to 3-99)	KE-OB9/OE9	381404
	Enclosing Tube Gasket (3-99 to Present) **(Wolverine)**	14000-2	380104
OLDR-20	Body Flange Gasket	938-1	183710
	Enclosing Tube Kit	KE-9	382355
DDR-20	Body Flange Gasket **(Wolverine)**	2539-000	183604
	Enclosing Tube Kit	KE-9	382355

SORIT-TO-CDS CONVERSION KITS

Product	Replacement Parts Needed	Description P/N	Item Number
SORIT-12-to-CDS	Seal Gasket	2645-000	183675
SORIT-15-to-CDS	O-Ring	621-129	183603
SORIT-20-to-CDS	Gasket	2539-000	183604

CDS VALVES

Product	Replacement Parts Needed	Description P/N	Item Number
CDS(T)-4	Gasket **(Wolverine)**	14000-3	380100
CDS(T)-16	O-Ring	621-127	908077
CDS(T)-17	Gasket **(Wolverine)**	22010-000	908078

SPORLAN DISTRIBUTORS

For use with all refrigerants

All Sporlan distributors are ready for service with R-410A. The following tables are provided for making selections based on procedure explained in Bulletin 20-10.





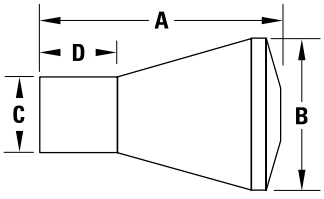


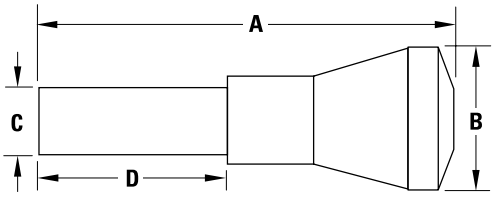
Quick Reference

CONNECTION SIZE Inches	TYPICAL TEV TYPES ①, ②	DISTRIBUTOR TYPE	MAXIMUM NUMBER OF CIRCUITS 3/16	1/4	5/16	3/8	NOZZLE TYPE	SIDE CONNECTION
1/2 ODM	*BI, BBI, CBI, CBBI,* EBQ, R, RC, SBQ	1613	6	4	–	–	PERM.	–
		1616	8	6	4	–	PERM.	–
		D260	6	4	–	–	L	–
		D262	9	6	4	–	L	–
5/8 ODM	*BI, BBI, CBI, CBBI,* EBQ, R, RC	1620	6	4	–	–	J	–
		1622	9	7	4	–	J	–
		1651(R)	7	5	–	–	J (R)	3/8 or 1/2 ODF
7/8 ODM	*BI, BBI, CBI, CBBI,* EBQ, O, R	1112	7	6	4	2	G	–
		1113	12	8	6	4	G	–
		1653(R)	12	9	6	4	G (R)	3/8 or 1/2 ODF
1-1/8 ODM	O, R	1115	15	10	9	6	E	–
		1116	20	15	–	–	E	–
		1655 (R)	20	12	10	7	E (R)	1/2 or 5/8 ODF
1-3/8 ODM	O, R	1117	18	15	9	7	C	–
		1126	24	18	15	12	C	–
		1128	28	25	21	16	C	–
		1657(R)	26	18	14	11	C (R)	5/8 or 7/8 ODF
1-5/8 ODM	O	1125	28	24	20	16	A	–
		1127	37	30	26	20	A	–
		1143	40	36	30	24	A	–
		1659(R)	32	24	18	14	A (R)	7/8 or 1-1/8 ODF

① TEV models in italics are OEM type thermostatic expansion valves.
② Thermostatic expansion valves used with refrigerant distributor must be externally equalized.

Dimensions





Specifications

NUMBER OF CIRCUITS & TUBING SIZES AVAILABLE	NOZZLE ORIFICE NUMBERS AVAILABLE	NOZZLE & RETAINER RING SIZE	INLET CONNECTION Inches	DISTRIBUTOR	DIMENSIONS Inches A	B	C	D
Type D260 Net Weight - Approximately 2 oz. (60 g)								
2 to 6 3/16″	1/9 thru 8	L	1/2 ODM Solder		1.96	0.81	.497/.503	0.82
2 to 4 1/4″								
Type D262 Net Weight - Approximately 3 oz. (80 g)								
7 to 9 3/16″	1/9 thru 8	L	1/2 ODM Solder		2.44	1.00	.497/.503	0.81
5 to 6 1/4″								
2 to 4 5/16″								
Type 1613 Net Weight - Approximately - Approximately 2 oz. (60 g)								
2 to 7 5/32″	1/2 thru 5	PERM.	1/2 ODM Solder		1.17	0.81	.498/.500	0.50
2 to 6 3/16″								
2 to 4 1/4″								
Type 1616 Net Weight - Approximately - Approximately 3 oz. (80 g)								
8 to 10 5/32″	1/2 thru 5	PERM.	1/2 ODM Solder		1.55	1.00	.498/.500	0.50
7 to 8 3/16″								
5 to 6 1/4″								
2 to 4 5/16″								
Type 1620 Net Weight - Approximately 2 oz. (60 g)								
2 to 6 3/16″	1/9 thru 8	J	5/8 ODM Solder		1.14	0.81	.623/.625	0.69
2 to 4 1/4″								

SPORLAN DISTRIBUTORS

Specifications

For use with all refrigerants

NUMBER OF CIRCUITS & TUBING SIZES AVAILABLE	NOZZLE ORIFICE NUMBERS AVAILABLE	NOZZLE & RETAINER RING SIZE	INLET CONNECTION Inches	DISTRIBUTOR	DIMENSIONS Inches			
					A	B	C	D
Type 1622 Net Weight - Approximately 3 oz. (80 g)								
7 to 9 3/16″ 5 to 7 1/4″ 2 to 4 5/16″	1/9 thru 8	J	5/8 ODM Solder		1.63	1.00	.623 / .625	0.63
Type 1112 Net Weight - Approximately 4 oz. (110 g)								
5 to 7 3/16″ 4 to 6 1/4″ 2 to 4 5/16″ 2 3/8″	1/6 thru 20	G	7/8 ODM Solder		1.72	0.91	.873 / .875	1.00
Type 1113 Net Weight - Approximately 5 oz. (140 g)								
8 to 12 3/16″ 7 to 8 1/4″ 5 to 6 5/16″ 3 to 4 3/8″	1/6 thru 20	G	7/8 ODM Solder		1.78	1.16	.873 / .875	0.88
Type 1115 Net Weight - Approximately 9 oz. (250 g)								
11 to 15 3/16″ 9 to 10 1/4″ 7 to 9 5/16″ 5 to 6 3/8″	2 thru 30	E	1-1/8 ODM Solder		2.44	1.50	1.123 / 1.125	1.12
Type 1116 Net Weight - Approximately 9 oz. (250 g)								
16 to 20 3/16″ 11 to 15 1/4″	2 thru 30	E	1-1/8 ODM Solder		2.44	1.75	1.123 / 1.125	1.12
Type 1117 Net Weight - Approximately 1 lb. (450 g)								
16 to 18 3/16″ 11 to 15 1/4″ 9 5/16″ 7 3/8″	3 thru 50	C	1-3/8 ODM Solder		2.56	1.75	1.373 / 1.375	1.31
Type 1126 Net Weight - Approximately 1 lb., 6 oz. (620 g)								
19 to 24 3/16″ 15 to 18 1/4″ 10 to 15 5/16″ 8 to 12 3/8″	3 thru 50	C	1-3/8 ODM Solder		2.81	2.38	1.373 / 1.375	1.12
Type 1128 Net Weight - Approximately 1 lb., 10 oz. (740 g)								
25 to 28 3/16″ 19 to 25 1/4″ 16 to 21 5/16″ 13 to 16 3/8″	3 thru 50	C	1-3/8 ODM Solder		3.12	3.00	1.373 / 1.375	1.38
Type 1125 Net Weight - Approximately 1 lb., 14 oz. (850 g)								
25 to 28 3/16″ 19 to 24 1/4″ 16 to 20 5/16″ 13 to 16 3/8″	10 thru 50	A	1-5/8 ODM Solder		3.12	3.00	1.623 / 1.625	1.30
Type 1127 Net Weight - Approximately 2 lb., 4 oz. (1.0 kg)								
29 to 37 3/16″ 25 to 30 1/4″ 21 to 26 5/16″ 17 to 20 3/8″	10 thru 50	A	1-5/8 ODM Solder		3.31	3.50	1.623 / 1.625	1.28
Type 1143 Net Weight - Approximately 3 lb. (1.4 kg)								
29 to 40 3/16″ 31 to 36 1/4″ 27 to 30 5/16″ 21 to 24 3/8″	10 thru 50	A	1-5/8 ODM Solder		3.69	4.00	1.623 / 1.625	1.44

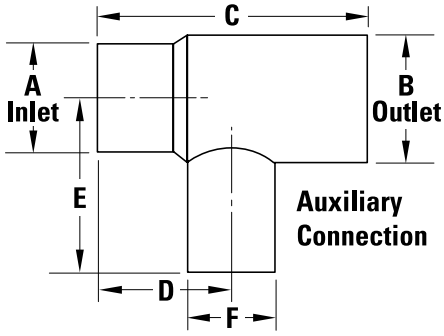
SPORLAN AUXILARY SIDE CONNECTORS

For use with all refrigerants

Auxiliary Side Connectors

ASC-4-3, ASC-5-4, ASC-7-4, ASC-9-5, ASC-11-7, and ASC-13-9

For proper distributor type, order by complete Sporlan type listed below. E.g., an 1126 distributor requires an ASC-11-7 Auxiliary Side Connector. **Do not use an ASC that is smaller or larger than recommended. Bushing up or down at the outlet defeats the purpose of the internal nozzle tube extension. Do not use an ASC on distributors with permanent nozzles.**



TYPE	CONNECTION SIZES - Inches			USED WITH DISTRIBUTOR TYPE	NOZZLE SIZE	DIMENSIONS Inches					
	INLET ODM SOLDER	OUTLET ODF SOLDER	AUXILIARY ODF SOLDER			A (ODM)	B (ODF)	C	D	E	F (ODF)
ASC-4-3	1/2	1/2	3/8	D260, D262	L	1/2	1/2	1.75	0.85	1.04	3/8
ASC-5-4	5/8	5/8	1/2	1620, 1622	J	5/8	5/8	1.88	0.95	1.25	1/2
ASC-7-4	7/8	7/8	1/2	1112, 1113	G	7/8	7/8	2.25	1.06	1.38	1/2
ASC-9-5	1-1/8	1-1/8	5/8	1115, 1116	E	1-1/8	1-1/8	2.81	1.47	1.62	5/8
ASC-11-7	1-3/8	1-3/8	7/8	1117, 1126, 1128	C	1-3/8	1-3/8	3.53	1.89	2.19	7/8
ASC-13-9	1-5/8	1-5/8	1-1/8	1125, 1127, 1143	A	1-5/8	1-5/8	3.72	1.83	2.75	1-1/8

Ordering Instructions

Distributors must be ordered with the complete designation: model, number and size of circuits, orifice size, and number and size of the side connection (1650 series only). Example, 1651-2-1/4-2 with one 3/8" OD side connection. The ASC designation is specified as shown above to match with the appropriate distributor. Do not attempt to use an ASC that is smaller or larger than recommended. Bushing up or down at the outlet will defeat the purpose of the internal nozzle tube extension.

Important

When adding an ASC to the solder type distributor, the nozzle must be moved from the distributor to the ASC. When the ASC-H-7 and ASC-M-9 are used the ER or CR nozzle replaces the conventional nozzle.

SPORLAN CATCH-ALL FILTER DRIERS

SPORLAN

Significance of the Type Number

The letters and numerals in the Catch-All® type number each have a significance. The "C" indicates Catch-All. The **FIRST TWO OR THREE DIGITS** indicate cubic inches of desiccant. The **LAST ONE OR TWO DIGITS** indicate fitting size in eighths of an inch. For sealed models, a **"-S"** following the last digit indicates solder fittings, and **NO LETTER** indicates a flare fitting. Replaceable core models (C-420 and larger) only have solder connections and the "-S" is omitted. Examples are: C-083 is 8 cu. in. and 3/8" flare, C-309-S is 30 cu. in. and 1-1/8" solder, C-19213-G is 192 cu. in. and 1-5/8" solder.

Other suffix letters indicate special qualities. For example:

"-T" indicates a pressure tap consisting of a Schrader type access valve on the inlet end of the Catch-All.

"-HH" indicates a charcoal style core for wax removal and clean-up after a hermetic motor burnout.

"-F" indicates a female flare outlet fitting with a male flare inlet fitting.

"-FM" indicates a female flare inlet fitting with a male flare outlet fitting.

"-CAP" indicates a Catch-All particularly designed for installation on capillary tube systems.

Replaceable Cores and Pleated Filter Elements – Order Separately

Cores for replaceable core type filter-driers are molded of exactly the same desiccants that are used in the popular sealed filter-driers.

Cores are individually packed in ***metal cans***, fully activated and hermetically sealed against moisture and dirt.

Filter Elements are dried and packed in individual sealed metal cans. This method of packaging prevents the element from picking up moisture from the atmosphere.

Detailed ***instructions*** are printed on each can. Each can contains a ***"triple gasket"*** consisting of a new end plate gasket, an end plate gasket for certain competitive filter-driers and a core gasket where desired. See the specifications on page 40 for the number of cores required for each type drier.

RCW-42 – High Water Capacity Core – Order as separate item – Fits ONLY shell type C-R424, C-R425 and C-R427. **Designed specially for use with POE oils.** This core should be used on systems that have a ruptured water cooled condenser, or that have been exposed to the atmosphere, or for some reason have a high amount of moisture in the system.

RC-4864 – Activated Core – Order as separate item – Fits types C-480 thru C-19200 Series shells and Replaceable Suction Filter (RSF) shells. This is the standard core suitable for most installations in the liquid or suction line applications.

RCW-48 – High Water Capacity Core – Order as separate item – Fits types C-480 thru C-19200 Series shells and Replaceable Suction Filter (RSF) shells. **Designed specially for use with POE oils.** This core should be used on systems that have a ruptured water cooled condenser, or that have been exposed to the atmosphere, or for some reason have a high amount of moisture in the system.

HH Style Catch-All for Wax Removal

Small amounts of wax are often a problem on **low temperature systems.** Even well engineered systems frequently contain minute quantities of wax which are sufficient to clog expansion valve screens or cause sticking of the valve. Sporlan has developed a special blend of desiccants including activated charcoal which removes small amounts of wax in the liquid line before this wax can cause trouble at the expansion valve. These Catch-All Filter-Driers have been very successful in correcting trouble jobs in the field.

Select an HH Style Catch-All Filter-Drier if wax problems occur on low temperature systems. In addition to their wax removal ability, these filter-driers will remove all of the other harmful contaminants that the standard filter-driers remove. Listed in the table are various Catch-All models that incorporate the HH style core.

TYPE	CONNECTIONS Inches	TYPE	CONNECTIONS Inches
C-052-HH	1/4 SAE Flare	C-303-HH	3/8 SAE Flare
C-082-HH	1/4 SAE Flare	C-304-HH	1/2 SAE Flare
C-083-HH	3/8 SAE Flare	C-304-S-HH	1/2 ODF Solder
C-162-HH	1/4 SAE Flare	C-305-HH	5/8 SAE Flare
C-163-HH	3/8 SAE Flare	C-305-S-HH	5/8 ODF Solder
C-163-S-HH	3/8 ODF Solder	C-414-HH	1/2 SAE Flare
C-164-HH	1/2 SAE Flare	C-415-HH	5/8 SAE Flare
C-164-S-HH	1/2 ODF Solder	C-417-S-HH	7/8 ODF Solder
C-165-HH	5/8 SAE Flare	RC-4864-HH	Replaceable Core
C-165-S-HH	5/8 ODF Solder	RC-10098-HH	



RC-4864-HH – Activated Charcoal Core – Order as separate item – Fits types C-480 thru C-19200 Series shells and Replaceable Suction Filter (RSF) shells. This core should be used for wax removal on low temperature systems, and for clean-up of systems that have had a hermetic motor burnout.

RPE-48-BD – Filter Element – Order as separate item – Fits types C-480 thru C-19200 Series shells and **Replaceable Suction Filter (RSF) shells.** This element should be used in RSF shells installed in the **suction line** to obtain the lowest possible pressure drop. In cleaning up a system after a hermetic motor burnout, cores should be used first. Then after the system is thoroughly clean, this filter element can be installed in the RSF shell.

RC-10098 – Activated Core – Order as separate item – Fits types C-30000 and C-40000 Series shells. This core has a high water capacity and should be used on all standard liquid and suction line applications.

RCW-100 – High Water Capacity Core – Order as separate item – Fits types C-30000 and C-40000 Series shells. **Designed specially for use with POE oils.** This core should be used on systems that have a ruptured water cooled condenser, or that have been exposed to the atmosphere, or for some reason have a high amount of moisture in the system.

RC-10098-HH – Activated Charcoal Core – Order as separate item – Fits types C-30000 and C-40000 Series shells. This core should be used for wax removal on low temperature systems, and for clean-up of systems that have had a hermetic motor burnout.

RPE-100 – Filter Element – Order as separate item – Fits types C-30000 and C40000 Series shells. This filter element should be used in the suction line to obtain the lowest possible pressure drop after cores were used for system clean-up.

Liquid Holding Capacity

Catch-All Liquid Refrigerant Capacities

CATCH-ALL SERIES TYPE NO.	LIQUID CAPACITY													
	OUNCES OF REFRIGERANT BY WEIGHT AT 100°F							kg OF REFRIGERANT BY WEIGHT AT 38°C						
	REFRIGERANT							REFRIGERANT						
	12	134a	22	404A	407C	410A	507	12	134a	22	404A	407C	410A	507
C-030	2.1	1.9	1.9	1.6	1.7	1.7	1.6	0.06	0.05	0.05	0.05	0.05	0.05	0.05
C-050	5.3	4.9	4.8	3.9	4.2	4.2	4.1	0.15	0.14	0.14	0.11	0.12	0.12	0.12
C-080	7.6	6.9	6.8	5.6	6.0	5.9	5.8	0.22	0.20	0.19	0.16	0.17	0.17	0.16
C-160	12.0	11.0	10.8	8.9	9.5	9.4	9.3	0.34	0.31	0.31	0.25	0.27	0.27	0.26
C-300	19.2	17.6	17.3	14.2	15.2	15.1	14.9	0.54	0.50	0.49	0.40	0.43	0.43	0.42
C-410	27.0	24.7	24.3	19.9	21.4	21.1	20.9	0.77	0.70	0.69	0.56	0.61	0.60	0.59
HPC-080	—	—	9.2	—	8.1	8.0	—	—	—	0.26	—	0.23	0.23	—
HPC-100	—	—	12.2	—	10.7	10.6	—	—	—	0.35	—	0.30	0.30	—
HPC-160	—	—	14.5	—	12.7	12.6	—	—	—	0.41	—	0.36	0.36	—
HPC-300	—	—	19.7	—	17.3	17.2	—	—	—	0.56	—	0.49	0.49	—

SPORLAN CATCH-ALL FILTER DRIERS

Quick Selection Guide

SYSTEM SIZE		FIELD REPLACEMENT			
		AIR CONDITIONING		REFRIGERATION	
TONS	LINE SIZE Inches OD	R-12 & R-134a	R-22, R-407C & R-410A*	R-12, R-134a, R-404A, R-502 & R-507	R-22
SEALED TYPES - SPECIFY FLARE OR SOLDER					
1/4 - 1/3	CAP TUBE 1/4	C-032-CAP C-032(-S)	C-032-CAP C-032(-S)	C-032-CAP C-032(-S)	C-032-CAP C-032(-S)
1/2 - 1	1/4 5/16 3/8	C-052(-S) C-0525-S C-053(-S)	C-052(-S) C-0525-S C-053(-S)	C-082(-S) C-0825(-S) C-083(-S)	C-082(-S) C-0825-S C-083(-S)
1-1/2 - 2-1/2	5/16 3/8 1/2	C-0825-S C-083(-S) C-084(-S)	C-0825-S C-083(-S) C-084(-S)	C-1625-S C-163(-S) C-164(-S)	C-1625-S C-163(-S) C-164(-S)
3 - 6	5/16 3/8 1/2 5/8	C-1625-S C-163(-S) C-164(-S) C-165(-S)	C-1625-S C-163(-S) C-164(-S) C-165(-S)	— C-303(-S) C-304(-S) C-305(-S)	— C-303(-S) C-304(-S) C-305(-S)
7 - 9	1/2 5/8 7/8	C-304(-S) C-305(-S) C-307-S	C-304(-S) C-305(-S) C-307-S	C-414(-S) C-415(-S) C-417-S	C-414(-S) C-415(-S) C-417-S
10 - 12	1/2 5/8 7/8 1-1/8	— C-415(-S) C-417-S C-419S	C-414(-S) C-415(-S) C-417-S C-419S	— C-415(-S) C-417-S C-419-S	C-414(-S) C-415(-S) C-417-S C-419-S
13 - 18	5/8 7/8 1-1/8	— C-607-S C-609-S	C-415(-S) C-607-S C-609-S	— C-607-S C-609-S	C-415(-S) C-607-S C-609-S
REVERSIBLE HEAT PUMP FILTER-DRIER					
1-5	3/8 1/2 5/8	—	HPC-103-S / HPC-163-S-HH HPC-104-S / HPC-164-S-HH HPC-165-S-HH	—	—
5-16	3/8 1/2 5/8 7/8	—	HPC-303-S-HH / HPC-304-S-HH HPC-305-S-HH / HPC-307-S-HH	—	—
REPLACEABLE CORE TYPES					
4 - 9	5/8 7/8	C-485-G C-487-G	C-485-G C-487-G	C-485-G C-487-G	C-485-G C-487-G
10 - 15	5/8 7/8 1-1/8	— C-487-G C-489-G	C-485-G C-487-G C-489-G	— C-487-G C-489-G	C-485-G C-487-G C-489-G
16 - 29	7/8 1-1/8 1-3/8	C-967-G C-969-G C-9611-G	C-967-G C-969-G C-9611-G	C-967-G C-969-G C-9611-G	C-967-G C-969-G C-9611-G
30 - 39	7/8 1-1/8 1-3/8	— C-1449-G C-14411-G	C-967-G C-969-G C-9611-G	— C-1449-G C-14411-G	C-967-G C-969-G C-9611-G
40 - 59	1-1/8 1-3/8 1-5/8	C-1449-G C-19211-G C-19213-G	C-1449-G C-14411-G C-14413-G	— C-19211-G C-19213-G	C-1449-G C-14411-G C-14413-G
60 - 75	1-1/8 1-3/8 1-5/8	— C-19211-G C-19213-G	C-1449-G C-19211-G C-19213-G	— C-19211-G C-19213-G	— C-19211-G C-19213-G
76 - 99	1-3/8 1-5/8 2-1/8	— C-30013-G C-40017-G	C-19211-G C-19213-G C-19217-G	— C-30013-G C-40017-G	C-19211-G C-19213-G C-19217-G
100 - 130	1-5/8 2-1/8	— C-40017-G	C-30013-G C-40017-G	— C-40017-G	C-30013-G C-40017-G
131 - 150	2-1/8	(2) C-30017-G	C-40017-G	(2) C-30017-G	C-40017-G





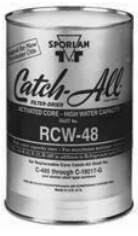




CATCH-ALL SIZE	NO. OF CORES	SECONDARY FILTER	CORE TYPE
C-R420 Series Shell	1	—	RCW-42
C-480 Series Shell	1	FS-480	RCW-48, RC-4864, or RC-4864-HH
C-960 Series Shell	2	FS-960	
C-14400 Series Shell	3	FS-1440	
C-19200 Series Shell	4	FS-19200	
C-30000 Series Shell	3	—	RCW-100, RC-10098, or RC-10098-HH
C-40000 Series Shell	4	—	

*C-30000 and C-40000 Series shells are not approved for R-410A.





SPORLAN CATCH-ALL FILTER DRIERS

Filter Driers

Part #	Description	LIST
304-V	SPV FILTER DRIER 450209	153.90
C-032-CAP	SPV FILTER DRIER 1/4" 400064	50.20
C-032-CAP-T	SPV FILTER DRIER 1/4" 400072	60.50
C-032-FM	SPV FILTER DRIER 1/4" 400032	53.30
C-032-F	SPV FILTER DRIER 1/4" 400016	44.40
C-032	SPV FILTER DRIER 1/4" 400000	38.00
C-032-S	SPV FILTER DRIER 1/4" 400052	37.70
C-033	SPV FILTER DRIER 3/8" 400088	39.30
C-033-S	SPV FILTER DRIER 3/8" 400001	39.30
C03E124	SPV FILTER DRIER 3/8" ODF 400110-003	41.80
C052-CAP-TT-HH	SPV FILTER DRIER 1/4" 400219	96.30
C-052-HH	SPV FILTER DRIER 1/4" 400232	62.70
C-052	SPV FILTER DRIER 1/4" 400200	44.80
C-052-S	SPV FILTER DRIER 1/4" 400249	44.40
C-053	SPV FILTER DRIER 3/8" 400288	45.60
C-053-S	SPV FILTER DRIER 3/8" 400329	44.10
C-082-HH	SPV FILTER DRIER 1/4" 400424	71.30
C-082	SPV FILTER DRIER 1/4" 400416	55.90
C-082-S	SPV FILTER DRIER 1/4" 400429	57.70
C-083-HH	SPV FILTER DRIER 3/8" 400488	71.30
C-083	SPV FILTER DRIER 3/8" 400472	54.60
C-083-S	SPV FILTER DRIER 3/8" 400503	54.60
C-084	SPV FILTER DRIER 1/2" 400536	58.40
C-084-S	SPV FILTER DRIER 1/2" 400437	58.40
C-084-S-T-HH	SPV FILTER DRIER 1/2" 400441	86.50
C-144-S-TT-HH	SPV FILTER DRIER 1/2" 400796	129.70
C-145-S-TT-HH	SPV FILTER DRIER 5/8" 400801	148.50
C-146-S-TT-HH	SPV FILTER DRIER 3/4" 400806	146.20
C-147-S-TT-HH	SPV FILTER DRIER 7/8" 400811	148.10
C-149-S-TT-HH	SPV FILTER DRIER 1-1/8" 400816	172.60
C-162-HH	SPV FILTER DRIER 1/4" 401008	88.60
C-162	SPV FILTER DRIER 1/4" 401000	72.90
C-162-S	SPV FILTER DRIER 1/4" 401018	73.20
C-163-HH	SPV FILTER DRIER 3/8" 401080	83.30
C-163-S-HH	SPV FILTER DRIER 3/8" 401022	81.30
C-163	SPV FILTER DRIER 3/8" 401048	70.00
C-163-S	SPV FILTER DRIER 3/8" 401021	70.00
C-164-HH	SPV FILTER DRIER 1/2" 401152	97.80
C-164-S-HH	SPV FILTER DRIER 1/2" 401025	92.30
C-164	SPV FILTER DRIER 1/2" 401128	76.40
C-164-S	SPV FILTER DRIER 1/2" 401023	76.40
C-164-S-T-HH	SPV FILTER DRIER 1/2" 401026	116.20
C-165-HH	SPV FILTER DRIER 5/8" 401232	97.80
C-165-S-HH	SPV FILTER DRIER 5/8" 401028	97.80
C-165	SPV FILTER DRIER 5/8" 401216	81.80

Part #	Description	LIST
C-165-S	SPV FILTER DRIER 5/8" 401035	81.10
C-165-S-T-HH	SPV FILTER DRIER 5/8" 401029	118.70
C-166-S-T-HH	SPV FILTER DRIER 3/4" 401030	125.60
C-167-S-T-HH	SPV FILTER DRIER 7/8" 401033	124.30
C-303-HH	SPV FILTER DRIER 3/8" 401336	172.80
C-303	SPV FILTER DRIER 3/8" 401328 (8/BX)	128.20
C-303-S	SPV FILTER DRIER 3/8" 401305	129.90
C-303	SPV FILTER DRIER 3/8" 401328 (8/BX)	128.20
C-303-S	SPV FILTER DRIER 3/8" 401305	129.90
C-304-HH	SPV FILTER DRIER 1/2" 401376	163.10
C-304-S-HH	SPV FILTER DRIER 1/2" 401309	164.70
C-304	SPV FILTER DRIER 1/2" 401360 (8/BX)	125.10
C-304-S	SPV FILTER DRIER 1/2" 401307	125.10
C-305-HH	SPV FILTER DRIER 5/8" 401432	163.10
C-305-S-HH	SPV FILTER DRIER 5/8" 401310	163.10
C-305	SPV FILTER DRIER 5/8" 401408 (8/BX)	125.10
C-305-S	SPV FILTER DRIER 5/8" 401449 (8/BX)	125.10
C-305-S-T-HH	SPV FILTER DRIER 5/8" 401311	203.50
C-306-S	SPV FILTER DRIER 3/4" 401313 (8/BX)	154.30
C-306-S-T-HH	SPV FILTER DRIER 3/4" 401314 (8/BX)	197.00
C-307-S	SPV FILTER DRIER 7/8" 401505 (8/BX)	140.20
C-309-S	SPV FILTER DRIER 1-1/8" 401317	151.50
C-309-S-T-HH	SPV FILTER DRIER 1-1/8" 401318	210.60
C-30E5	SPV FILTER DRIER ROTOLOCK 7/8" 401544	278.30
C-413-P	SPV FILTER DRIER 3/8" 401608	346.00
C-413	SPV FILTER DRIER 3/8" 401592	192.70
C-413-S	SPV*** FILTER DRIER 3/8	
C-414-HH	SPV FILTER DRIER 1/2" 401632	230.60
C-414	SPV FILTER DRIER 1/2" 401624	186.30
C-414-S	SPV FILTER DRIER 1/2" 401609	186.30
C-415-HH	SPV FILTER DRIER 5/8" 401672	230.60
C-415-S-HH	SPV FILTER DRIER 5/8" 401611	223.90
C-415	SPV FILTER DRIER 5/8" 401656 (10/BX)	184.40
C-415-S	SPV FILTER DRIER 5/8" 401610 (10/BX)	184.40
C-417-S-HH	SPV FILTER DRIER 7/8" 401615	230.60
C-417-S	SPV FILTER DRIER 7/8" 401614 (10/BX)	181.70
C-417-S-T-HH	SPV FILTER DRIER 7/8" 401617	257.60
C-419-S	SPV FILTER DRIER 1-1/8" 401618	196.50
C-419-S-T-HH	SPV FILTER DRIER 1-1/8" 401619	268.80
C-4311-S-T-HH	SPV FILTER DRIER 1-3/8" 401816	429.00
C-4313-S-T-HH	SPV FILTER DRIER 1-5/8"" 401824	449.00
C-437-S-T-HH	SPV FILTER DRIER 7/8" 401804	448.00
C-439-S-T-HH	SPV FILTER DRIER 1-1/8" 401808	425.00
C-607-S	SPV FILTER DRIER 7/8" 401837 (4/BX)	276.40
C-607-S-T-HH	SPV FILTER DRIER 7/8" 401838	380.00
C-609-S	SPV FILTER DRIER 1-1/8" 401865 (4/BX)	287.30
C-609-S-T-HH	SPV FILTER DRIER 1-1/8" 401839	391.00
CG-307-S	SPV*** FILTER DRIER	66.00

SPORLAN CATCH-ALL FILTER DRIERS

For Refrigerants 22, 134a, 404A, 407C, 410A, 507

Replaceable Core Type

ODF Solder Connections

The rugged construction of the Replaceable Core Catch-All has proven itself in the field for many years. The design features include:

1. The famous **molded porous core** for maximum contaminant removal. The core cannot swell, powder or pack – assuring ease of installation and removal.
2. The **bolt and nut attachment** of the end plate provides simple trouble-free installation.
3. The **internal** construction gives a one piece assembly and assures proper core alignment.
4. A **complete line** of fitting sizes – all with copper fittings.
5. **No plastic parts** are used – all internal parts are plated steel.
6. A **corrosion resistant powder paint** protects the exterior of the shell.



RCW-48

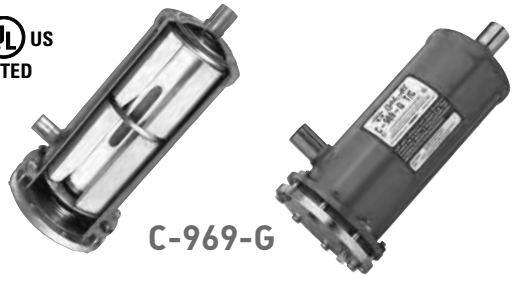


RC-4864



RCW-100

C UL US LISTED



C-969-G

Specifications

TYPE	CONNECTIONS ODF SOLDER Inches	OPTIONAL SECONDARY FILTER*	NUMBER of CORES or FILTER ELEMENTS	CORE PART NUMBER	VOLUME of DESICCANT Cubic Inches	FILTER ELEMENT PART NUMBER	MOUNTING BRACKETS	OVERALL LENGTH Inches
C-R424-G **C-R425-G** **C-R427-G**	1/2 5/8 7/8	—	1	RCW-42	42	—	A-175-1	9.00 9.06 9.44
C-485-G **C-487-G** **C-489-G** **C-4811-G** **C-4813-G**	5/8 7/8 1-1/8 1-3/8 1-5/8	FS-480	1	RCW-48, RC-4864 or RC-4864-HH	48	RPE-48-BD	A-685	9.15 9.30 9.50 9.60 9.60
C-967-G **C-969-G** **C-9611-G** **C-9613-G**	7/8 1-1/8 1-3/8 1-5/8	FS-960	2		96	RPE-48-BD	A-685	14.84 15.04 15.14 15.14
C-1449-G **C-14411-G** **C-14413-G**	1-1/8 1-3/8 1-5/8	FS-1440	3		144	RPE-48-BD	A-685	20.58 20.68 20.68
C-19211-G **C-19213-G** **C-19217-G**	1-3/8 1-5/8 2-1/8	FS-19200	4		192	RPE-48-BD	A-685	26.22 26.22 26.22
C-30013-G **C-30017-G**	1-5/8 2-1/8	—	3	RCW-100, RC-10098 or RC-10098-HH	300	RPE-100	A-175-2	27.94 28.06
C-40017-G **C-40021-G** **C-40025-G** **C-40029-G** **C-40033-G**	2-1/8 2-5/8 3-1/8 3-5/8 4-1/8	—	4		400	RPE-100	A-175-2	34.56 34.75 34.44 34.81 35.12
NPT PIPE CONNECTIONS								
C-484-PG **C-966-PG** **C-1448-PG** **C-19212-PG**	1/2 3/4 1 1-1/2	—	1 2 3 4	RCW-48, RC-4864 or RC-4864-HH	48 96 144 192	RPE-48-BD	A-685	9.08 14.67 20.42 25.85
C-40016-PG	2	—	4	RCW-100, RC-10098 or RC-10098-HH	400	RPE-100	A-175-2	34.44

UL and UL_C Listed – Guide SMGT-File No. SA-1756A & B. C-480 through C-1920 Series shells have a 650 psig rating for R-410A. C-30000 and C40000 shells have a 500 psig rating.
*Optional Secondary Filter must be purchased separately. O-rings (p/n 621-025) are supplied with each secondary filter, but can be purchased separately. The secondary filter cannot be used if the shell is installed in the suction line.

Type numbers with G suffix indicate that unit is supplied with 1/4" female pipe connection in the end plate and pipe plug. For liquid line service and angle charging valve for system charging purposes can be installed in place of the pipe plug. Angle charging and Schrader type access valves are available from your Sporlan Wholesaler.

Type numbers with P suffix indicates female threaded pipe connections.

Note: Do not use RPE-48-BD and RPE-100 filter elements in ammonia systems.

For complete information see your Sporlan Wholesaler, our website at www.sporlan.com, or write Sporlan and request Bulletin 40-10.

LIQUID LINE RATINGS AND SELECTION RECOMMENDATIONS

TYPE	③SURFACE FILTERING AREA Square Inches	②RATINGS AT ARI STANDARD CONDITIONS														SELECTION RECOMMENDATIONS (Tons)				
		WATER CAPACITY – DROPS										①REFRIGERANT FLOW CAPACITY Tons at 1 psi ΔP				REFRIGERATION			AIR CONDITIONING	
		R-22 60 PPM		R-134a 50 PPM		R-404A & 507 50 PPM		R-507C 50 PPM		R-410A 50 PPM						COMMERCIAL & LOW TEMPERATURE EQUIPMENT			FIELD REPLACEMENT or FIELD BUILT UP SYSTEMS	
		75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	22 & 410A	134a	404A & 507	407C	12 & 134a	22	404A, 502 & 507	12 & 134a	22, 407C & 410A
SEALED TYPE																				
C-032	9	61	50	67	48	71	58	52	17	27	20	1.5	1.3	1.0	1.3	1/4	1/4	1/4	1/2	1/2
C-032-CAP																				
C-032-S																				
C-032-F																				
C-032-FM																				
C-033												3.5	3.2	2.3	3.2					
C-033-S												3.8	3.5	2.6	3.5					
C-052	15	146	119	158	114	169	138	123	40	63	48	2.1	1.9	1.4	1.9	1/3	1/3	1/3	3/4 thru 1	3/4 thru 2
C-052-S																				
C-052-F																				
C-052-FM																				
C-0525-S												3.4	3.1	2.3	3.1					
C-053												4.1	3.8	2.7	3.8					
C-053-S												4.7	4.3	3.1	4.3					
C-082	21	240	196	261	188	279	227	202	65	104	78	2.1	1.9	1.4	1.9	1/2 thru 1-1/2	1/2 thru 1-1/2	1/2 thru 1	3/4 thru 2	1 thru 2
C-082-S																				
C-0825-S												3.7	3.3	2.4	3.3					
C-083												4.5	4.2	3.0	4.2					
C-083-S												5.2	4.7	3.4	4.7					
C-084												8.7	7.9	5.9	8.0					
C-084-S												9.6	8.8	6.4	8.8					
C-162	33	346	297	396	285	424	345	307	100	158	119	2.1	1.9	1.4	1.9	1 thru 2	1-1/2 thru 3	3/4 thru 2	1 thru 5	1-1/2 thru 5
C-162-S																				
C-1625-S												3.7	3.3	2.4	3.3					
C-163												4.5	4.2	3.0	4.2					
C-163-S												5.2	4.7	3.4	4.7					
C-164												10.1	9.3	6.8	9.3					
C-164-S												11.0	10.1	7.3	10.1					
C-165												12.0	11.0	8.2	11.1					
C-165-S												13.8	12.6	9.2	12.7					
C-303	53	696	567	756	545	809	658	586	189	302	227	4.6	4.2	3.0	4.2	3 thru 5	3 thru 5	2 thru 5	3 thru 7-1/2	4 thru 10
C-303-S												5.3	4.7	3.4	4.7					
C-304												10.1	9.3	6.8	9.3					
C-304-S												11.0	10.1	7.3	10.1					
C-305												14.9	13.6	9.9	13.7					
C-305-S												16.9	15.5	11.3	15.5					
C-307-S												21.6	19.8	14.4	19.9					
C-414	67	936	713	1017	733	1088	885	788	254	407	305	11.5	10.5	7.6	10.5	5 thru 10	5 thru 12	5 thru 10	5 thru 12	7-1/2 thru 15
C-414-S												12.4	11.4	8.3	11.4					
C-415												15.8	14.5	10.6	14.6					
C-415-S												17.5	16.1	11.8	16.2					
C-417-S												22.1	20.3	14.8	20.4					
C-419-S												24.3	22.3	16.3	22.4					
C-607-S	106	1392	1134	1512	1090	1618	1316	1172	378	604	454	29.1	26.6	19.5	26.8	15	15	10	15	20
C-609-S												33.2	30.4	22.3	30.7					

① Based on 86°F liquid line temperature and a refrigerant flow of 3.1 pounds per minute per ton of Refrigerant 134a; 2.9 pounds per minute per ton of Refrigerant 22; 3.9 pounds per minute per ton for Refrigerant 404A; 2.9 pounds per minute per ton for Refrigerant 407C; 2.8 pounds per minute per ton for Refrigerant 410A and 4.1 pounds per minute per ton for Refrigerant 507. Ratings in accordance to ARI Standard 710.

② 20 drops = 1 gram = 1 cc.

③ The filtration area is equal to the core surface area plus the large internal surface available for depth filtration.

Notes: R-12 water capacity values are approximately 15 percent greater than R-134a. R-502 water capacities are similar to R-404A and R-507.

The variation in flow ratings of filter-driers having the same size core and shell is caused by the difference in connection sizes used.

For complete capacity and selection information see your Sporlan Wholesaler, our website at www.sporlan.com, or write Sporlan and request Bulletin 40-10.

LIQUID LINE RATINGS AND SELECTION RECOMMENDATIONS

TYPE	③SURFACE FILTERING AREA Square Inches	②RATINGS AT ARI STANDARD CONDITIONS														SELECTION RECOMMENDATIONS (Tons)					
		WATER CAPACITY – DROPS										①REFRIGERANT FLOW CAPACITY Tons at 1 psi ΔP				REFRIGERATION			AIR CONDITIONING		
		R-22 60 PPM		R-134a 50 PPM		R-404A & 507 50 PPM		R-407C 50 PPM		R-410A 50 PPM						COMMERCIAL & LOW TEMPERATURE EQUIPMENT			FIELD REPLACEMENT or FIELD BUILT UP SYSTEMS		
		75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	22 & 410A	134a	404A & 507	407C	12 & 134a	22	404A, 502 & 507	12 & 134a	22 & 407C	410A
REPLACEABLE CORE TYPE WITH HIGH WATER CAPACITY CORES (See page 44)																					
C-R424-G	67	902	735	981	706	1049	853	760	245	407	305	11.4	10.4	7.6	10.5	3	5	5	5	5	5
C-R425-G												13.7	12.5	9.1	12.5	5	7-1/2	5	7-1/2	10	10
C-R427-G												18.5	16.9	12.4	17.0						
C-485-G	64	1109	904	1201	868	1290	1049	934	301	481	361	14.6	13.4	9.8	13.5	7-1/2	10	7-1/2	7-1/2	10	10
C-487-G												23.9	21.9	16.0	22.0	12	15	10	12	15	15
C-489-G												43.2	39.5	28.9	39.8				15	20	20
C-967-G	128	2218	1808	2402	1736	2580	2098	1868	602	962	722	39.2	35.9	26.2	36.1	20	25	15	20	25	25
C-969-G												48.7	44.5	32.6	44.8	25	35	25	25	35	35
C-1449-G	192	3327	2712	3603	2604	3870	3147	2802	903	1443	1083	59.2	54.1	39.7	54.6	30	40	30	30	40	40
C-14411-G												67.0	61.3	44.8	61.7	40	50	35	40	50	50
C-19211-G	256	4436	3616	4804	3472	5160	4196	3736	1204	1924	1444	84.5	77.3	56.3	77.7	50	70	50	50	70	70
C-19213-G												99.0	90.6	66.2	91.1	60	80	55	60	80	80
C-19217-G												104	95.1	69.5	95.7	65	85	60	65	85	85
C-30013-G	294	6786	5532	7375	5310	7890	6417	5716	1844	—	—	112	102	74.5	103	75	100	70	75	100	—
C-40017-G	392	9048	7376	9833	7080	10520	8556	7621	2458	—	—	134	132	96.8	133	110	130	100	110	130	—

TYPE	③SURFACE FILTERING AREA Square Inches	②RATINGS AT ARI STANDARD CONDITIONS									SELECTION RECOMMENDATIONS (Tons)				
		WATER CAPACITY – DROPS						①REFRIGERANT FLOW CAPACITY Tons at 1 psi ΔP			REFRIGERATION			AIR CONDITIONING	
		R-22 60 PPM		R-134a 50 PPM		R-404A & 507 50 PPM					COMMERCIAL & LOW TEMPERATURE EQUIPMENT			FIELD REPLACEMENT or FIELD BUILT UP SYSTEMS	
		75°F	125°F	75°F	125°F	75°F	125°F	22	134a	404A & 507	12 & 134a	22	404A, 502 &507	12 & 134a	22
REPLACEABLE CORE TYPE WITH STANDARD CORES (See page 44)															
C-485-G	64	347	288	583	473	408	309	14.6	13.4	9.8	7-1/2	10	7-1/2	7-1/2	10
C-487-G								23.9	21.9	16.0	12	15	10	12	15
C-489-G								43.2	39.5	28.9		15	10	15	20
C-967-G	128	694	576	1166	946	816	618	39.2	35.9	26.2	20	25	15	20	25
C-969-G								48.7	44.5	32.6	25	35	25	25	35
C-1449-G	192	1041	864	1749	1419	1224	927	59.2	54.1	39.7	30	40	30	30	40
C-14411-G								67.0	61.3	44.8	40	50	35	40	50
C-19211-G	256	1388	1152	2332	1892	1632	1236	84.5	77.3	56.3	50	70	50	50	70
C-19213-G								99.0	90.6	66.2	60	80	55	60	80
C-19217-G								104	95.1	69.5	65	85	60	65	85
C-30013-G	294	2670	1878	3912	3009	2631	1992	112	102	74.5	75	100	70	75	100
C-40017-G	392	3560	2504	5216	4012	3508	2652	134	132	96.8	110	130	100	110	130

① Based on 86°F liquid line temperature and a refrigerant flow of 3.1 pounds per minute per ton of Refrigerant 134a; 2.9 pounds per minute per ton of Refrigerant 22; 3.9 pounds per minute per ton for Refrigerant 404A; 2.9 pounds per minute per ton for Refrigerant 407C; 2.8 pounds per minute per ton for Refrigerant 410A and 4.1 pounds per minute per ton for Refrigerant 507. Ratings in accordance to ARI Standard 710.

② 20 drops = 1 gram = 1 cc.

③ The filtration area is equal to the core surface area plus the large internal surface available for depth filtration.

Notes: R-12 water capacity values are approximately 15 percent greater than R-134a. R-502 water capacities are similar to R-404A and R-507.

The variation in flow ratings of filter-driers having the same size core and shell is caused by the difference in connection sizes used.

For complete capacity and selection information see your Sporlan Wholesaler, our website at www.sporlan.com, or write Sporlan and request Bulletin 40-10.

LIQUID LINE RATINGS AND SELECTION RECOMMENDATIONS

Selection Instructions

Except for the values in bold (R-22/R-407C/R-410A at 40°F; 8 psi pressure drop), the flow capacities are rated at the maximum recommended pressure drop for **permanent** installation.

To ensure the suction line filter-drier has ample contaminant removal ability, selection must be based on flow capacity and the amount of desiccant required for system clean-up. The suction line filter-drier must be large enough to adequately remove acid, moisture and solid contaminants without causing nuisance plug-ups. Sizing is especially important for sealed type suction line filter-driers since they should be sized to clean a small system with one service call.

To reduce the pressure drop through replaceable core shells, substitute cores with filter elements (see page 44) after the system has been cleaned up. The 6171-5 screen should be discarded when cores are replaced with RPE-48-BD elements in RSF shells.

For complete description of the suggested system clean-up procedure, request Bulletin 40-10.

Suction Line Flow Capacity (Tons) – Sealed Type

	REFRIGERANT	134a			22					404A				407C	410A
	EVAPORATOR TEMPERATURE	40°F	20°F	0°F	40°F	20°F	0°F	-20°F	-40°F	20°F	0°F	-20°F	-40°F	40°F	40°F
	PRESSURE DROP (psi)	2.0	1.5	1.0	3.0	2.0	1.5	1.0	0.5	2.0	1.5	1.0	0.5	3.0	3.0
SEALED TYPE	C-083-S-T-HH	1.3	0.9	0.5	2.1	1.3	0.9	0.5	0.2	1.2	0.8	0.5	0.2	2.0	2.7
	C-084-S-T-HH	1.4	0.9	0.6	2.1	1.3	0.9	0.5	0.3	1.3	0.8	0.5	0.3	2.1	2.7
	C-144-S-T-HH	1.3	0.8	0.5	2.1	1.3	0.9	0.4	0.2	0.9	0.6	0.3	0.2	2.1	2.7
	C-145-S-T-HH	2.1	1.3	0.8	3.4	2.2	1.4	0.8	0.4	1.6	1.0	0.6	0.3	3.4	4.6
	C-146-S-T-HH	2.9	1.8	1.1	4.8	3.0	2.0	1.2	0.6	2.1	1.4	0.9	0.4	4.8	6.2
	C-147-S-T-HH	3.2	2.1	1.3	5.3	3.3	2.2	1.3	0.7	2.4	1.6	0.9	0.5	5.3	6.8
	C-149-S-T-HH	4.2	2.7	1.6	7.0	4.4	2.9	1.7	0.9	3.2	2.1	1.2	0.6	7.0	9.0
	C-164-S-T-HH	1.7	1.1	0.7	2.7	1.7	1.1	0.7	0.3	1.6	1.0	0.6	0.3	2.7	3.6
	C-165-S-T-HH	2.0	1.3	0.8	3.2	2.0	1.3	0.8	0.4	1.9	1.2	0.7	0.4	3.2	4.2
	C-166-S-T-HH	2.6	1.7	1.0	4.0	2.5	1.6	1.0	0.5	2.4	1.6	0.9	0.5	3.9	5.2
	C-167-S-T-HH	2.8	1.8	1.1	4.5	2.8	1.8	1.1	0.5	2.7	1.7	1.0	0.5	4.4	5.9
	C-305-S-T-HH	2.2	1.4	0.8	3.4	2.1	1.4	0.8	0.4	2.0	1.3	0.8	0.4	3.4	4.4
	C-306-S-T-HH	2.8	1.8	1.1	4.4	2.8	1.8	1.1	0.5	2.7	1.7	1.0	0.5	4.4	5.8
	C-307-S-T-HH	3.4	2.2	1.3	5.3	3.3	2.2	1.3	0.6	3.2	2.0	1.2	0.6	5.3	7.0
	C-309-S-T-HH	3.8	2.4	1.5	5.9	3.7	2.4	1.5	0.7	3.6	2.3	1.4	0.7	5.8	7.7
	C-417-S-T-HH	3.8	2.5	1.5	6.0	3.8	2.5	1.5	0.7	3.6	2.3	1.4	0.7	6.0	7.9
	C-419-S-T-HH	4.0	2.6	1.6	6.2	3.9	2.5	1.5	0.8	3.7	2.4	1.5	0.7	6.1	8.0
	C-437-S-T-HH	5.1	3.3	2.1	8.0	5.0	3.3	2.0	1.0	4.8	3.1	1.9	0.9	7.9	10.4
	C-439-S-T-HH	6.4	4.2	2.5	10.0	6.3	4.1	2.5	1.2	6.0	3.9	2.4	1.2	9.9	13.1
	C-4311-S-T-HH	7.1	4.6	2.8	11.1	6.9	4.6	2.7	1.4	6.7	4.3	2.6	1.3	10.9	14.4
	C-4313-S-T-HH	7.8	5.1	3.1	12.2	7.6	5.0	3.0	1.5	7.3	4.7	2.9	1.4	12.0	15.9
	C-607-S-T-HH	4.2	2.7	1.7	6.7	4.2	2.7	1.6	0.8	4.0	2.6	1.6	0.8	6.6	8.7
	C-609-S-T-HH	4.8	3.1	1.9	7.5	4.7	3.1	1.8	0.9	4.5	2.9	1.8	0.9	7.4	9.8

Suction Line Flow Capacity (Tons) – Shells With Replaceable Cores

	REFRIGERANT	134a			22						404A & 507				407C		410A	
	EVAPORATOR TEMPERATURE	40°F	20°F	0°F	40°F		20°F	0°F	-20°F	-40°F	20°F	0°F	-20°F	-40°F	40°F		40°F	
	PRESSURE DROP (psi)	2.0	1.5	1.0	3.0	8.0*	2.0	1.5	1.0	0.5	2.0	1.5	1.0	0.5	3.0	8.0*	3.0	8.0*
REPLACEABLE CORE TYPE	RSF-487-T	6.4	4.2	2.5	10.1	**17.5**	6.3	4.1	2.5	1.2	6.1	4.0	2.3	1.2	10.0	**17.3**	12.6	**21.9**
	RSF-489-T	7.8	5.1	3.1	12.2	**21.1**	7.6	5.0	3.0	1.5	7.3	4.8	2.8	1.4	12.0	**20.7**	15.3	**26.4**
	RSF-4811-T	9.4	6.2	3.7	14.8	**25.6**	9.3	6.1	3.6	1.8	8.9	5.8	3.4	1.7	14.6	**25.3**	18.5	**32.0**
	RSF-4813-T	10.1	6.7	4.0	15.9	**27.5**	10.0	6.5	3.9	1.9	9.6	6.2	3.6	1.8	15.7	**27.2**	19.9	**34.4**
	RSF-4817-T	11.0	7.2	4.4	17.2	**29.8**	10.8	7.1	4.2	2.1	10.4	6.8	3.9	2.0	17.0	**29.4**	21.5	**37.3**
	RSF-4821-T	11.9	7.8	4.7	18.6	**32.2**	11.6	7.6	4.6	2.3	11.2	7.3	4.3	2.2	18.4	**31.6**	23.3	**40.3**
	RSF-9611-T	14.5	10.5	6.7	23.8	**39.0**	15.9	11.1	7.1	3.9	14.4	9.8	6.2	3.3	22.9	**37.6**	29.8	**48.8**
	RSF-9613-T	15.2	13.0	8.1	29.7	**49.0**	19.8	13.7	8.7	4.7	17.9	12.2	7.6	4.0	28.6	**47.2**	37.1	**61.3**
	RSF-9617-T	16.1	13.0	8.1	29.7	**49.0**	19.8	13.7	8.7	4.7	17.9	12.2	7.6	4.0	28.6	**47.2**	37.1	**61.3**
	RSF-9621-T	18.7	13.0	8.1	29.7	**50.7**	19.8	13.7	8.7	4.7	17.9	12.2	7.6	4.0	28.9	**49.8**	37.1	**61.3**
	RSF-9625-T	19.2	13.0	8.1	30.0	**51.9**	20.0	13.7	8.7	4.7	17.9	12.2	7.6	4.0	29.7	**51.0**	37.5	**63.4**
	C-30013-G	16.9	11.0	6.7	26.6	**46.0**	16.7	10.9	6.5	3.2	16.0	10.3	6.2	3.1	26.3	**42.8**	33.3	**64.9**
	C-30017-G	17.2	11.1	6.8	27.0	**46.7**	16.9	11.1	6.6	3.3	16.2	10.4	6.3	3.1	26.7	**43.3**	33.8	**58.4**
	C-40017-G	21.0	13.6	8.3	32.9	**56.9**	20.6	13.5	8.1	4.0	19.8	12.8	7.2	3.8	32.4	**52.8**	41.1	**71.1**
	C-40021-G thru C-40033-G	21.0	13.6	8.3	32.9	**56.9**	20.6	13.5	8.1	4.0	19.8	12.8	7.2	3.8	32.4	**52.8**	41.1	**71.1**

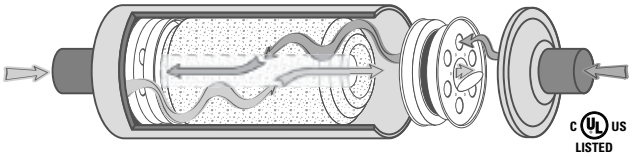
*Denotes TEMPORARY INSTALLATION. Cores for system clean-up; RPE-48-BD or RPE-100 Filter Elements should be installed after clean-up.
Rated in accordance with ARI Standard 730.

SPORLAN CATCH-ALL FILTER DRIERS

SPORLAN

Design Features

- New product line-up with enhanced flow capacities deliver system protection solutions for today's system sizes.
- Filter-drier operates in either flow direction with low pressure drop.
- Rugged metal check valve designed for maximum flow capacity.
- Sporlan dependable molded core used for maximum filtration ability. When flow reverses, dirt already collected remains in the filter-drier.
- Carefully engineered desiccant formulations for new system and system clean-up for all commercially available HCFC and HFC refrigerant/lubricant combinations.



- HPC-160 and HPC-300 Series offer the largest core sizes available in the industry for these filter-drier types. A larger molded core provides superior performance, and is especially advantageous for R-410A/POE lubricant systems.
- Catch-All® shells are epoxy powder coated to prevent corrosion even in the most adverse conditions.
- Shells listed by Underwriters' Laboratories for 650 psig for R-410A systems.

Specifications – For New Installations

TYPE NUMBER	CONNECTION SIZE Inches	SELECTION RECOMMEND. Tons	DIMENSIONS		SPECIFICATIONS										
			OVERALL LENGTH Inches	DIA. Inches	FLOW CAPACITY Tons @ 1 psi ΔP		WATER CAPACITY						LIQUID CAPACITY Ounces (wt.) @ 100°F		
							R-22 Drops at 60 ppm		R-407C Drops at 50 ppm		R-410A Drops at 50 ppm				
					R-22 & R-410A	R-407C	75°F	125°F	75°F	125°F	75°F	125°F	R-22	R-407C	R-410A
HPC-082	1/4 SAE Flare	1 – 3	5.78	3.0	2.2	2.0	194	158	163	53	85	63	9.2	8.1	8.0
HPC-082-S	1/4 ODF Solder		5.32												
HPC-083	3/8 SAE Flare		6.22		3.7	3.4									
HPC-083-S	3/8 ODF Solder		5.46												
HPC-084	1/2 SAE Flare		6.48		4.1	3.8									
HPC-084-S	1/2 ODF Solder		5.58												
HPC-103	3/8 SAE Flare	1 – 5	6.75	3.0	5.0	4.6	215	176	181	80	94	70	12.2	10.7	10.6
HPC-103-S	3/8 ODF Solder		5.88		5.5	5.1									
HPC-104	1/2 SAE Flare		6.94		8.3	7.6									
HPC-104-S	1/2 ODF Solder		6.00		8.9	8.2									
HPC-105	5/8 SAE Flare		7.25		10.2	9.4									
HPC-105-S	5/8 ODF Solder		6.31		10.8	9.9									
HPC-163	3/8 SAE Flare	1 – 8	7.78	3.0	5.0	4.6	364	297	307	100	158	119	14.5	12.7	12.6
HPC-163-S	3/8 ODF Solder		6.92		5.5	5.1									
HPC-164	1/2 SAE Flare		7.95		8.3	7.6									
HPC-164-S	1/2 ODF Solder		7.07		8.9	8.2									
HPC-165	5/8 SAE Flare		8.28		10.2	9.4									
HPC-165-S	5/8 ODF Solder		7.35		10.8	9.9									
HPC-304	1/2 SAE Flare	8 – 20	11.08	3.0	8.7	8.0	696	567	586	189	302	227	19.7	17.3	17.2
HPC-304-S	1/2 ODF Solder		10.18		9.3	8.6									
HPC-305	5/8 SAE Flare		11.38		9.9	9.1									
HPC-305-3	5/8 ODF Solder		10.42		10.5	9.7									
HPC-306-S	3/4 ODF Solder		10.86		11.0	10.1									
HPC-307-S	7/8 ODF Solder		11.02		11.4	10.5									

Specifications – For Clean-Up After Burnout

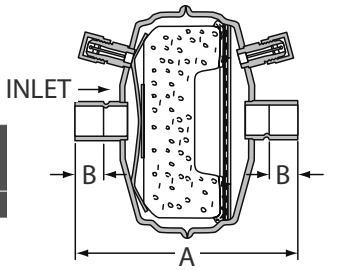
TYPE NUMBER	CONNECTION SIZE Inches	SELECTION RECOMMEND. Tons	DIMENSIONS		SPECIFICATIONS										
			OVERALL LENGTH Inches	DIA. Inches	FLOW CAPACITY Tons @ 1 psi ΔP		WATER CAPACITY						LIQUID CAPACITY Ounces (wt.) @ 100°F		
							R-22 Drops at 60 ppm		R-407C Drops at 50 ppm		R-410A Drops at 50 ppm				
					R-22 & R-410A	R-407C	75°F	125°F	75°F	125°F	75°F	125°F	R-22	R-407C	R-410A
HPC-163-HH	3/8 SAE Flare	1 – 8	7.78	3.0	4.8	4.4	93	81	90	88	60	52	14.5	12.7	12.6
HPC-163-S-HH	3/8 ODF Solder		6.92		5.2	4.8									
HPC-164-HH	1/2 SAE Flare		7.95		7.9	7.3									
HPC-164-S-HH	1/2 ODF Solder		7.07		8.5	7.8									
HPC-165-HH	5/8 SAE Flare		8.28		9.7	8.9									
HPC-165-S-HH	5/8 ODF Solder		7.35		10.3	9.5									
HPC-304-HH	1/2 SAE Flare	8 – 20	11.08	3.0	8.3	7.6	167	119	161	88	120	104	19.7	17.3	17.2
HPC-304-S-HH	1/2 ODF Solder		10.18		8.8	8.1									
HPC-305-HH	5/8 SAE Flare		11.38		9.4	8.6									
HPC-305-S-HH	5/8 ODF Solder		10.42		10.8	9.2									
HPC-307-S-HH	7/8 ODF Solder		11.02		10.8	9.9									

HPC-100 Series – Core volume is 10 cubic inches. Core surface filtering area is 18 sq. inches. Maximum rated pressure is 650 psig.
HPC-160 Series – Core volume is 14 cubic inches. Core surface filtering area is 26 sq. inches. Maximum rated pressure is 650 psig.
HPC-300 Series – Core volume is 30 cubic inches. Core filtering area is 53 sq. inches. Maximum rated pressure is 650 psig.
UL and UL_C Listed – Guide-SMGT-File No. SA-1756A & B.
For complete information see your Sporlan Wholesaler, our website at www.sporlan.com, or write Sporlan and request Bulletin 40-10.

SPORLAN CATCH-ALL FILTER DRIERS

SPORLAN

Type C-144-S-TT-HH through C-149-S-TT-HH



PROVEN BENEFITS:

- **Short overall length**, suitable for cramped piping situations — shorter than other similar type filter-driers.
- Suitable for use on **1 through 5 ton air conditioning systems**, with suction line sizes in the range of 1/29 to 1-1/89. Also applicable on the common suction line of heat pump systems.
- **The famous Sporlan HH core** removes all types of contaminants including moisture, acid, dirt, and sludge. A blend of two desiccants, plus activated charcoal, gives maximum performance.
- **Access valves** permit measuring the pressure drop across the filter-drier during clean-up, following a hermetic motor burnout.

Specifications

TYPE	CONNECTION SIZE Inches ODF Solder	OVERALL LENGTH "A"		SOLDER SOCKET DEPTH "B"		DIAMETER OF BODY		SHIPPING WEIGHT	
		Inches	mm	Inches	mm	Inches	mm	lb	kg
C-144-S-TT-HH	1/2	4.14	105	.50	13	4.44	113	2.0	0.9
C-145-S-TT-HH	5/8	4.38	111	.62	16				
C-146-S-TT-HH	3/4	4.83	123	.69	18				
C-147-S-TT-HH	7/8	4.97	126	.75	19				
C-149-S-TT-HH	1-1/8	4.93	125	.96	24				

Volume of desiccant is 14 cubic inches (229 cm³). Filtering area is 27 square inches (174 cm²).
$_{c}$UL$_{US}$ Recognized Component — Guide-SMGT2-File No. SA-1756.

Part #	LIST
C-144-S-TT-HH	129.70
C-145-S-TT-HH	148.50
C-146-S-TT-HH	146.20
C-147-S-TT-HH	148.10
C-149-S-TT-HH	172.60

APPLICATION

The short overall length of these filter-driers permit easy installation, even on systems with restricted space. While designed for the minimum possible overall length, these filter-driers are suitable for use on most air conditioning systems. The filter-drier has two access valves for measuring the pressure drop across the filter-drier core during the clean-up process.

Heat pump systems frequently have cramped piping in the very compact cabinet. The C-140 Series Catch-All is not a reversible filter-drier, therefore it must be installed in the common suction line. The service technician needs a short suction line filter-drier to fit in this restricted space. The C-140 Series Catch-All meets this essential need.

CONSTRUCTION

The core is held in place by a leaf spring at the inlet end. Filtration occurs on the core surface, and a 100 mesh screen is used as a safety filter at the outlet end. The screen and core are sealed to the shell wall with a fiberglass pad. The threaded valve core for each access valve is supplied in a separate envelope. This way the heat sensitive valve core can be installed after brazing the Catch-All into the line. The Catch-All utilizes copper connections for ease in brazing with any type of alloy.

While designed for use in the suction line these filter-driers may be installed in the liquid line, if desired under unusual circumstances. The performance of these filter-driers in the liquid line is similar to the popular C-160 Series Catch-All Filter-Driers.

Flow Capacity*

Tons ▪ °F ▪ psi

TYPE	REFRIGERANT																	
	134a			22					407A				407C	407F				410A
	EVAPORATOR TEMPERATURE °F																	
	0	20	40	-40	-20	0	20	40	-40	-20	0	20	40	-40	-20	0	20	40
	PRESSURE DROP – psi																	
	1	1-1/2	2	1/2	1	1-1/2	2	3	1/2	1	1-1/2	2	3	1/2	1	1-1/2	2	3
C-144-S-TT-HH	0.5	0.8	1.3	0.2	0.4	0.9	1.3	2.2	0.2	0.4	0.9	1.2	2.1	0.2	0.4	0.9	1.4	2.7
C-145-S-TT-HH	0.8	1.3	2.1	0.4	0.8	1.4	2.2	3.6	0.4	0.8	1.3	2.1	3.5	0.4	0.9	1.5	2.3	4.6
C-146-S-TT-HH	1.1	1.8	2.9	0.6	1.2	2.0	3.0	4.9	0.6	1.2	1.9	3.0	4.8	0.6	1.3	2.1	3.2	6.2
C-147-S-TT-HH	1.3	2.1	3.2	0.7	1.3	2.2	3.3	5.4	0.7	1.3	2.1	3.2	5.3	0.7	1.4	2.3	3.5	6.8
C-149-S-TT-HH	1.6	2.7	4.2	0.9	1.7	2.9	4.4	7.1	0.8	1.7	2.8	4.3	7.0	0.9	1.9	3.1	4.7	9.0

Flow Capacity*

kW ▪ °C ▪ bar

TYPE	REFRIGERANT																	
	134a			22					407A				407C	407F				410A
	EVAPORATOR TEMPERATURE °C																	
	-20	-5	0	-40	-30	-20	-5	5	-40	-30	-15	-5	5	-40	-30	-15	-5	5
	PRESSURE DROP – bar																	
	0.07	0.10	0.14	0.03	0.07	0.10	0.14	0.21	0.03	0.07	0.10	0.14	0.21	0.03	0.07	0.10	0.14	0.21
C-144-S-TT-HH	1.8	2.8	4.6	0.7	1.4	3.2	4.6	7.7	0.7	1.4	3.0	4.4	7.4	0.8	1.5	3.3	4.9	9.5
C-145-S-TT-HH	2.8	4.6	7.4	1.4	2.8	4.9	7.7	12.6	1.3	2.8	4.7	7.4	12.3	1.5	3.1	5.2	8.0	16.1
C-146-S-TT-HH	3.9	6.3	10.2	2.1	4.2	7.0	10.5	17.2	2.0	4.1	6.8	10.4	16.8	2.2	4.5	7.4	11.2	21.8
C-147-S-TT-HH	4.6	7.4	11.2	2.5	4.6	7.7	11.6	19.0	2.3	4.6	7.5	11.4	18.6	2.5	5.0	8.2	12.4	23.9
C-149-S-TT-HH	5.6	9.5	14.7	3.2	6.0	10.2	15.4	24.9	3.0	5.9	9.9	15.1	24.6	3.3	6.6	10.8	16.4	31.6

Rated in accordance with ANSI/AHRI Standard 730.

**The water capacity and acid capacity of the C-140 Series are comparable to the popular C-160-S-T-HH Series Filter-Drier. Specific values are not listed since the industry has no standard method for testing the water capacity or acid removal ability in the suction line of refrigerant systems. The flow capacity information above permits selecting C-140 Series Catch-Alls for various conditions with confidence.*

SPORLAN CATCH-ALL FILTER DRIERS

SPORLAN

With the exclusive Bi-directional feature



SELECTION RECOMMENDATIONS

TYPE NUMBER		CONNEC-TIONS Inches	* FLOW CAPACITY IN **TONS** EVAPORATOR TEMPERATURE																NOMINAL SYSTEM **HORSEPOWER**		LIST
			40°F				20°F				0°F				– 20°F			– 40°F			
			PRESSURE DROP																		
WITHOUT Access Valve	WITH Access Valve		2		3		1-1/2		2		1		1-1/2		1/2	1		1/2			
			REFRIGERANT																REFRIGERANT		
			12	134a	22	407C	12	134a	22	404A	12	134a	22	404A	12	22	404A	22	404A	22 407C	12, 134a, 404A, 502, 507	
SF-114	–	1/2 ODF	1.3	1.5	2.4	2.4	0.9	1.0	1.5	1.5	0.6	0.6	1.1	1.0	0.3	0.7	0.6	0.3	0.3	1	1/2	65.80
SF-114F	–	1/2 SAE	1.2	1.3	2.1	2.1	0.8	0.9	1.4	1.3	0.5	0.5	0.9	0.9	0.3	0.6	0.5	0.3	0.3	1	1/2	
SF-115	–	5/8 ODF	2.3	2.6	4.1	4.1	1.6	1.7	2.7	2.6	1.0	1.1	1.8	1.7	0.5	1.2	1.1	0.6	0.6	2	1	67.70
SF-115-F	–	5/8 SAE	2.1	2.3	3.7	3.7	1.4	1.5	2.4	2.3	0.9	0.9	1.6	1.5	0.5	1.0	0.9	0.5	0.5	2	1	
SF-283F	–	3/8 SAE	1.1	1.2	2.1	2.0	0.7	0.8	1.3	1.2	0.4	0.5	0.9	0.8	0.3	0.4	0.5	0.3	0.3	1	1/2	134.60
–	SF-285-T	5/8 ODF	3.5	4.0	6.4	6.2	2.5	2.7	4.0	3.9	1.6	1.7	2.9	2.7	0.9	1.8	1.7	1.0	0.9	4	1-1/2	156.50
–	SF-286-T	3/4 ODF	4.3	5.1	8.6	8.1	3.1	3.4	5.0	5.1	2.0	2.1	3.6	3.4	1.1	2.2	2.1	1.2	1.1	5	1-1/2	166.60
–	SF-287-T	7/8 ODF	6.3	7.0	11.1	11.3	4.4	4.6	7.2	7.0	2.7	2.8	5.1	4.6	1.4	3.1	2.9	1.5	1.5	7-1/2	3	163.40
–	SF-289-T	1-1/8 ODF	8.2	9.2	14.8	14.6	5.7	6.0	9.4	9.2	3.5	3.7	6.6	6.1	1.8	4.0	3.8	2.1	2.0	7-1/2	5	176.30
–	SF-489-T	1-1/8 ODF	8.7	9.9	16.0	15.7	6.1	6.5	10.0	9.8	3.7	3.9	7.0	6.5	1.9	4.3	4.1	2.2	2.1	10	5	263.70
–	SF-4811-T	1-3/8 ODF	9.9	11.2	18.4	18.0	6.8	7.3	11.4	11.2	4.2	4.4	7.9	7.4	2.2	4.8	4.6	2.5	2.4	12	5	256.10
–	SF-4813-T	1-5/8 ODF	11.7	13.3	21.6	21.3	8.1	8.7	13.5	13.3	4.9	5.2	9.4	8.7	2.6	5.6	5.4	2.9	2.8	15	7	280.60
–	SF-6417-T	2-1/8 ODF	46.7	50.9	91.1	88.9	28.7	31.0	56.9	52.6	15.8	16.4	35.4	31.8	7.2	20.3	17.8	9.3	7.9	55	20	640.00
–	SF-6421-T	2-5/8 ODF	50.5	62.9	119.0	109.0	36.8	38.6	70.2	64.6	20.2	20.6	44.0	39.4	9.1	25.6	22.3	11.8	10.0	60	30	

* Refrigerant 502 flow capacity is 80% of the values shown for Refrigerant 22, when expressed in TONS. When expressed in horsepower, the proper refrigerant selection is the same as for R-12.

Use R-404A flow ratings for R-507. Use R-502 horsepower recommendations for R-402A & B and R-408A. Use R-12 horsepower recommendations for R-401A & B and R-409A. Ratings are in accordance with ARI Standard 730.

SUCTION FILTER – SPECIFICATIONS

TYPE NUMBER		CONNECTIONS Inches	FILTER AREA Square Inches	DIMENSIONS Inches			SHIPPING WEIGHT Lbs.
WITHOUT Access Valve	WITH Access Valve			OVERALL LENGTH	SOCKET DEPTH	SHELL DIAMETER	
Types WITH bypass relief feature (Bi-directional Flow)							
SF-283-F	–	3/8 SAE	28	8.78	–	3.00	2-1/4
–	**SF-285-T**	5/8 SAE		8.34	0.62		
–	**SF-286-T**	3/4 ODF		8.79	0.69		
–	**SF-287-T**	7/8 ODF		8.93	0.75		
–	**SF-289-T**	1-1/8 ODF		9.51	0.91		
–	**SF-489-T**	1-1/8 ODF	48	12.42	0.91		3
–	**SF-4811-T**	1-3/8 ODF		13.10	0.97		
–	**SF-4813-T**	1-5/8 ODF		13.44	1.09		
Types WITHOUT bypass relief feature (Single Flow Direction)							
SF-114	–	1/2 ODF	11	4.36	0.50	2.00	3/4
SF-114F	–	1/2 SAE		5.25	–		
SF-115	–	5/8 ODF		4.60	0.62		
SF-115F	–	5/8 SAE		5.56	–		
–	**SF-6417-T**	2-1/8 ODF	388	10.94	1.24	4.75	7-1/2
–	**SF-6421-T**	2-5/8 ODF		10.94	1.38		

SPORLAN CATCH-ALL FILTER DRIERS

SPORLAN



Sporlan replaceable suction filters are installed in the suction line of refrigeration or air conditioning systems to remove contaminants that may be in the system at startup.

SELECTION RECOMMENDATIONS for TEMPORARY APPLICATION for CLEAN-UP AFTER BURNOUT
Select on the basis of cores used temporarily for clean-up, followed by filter elements used permanently

TYPE	CONNECTIONS Inches ODF Solder	NUMBER OF CORES OR FILTER ELEMENTS	MAXIMUM SYSTEM CAPACITY IN HORSEPOWER														LIST
			AIR CONDITIONING				COMMERCIAL					LOW TEMPERATURE					
			REFRIGERANT														
			12	134a	22	407C	12	134a	22	502	404A	12	134a	22	502	404A	
RSF-487-T	7/8	1	9	13	20	17	9	10	17	14	15	6	8	14	10	11	693.00
RSF-489-T	1-1/8		10	16	20	20	11	12	18	14	16	6	10	16	10	11	693.00
RSF-4811-T	1-3/8		12	19	25	25	13	15	20	18	18	7	12	20	12	13	716.00
RSF-4813-T	1-5/8		16	20	25	25	14	16	24	19	22	9	13	21	15	17	761.00
RSF-4817-T	2-1/8		17	22	30	30	15	17	24	21	22	10	14	23	15	17	848.00
RSF-4821-T	2-5/8		19	24	30	30	16	19	27	22	24	10	15	25	15	17	1,201.00
RSF-9617-T	2-1/8	2	25	32	40	40	21	25	37	32	34	12	20	34	22	24	1,322.00
RSF-9621-T	2-5/8		29	38	50	50	25	30	40	35	37	15	24	39	28	31	1,256.00
RSF-9625-T	3-1/8		30	38	50	50	25	30	40	35	37	15	24	40	28	31	1,518.00

Use R-404A ratings for R-507. Use R-502 ratings for R-402A & B and R-408A. Use R-12 ratings for R-401A & B and R-409A.
NOTE: The above ratings are made on the basis of the maximum recommended pressure drop (for temporary installation) shown in the table at the bottom of this page.

Suction Filters



RSF-4817-T

The Replaceable Suction Filter shell, used with RPE-48-BD pleated filter element, is designed to be installed in the suction line of new systems to remove circulating contaminants.

Design Benefits

- High flow capacity
- Corrosion resistant coating on shell
- Can be used with desiccant cores for clean-up after burnout
- Various fitting sizes up to 3-1/8" line size
- Access valve supplied for pressure drop measurement or charging

How It's Used

Sporlan Replaceable Suction Filters are installed in the suction line of refrigeration or air conditioning systems to remove contaminants that may be in the system at startup.

The Replaceable Suction Filter has large fittings permitting the use of a small shell on a system with large line sizes, resulting in considerable economy. The angle construction is suitable of flow in either direction, which results in easy installation even on compact racks.

The Replaceable Suction Filters should be used with cores for cleaning up a system after a hermetic motor burnout. Select the RC-4864, RC-4864-HH or RCW-48 replaceable cores. After cleanup, install RPE-48-BD elements in the shells.

Flow Capacity - Tons ▪ psi ▪ °F

TYPE	CONNECTIONS Inches ODF SOLDER	FLOW CAPACITY EVAPORATOR TEMPERATURE 40°F PRESSURE DROP – psi			NUMBER OF FILTER ELEMENTS	FILTER AREA Square Inches	OVERALL LENGTH Inches
		1	2	3			
RSF-487-T	7/8	8.0	11.3	13.8	One RPE-48-BD	388	9.30
RSF-489-T	1-1/8	12.7	18.0	22			9.37
RSF-4811-T	1-3/8	18.5	26.1	32			9.60
RSF-4813-T	1-5/8	23.7	33.5	41			9.60
RSF-4817-T	2-1/8	31.8	44.9	55			9.37
RSF-4821-T	2-5/8	41.6	58.8	72			9.75
RSF-9611-T	1-3/8	20.8	29.4	36	Two RPE-48-BD	776	15.14
RSF-9613-T	1-5/8	27.1	38.4	47			15.14
RSF-9617-T	2-1/8	34.1	48.2	59			14.96
RSF-9621-T	2-5/8	46.8	66.1	81			15.43
RSF-9625-T	3-1/8	64.1	90.6	111			15.12

Listed by Underwriters' Laboratories, Inc. Guide SMGT File No. SA-1756A & B. RSF shells have a 500 psig (34.5 bar) M.R.P. rating.

Note: Ratings are in accordance with ARI Standards 730. Flow capacity (tons/kW) with cores is approximately 40% of the above values.

For complete information request Bulletin 80-10.

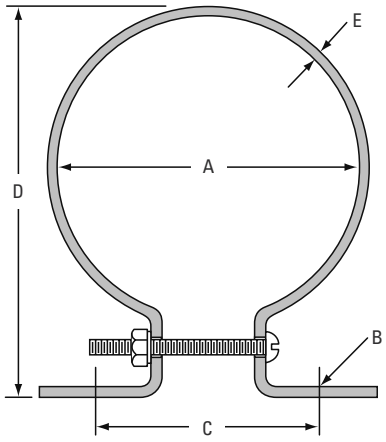
When using RSF as a suction drier after burn out- MUST use 100 mesh screen - #6171-5

Catch-ALL Accessories

MOUNTING BRACKETS

Order Separately

Mounting Brackets designed especially for **replaceable core type Catch-All Filter-Driers and RSF shells** are available. All brackets are supplied with a bolt, nut, and washer.



A-685

Mounting Bracket for shell types C-480 thru C-19200 Series and RSF shells. **ONE** bracket per package. Depending on shell size and installation requirements, more than one bracket may be required. Catch-Alls larger than the C-480 and RSF-480 Series shells generally require two brackets.

A-175-1

Mounting Bracket for shell types C-R424-G, C-R425-G, and C-R427-G ONLY. **ONE** bracket per package. Usually one bracket is adequate for mounting these Catch-Alls.

A-175-2

Mounting Bracket for shell types C-30000 and C-40000 Series. **TWO** brackets per package. Two brackets are generally adequate for mounting these large Catch-Alls.

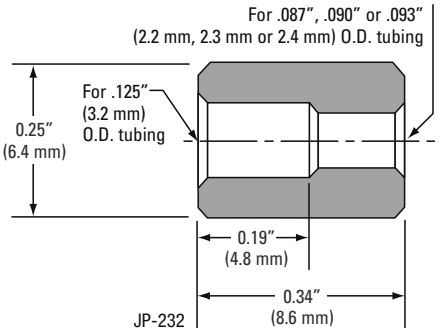
Mounting Bracket Dimensions

MODEL NUMBER	DIMENSIONS									
	A		B		C		D		E	
	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
A-685	4.75	121	.41 x .81 Slot	10 x 21 Slot	3.50	89	6.12	155	0.12	3.0
A-175-1	3.50	89			3.50	89	4.62	117	0.12	3.0
A-174-2	6.00	152			4.00	102	7.44	189	0.12	3.0

JP-232 CAP TUBE ADAPTER

To simplify the application of **Catch-All Filter-Driers** on systems with cap tubes, Sporlan has designed a brass adapter that fits all standard 1/4" ODF solder fittings. This adapter can be used with the C-032-S, C-052-S, and C-082-S models. As shown in the illustration, one end of the adapter is suitable for 0.125" OD tubing and the other is suitable for cap tubes of .087", .090", or .093" OD. This adapter **CANNOT** be used with the C-032-CAP or C-032-CAP-T Catch-Alls.

The adapter can be brazed to the capillary tubing and the unit fitting in one operation. These adapters are available from all Sporlan wholesalers. Request **part number: JP-0232-000.**



SPORLAN CATCH-ALL FOR RETROFIT

New Filter-Drier for Improved System Reliability

Catch-All Filter-Drier Type CSG





Advantages:

Combines the Catch-All's® proven system protection with the See-All's® easy to read system monitoring capability, providing superior protection while reducing installation cost and time.

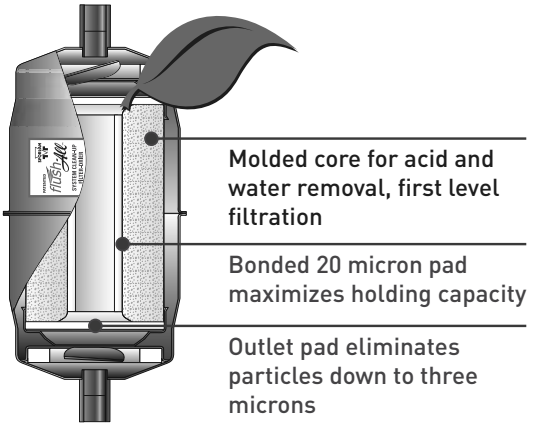
- Combined unit replaces 2 field-braze joints with factory-tested leak-free design.
- Reduces installation materials, specifically copper connecting tube and braze material.
- Reduces installation time and cost.
- Minimizes the potential for leaks and decreases nuisance call-backs.

Part #	Description	LIST
CSG-083S	Sight Glass & Drier	133.90
CSG-084-S	Sight Glass & Drier	153.60
CSG-163S	Sight Glass & Drier	152.30

Flush-All SFD-163S Filter-Drier

The patented Flush-All SFD-163S filter-drier offers three levels of filtration, efficiently capturing particles disturbed during purging procedure and system maintenance. The core provides necessary water and acid removal, then a unique 20 micron filter media bonded to the core optimizes the solid contaminant holding capacity, while a low micron fibrous outlet pad completes the filtration process. The three stage filtration achieves best in the industry filtration characteristics.

Also available in Kits, the Flush-All SFD-163S filter-drier coupled with the powerful Flush-All chemical solvent for a unique total solution for system conversions or compressor burnouts.



CATALOG NO.	ITEM NO.	PRODUCT DESCRIPTION
SFD-163-S	**409992**	**SFD-163-S Filter-Drier**
FAKIT1-S	475477	Flush-All 1 lb. Starter System Clean-up Kit. Includes FA-1 Canister, SFD-163S Filter-Drier, FA-V Canister Valve, and FA-G Gun/Hose Assembly
FAKIT1	475467	Flush-All 1 lb. System Clean-up Kit. Includes FA-1 Canister and SFD-163S Filter-Drier
FAKIT2-S	475459	Flush-All 2 lb. Starter System Clean-up Kit. Includes FA-2 Canister, SFD-163S Filter-Drier, FA-V Canister Valve, and FA-G Gun/Hose Assembly
FAKIT2	475478	Flush-All 2 lb. System Clean-up Kit. Includes FA-2 Canister and SFD-163S Filter-Drier

For refrigeration, air conditioning and heat pump systems up to 8 tons!

CATCH-ALL FOR PLUGGED CAP TUBE

Catch-All Filter-Drier Type C-052-CAP-TT-HH



Filter-Drier for Cap Tube Systems

Catch-All ® Filter-Drier
Type C-052-CAP-TT-HH

Problem

Capillary tubes clog with **waxy, resin** materials and solid debris in small refrigerating systems. This reduces the system capacity and efficiency, requiring capillary tubing replacement.



Cause

Waxy, resin materials deposit in the capillary tubing and attract/hold solid debris that reduces the flow area of the capillary tube.

Solution

- Porous, molded **Catch-All HH Core** contains the ideal desiccant blend to capture those resins and waxes, eliminating the "sticky" material before it deposits in the capillary tube.
- Uses "3 stage filtration" to capture even the smallest particles of solid debris while maintaining low pressure loss.
- Eliminates nuisance call-backs and increases customer satisfaction.
- Dual pressure taps allow easy pressure drop monitoring during cleanup.

Superior 3 stage filtration virtually *eliminates* plugged cap tubes.



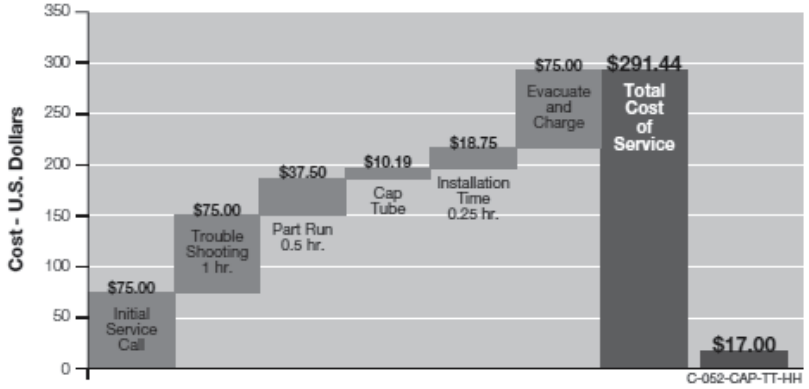
Stage 1
Porous molded Catch-All HH Core filters the vast majority of particles.

Stage 2
10 micron filter to capture all but the finest particles.

Stage 3
1 micron final filter to capture remaining particles.

Catch-All Filter-Drier Type C-052-CAP-TT-HH

Installation Savings Example



Labor and Materials to Service a Plugged Capillary Tube vs. Investment in a Sporlan Type C-052-CAP-TT-HH Filter-Drier

A service call resulting from a plugged cap tube can be costly and frustrating for a customer. Eliminate the reoccurring costs associated with the plugging of capillary tubes and increase customer savings and satisfaction with the installation of a Sporlan Type C-052-CAP-TT-HH Catch-All Filter-Drier.

Sporlan Type C-052-CAP-TT-HH Catch-All Filter-Drier, the only filter-drier for cap tube systems.

Specifications

Model	Item Number	Volume of Desiccant Cubic Inches	Inlet Connection	Outlet Connection	Overall Length Inches (mm)	Diameter of Body Inches (mm)
C-052-CAP-TT-HH	400219	5	1/4" ODF	Capillary Tube	5.71 (145)	2.44 (65)

SPORLAN SEE-ALL MOISTURE & LIQUID INDICATOR

Compatible with Refrigerants 12, 22, 134a, 404A, 407C, 502, 507, 410A


SA-12FM


SA-14U


SA-13UU


SA-13FU


SA-14SU


SA-17S


SA-217

Specifications - Inches

Listed by Underwriters' Laboratories, Inc. – Guide SEYW – File No. SA3182

CONNECTION SIZES Inches	MALE FLARE		FEMALE & MALE FLARE		MALE FLARE x SWIVEL NUT		SWIVEL NUT x SWIVEL NUT		FEMALE FLARE x SWIVEL NUT		SWIVEL NUT x ODF SOLDER		ODF SOLDER	
	TYPE NO.	LIST	TYPE NO.	LIST	TYPE NO.	LIST	TYPE NO.	LIST	TYPE NO.	LIST	TYPE NO.	LIST	TYPE NO.	LIST
1/4	**SA-12**	58.60	**SA-12FM**	57.70	—		—		—		—		**SA-12S**	55.40
3/8	**SA-13**	57.30	**SA-13FM**	58.40	**SA-13U**	79.70	**SA-13UU**	87.70	**SA-13FU**	84.60	**SA-13SU**	84.60	**SA-13S**	55.20
1/2	**SA-14**	70.80	**SA-14FM**	70.30	**SA-14U**	98.30	**SA-14UU**	105.80	**SA-14FU**	101.20	**SA-14SU**	101.20	**SA-14S**	69.30
5/8	**SA-15**	69.10	—		**SA-15U**	96.00	**SA-15UU**	117.40	—		**SA-15SU**	101.80	**SA-15S**	71.70
7/8	—		—		—		—		—		—		**SA-17S**	101.90
1-1/8	—		—		—		—		—		—		**SA-19S**	110.20
1-3/8	—		—		—		—		—		—		① **SA-211**	226.90
1-5/8	—		—		—		—		—		—		① **SA-213**	273.90
2-1/8	—		—		—		—		—		—		① **SA-217**	328.00

Moisture Content PPM

SEE•ALL SHOWS	R-410A LIQUID LINE TEMPERATURE	
	75°F	24°C
Green DRY	Below 75	
Chartreuse CAUTION	75-150	
Yellow WET	Above 150	

Note: Change or add Catch-All Filter-Drier when paper turns from green to chartreuse.

Maximum Rated Pressure for all models is 650 psig (44.8 bar). Overall width is: 1.31" (33.3 mm) for 1/4" and 3/8" sizes. 1.58" (40.1 mm) for 1/2" and 5/8 sizes, and 1.38" (35.1 mm) for 7/8" and 1-1/8" sizes. Most solder connections can be used as male fittings as well as female fittings. The 1/4" ODF is 3/8" ODM, the 3/8" ODF is 1/2" ODM, the 1/2" ODF is 5/8" ODM, and the 5/8" ODF is 3/4" ODM. Models with female flare and/or swivel nut connections are supplied with a copper gasket in the fitting.

① These models have copper connections and feature a removable element cartridge – for replacement cartridge specify AC-20.

Sight Glass Accessories

K-SA-4 Indicator Paper - 780002

SPORLAN OIL LEVEL CONTROL SYSTEM

Sporlan's Oil Level Control System Components were developed to offer the refrigeration industry an oil level control system of the highest quality. The heart of the system is the Oil Level Control which when matched with the Oil Reservoir and Oil Differential Check Valve maintains a minimum oil level in the compressor crankcase during all phases of system operation.

Oil Reservoir Type OR-1-1/2



The Sporlan Oil Reservoir (OR-1-1/2) is a holding vessel to contain the oil that is not within the crankcase, the oil separator, or in circulation. The OR-1-1/2 has an inlet and an outlet service valve so it may be isolated from the rest of the system, or the oil supply from the oil reservoir to the Oil Level Control can be eliminated for service.

Oil Level Controls

The purpose of the Sporlan Oil Level Control is to regulate the flow of oil to the compressor crankcase to maintain a minimum oil level as specified by the compressor manufacturer for any given application.

Selection & Specifications

MODEL NUMBER	ADJUSTMENT RANGE	FLANGE DESIGN FOR COMPRESSOR ATTACHMENT	NUMBER OF ARMS LENGTH	EQUALIZATION FITTING OPTION/PLACEMENT	LIST
OL-60CH	5-90 psi Differential	3 bolt, 1-7/8" B.C. (47.6 mm B.C.)	Two arms - standard length	None	750.00
OL-60FH		3 bolt, 1-7/8" B.C. (47.6 mm B.C.)	Two arms - standard length	Yes - bottom of drill hole at centerline of sightglass	798.00
OL-60HH-6		3 bolt, 1-7/8" B.C. (47.6 mm B.C.)	One arm - standard length	None	791.00
OL-60NH-2		3 bolt, 1-7/8" B.C. (47.6 mm B.C.)	Two arms - standard length	Yes - fitting is .375 inch above standard location	890.00
OL-60XH		3 bolt, 1-7/8" B.C. (47.6 mm B.C.)	Two arms - short length	Yes - bottom of drill hole at centerline of sightglass	798.00
OL-60ZH		4 bolt, 50 mm B.C.	Two arms - short length	Yes - bottom of drill hole at centerline of sightglass	

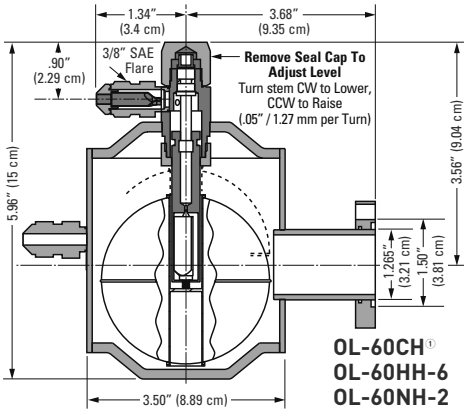
NOTES: Model OL-60XH-1 is identical to OL-60XH but less equalization fitting.

All Sporlan oil level controls now incorporate the OL-60 design for product simplification. The OL-60 Series are designed to handle a large operating range and replaces the OL-1 and 2 Series oil level controls.

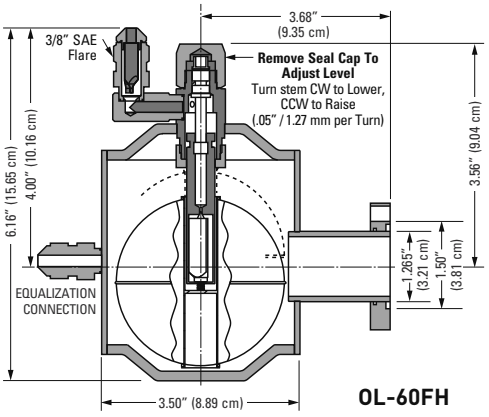
Model Number	Product Type	Compressor Manufacturer and Model	LIST
ADAPTORS			
AOL-A	Adaptor Kit - contains the adaptor fitting, O rings, bolts and nuts	Copeland - Threaded Sight Glass (1-1/8 - 12 thd) under 5 ton Tecumseh - Model P, R, S, PA, RA, SA, CK, CM, CH, CG	261.90
AOL-C		Carrier - Threaded Sight Glass (1-1/2 - 18 thd) Model DA, DR, 5F, 5H, 6D, 6E, 06CC	299.30
AOL-P		Prestcold - Threaded Sight Glass (42 MM thd) Model E & C	
AOL-R		Copeland - Model 8R, 8D, 3D Front	286.90
S-OL	Sight Glass	Incl. with adaptor kits above (except AOL-R) or may be purchased separately	89.30

Note: "H" designation indicates 400 psi maximum system lest pressure, i.e. OL-1CH, etc. * Replaces OL-1FH-2

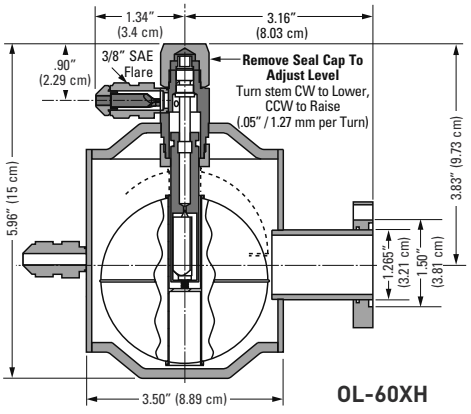
SPORLAN OIL LEVEL CONTROL SYSTEM



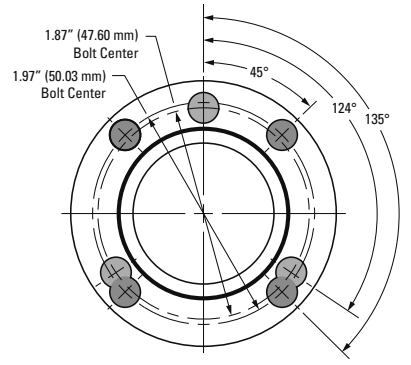
OL-60CH[1]
OL-60HH-6
OL-60NH-2



OL-60FH



OL-60XH

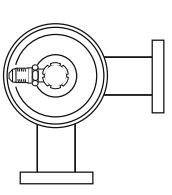
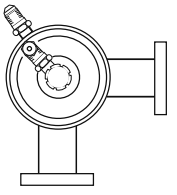
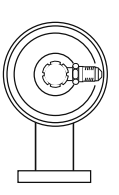
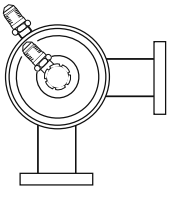
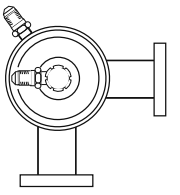


7 Bolt Universal Mounting Flange and Oil Sightglass (S-OL)

Bolt holes are 0.272″ (6.9 mm) diameter. The above hole configuration fits typical 3 and 4 bolt compressor sightglass and oil level control connections.

● 3 Bolt Configuration
● 4 Bolt Configuration

[1] OL-60CH and OL-60HH-6 are supplied less the equalization fitting.

MODEL NUMBER	 OL-60CH	 OL-60FH	 OL-60HH-6	 OL-60NH-2	 OL-60XH
ADJUSTMENT RANGE	5 - 90 psi (0.34 - 6.2 bar) Differential	5 - 90 psi (0.34 - 6.2 bar) Differential	5 - 90 psi (0.34 - 6.2 bar) Differential	5 - 90 psi (0.34 - 6.2 bar) Differential	5 - 90 psi (0.34 - 6.2 bar) Differential
FLANGE DESIGN FOR COMPRESSOR ATTACHMENT	3 bolt, 1-7/8" B.C. (47.6 mm B.C.)	3 bolt, 1-7/8" B.C. (47.6 mm B.C.)	3 bolt, 1-7/8" B.C. (47.6 mm B.C.)	3 bolt, 1-7/8" B.C. (47.6 mm B.C.)	3 bolt, 1-7/8" B.C. (47.6 mm B.C.)
NUMBER OF ARMS AND LENGTH	Two arms - standard length	Two arms - standard length	One arm - standard length	Two arms - standard length	Two arms - short length
EQUALIZATION FITTING PLACEMENT OPTION	None	Yes - bottom of drill hole at centerline of sightglass	None	Yes - fitting is 0.375" (0.953 mm) above standard location	Yes - bottom of drill hole at centerline of sightglass

NOTES: Model OL-60XH-1 is identical to OL-60XH but less equalization fitting.

All Sporlan oil level controls now incorporate the OL-60 design for product simplification. The OL-60 Series are designed to handle a large operating range and replaces the OL-1 and 2 Series oil level controls.

SPORLAN OIL FILTERS

OF Series Filters



Features:

- Virtually eliminates the need for oil changes due to suspended particulate in circulation
- 99% removal of 3 micron sized particles
  98% removal of 2 micron sized particles
- Element utilizes a pleated design for maximum surface area
- High flow capacities with low pressure drop
- Filter element utilizes an O-ring seal
- Inert microglass filter material insures lubricant compatibility

OF-303-BP Oil Filter

The design of the OF-303 is similar to the OF-303-BP, but the OF-303 is supplied without the bypass feature. Either filter can be installed in a horizontal or vertical position.

ROF-413 Replaceable Oil Filter

The ROF-413 utilizes a replaceable OFE-1 Oil Filter Element. The ROF-413 must be installed vertically, with the end plate in the "up" position. A refrigeration clamp or a Sporlan A-175-1 Mounting Bracket should be used for easy installation.

OFE-1 Filter Element

The OFE-1 is a replaceable filter element for the ROF-413 Oil Filter



Specifications:

Unit	Description	Connections	Filtering Area (Sq. inches)	Overall Length (inches)	Shell Diam-eter (inches)	UL Rated Working Pressure (psi)	LIST
OF-303	Oil Filter	3/8" SAE Flare	325	9.69	3.00	500	432.00
OF-303-BP	Oil Filter with Bypass Feature			10.63			469.00
ROF-413	Replaceable Oil Filter	3/8" SAE Flare		8.77	3.50	400	497.00

Note: The OF Series Oil Filters are not suitable for use on ammonia systems

Liquid Capacity Selection Table R22, 134a, 401A, 402A

** All Models will come as "-HP" and will be rated for use with High Pressure Gases i.e. R410A*

TYPE NUMBER						CONNECTIONS Inches	PORT SIZE Inches	TONS OF REFRIGERATION																	
"A" and "B" Series Valves			"E" Series Extended Connections					22					134a					401A					402A				
								PRESSURE DROP — psi*																	
Without Manual Lift Stem		With Manual Lift Stem	Without Manual Lift Stem		With Manual Lift Stem			1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Normally Closed	Normally Open	Normally Closed	Normally Closed	Normally Open	Normally Closed																						
A3P1	---	---	---	---	---	3/8 NPT Female	.101	0.9	1.3	**1.6**	1.9	2.1	0.8	**1.2**	1.5	1.8	2.0	0.9	**1.3**	1.6	1.9	2.1	0.6	0.9	**1.1**	1.2	1.4
A3F1	---	---	---	---	---	1/4 SAE Flare																					
A3S1	---	---	E3S120	---	---	1/4 ODF Solder																					
	---	---	E3S130	---	---	3/8 ODF Solder																					
---	---	---	E5S120	---	---	1/4 ODF Solder	.150	1.6	2.3	**2.8**	3.3	3.6	1.5	**2.1**	2.6	3.0	3.4	1.6	**2.3**	2.8	3.3	3.7	1.1	1.5	**1.9**	2.1	2.4
---	---	---	E5S130HP	---	---	3/8 ODF Solder																					
B6P1	---	MB6P1	---	---	---	3/8 NPT Female	3/16	2.9	4.0	**4.9**	5.7	6.4	2.7	**3.8**	4.6	5.3	5.9	2.9	**4.1**	4.9	5.7	6.4	1.9	2.7	**3.3**	3.8	4.2
B6F1	---	MB6F1	---	---	---	3/8 SAE Flare																					
B6S1	---	MB6S1	E6S130HP	---	ME6S130HP	3/8 ODF Solder																					
	---		E6S140HP	---	ME6S140HP	1/2 ODF Solder																					
B9P2	OB9P2	MB9P2	---	---	---	3/8 NPT Female	9/32	4.7	6.6	**8.1**	9.3	10.4	4.4	**6.2**	7.5	8.7	9.7	4.7	**6.6**	8.1	9.3	10.4	3.1	4.4	**5.3**	6.2	6.9
B9F2	OB9F2	MB9F2	---	---	---	3/8 SAE Flare																					
---	---	---	E9S230	OE9S230	ME9S230	3/8 ODF Solder																					
B9S2	OB9S2	MB9S2	E9S240HP	OE9S240	ME9S240HP	1/2 ODF Solder																					
B10F2	OB10F2	MB10F2	---	---	---	1/2 SAE Flare	5/16	6.4	9.1	**11.1**	12.8	14.3	6.0	**8.5**	10.4	12.0	13.4	6.4	**9.1**	11.1	12.8	14.4	4.2	6.0	**7.3**	8.5	9.4
---	---	---	E10S240HP	OE10S240	ME10S240HP	1/2 ODF Solder																					
B10S2	OB10S2	MB10S2	E10S250HP	OE10S250	ME10S250HP	5/8 ODF Solder																					
B14P2	OB14P2	MB14P2	---	---	---	1/2 NPT Female	7/16	9.1	12.9	**15.8**	18.2	20.3	8.5	**12.0**	14.7	17.0	18.9	9.1	**12.9**	15.8	18.2	20.4	6.0	8.5	**10.4**	12.0	13.4
B14S2	OB14S2	MB14S2	E14S250HP	OE14S250	ME14S250HP	5/8 ODF Solder																					
B19S2	OB19S2	MB19S2	E19S250HP	OE19S250	ME19S250HP	5/8 ODF Solder	19/32	13.9	19.8	**24.2**	28.0	31.4	13.0	**18.4**	22.6	26.1	29.2	14.0	**19.8**	24.3	28.1	31.4	9.2	13.0	**16.0**	18.5	20.7
B19P2	OB19P2	MB19P2	---	---	---	3/4 NPT Female																					
B19S2	OB19S2	MB19S2	E19S270HP	OE19S270	ME19S270HP	7/8 ODF Solder																					
B25P2	OB25P2	MB25P2	---	---	---	1 NPT Female	25/32	23.8	33.8	**41.4**	47.8	53.5	22.2	**31.5**	38.6	44.6	49.9	23.9	**33.8**	41.4	47.9	53.6	15.7	22.2	**27.3**	31.5	35.3
B25S2	OB25S2	MB25S2	E25S270HP	OE25S270	ME25S270HP	7/8 ODF Solder																					
			E25S290HP	OE25S290	ME25S290HP	1-1/8 ODF Solder																					
---	---	---	E35S190	OE35S190	ME35S190	1-1/8 ODF Solder	1	38.9	56.8	**70.9**	83.0	93.7	36.3	**53.0**	66.2	77.4	87.4	39.0	**56.9**	71.0	83.1	93.8	25.6	37.3	**46.6**	54.5	61.5
			E35S1110	OE35S1110	ME35S1110	1-3/8 ODF Solder																					
			E42S2130HP	OE42S2130	ME42S2130	1-5/8 ODF Solder	1-15/16	60.9	82.3	**98.2**	111	123	56.7	**76.7**	91.5	104	114	61.0	**82.5**	98.0	112	123	40.4	54.6	**65.1**	73.8	81.4
			E42S2170	OE42S2170	ME42S2170	2-1/8 ODF Solder																					

*Do not use below 1 psi pressure drop, except Types A3 and E3 valves.
Liquid capacities for Refrigerants 22, 134a, 401A and 402A shown in the above table are based on 40°F evaporating and 100°F liquid case.

* E42 No longer available. See NEW solenoid info for E43 capacity

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

Refrigerant Liquid Temperature °F ➡		40	50	60	70	80	90	100	110	120	130	140
R-22	Correction Factor	1.33	1.27	1.22	1.17	1.11	1.06	1.00	0.94	0.89	0.83	0.77
R-134a		1.39	1.33	1.26	1.20	1.13	1.07	1.00	0.93	0.87	0.80	0.73

Refrigerant Liquid Temperature °F ➡		40	50	60	70	80	90	100	110	120	130	140
R-401A	Correction Factor	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-402A		1.57	1.48	1.39	1.29	1.20	1.10	1.00	0.90	0.79	0.68	0.56

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 40°F. For each 10°F reduction in evaporating temperature, capacities are reduced by approximately 1-1/2%.

Liquid Capacity Selection Table R404A, 407C, 502, 507, 717

** All Models will come as "-HP" and will be rated for use with High Pressure Gases i.e. R410A*

TYPE NUMBER						CONNECTIONS Inches	PORT SIZE Inches	TONS OF REFRIGERATION																							
"A" and "B" Series Valves			"E" Series Extended Connections					404A					407C					502					507					717				
								PRESSURE DROP — psi*																							
Without Manual Lift Stem		With Manual Lift Stem	Without Manual Lift Stem		With Manual Lift Stem			1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Normally Closed	Normally Open	Normally Closed	Normally Closed	Normally Open	Normally Closed																										
A3P1	---	---	---	---	---	3/8 NPT Female	.101	0.6	0.9	**1.1**	1.2	1.4	0.8	1.2	**1.5**	1.7	1.9	0.6	0.8	**1.0**	1.2	1.4	0.6	0.8	**1.0**	1.2	1.4	---	---	---	---	---
A3F1	---	---	---	---	---	1/4 SAE Flare																									
A3S1	---	---	E3S120	---	---	1/4 ODF Solder																									
	---	---	E3S130	---	---	3/8 ODF Solder																									
---	---	---	E5S120	---	---	1/4 ODF Solder	.150	1.1	1.5	**1.9**	2.1	2.4	1.5	2.1	**2.6**	3.0	3.4	1.0	1.5	**1.8**	2.1	2.4	1.0	1.5	**1.8**	2.1	2.4	---	---	---	---	---
---	---	---	E5S130HP	---	---	3/8 ODF Solder																									
B6P1	---	MB6P1	---	---	---	3/8 NPT Female	3/16	1.9	2.7	**3.3**	3.8	4.2	2.6	3.7	**4.5**	5.2	5.8	1.9	2.6	**3.2**	3.7	4.1	1.9	2.6	**3.2**	3.7	4.1	---	---	---	---	---
B6F1	---	MB6F1	---	---	---	3/8 SAE Flare																									
B6S1	---	MB6S1	E6S130HP	---	ME6S130HP	3/8 ODF Solder																									
	---		E6S140HP	---	ME6S140HP	1/2 ODF Solder																									
B9P2	OB9P2	MB9P2	---	---	---	3/8 NPT Female	9/32	3.1	4.4	**5.4**	6.2	6.9	4.3	6.1	**7.4**	8.6	9.6	3.0	4.3	**5.2**	6.0	6.8	3.0	4.3	**5.2**	6.0	6.7	---	---	---	---	---
B9F2	OB9F2	MB9F2	---	---	---	3/8 SAE Flare																									
---	---	---	E9S230	OE9S230	ME9S230	3/8 ODF Solder																									
B9S2	OB9S2	MB9S2	E9S240HP	OE9S240	ME9S240HP	1/2 ODF Solder																									
B10F2	OB10F2	MB10F2	---	---	---	1/2 SAE Flare	5/16	4.2	6.0	**7.3**	8.5	9.5	5.9	8.3	**10.2**	11.8	13.2	4.2	5.9	**7.2**	8.3	9.3	4.2	5.9	**7.2**	8.3	9.3	---	---	---	---	---
---	---	---	E10S240HP	OE10S240	ME10S240HP	1/2 ODF Solder																									
B10S2	OB10S2	MB10S2	E10S250HP	OE10S250	ME10S250HP	5/8 ODF Solder																									
B14P2	OB14P2	MB14P2	---	---	---	1/2 NPT Female	7/16	6.0	8.5	**10.4**	12.0	13.4	8.4	11.8	**14.5**	16.7	18.7	5.9	8.4	**10.2**	11.8	13.2	5.9	8.3	**10.2**	11.8	13.2	---	---	---	---	---
B14S2	OB14S2	MB14S2	E14S250HP	OE14S250	ME14S250HP	5/8 ODF Solder																									
B19S2	OB19S2	MB19S2	E19S250HP	OE19S250	ME19S250HP	5/8 ODF Solder	19/32	9.2	13.1	**16.0**	18.5	20.7	12.8	18.2	**22.3**	25.8	28.8	9.0	12.8	**15.7**	18.2	20.3	9.0	12.8	**15.7**	18.1	20.3	---	---	---	---	---
B19P2	OB19P2	MB19P2	---	---	---	3/4 NPT Female																									
B19S2	OB19S2	MB19S2	E19S270HP	OE19S270	ME19S270HP	7/8 ODF Solder																									
B25P2	OB25P2	MB25P2	---	---	---	1 NPT Female	25/32	15.7	22.3	**27.4**	31.6	35.4	21.9	31.0	**38.0**	44.0	49.2	15.5	21.9	**26.8**	31.0	34.7	15.4	21.8	**26.8**	30.9	34.6	---	---	---	---	---
B25S2	OB25S2	MB25S2	E25S270HP	OE25S270	ME25S270HP	7/8 ODF Solder																									
			E25S290HP	OE25S290	ME25S290HP	1-1/8 ODF Solder																									
---	---	---	E35S190	OE35S190	ME35S190	1-1/8 ODF Solder	1	25.5	37.3	**46.5**	54.4	61.4	35.6	52.0	**64.8**	75.9	85.7	25.3	36.9	**46.0**	53.8	60.8	25.1	36.6	**45.6**	53.4	60.3	---	---	---	---	---
			E35S1110	OE35S1110	ME35S1110	1-3/8 ODF Solder																									
---	---	---	E42S2130	OE42S2130	ME42S2130	1-5/8 ODF Solder	1-5/16	40.8	55.2	**65.8**	74.6	82.2	56.4	76.3	**91.1**	103	114	39.5	53.4	**63.7**	72.2	79.5	39.8	53.8	**64.2**	72.8	80.2	---	---	---	---	---
---	---	---	E42S2170	OE42S2170	ME42S2170	2-1/8 ODF Solder																									

*Do not use below 1 psi pressure drop, except Types A3, E3 and MA5 valves.
Liquid capacities for Refrigerants 404A, 407C, 502 and 507 shown in the above table are based on 40°F evaporating and 100°F liquid case. Refrigerant 717 capacities are based on 5°F evaporating and 86°F liquid.

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

Refrigerant Liquid Temperature °F		40	50	60	70	80	90	100	110	120	130	140
R-404A	Correction Factor	1.58	1.49	1.39	1.30	1.20	1.10	1.00	0.90	0.79	0.68	0.57
R-407C		1.45	1.38	1.30	1.23	1.15	1.08	1.00	0.92	0.84	0.75	0.67

Refrigerant Liquid Temperature °F		40	50	60	70	80	90	100	110	120	130	140
R-502	Correction Factor	1.48	1.40	1.32	1.24	1.16	1.08	1.00	0.92	0.84	0.75	0.67
R-507		1.54	1.45	1.36	1.27	1.18	1.09	1.00	0.90	0.80	0.69	0.56

Refrigerant Liquid Temperature °F		0	10	20	30	40	50	60	70	80	86	90	100
R-717	Correction Factor	1.27	1.24	1.21	1.17	1.14	1.11	1.08	1.05	1.02	1.00	0.99	0.96

The **404A, 407C, 502,** and **507** factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 40°F. For each 10°F reduction in evaporating temperature, capacities are reduced by approximately 1-1/2%. The **R-717** factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 5°F. For each 10°F reduction in evaporating temperature, the above capacities are reduced by approximately 3/4%.

** E42 No longer available. See NEW solenoid info for E43 capacity*

SPORLAN
228-314

NEW SPORLAN SOLENOID VALVES

Solenoid Magnet - 310250 Solenoid Manual List Item - 958121

E Series Solenoid Valve Liquid Capacity in IP Units

Type	Port Size Inches	Tons of Refrigeration 22					134a					401A					402A				
		Pressure Drop - psi																			
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
E2-HP	0.075	0.50	0.71	0.88	1.01	1.14	0.47	0.67	0.82	0.95	1.06	0.50	0.71	0.87	1.01	1.13	0.34	0.48	0.59	0.68	0.77
E8-HP	1/4	3.70	5.23	6.40	7.39	8.27	3.45	4.88	5.97	6.90	7.71	3.68	5.20	6.37	7.36	8.22	2.50	3.53	4.33	5.00	5.58
E43/E43-HP	1 5/16	73.6	104.0	127.4	147.1	164.4	68.63	97.04	118.8	137.2	153.4	73.19	103.5	126.7	146.3	163.6	49.7	70.3	86.1	99.4	111.1

Type	Port Size Inches	Tons of Refrigeration 407C					407F					448A					449A				
		Pressure Drop - psi																			
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
E2-HP	0.075	0.47	0.67	0.83	0.96	1.07	0.43	0.61	0.75	0.87	0.97	0.44	0.62	0.76	0.88	0.99	0.43	0.61	0.75	0.87	0.98
E8-HP	1/4	3.48	4.93	6.03	6.97	7.79	3.17	4.48	5.49	6.34	7.09	3.21	4.54	5.56	6.42	7.18	3.18	4.50	5.51	6.36	7.11
E43/E43-HP	1 5/16	69.32	98.01	120.0	138.6	154.9	63.09	89.20	109.2	126.1	141.0	63.86	90.29	110.6	127.7	142.7	63.31	89.51	109.6	126.5	141.5

E Series Solenoid Valve Liquid Capacity in IP Units

Type	Port Size Inches	Tons of Refrigeration 404A					R-407A				
		Pressure Drop - psi									
		1	2	3	4	5	1	2	3	4	5
E2-HP	0.075	0.32	0.46	0.57	0.65	0.73	0.43	0.62	0.76	0.88	0.98
E8-HP	1/4	2.39	3.38	4.14	4.78	5.34	3.20	4.53	5.55	6.41	7.16
E43/E43-HP	1 5/16	47.52	67.19	82.28	95.00	106.2	63.75	90.13	110.4	127.4	142.5

Type	Port Size Inches	Tons of Refrigeration 450a					507					513A				
		Pressure Drop - psi														
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
E2-HP	0.075	0.43	0.62	0.76	0.88	0.99	0.31	0.45	0.55	0.63	0.71	0.40	0.56	0.69	0.80	0.90
E8-HP	1/4	3.21	4.53	5.55	6.41	7.17	2.31	3.27	4.01	4.63	5.17	2.92	4.13	5.06	5.85	6.54
E43/E43-HP	1 5/16	63.8	90.2	110.5	127.5	142.6	46.05	65.10	79.72	92.05	102.9	58.16	82.24	100.7	116.3	130.0

E Series Solenoid Valve Discharge Gas Capacity in IP Units

Type	Port Size Inches	Tons of Refrigeration 22						134a						401A						402A					
		Pressure Drop - psi																							
		2	5	10	25	50	100	2	5	10	25	50	100	2	5	10	25	50	100	2	5	10	25	50	100
E2-HP	0.075	0.15	0.24	0.34	0.51	0.64	Critical	0.12	0.20	0.28	0.40	0.47	Critical	0.13	0.20	0.28	0.40	0.47	Critical	0.13	0.21	0.30	0.47	0.59	0.68
E8-HP	1/4	1.12	1.77	2.50	3.84	5.11	6.33	0.94	1.49	2.10	3.11	3.97	Critical	0.94	1.49	2.11	3.13	4.01	Critical	0.98	1.55	2.19	3.46	4.57	5.83
E43/E43-HP	1 5/16	22.30	35.24	49.83	72.04	96.34	120.57	18.72	29.59	41.84	58.50	75.26	85.31	18.82	29.75	42.06	58.93	76.00	86.73	19.50	30.83	43.58	68.89	86.05	110.48

TYPE	Port Size Inches	Tons of Refrigeration 407C						407F						448A						449A					
		Pressure Drop - psi																							
		2	5	10	25	50	100	2	5	10	25	50	100	2	5	10	25	50	100	2	5	10	25	50	100
E2-HP	0.075	0.15	0.23	0.33	0.50	0.63	Critical	0.14	0.22	0.31	0.47	0.59	Critical	0.15	0.23	0.33	0.50	0.64	Critical	0.14	0.23	0.33	0.50	0.63	Critical
E8-HP	1/4	1.09	1.73	2.45	3.75	4.98	6.14	1.03	1.63	2.31	3.53	4.70	5.81	1.09	1.73	2.44	3.76	5.03	6.29	1.09	1.72	2.43	3.74	5.00	6.25
E43/E43-HP	1 5/16	21.80	34.46	48.72	70.33	93.89	117.02	20.55	32.49	45.94	66.35	88.63	110.62	21.76	34.39	48.63	70.56	94.72	119.62	21.66	34.24	48.41	70.21	94.21	118.86

E Series Solenoid Valve Discharge Gas Capacity in IP Units

Type	Port Size Inches	Tons of Refrigeration 404A						407A					
		Pressure Drop - psi											
		2	5	10	25	50	100	2	5	10	25	50	100
E2-HP	0.075	0.13	0.202	0.288	0.438	0.56	0.64	0.14	0.226	0.322	0.486	0.62	Critical
E8-HP	1/4	0.95	1.505	2.129	3.289	4.42	5.59	1.07	1.687	2.385	3.666	4.89	6.10
E43/E43-HP	1 5/16	19.0	30.0	42.4	61.7	83.2	106.1	21.25	33.59	47.49	68.81	92.22	116.02

TYPE	Port Size Inches	Tons of Refrigeration 450a						507						513A					
		Pressure Drop - psi																	
		2	5	10	25	50	100	2	5	10	25	50	100	2	5	10	25	50	100
E2-HP	0.075	0.11	0.18	0.26	0.35	Critical	Critical	0.13	0.202	0.287	0.458	0.57	0.65	0.11	0.183	0.26	0.37	0.44	Critical
E8-HP	1/4	0.85	1.35	1.91	2.78	3.48	Critical	0.95	1.502	2.124	3.358	4.43	5.62	0.86	1.365	1.93	2.867	3.68	Critical
E43/E43-HP	1 5/16	17.01	26.89	38.01	52.37	66.18	Critical	18.92	29.9	42.28	66.83	83.30	106.69	17.20	27.18	38.43	53.94	69.72	80.04

NEW SPORLAN SOLENOID VALVES

Solenoid Magnet - 310250 Solenoid Manual List Item - 958121

R-410A Solenoid Capacity Information

Type	Port Size Inches	Liquid Capacity Tons of Refrigeration 410A Pressure Drop - psi					Discharge Capacity Tons of Refrigeration 410A Pressure Drop - psi						Suction Capacity Tons of Refrigeration 410A Pressure Drop - psi				
		1	2	3	4	5	2	5	10	25	50	100	40	20	0	-20	-40
E2-HP	0.075	0.47	0.67	0.82	0.95	1.06	0.18	0.28	0.40	0.64	0.83	1.03	0.08	0.07	0.05	0.04	0.03
E5-HP	0.150	1.50	2.14	2.63	3.04	3.41	0.57	0.91	1.29	2.05	3.26	4.17	0.26	0.21	0.17	0.14	0.10
E6-HP	3/16	2.69	3.79	4.63	5.33	5.95	1.05	1.65	2.32	3.65	5.51	6.83	0.50	0.41	0.33	0.26	0.20
E8-HP	1/4	3.45	4.88	5.98	6.91	7.72	1.33	2.10	2.97	4.70	6.36	8.35	0.62	0.51	0.41	0.32	0.25
E10S1-HP	5/16	5.85	8.31	10.20	11.80	13.21	2.23	3.54	5.03	7.99	10.87	13.80	1.03	0.85	0.68	0.54	0.41
E14-HP	7/16	8.54	12.05	14.74	17.01	19.01	3.30	5.21	7.35	11.60	17.30	22.68	1.55	1.27	1.03	0.81	0.62
E19-HP	19/32	13.02	18.46	22.65	26.19	29.30	4.97	7.89	11.19	17.76	25.67	33.87	2.31	1.90	1.52	1.20	0.92
E25-HP	25/32	22.27	31.55	38.68	44.70	50.00	8.53	13.52	19.15	30.35	40.99	54.08	3.97	3.26	2.62	2.06	1.59
E35-HP	1.0	36.21	52.85	65.93	77.13	87.12	12.78	21.06	30.74	50.68	72.08	96.17	5.58	4.50	3.57	2.76	2.08
E43-HP	1 5/16	68.74	97.19	119.0	137.4	153.6	26.48	41.85	59.17	93.52	119.5	157.65	12.40	10.17	8.19	6.46	4.97

Minimum operating capacity is at one psi pressure drop for pilot operated valves

NEW REFRIGERANTS CAPACITY INFORMATION

E Series Solenoid Valve Liquid Capacity in IP Units

Type	Port Size Inches	Tons of Refrigeration R-290 Pressure Drop - psi					Tons of Refrigeration R-1234ze Pressure Drop - psi				
		1	2	3	4	5	1	2	3	4	5
E2-HP	0.078	0.56	0.79	0.98	1.13	1.27	0.42	0.60	0.74	0.85	0.95
E3	0.101	0.98	1.42	1.76	2.05	2.31	0.76	1.09	1.35	1.58	1.78
E5 & E5-HP	0.15	1.79	2.55	3.13	3.63	4.07	1.35	1.92	2.36	2.74	3.07
E6 & E6-HP	0.197	3.26	4.58	5.59	6.44	7.19	2.42	3.40	4.15	4.79	5.34
E8-HP	1/4	4.15	5.87	7.19	8.30	9.28	3.10	4.39	5.38	6.21	6.94
E10S1-HP	5/16	7.00	9.94	12.20	14.11	15.80	5.26	7.47	9.17	10.61	11.88
E14 & E14-HP	7/16	10.27	14.50	17.74	20.47	22.87	7.67	10.83	13.25	15.28	17.08
E19 & E19-HP	19/32	15.59	22.11	27.13	31.36	35.09	11.71	16.60	20.37	23.55	26.35
E25 &E25-HP	25/32	26.69	37.82	46.37	53.59	59.95	20.02	28.37	34.78	40.19	44.96

Type	Port Size Inches	Tons of Refrigeration R-32 Pressure Drop - psi				
		1	2	3	4	5
E2-HP	0.078	0.68	0.97	1.19	1.38	1.55
E5-HP	0.15	2.19	3.12	3.83	4.44	4.97
E6-HP	0.197	3.94	5.54	6.76	7.79	8.70
E8-HP	1/4	5.05	7.14	8.74	10.09	11.28
E10S1-HP	5/16	8.55	12.14	14.90	17.23	19.29
E14-HP	7/16	12.47	17.61	21.54	24.86	27.78
E19-HP	19/32	19.02	26.97	33.08	38.25	42.80
E25-HP	25/32	32.53	46.08	56.50	65.29	73.04

Refrigerant Liquid Temperature Correction Factors

Temperature °F (°C)		40 (5)	50 (10)	60 (15)	7 (21)	80 (27)	90 (32)	100 (38	110 (43)	120 (49)	130 (54)	140 (60)
R-290	Correction Factor	1.40	1.33	1.26	1.20	1.13	1.07	1.00	0.93	0.86	0.79	0.72
R-1234ZE		1.40	1.34	1.27	1.20	1.13	1.07	1.00	0.93	0.86	0.80	0.73
R-32		1.35	1.29	1.24	1.18	1.12	1.06	1.00	0.94	0.87	0.80	0.73

Liquid Capacity is based on 110 °F (43°C) condensing temperature, 100°F (38°C) liquid temperature and 40°F (5°C) evaporating temp
For each 10°F (5°C) reduction in evaporating temperature, capacities are reduced by approximately 1 1/2%.

EVAPORATOR TEMPERATURE CORRECTION FACTORS

EVAPORATOR TEMPERATURE °F (°C)	40 (5)	30 (-1)	20 (-7)	10 (-12)	0 (-18)	-10(-23)	-20(-29)	-30(-34)	-40(-40)
MULTIPLIER	1.00	0.96	0.93	0.90	0.87	0.84	0.81	0.78	0.75

Capacities based on 110°F (43°C) condensing temperature, isentropic compression plus 50°F (28°C), 40°F 5°C) evaporator and 65°F (18°C) suction gas. For capacities at other conditions use the multipliers in table above

E Series Solenoid Valve Discharge Gas Capacity in IP Units

Type	Port Size Inches	Tons of Refrigeration R-290 Pressure Drop - psi						Tons of Refrigeration R-1234ze Pressure Drop - psi					
		2	5	10	25	50	100	2	5	10	25	50	100
E2-HP	0.078	0.18	0.29	0.41	0.60	0.75	Critical	0.11	0.17	0.23	0.32	Critical	Critical
E3	0.101	0.30	0.49	0.71	0.99	1.27	Critical	0.18	0.29	0.38	0.53	0.60	Critical
E5 & E5-HP	0.15	0.58	0.92	1.30	2.36	3.03	Critical	0.34	0.54	0.89	1.27	1.46	Critical
E6 & E6-HP	0.197	1.08	1.70	2.39	3.99	4.98	Critical	0.63	0.99	1.52	2.10	Critical	Critical
E8-HP	1/4	1.36	2.15	3.04	4.61	6.06	7.30	0.79	1.25	1.73	2.53	3.09	Critical
E10S1-HP	5/16	2.26	3.60	5.11	7.88	10.05	Critical	1.32	2.10	2.98	4.21	4.77	Critical
E14 & E14-HP	7/16	3.38	5.33	7.53	12.53	16.48	19.79	1.97	3.11	4.71	6.87	8.38	Critical
E19 & E19-HP	19/32	5.06	8.03	11.38	18.59	24.59	29.98	2.95	4.69	6.97	10.24	12.66	Critical
E25 &E25-HP	25/32	8.69	13.77	19.50	29.68	39.27	47.87	5.07	8.04	11.13	16.36	20.21	Critical

Type	Port Size Inches	Tons of Refrigeration R-32 Pressure Drop - psi					
		2	5	10	25	50	100
E2-HP	0.078	0.22	0.36	0.50	0.80	1.06	1.32
E5-HP	0.15	0.71	1.14	1.62	2.58	4.13	5.32
E6-HP	0.197	1.33	2.09	2.94	4.61	6.99	8.76
E8-HP	1/4	1.67	2.65	3.75	5.92	8.05	10.62
E10S1-HP	5/16	2.80	4.45	6.32	10.05	13.79	17.64
E14-HP	7/16	4.17	6.57	9.28	14.63	21.90	28.87
E19-HP	19/32	6.26	9.93	14.08	22.35	32.49	43.07
E25-HP	25/32	10.74	17.02	24.11	38.21	51.88	68.78

E Series Solenoid Valve Suction Capacity in IP Units

Type	Port Size Inches	Tons of Refrigeration R-290 1 PSI Pressure Drop and Evaporator Temperatures (°F)					Tons of Refrigeration R-1234ze 1 PSI Pressure Drop and Evaporator Temperatures (°F)				
		40	20	0	-20	-40	40	20	0	-20	-40
E2-HP	0.078	0.08	0.07	0.05	0.04	0.03	0.04	0.03	0.02	0.02	0.01
E3	0.101	0.13	0.10	0.08	0.06	0.05	0.07	0.05	0.04	0.03	0.02
E5 & E5-HP	0.15	0.26	0.21	0.16	0.12	0.09	0.14	0.10	0.08	0.06	0.04
E6 & E6-HP	0.197	0.51	0.41	0.32	0.24	0.18	0.27	0.20	0.15	0.11	0.08
E8-HP	1/4	0.63	0.50	0.39	0.30	0.22	0.33	0.25	0.19	0.13	0.09
E10S1-HP	5/16	1.05	0.83	0.64	0.49	0.37	0.55	0.42	0.31	0.22	0.15
E14 & E14-HP	7/16	1.58	1.25	0.98	0.75	0.56	0.83	0.63	0.47	0.34	0.24
E19 & E19-HP	19/32	2.34	1.85	1.44	1.10	0.82	1.23	0.93	0.69	0.50	0.35
E25 &E25-HP	25/32	4.03	3.19	2.49	1.90	1.42	2.12	1.60	1.19	0.86	0.60

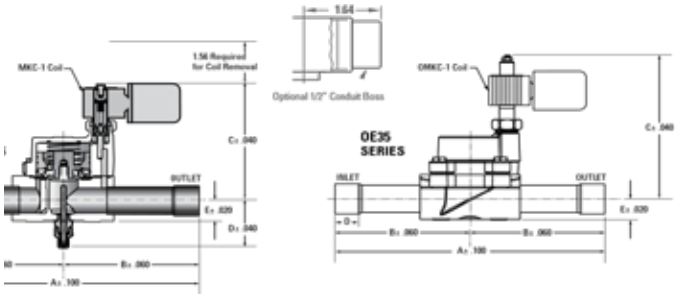
Type	Port Size Inches	Tons of Refrigeration R-32 1 PSI Pressure Drop and Evaporator Temperatures (°F)				
		40	20	0	-20	-40
E2-HP	0.078	0.11	0.09	0.07	0.06	0.04
E5-HP	0.15	0.34	0.28	0.23	0.18	0.14
E6-HP	0.197	0.65	0.54	0.44	0.36	0.28
E8-HP	1/4	0.81	0.67	0.55	0.44	0.34
E10S1-HP	5/16	1.34	1.11	0.91	0.72	0.56
E14-HP	7/16	2.02	1.68	1.37	1.10	0.86
E19-HP	19/32	3.01	2.49	2.03	1.62	1.27
E25-HP	25/32	5.17	4.29	3.50	2.80	2.18

SPORLAN SOLENOID VALVES

Series E35

R22, 134a, 401A, 402A, 404A, 407C, 502, 507

All Models will come as "-HP" and will be rated for use with High Pressure Gases i.e. R410A





Type ME35S1110
Normally Closed

VALVE SERIES	TYPE	CONNECTIONS Inches Sizes shown in BLUE will be furnished unless otherwise specified.	PORT SIZE Inches	MOPD psi		NOMINAL LIQUID CAPACITIES Tons of Refrigeration REFRIGERANTS Pressure Drop – psi								COIL RATINGS		
						22	134a	401A	402A	404A	407C	502	507	STANDARD VOLTS/CYCLES	WATTS	
				AC	DC	3	2	2	3	3	3	3	3		AC	DC
E35	E35S190	1-1/8 ODF X 1-1/8 ODF	1	300	250	70.9	53.0	56.9	46.6	46.5	64.8	46.0	45.6	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	10	15
	ME35S190															
	OE35S190			300												
	E35S1110	W 1-3/8 ODF X 1-3/8 ODF		300	250											
	ME35S1110															
	OE35S1110			300												

Type	LIST
E35S190	1,285.00
ME35S190	1,189.00
OE35S190	
E35S1110	1,350.00
ME35S1110	1,389.00
OE35S1110	1,602.00

Maximum rated pressure: Type E35 Series, 500 psi f
Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost. For other voltages and cycles, consult Sporlan, Washington, MO 63090.

Available with conduit boss or junction box at no extra charge.
For capacity at other pressure drops, see Pages 4 and 5.

TYPE
E43S1130



Series E43

R22, 134a, 401A, 402A, 404A, 407C, 502, 507

All Models will come as "-HP" and will be rated for use with High Pressure Gases i.e. R410A

VALVE SERIES	TYPE	STANDARD CONNECTION Inches	PORT SIZE Inches	MOPD psi (bar)		NOMINAL LIQUID CAPACITIES Tons (kW) of Refrigerant REFRIGERANTS Pressure Drop – psi (bar)									STANDARD COIL RATINGS		
						22	134a	401A	402A	404A	407C	407F	410A	507	VOLTS/CYCLES	WATTS	
				AC	DC	3 (0.20)	2 (0.14)	2 (0.14)	3 (0.20)	3 (0.20)	3 (0.20)	3 (0.20)	5 (0.34)	3 (0.20)		AC	DC
E43	E43S1130	1-5/8 ODF x 1-5/8 ODF	1-5/16	300 (21)	250 (17)	127 (447)	96.9 (340)	104 (365)	83.9 (295)	84.2 (296)	117 (411)	121 (425)	NA	82.4 (290)	24/50-60 120/50-60 208/50-60 208-240/50-60 120-208-240/50-60	10	15
	ME43S1130																
	E43S1170	2-1/8 ODF x 2-1/8 ODF															
	ME43S1170																
E43-HP	E43S1130-HP	1-5/8 ODF x 1-5/8 ODF		450 (31)	400 (27)	127 (447)	96.9 (340)	104 (365)	83.9 (295)	84.2 (296)	117 (411)	121 (425)	156 (548)	82.4 (290)			
	ME43S1130-HP																
	OE43S1130-HP			400 (27)													
	E43S1170-HP	2-1/8 ODF x 2-1/8 ODF		450 (31)													
	ME43S1170-HP																
	OE43S1170-HP			400 (27)													

Type	LIST
E43S1130	
ME43S1130	2,303.00
E43S1170	
ME43S1170	2,373.00
E43S1130-HP	
ME43S1130-HP	
OE43S1130-HP	2,223.00
E43S1170-HP	
ME43S1170-HP	
OE43S1170-HP	2,290.00

Maximum rated pressure (MRP) is 500 psig (34 bar) for E43 non R-410A series and 680 psig (47 bar) for E43-HP, R-410A series.
Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost. For other voltages and cycles, consult Sporlan, Washington, MO 63090.
Coils are available with conduit boss or junction box.
Manual Lift Stem is not available with Normally Open Valves.
For OE43-HP Series Valves: When using 208 volts, do not operate 208-240 volt coil at 85% voltage and hot coil. If so, MOPD may be lower than stated in this bulletin.
Use OMKC-1 208/50-60 coil.

Discharge Gas and Suction Capacities R22, 134a, 401A, 402A

* Can use Sporlan Selection Program (sporlanonline.com) for selections

VALVE SERIES	DISCHARGE GAS CAPACITIES — TONS Pressure Drop Across Valve — psi					
	2	5	10	25	50	100
REFRIGERANT 22						
A3 & E3	0.24	0.39	**0.56**	0.77	0.99	1.11
E5	0.45	0.71	**1.02**	1.83	2.36	2.69
B6 & E6	0.84	1.31	**1.85**	3.10	3.89	4.15
B9 & E9	1.35	2.13	**3.00**	4.65	6.20	7.71
B10 & E10	1.83	2.90	**4.09**	7.07	9.17	10.6
B14 & E14	2.62	4.13	**5.83**	9.72	12.8	15.5
B19 & E19	3.93	6.23	**8.84**	14.4	19.1	23.4
B25 & E25	6.74	10.7	**15.1**	23.0	30.5	37.4
E35	9.90	16.3	**23.8**	40.3	53.7	66.8
E42	21.0	33.1	**46.8**	67.2	89.0	109
REFRIGERANT 134a						
A3 & E3	0.20	0.32	**0.46**	0.60	0.71	0.72
E5	0.37	0.59	**0.84**	1.44	1.72	1.74
B6 & E6	0.70	1.09	**1.54**	2.39	2.70	2.70
B9 & E9	1.12	1.77	**2.50**	3.72	4.76	5.30
B10 & E10	1.52	2.41	**3.40**	5.56	6.74	6.92
B14 & E14	2.17	3.43	**4.84**	7.73	9.65	10.3
B19 & E19	3.26	5.17	**7.34**	11.5	14.5	15.8
B25 & E25	5.60	8.87	**12.6**	18.4	23.2	25.2
E35	8.1	13.4	**19.6**	32.1	40.8	44.9
E42	17.4	27.5	**38.9**	53.6	67.6	73.3
REFRIGERANT 401A						
A3 & E3	0.20	0.33	**0.47**	0.62	0.74	0.74
E5	0.38	0.61	**0.86**	1.48	1.77	1.81
B6 & E6	0.72	1.12	**1.58**	2.46	2.79	2.79
B9 & E9	1.15	1.82	**2.56**	3.83	4.90	5.49
B10 & E10	1.56	2.47	**3.49**	5.73	6.96	7.16
B14 & E14	2.23	3.52	**4.97**	7.95	9.96	10.6
B19 & E19	3.35	5.31	**7.53**	11.8	15.0	16.3
B25 & E25	5.74	9.11	**12.9**	18.9	23.9	26.1
E35	8.32	13.7	**20.0**	33.1	42.1	46.5
E42	17.9	28.3	**40.0**	55.1	69.7	75.9
REFRIGERANT 402A						
A3 & E3	0.21	0.34	**0.49**	0.68	0.89	1.05
E5	0.39	0.63	**0.89**	1.62	2.13	2.55
B6 & E6	0.73	1.14	**1.60**	2.76	3.55	3.99
B9 & E9	1.18	1.85	**2.61**	4.09	5.52	7.05
B10 & E10	1.60	2.52	**3.57**	6.26	8.25	9.99
B14 & E14	2.28	3.59	**5.07**	8.58	11.5	14.3
B19 & E19	3.43	5.45	**7.73**	12.7	17.1	21.5
B25 & E25	5.89	9.33	**13.2**	20.3	27.3	34.4
E35	8.82	14.5	**21.2**	35.5	47.9	61.3
E42	18.3	28.9	**40.8**	59.2	79.5	100

VALVE SERIES	SUCTION CAPACITY* — TONS 1 PSI Pressure Drop and Evaporating Temperatures				
	40°F	20°F	0°F	– 20°F	– 40°F
REFRIGERANT 22					
A3 & E3	0.11	0.09	0.07	0.05	0.04
E5	0.22	0.17	0.14	0.11	0.08
B6 & E6	0.42	0.34	0.27	0.21	0.16
B9 & E9	0.66	0.53	0.42	0.32	0.24
B10 & E10	0.91	0.73	0.57	0.44	0.33
B14 & E14	1.30	1.04	0.82	0.63	0.48
B19 & E19	1.94	1.54	1.21	0.93	0.70
B25 & E25	3.28	2.62	2.06	1.59	1.19
E35	4.60	3.61	2.78	2.10	1.54
E42	9.57	7.64	6.00	4.62	3.48
REFRIGERANT 134a					
A3 & E3	0.09	0.07	0.05	---	---
E5	0.17	0.13	0.10	---	---
B6 & E6	0.32	0.25	0.19	---	---
B9 & E9	0.51	0.39	0.30	---	---
B10 & E10	0.70	0.54	0.41	---	---
B14 & E14	1.00	0.77	0.58	---	---
B19 & E19	1.49	1.14	0.86	---	---
B25 & E25	2.53	1.94	1.46	---	---
E35	3.48	2.62	1.93	---	---
E42	7.36	5.66	4.26	---	---
REFRIGERANT 401A					
A3 & E3	0.09	0.07	0.05	---	---
E5	0.18	0.14	0.10	---	---
B6 & E6	0.34	0.26	0.20	---	---
B9 & E9	0.53	0.41	0.32	---	---
B10 & E10	0.73	0.57	0.44	---	---
B14 & E14	1.05	0.82	0.62	---	---
B19 & E19	1.55	1.21	0.92	---	---
B25 & E25	2.63	2.05	1.57	---	---
E35	3.62	2.76	2.07	---	---
E42	7.68	5.98	4.57	---	---
REFRIGERANT 402A					
A3 & E3	0.09	0.07	0.06	0.04	0.03
E5	0.19	0.15	0.11	0.08	0.06
B6 & E6	0.36	0.28	0.22	0.16	0.12
B9 & E9	0.57	0.44	0.34	0.25	0.19
B10 & E10	0.78	0.61	0.47	0.35	0.25
B14 & E14	1.11	0.87	0.67	0.50	0.37
B19 & E19	1.66	1.29	0.99	0.74	0.54
B25 & E25	2.80	2.19	1.67	1.26	0.92
E35	4.01	3.07	2.31	1.69	1.21
E42	8.18	6.37	4.88	3.66	2.67

*Minimum operating capacity is at one psi pressure drop for pilot operated valves.

EVAPORATOR TEMPERATURE CORRECTION FACTORS

Evaporator Temperature °F	40	30	20	10	0	– 10	– 20	– 30	– 40
Multiplier	1.00	0.96	0.93	0.90	0.87	0.84	0.81	0.78	0.75

Capacities based on 100°F condensing temperature, isentropic compression plus 50°F, 40°F evaporator and 65°F suction gas. For capacities at other conditions use the multipliers in table at left.

** E42 No longer available. See NEW solenoid info for E43 capacity*

Discharge Gas and Suction Capacities R404A, 407C, 502, 507

* Can use Sporlan Selection Program (sporlanonline.com) for selections

VALVE SERIES	DISCHARGE GAS CAPACITIES — TONS Pressure Drop Across Valve — psi					
	2	5	10	25	50	100
REFRIGERANT 404A						
A3 & E3	0.22	0.35	**0.51**	0.70	0.91	1.06
E5	0.40	0.64	**0.91**	1.66	2.17	2.56
B6 & E6	0.75	1.17	**1.65**	2.82	3.60	3.99
B9 & E9	1.21	1.90	**2.68**	4.19	5.64	7.16
B10 & E10	1.64	2.59	**3.66**	6.40	8.41	10.1
B14 & E14	2.34	3.69	**5.21**	8.79	11.7	14.5
B19 & E19	3.53	5.59	**7.93**	13.0	17.4	21.8
B25 & E25	6.04	9.60	**13.6**	20.8	27.8	34.9
E35	9.03	14.9	**21.7**	36.4	49.0	62.2
E42	18.8	29.7	**41.9**	60.7	81.1	102
REFRIGERANT 407C						
A3 & E3	0.24	0.38	**0.55**	0.76	0.96	1.06
E5	0.44	0.71	**1.00**	1.80	2.31	2.58
B6 & E6	0.83	1.30	**1.83**	3.05	3.78	3.98
B9 & E9	1.34	2.10	**2.97**	4.58	6.08	7.49
B10 & E10	1.81	2.86	**4.05**	6.95	8.96	10.21
B14 & E14	2.59	4.08	**5.76**	9.57	12.6	15.0
B19 & E19	3.88	6.16	**8.74**	14.2	18.7	22.7
B25 & E25	6.66	10.6	**15.0**	22.7	29.9	36.3
E35	9.79	16.1	**23.6**	39.6	52.7	64.9
E42	20.7	32.7	**46.3**	66.1	87.3	106
REFRIGERANT 502						
A3 & E3	0.19	0.31	**0.45**	0.62	0.80	0.91
E5	0.36	0.57	**0.81**	1.47	1.90	2.20
B6 & E6	0.66	1.04	**1.46**	2.49	3.14	3.41
B9 & E9	1.07	1.69	**2.38**	3.71	4.97	6.24
B10 & E10	1.46	2.30	**3.26**	5.66	7.38	8.68
B14 & E14	2.08	3.28	**4.63**	7.77	10.3	12.6
B19 & E19	3.13	4.97	**7.05**	11.5	15.3	19.0
B25 & E25	5.37	8.51	**12.1**	18.4	24.5	30.3
E35	8.03	13.2	**19.3**	32.2	43.1	54.1
E42	16.7	26.4	**37.3**	53.7	71.4	88.4
REFRIGERANT 507						
A3 & E3	0.21	0.34	**0.49**	0.68	0.89	1.04
E5	0.39	0.63	**0.89**	1.62	2.12	2.51
B6 & E6	0.73	1.14	**1.60**	2.75	3.52	3.92
B9 & E9	1.18	1.85	**2.61**	4.09	5.50	6.99
B10 & E10	1.60	2.52	**3.57**	6.24	8.21	9.86
B14 & E14	2.28	3.59	**5.07**	8.56	11.4	14.2
B19 & E19	3.43	5.45	**7.72**	12.7	17.0	21.3
B25 & E25	5.88	9.30	**13.2**	20.3	27.1	34.1
E35	8.81	14.3	**21.2**	35.5	47.8	60.8
E42	18.3	28.9	**40.8**	59.1	79.1	99.3

VALVE SERIES	SUCTION CAPACITY* — TONS 1 PSI Pressure Drop and Evaporating Temperatures				
	40°F	20°F	0°F	– 20°F	– 40°F
REFRIGERANT 404A					
A3 & E3	0.10	0.07	0.06	0.04	0.03
E5	0.19	0.15	0.11	0.08	0.06
B6 & E6	0.36	0.28	0.22	0.16	0.12
B9 & E9	0.58	0.45	0.34	0.25	0.18
B10 & E10	0.79	0.61	0.47	0.35	0.25
B14 & E14	1.13	0.88	0.67	0.50	0.36
B19 & E19	1.69	1.30	0.99	0.74	0.53
B25 & E25	2.86	2.21	1.68	1.26	0.91
E35	4.07	3.09	2.31	1.69	1.20
E42	8.33	6.45	4.91	3.66	2.65
REFRIGERANT 407C					
A3 & E3	0.10	0.08	0.06	0.04	---
E5	0.20	0.16	0.12	0.09	---
B6 & E6	0.39	0.30	0.23	0.17	---
B9 & E9	0.62	0.48	0.36	0.27	---
B10 & E10	0.85	0.66	0.50	0.37	---
B14 & E14	1.21	0.94	0.72	0.54	---
B19 & E19	1.80	1.40	1.06	0.79	---
B25 & E25	3.06	2.37	1.81	1.35	---
E35	4.27	3.25	2.43	1.77	---
E42	8.92	6.92	5.27	3.92	---
REFRIGERANT 502					
A3 & E3	0.09	0.07	0.05	0.04	0.03
E5	0.17	0.14	0.11	0.08	0.06
B6 & E6	0.33	0.26	0.20	0.15	0.11
B9 & E9	0.52	0.41	0.32	0.24	0.18
B10 & E10	0.72	0.57	0.44	0.33	0.25
B14 & E14	1.03	0.81	0.63	0.47	0.35
B19 & E19	1.54	1.21	0.93	0.70	0.52
B25 & E25	2.60	2.04	1.58	1.19	0.88
E35	3.72	2.87	2.17	1.61	1.16
E42	7.59	5.95	4.60	3.48	2.57
REFRIGERANT 507					
A3 & E3	0.09	0.07	0.06	0.04	0.03
E5	0.19	0.15	0.11	0.08	0.06
B6 & E6	0.36	0.28	0.21	0.16	0.12
B9 & E9	0.56	0.44	0.33	0.25	0.18
B10 & E10	0.78	0.60	0.46	0.34	0.25
B14 & E14	1.11	0.86	0.66	0.49	0.36
B19 & E19	1.65	1.28	0.98	0.73	0.53
B25 & E25	2.80	2.17	1.66	1.24	0.90
E35	4.00	3.04	2.28	1.67	1.19
E42	8.16	6.33	4.83	3.61	2.62

*Minimum operating capacity is at one psi pressure drop for pilot operated valves.

EVAPORATOR TEMPERATURE CORRECTION FACTORS

Evaporator Temperature °F	40	30	20	10	0	– 10	– 20	– 30	– 40
Multiplier	1.00	0.96	0.93	0.90	0.87	0.84	0.81	0.78	0.75

Capacities based on 100°F condensing temperature, isentropic compression plus 50°F, 40°F evaporator and 65°F suction gas. For capacities at other conditions use the multipliers in table at left.

** E42 No longer available. See NEW solenoid info for E43 capacity*

NEW SPORLAN SOLENOID VALVES

E Series Solenoid Valve Suction Capacity in IP Units

Type		Port Size Inches	Tons of Refrigeration																			
			22					134a					401A					402A				
			Pressure Drop - One psi																			
			40	20	0	-20	-40	40	20	0	-20	-40	40	20	0	-20	-40	40	20	0	-20	-40
E2-HP		0.075	0.07	0.06	0.04	0.04	0.03	0.05	0.04	0.03	0.02	0.02	0.05	0.04	0.03	0.03	0.02	0.06	0.05	0.04	0.03	0.02
E8-HP		1/4	0.52	0.43	0.34	0.27	0.21	0.40	0.32	0.24	0.18	0.13	0.42	0.33	0.26	0.20	0.15	0.45	0.36	0.29	0.22	0.16
E43/E43-HP		1 5/16	10.40	8.51	6.83	5.38	4.13	8.01	6.30	4.86	3.65	2.66	8.35	6.67	5.22	3.98	2.96	8.99	7.22	5.69	4.39	3.29

Type		Port Size Inches	Tons of Refrigeration																			
			407C					407F					448A					449A				
			Pressure Drop - One psi																			
			40	20	0	-20	-40	40	20	0	-20	-40	40	20	0	-20	-40	40	20	0	-20	-40
E2-HP		0.075	0.06	0.05	0.04	0.03	0.02	0.06	0.05	0.04	0.03	0.02	0.06	0.05	0.04	0.03	0.02	0.06	0.05	0.04	0.03	0.02
E8-HP		1/4	0.49	0.39	0.30	0.23	0.17	0.46	0.37	0.29	0.22	0.16	0.49	0.39	0.31	0.23	0.17	0.48	0.39	0.30	0.23	0.17
E43/E43-HP		1 5/16	9.73	7.77	6.08	4.64	3.44	9.25	7.36	5.73	4.36	3.22	9.71	7.77	6.10	4.67	3.48	9.66	7.73	6.06	4.64	3.46

E Series Solenoid Valve Suction Capacity in IP Units

Type		Port Size Inches	Tons of Refrigeration									
			404A					R-407A				
			Pressure Drop - One psi									
			40	20	0	-20	-40	40	20	0	-20	-40
E2-HP		0.075	0.06	0.05	0.04	0.03	0.02	0.06	0.05	0.04	0.03	0.02
E8-HP		1/4	0.43	0.34	0.27	0.21	0.15	0.48	0.38	0.30	0.23	0.17
E43/E43-HP		1 5/16	8.63	6.88	5.37	4.09	3.03	9.53	7.60	5.93	4.52	3.35

Type		Port Size Inches	Tons of Refrigeration														
			450a					507					513a				
			Pressure Drop - One psi														
			40	20	0	-20	-40	40	20	0	-20	-40	40	20	0	-20	-40
E2-HP		0.075	0.05	0.04	0.03	0.02	0.01	0.06	0.05	0.04	0.03	0.02	0.05	0.04	0.03	0.02	0.02
E8-HP		1/4	0.36	0.28	0.22	0.16	0.12	0.43	0.34	0.27	0.20	0.15	0.37	0.29	0.23	0.17	0.12
E43/E43-HP		1 5/16	7.21	5.63	4.30	3.20	2.30	8.59	6.85	5.35	4.08	3.03	7.46	5.85	4.49	3.36	2.45

Refrigerant Liquid Temperature Correction Factors

Temperature °F		40	50	60	70	80	90	100	110	120	130	140
R-22		1.33	1.27	1.22	1.17	1.11	1.06	1.00	0.94	0.89	0.83	0.77
R-134A		1.39	1.33	1.26	1.20	1.13	1.07	1.00	0.93	0.87	0.80	0.73
R-401A		1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-402A		1.57	1.48	1.39	1.29	1.20	1.10	1.00	0.90	0.79	0.68	0.56
R-404A		1.58	1.49	1.39	1.30	1.20	1.10	1.00	0.90	0.79	0.68	0.57
R-407A		1.42	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.84	0.76	0.67
R-407C	Correction	1.45	1.38	1.30	1.23	1.15	1.08	1.00	0.92	0.84	0.75	0.67
R-407F	Factor	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.70
R-448A		1.46	1.38	1.31	1.23	1.16	1.08	1.00	0.92	0.84	0.75	0.67
R-449A		1.44	1.37	1.30	1.22	1.15	1.08	1.00	0.92	0.84	0.76	0.68
R-450a		1.41	1.34	1.27	1.21	1.14	1.07	1.00	0.93	0.86	0.79	0.72
R-410A		1.45	1.38	1.30	1.23	1.15	1.08	1.00	0.92	0.83	0.74	0.64
R-507		1.54	1.45	1.36	1.27	1.18	1.09	1.00	0.90	0.80	0.69	0.56
R-513A		1.44	1.37	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.77	0.69

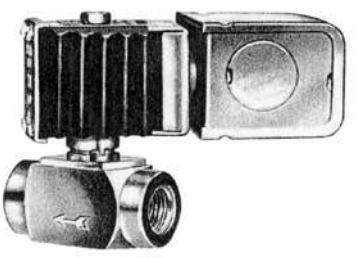
Liquid Capacity is based on 110 F condensing temperature, 100 F liquid temperature and 40 F evaporating temperature

For each 10 F reduction in evaporating temperature, capacities are reduced by approximately 1 1/2%.

SOLENOID, RECLAIM, HOT GAS VALVES

Disc Type Industrial Solenoid Valves
Air - Water - Steam - Light Oil

Less Coil			
Type	Connections inches	Coil Type Required	LIST
W3P1	1/4 NPT	MKC-1 (124.00)	185.80
W6P1	3/8 NPT		237.00
W14P2	1/2 NPT	MKC-2 (152.90)	524.00
W19P2	3/4 NPT		771.00
W25P2	1 NPT		1,192.00



W3P1

3-Way Heat Reclaim Valves
Refrigerants 12-22-502

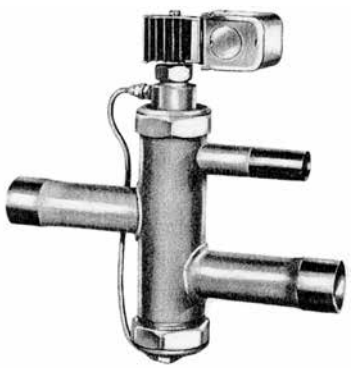
Less Coil				
Type		Connections inches	Coil Type Required	LIST
5D5B	5D5C	5/8 ODF	MKC-1 (124.00)	994.00
8D7B	8D7C	7/8 ODF		1,490.00
8D9B	8D9C	1-1/8 ODF		1,490.00
12D11B	12D11C	1-3/8 ODF		2,367.00
12D13B	12D13C	1-5/8 ODF		2,401.00
16D17B	16D17C	2-1/8 ODF	MKC-2 (152.90)	4,274.00



8D

3-Way Hot Gas Defrost Valves
Refrigerants 12-22-502

Less Coil			
Type	Connections inches	Coil Type Required	LIST
10G79B	1-1/8 ODF	MKC-1 (124.00)	2,610.00
10G711B	1-3/8 ODF		2,709.00
10G711C	1-3/8 ODF		2,860.00



10G711C

Solenoid Pilot Control
Refrigerants 12-22-500-502

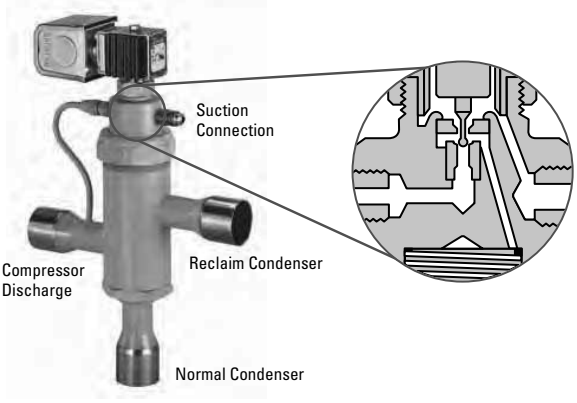
Less Coil			
Type	Connections inches	Coil Type Required	LIST
180		MKC-2 (152.90)	780.00

Price includes C-032-F Catch-All

SPORLAN 3-WAY HEAT RECLAIM VALVES

WORKS WITH SPORLAN R-410A

Sporlan Heat Reclaim Valves are tight synthetic seating three way valves designed specifically to divert hot gas from the normal to auxiliary condenser.



Operation "B" Type

Normal (Outdoor) Condenser – De-energized – With the pilot valve de-energized, high side pressure is prevented from entering the cavity above the piston-seat assembly. At the same time the upper pilot port is opened to suction pressure. The resulting pressure differential across the piston moves the piston-seat assembly to close the reclaim (upper) main port. When the upper pilot port is open, the cavity above the piston is open to suction. Pump out of the reclaim condenser is controlled by the bleed rate through the piston. After the reclaim condenser has been pumped out, and the valve continues to operate in the normal condenser mode, **all flow ceases,** thus eliminating high to low side bleed and the resulting capacity loss.

"C" Type

Normal (Outdoor) Condenser – De-energized – With the pilot valve de-energized, high side pressure is prevented from entering cavity above the piston-seat assembly. At the same time the upper pilot port is opened to suction pressure. The resulting pressure differential across the piston moves the piston-seat assembly to close the reclaim (upper) main port. The non bleed piston prevents high to low side bleed with the system operating in the normal condenser mode.

"B" and "C" Type

Reclaim (Reheat) Condenser – Energized – When the pilot valve is energized, high side pressure is permitted to flow through the lower pilot port. At the same time the upper pilot port is closed to suction. High side pressure on top of the piston moves the piston-seat assembly to close the normal condenser port and open the reclaim (upper) main port. With the upper pilot port closed there is no high to low side bleed loss with the system operating in the reclaim mode.

Heat Reclaim Systems

- **with Head Pressure Control**
- **with Split Condenser Control**

When employing heat reclaim on a refrigeration system, the addition of head pressure controls is important not only to maintain liquid pressure at the expansion valve inlet, but also to assure availability of quality hot gas at the reclaim heat exchanger. Split condenser controls are important to minimize the required refrigerant charge for wintertime operation. And, integral check valves are important to minimize installation costs. (See Bulletin 30-20.)

Specifications

MKC-1 COIL						
TYPE	CONNECTION ODF SOLDER Inches	PORT SIZE	MOPD psi	MAXIMUM RATED PRESSURE psi	STANDARD COIL RATINGS	
			AC		VOLTS/CYCLES	WATTS
B5D5B, B5D5C	5/8	5/8	400	650	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	10
8D7B, 8D7C	7/8	3/4	300	450		
8D7B-HP, 8D7C-HP	7/8		400	650		
8D9B, 8D9C	1-1/8		300	450		
8D9B-HP, 8D9C-HP	1-1/8		400	650		
12D11B, 12D11C	1-3/8	1-1/4	300	450		
12D13B, 12D13C	1-5/8					
12D17B	2-1/8					
16D17B, 16D17C	2-1/8	2				

Available with junction box or conduit boss at no extra charge. For other voltages and cycles, consult Sporlan, Washington, MO.

Selection

1. For a given refrigerant, select a valve having a port size with capacity most closely matching the evaporator maximum load requirements in tons at the design evaporator temperature. Take into account the allowable pressure drop across the valve port.
2. Select the proper coil assembly for the valve type and match the voltage requirements. All AC voltage options are available. For voltages not listed in coil specification, consult Bulletin 30-10, or Sporlan, Washington, MO.

SPORLAN 3-WAY HEAT RECLAIM VALVES

WORKS WITH SPORLAN R-410A

Capacities – Tons

Capacities are based on 100°F condensing temperature isentropic compression plus 50°F, evaporator temperature as shown plus 25°F superheat suction gas.

EVAPORATOR TEMP. °F	REFRIGERANT																							
	22								134a								401A							
	psi – PRESSURE DROP																							
	2				4				2				4				2				4			
	B5D	8D	12D	16D	B5D	8D	12D	16D	B5D	8D	12D	16D	B5D	8D	12D	16D	B5D	8D	12D	16D	B5D	8D	12D	16D
40	4.7	10.1	29.1	70.1	6.6	14.2	41.9	100.0	4.0	10.1	29.1	70.1	5.5	11.8	34.6	83.1	4.1	8.7	24.6	59.3	5.7	12.1	35.4	85.1
30	4.7	9.9	28.6	68.7	6.5	13.9	41.1	98.6	3.9	9.9	28.6	68.7	5.4	11.5	33.8	81.1	4.0	8.5	24.1	58.0	5.5	11.9	34.6	83.2
20	4.6	9.7	28.0	67.4	6.3	13.6	40.3	96.7	3.8	9.7	28.0	67.4	5.2	11.2	32.9	79.1	3.9	8.3	23.5	56.6	5.4	11.6	33.8	81.3
10	4.5	9.5	27.4	66.0	6.2	13.4	39.4	94.6	3.7	9.5	27.4	66.0	5.1	10.9	32.0	77.0	3.8	8.1	22.9	55.3	5.3	11.3	33.0	79.3
0	4.4	9.3	26.8	64.5	6.1	13.1	38.5	92.5	3.6	9.3	26.8	64.5	5.0	10.6	31.1	74.8	3.7	7.9	22.3	53.8	5.1	11.0	32.1	77.2
-10	4.3	9.1	26.2	63.0	5.9	12.8	37.6	90.4	3.5	9.1	26.2	63.0	4.8	10.3	30.2	72.7	3.6	7.7	21.7	52.4	5.0	10.7	31.3	75.2
-20	4.2	8.9	25.5	61.5	5.8	12.5	36.7	88.2	3.4	8.9	25.5	61.5	4.7	10.0	29.3	70.5	3.5	7.5	21.1	50.9	4.9	10.4	30.4	73.1
-30	4.1	8.7	24.9	59.9	5.7	12.1	35.8	85.9	3.3	8.7	24.9	59.9	4.5	9.7	28.4	68.2	3.4	7.2	20.5	49.4	4.7	10.1	29.5	70.9
-40	4.0	8.4	24.2	58.2	5.5	11.8	34.8	83.6	3.2	8.4	24.2	58.2	4.4	9.4	27.5	66.0	3.3	7.0	19.9	47.9	4.6	9.8	28.6	68.8

EVAPORATOR TEMP. °F	REFRIGERANT																							
	402A								404A								407C							
	psi – PRESSURE DROP																							
	2				4				2				4				2				4			
	B5D	8D	12D	16D	B5D	8D	12D	16D	B5D	8D	12D	16D	B5D	8D	12D	16D	B5D	8D	12D	16D	B5D	8D	12D	16D
40	4.1	8.8	25.7	61.7	5.7	12.3	36.9	88.5	4.2	9.0	26.3	63.3	5.8	12.6	37.9	90.8	4.7	10.0	28.8	69.3	6.5	14.0	41.4	99.4
30	4.0	8.5	25.0	60.1	5.5	12.0	36.0	86.2	4.1	8.8	25.6	61.6	5.7	12.3	36.9	88.3	4.6	9.8	28.1	67.6	6.3	13.7	40.4	97.0
20	3.9	8.3	24.3	58.4	5.4	11.6	35.0	83.8	4.0	8.5	24.9	59.8	5.5	11.9	35.8	85.8	4.5	9.5	27.4	66.0	6.2	13.3	39.4	94.6
10	3.8	8.1	23.6	56.7	5.2	11.3	33.9	81.3	3.8	8.3	24.1	58.0	5.3	11.6	34.7	83.2	4.3	9.3	26.7	64.2	6.0	13.0	38.4	92.1
0	3.6	7.8	22.8	54.9	5.0	10.9	32.9	78.8	3.7	8.0	23.3	56.1	5.2	11.2	33.6	80.4	4.2	9.0	25.9	62.4	5.9	12.6	37.3	89.6
-10	3.5	7.5	22.1	53.0	4.9	10.6	31.7	76.1	3.6	7.7	22.5	54.1	5.0	10.8	32.4	77.6	4.1	8.8	25.2	60.6	5.7	12.3	36.2	87.0
-20	3.4	7.3	21.3	51.2	4.7	10.2	30.6	73.4	3.5	7.4	21.7	52.1	4.8	10.4	31.2	74.8	4.0	8.5	24.4	58.8	5.5	11.9	35.1	84.3
-30	3.3	7.0	20.5	49.2	4.5	9.8	29.5	70.6	3.3	7.1	20.8	50.1	4.6	10.0	30.0	71.8	3.9	8.2	23.6	56.9	5.4	11.5	34.0	81.6
-40	3.1	6.7	19.7	47.2	4.3	9.4	28.3	67.8	3.2	6.8	20.0	48.0	4.4	9.6	28.7	68.8	3.7	8.0	22.8	54.9	5.2	11.1	32.8	78.8

EVAPORATOR TEMP. °F	REFRIGERANT																							
	410A								502								507							
	psi – PRESSURE DROP																							
	2				4				2				4				2				4			
	B5D	8D	12D	16D	85D	8D	12D	16D	B5D	8D	12D	16D	B5D	8D	12D	16D	B5D	8D	12D	16D	B5D	8D	12D	16D
40	5.6	12.0	—	—	7.8	16.9	—	—	3.7	8.0	23.4	56.2	5.17	11.2	33.7	80.7	4.1	8.8	25.7	61.6	5.7	12.3	36.9	88.4
30	5.5	11.8	—	—	7.7	16.6	—	—	3.6	7.8	22.8	54.9	5.05	10.9	32.8	78.7	4.0	8.5	25.0	60.0	5.5	11.9	35.9	86.1
20	5.4	11.6	—	—	7.5	16.3	—	—	3.5	7.6	22.2	53.4	4.92	10.6	32.0	76.7	3.9	8.3	24.3	58.3	5.4	11.6	34.9	83.6
10	—	—	—	—	—	—	—	—	3.4	7.4	21.6	52.0	4.78	10.4	31.1	74.5	3.7	8.0	23.5	56.5	5.2	11.3	33.8	81.1
0	—	—	—	—	—	—	—	—	3.3	7.2	21.0	50.4	4.65	10.1	30.2	72.4	3.6	7.8	22.8	54.7	5.0	10.9	32.7	78.5
-10	—	—	—	—	—	—	—	—	3.2	7.0	20.3	48.9	4.50	9.74	29.2	70.1	3.5	7.5	22.0	52.8	4.9	10.5	31.6	75.8
-20	—	—	—	—	—	—	—	—	3.1	6.7	19.7	47.3	4.36	9.43	28.3	67.8	3.4	7.2	21.2	50.9	4.7	10.1	30.5	73.1
-30	—	—	—	—	—	—	—	—	3.0	6.5	19.0	45.6	4.21	9.10	27.3	65.5	3.3	7.0	20.4	49.0	4.5	9.8	29.3	70.3
-40	—	—	—	—	—	—	—	—	2.9	6.3	18.3	44.0	4.06	8.77	26.3	63.1	3.1	6.7	19.6	47.0	4.3	9.4	28.1	67.5

For complete information see your Sporlan Wholesaler, our website at www.sporlan.com, or write Sporlan and request Bulletin 30-20.

Nomenclature/Ordering Instructions

When ordering complete valves, specify Valve Type, Voltage and Cycles. When ordering Valve Body ONLY, specify Valve Type. When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles. **Example: MKC-1 120/50-60; MKC-2 120/50-60.**

MKC	–	1	–	120	/	50-60
Coil Type		Size		Voltage		Cycles

SPORLAN SOLENOIDS

Solenoids - Must Ask Questions

Solenoids are simple BUT misunderstood. They require minimum 1 PSI pressure drop for the valve to close once it's been engaged. IF you're continually having issues with a solenoid in a system remaining open after it's been in use, it is likely OVERSIZED not a warranty issue. Below are some questions to ask to ensure Proper Valve Sizing.

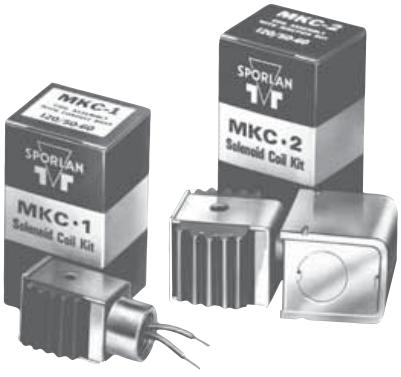
QUESTIONS FOR PROPERLY SIZED SOLENOIDS:

1) What refrigerant?
2) What application – liquid, suction, discharge?
3) What is the tonnage that the valve needs to control – in case of multi circuit systems, the total system may be much larger than the circuit.
4) What electrical specification?
5) What line size?

It's important to ask all questions above, not just the final question. The E3 and E5 solenoids both come in 3/8 connections, but one has much more capacity than the other. Additionally, it's important not to just replace like for like. Potentially, the reason for replacement is because the current valve isn't performing properly. Always Ask!

For a solenoid complaint of 'noisy' or 'over cycling', consider using a rapid cycle OMKC coil on a normally closed valve. You can use a replacement parts kit to convert.

Solenoid Coils



Valve Series		Rating Volts / Cycles	LIST
MKC-1			
A3	8D	24/50-60	124.00
E3	12D	120/50-60	124.00
E5	10G	208-240/50-60	124.00
B6	R183	Dual 120-280-240/50-60	163.20
E6	R184	12 DC	201.60
W3	R246	24 DC	197.80
W6	E10S1	32 DC	
SORIT-12	E35	115 DC	207.10
SORIT-15	E43		
SORIT-20			
MKC-2 and OMKC-2			
A9	A10	24/50-60	152.90
B9	B25	120/50-60	152.90
E9	E25	208-240/50-60	152.90
B10	B33	Dual 120-280-240/50-60	195.90
E10	E34	480/50-60	
B14	E42	6 DC	
E14	B19	12 DC	249.10
8G	E19	24 DC	237.20
11G	16D	32 DC	
W14	W19	115 DC	256.60
W25			
180SPC			

Solenoid Valves for Secondary Coolant Glycol

Description

A new line of solenoid valves to control secondary coolants has been developed for supermarket systems. These fluids include propylene glycol, ethylene glycol, Pecasol 50, Dynalene HC-40, and others. Parker's valve is the only valve designed to meet the requirements of both medium and low temperature applications encountered in supermarket applications.



For Supermarket Refrigeration

What is Secondary Cooling?

In a secondary coolant, or secondary loop system, a chilled solution, such as propylene glycol, is circulated throughout the system rather than liquid refrigerant. Secondary coolant systems are advantageous because they can eliminate liquid refrigerant and suction gas lines running through a store. This reduces installation costs and labor, and eliminates costly refrigerant leaks. Also, PVC tubing can be used, rather than the heavier, more expensive copper tubing normally used in traditional systems. Another benefit is more efficient defrost cycles with less potential product damage.

Minimum Pressure Drop

In order to achieve good heat transfer through a coil surface, minimizing pressure drops throughout the system is critical. Parker secondary coolant valves do not require a minimum pressure to operate.* This is because of the valve's unique "hung diaphragm" design. Other pilot operated valves require some minimum pressure drop to open the diaphragm or piston. This minimum pressure drop is a pressure loss, and means less pressure available at the coil. When using Parker's secondary coolant valves, valve size can be maximized, minimizing the pressure drop.

**The 34E24C2-R1021E is pilot operated and requires a minimum of 5 psi. It uses the AF-4 series coil.*

Specifications - Valve Description

2 way hung diaphragm normally closed valve with brass forged body and EPDM (Ethylene Propylene) trim material.

Maximum Fluid Temperature: -40°F to +180°F
Valve Body: Forged brass
Connections: ODF Copper
Plunger and Pole Piece: Stainless Steel
Enclosing Tube: Stainless Steel
Springs: Stainless Steel
Diaphragm: EPDM
Seals: EPDM
Safe Working Pressure: 10-26 Series = 250 PSIG
34 Series = 225 PSIG

Specifications - Coil

Type: NEMA 4, 4X (3 wire leads) Power: CF5 is 11 watts; AF4 is 6 watts
Power Consumption: Inrush - 53 va holding - 20 va

Capacities - For Liquid

$$Q_{gpm} - C_v \sqrt{\frac{\Delta P}{SG}}$$

SG = Specific gravity
Capacity table based on SG of water @ 1

Sizing Valves

Valve PIN	Connection Size	Cv	Pressure Drop	GPM
10E23C2-R1021E 10E23O2-R1021E	5/8″	4	0.5	2.8
			1	4.0
			2	5.7
			3	6.9
14E23C2-R1021E 14E23O2-R1021E	7/8″	5	0.5	3.5
			1	5.0
			2	7.1
			3	8.7
18E23C2-R1021E 18E23O2-R1021E	1-1/8″	5	0.5	3.5
			1	5.0
			2	7.1
			3	8.7
22EH5C2-R1021E 22E25O2-R1021E	1-3/8″	12.2	0.5	8.6
			1	12.2
			2	17.3
			3	21.1
26EH5C2-R1021E 26E25O2-R1021E	1-5/8″	12.2	0.5	8.6
			1	12.2
			2	17.3
			3	21.1
34E24C2-R1021E 34E24O2-R1021E	2-1/8″	22.5	0.5	15.9
			1	22.5
			2	31.8
			3	39.0

Coil Voltages - 10E, 14E, 18E, 22E, 26E Normally Open or Normally Closed and 34E Normally Open Series Valves

Voltage	Wire Length	Coil Part Number
24 VAC	18″	CF5C01-R1021
120 VAC		CF5C05-R1021
208 VAC		CF5C10-R1021
240 VAC		CF5C15-R1021

Coil Voltages - 34E Normally Closed Valve Only

Voltage	Wire Length	Coil Part Number
24 VAC*	18″	AF4C01-R1021
120 VAC		AF4C05-R1021
208 VAC		AF4C10-R1021
240 VAC*		AF4C15-R1021*

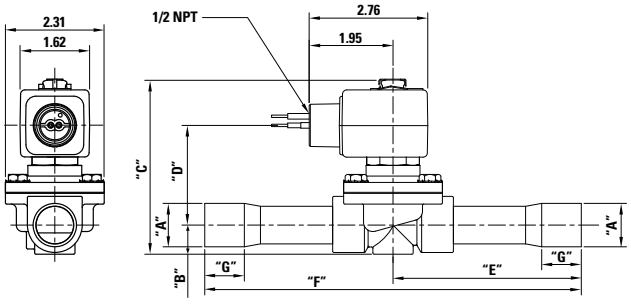
*Minimum order quantity may be required.

Feature	Advantage	Benefit
Ethylene propylene diaphragm and seals.	Compatible with secondary fluids.	Suitable for both medium and low temperature systems.
NEMA 4 coils.	Protects against water, icing and vibration.	Less maintenance, more dependability.
Unique hung diaphragm construction	No minimum pressure differential required.	Pressure drop (loss) is minimized.
Available in sizes 5/8" to 2-1/8" ODF.	A valve for every common line size.	Easily matches up to system piping.
Copper ODF extended connections.	Eliminates need for pipe threaded connections and associated leaks.	Allows easy brazing and faster installation.

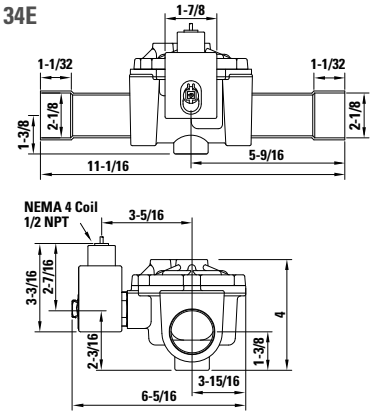
Bulletin 30-10-1, January 2013 supersedes Bulletin 30-10-1, December 2010 and all prior publications.

Solenoid Valves for Secondary Coolant Glycol

Models 10E to 26E



Models 34E



Models 22E2502-R1021E and 26E2502-R1021E look slightly different. UL File MH5567

Normally Closed Valves

Part Number	Cv	MOPD	Orifice	A	B	C	D	E	F	G
10E23C2-R1021E	4	150 psi	5/8″	5/8″	11/16″	4-1/16″	2-5/16″	3-1/4″	6-1/2″	1/2″
14E23C2-R1021E	5	150 psi	3/4″	7/8″	11/16″	4-1/16″	2-5/16″	4-3/8″	8-3/4″	3/4″
18E23C2-R1021E	5	150 psi	3/4″	1-1/8″	11/16″	4-1/16″	2-5/16″	5-5/32″	10-5/16″	15/16″
22EH5C2-R1021E	12.2	50 psi	1″	1-3/8″	13/16″	4-1/2″	3-1/8″	4-11/16″	9-3/8″	15/16″
26EH5C2-R1021E	12.2	50 psi	1″	1-5/8″	13/16″	4-1/2″	3-1/8″	4-11/16″	9-3/8″	15/16″
34E24C2-R1021E*	22.5	125 psi	1-1/2″	2-1/8″	1-3/8″	4″	2-3/16″	5-9/16″	11-1/16″	11/32″

*34E24C2-R1021E requires a minimum of 5 PSI to operate.

Normally Open Valves

Part Number	Cv	MOPD	Orifice	A	B	C	D	E	F	G
10E23O2-R1021E	4	150 psi	5/8″	5/8″	11/16″	4-1/16″	2-5/16″	3-1/4″	6-1/2″	1/2″
14E23O2-R1021E	5	150 psi	3/4″	7/8″	11/16″	4-1/16″	2-5/16″	4-3/8″	8-3/4″	3/4″
18E23O2-R1021E	5	150 psi	3/4″	1-1/8″	11/16″	4-1/16″	2-5/16″	5-5/32″	10-5/16″	15/16″
22E25O2-R1021E	12.2	50 psi	1″	1-3/8″	13/16″	4-1/2″	3-1/8″	4-11/16″	9-3/8″	15/16″
26E25O2-R1021E	12.2	50 psi	1″	1-5/8″	13/16″	4-1/2″	3-1/8″	4-11/16″	9-3/8″	15/16″
34E24O2-R1021E*	22.5	125 psi	1-1/2″	2-1/8″	1-3/8″	4″	2-3/16″	5-9/16″	11-1/16″	11/32″

*34E24O2-R1021E requires a minimum of 5 PSI to operate.

Valve Nomenclature

10	E	–	2	3	–	C	–	2	–	R1021E
Connection Size and Type in 16th Inches			Series			Normally Open/Closed		Body Material Type		Used for Glycol Service
16th Inches Connections	Extended ODF Copper Connections		2 = 2-Way H = Diaphragm Hung	3 = Diaphragm Hung 4 = Diaphragm Offset Pilot 5 = Diaphragm Pivoted Edge		C = Normally Closed O = Normally Open		2 = Brass		Series Designation

Coil Nomenclature

Ordering Examples: (CF5C10-R1021 for 10E, 14E, 18E, 22E, 26E Normally Closed or Normally Open and 34E Normally Open Series Valves)

C	–	F	–	5	–	C	–	01	–	R1021
Wattage		Coil Class		Coil Enclosure		Leads		Voltage		Used for Glycol Service
C = 11 Watts		F = Standard (155°F)		5 = Special (Molded Coil with External Conduit Boss Housing)		18″		01 = 24/60 05 = 120/60* 10 = 208/60* 15 = 240/60*		Series Designation

Ordering Examples: (AF4C10-R1021 for 34E Normally Closed Valve Only)

A	–	F	–	4	–	C	–	05	–	R1021
Wattage		Coil Class		Coil Enclosure		Leads		Voltage		Used for Glycol Service
A = 6 Watts*		F = Standard (155°F)		4 = Completely Encapsulated Coil (With Conduit Boss Housing)		18″		05 = 120/60* 10 = 208/60* 15 = 240/60*		Series Designation

AF4 series coil used on 34E24C2-R1021E.
*AF4 available in 120/60, 208/60, or 240/60 ONLY. 240/60 may require minimum order quantity.

SPORLAN DISCHARGE BYPASS VALVES

* Can use Sporlan Selection Program (sporlanonline.com) for selections

SELECTION PROCEDURES

The selection of a discharge bypass valve, and the necessary companion devices, is simplified ***if complete system information is available.*** This will result in the most economical selection because the components will match the system requirements.

Besides the discharge bypass valve, a specific application may require a hot gas solenoid valve, an auxiliary side connection distributor or ASC adapter, and a desuperheating TEV with a companion liquid line solenoid valve. Once the type of application (review Application Section) is determined, the necessary valves can be selected from the information discussed in this section.

DISCHARGE BYPASS VALVES The selection of a Sporlan Discharge Bypass Valve involves five basic items:

1. **Refrigerant** - valve capacities vary considerably for different refrigerants.
2. **Minimum allowable evaporating temperature at the reduced load condition** - depending on the system, this value must be set to prevent coil icing and/or compressor short cycling. For example, this may be 32°F - 34°F for a water chiller; 26°F - 28°F for a normal air conditioning system; and, the freezing temperature of the specific product for a refrigeration system.
3. **Compressor capacity (tons) at minimum allowable evaporating temperature** - consult compressor capacity ratings for this value.
4. **Minimum evaporator load (tons) at which the system is to be operated** - most systems are **not** required to operate down to zero load but this value will depend on the type of system. For example, most air conditioning systems only need to operate down to 15-25% of full load. However, air conditioning systems for data processing and "white" rooms, and most refrigeration systems may be required to bypass to zero load conditions.
5. **Condensing temperature when minimum load exists** - since the capacity ratings of the bypass valves are a function of condensing temperature, it is vital that proper head pressure is maintained, especially during low load operation. As the capacity table indicates, a condensing temperature of 80°F is considered the minimum allowable for satisfactory system operation. See Bulletin 90-30 for information on Sporlan's Head Pressure Control Valves.

The discharge bypass valve must be selected to handle the difference between items 3 and 4 above. If the minimum evaporator load (item 4) is zero, the hot gas bypass requirement is simply the compressor capacity at the minimum allowable evaporating temperature (item 3). The following discussion on Capacity Ratings and the Example show how these factors affect a selection on a typical air conditioning system.

Capacity Ratings – As the Discharge Bypass Valve Capacity Table indicates, valve ratings are dependent on the evaporating and condensing temperature ***at the reduced load condition*** and the refrigerant used. Therefore, once this information and the hot gas bypass requirement in tons is determined, a discharge bypass valve can be selected.

Where two valve capacities are shown for the same conditions — one for the 0/30 adjustment range and another for the 0/80 adjustment range — the "0/30 psig" valve should be used because of its greater capacity. Both values are listed as an aid in selecting a valve for a system with operating conditions between those shown.

As the capacity table heading indicates, these are ***valve*** capacities, ***not*** the system capacity on which the valve is applied. The ratings are the sum of the hot gas bypassed and the liquid refrigerant for desuperheating, regardless of whether the liquid is fed through the system TEV or the auxiliary desuperheating TEV. The capacities are based on an evaporator temperature change of 6°F from a closed position to the rated opening. This is a nominal rating value based on years of application experience. Since a discharge bypass valve is actually a ***pressure*** regulating valve, it should be pointed out that the capacity ratings based on a 6°F evaporator temperature change take into account that a 6°F change @ 40°F on Refrigerant 22 is a 9.1 psi change, while on Refrigerant 12 it is only 5.7 psi. The 6°F nominal change is used so all the various pressure changes do not need to be shown in the table. If additional capacity is required and a greater evaporator temperature change can be tolerated, these valves are capable of opening further. The following table lists various capacity multipliers for this purpose. For example, an ADRHE-6-0/80 rated for 9.58 tons at a 26°F evaporating temperature will start to open at 32°F (26° + 6°); and, when the evaporating temperature has dropped to 26°F, the valve will be open far enough to bypass 9.9 tons of hot gas. If a temperature change of 8°F can be tolerated, the valve would start opening at 34°F (26° + 8°) and be open far enough to bypass 9.9 times 1.15 or 11.39 tons of hot gas.

Occasionally, a bypass valve is selected for an evaporator temperature change of less than 6°F. Multipliers for those situations are also given in the table below.

CAPACITY MULTIPLIERS
for Evaporator Temperature Changes Other Than 6°F Nominal Change

EVAPORATOR TEMPERATURE CHANGE – °F	REFRIGERANT	EVAPORATOR TEMPERATURE – °F			
		40	26	20	0 and below
2	134a, 401A	0.65	0.65	0.65	0.65
	22, 402A, 404A, 407C, 507	0.72	0.70	0.70	
4	134a, 401A	0.80	0.80	0.80	0.74
	22, 402A, 404A, 407C, 507	0.87	0.85	0.85	
8	134a, 401A	1.11	1.11	1.11	1.09
	22, 402A, 404A, 407C, 507	1.17	1.15		
10	134a, 401A	1.22	1.20	1.19	1.11
	22, 402A, 404A, 407C, 507	1.34	1.27	1.25	

Example – Select a discharge bypass valve for a 30 ton Refrigerant 22 air conditioning system with 67% cylinder unloading (4 of 6 cylinders unloaded). Normal operating conditions are 45°F evaporating temperature and 120°F condensing temperature with a ***minimum*** condensing temperature of 80°F due to head pressure control.

When the evaporator load drops below the last step of cylinder unloading, it is necessary to keep the system on-the-line to maintain proper space temperatures, and avoid frosting of the coil. From the compressor manufacturer's capacity table, the compressor capacity in tons at the minimum allowable evaporating temperature is approximately 10 tons. If the system had to be on-the-line down to zero load, the bypass valve would have to bypass 10 tons of hot gas. With the necessary system factors — R-22, 26°F evaporating temperature at the reduced load condition, and 80°F condensing temperature — the capacity table is checked for a valve which can handle the ***10 tons bypass capacity:***

The DRHE-6-55/70 AR has a capacity of 13.1 tons at these conditions. Therefore, if the system must operate to zero load, this would be the proper selection.

However, if the minimum evaporator load is 4.5 tons (15% of total system capacity), an ADRPE-3-0/80 would be the proper selection (valve capacity of 4.86 tons). The only additional information necessary is the valve connections. While various connections are available, the proper valve connections must be selected to match the system's piping requirements.

SPORLAN DISCHARGE BYPASS VALVES

* Can use Sporlan Selection Program (sporlanonline.com) for selections

DIRECT ACTING DISCHARGE BYPASS VALVE CAPACITIES – Tons

Capacities based on discharge temperatures 50°F above isentropic compression, 25°F superheat at the compressor, 10°F subcooling, and includes both the hot gas bypassed and liquid refrigerant for desuperheating, regardless of whether the liquid is fed through the system thermostatic expansion valves or an auxiliary desuperheating thermostatic expansion valve.

REFRIGERANT	VALVE TYPE	ADJUSTMENT RANGE psig	MINIMUM ALLOWABLE EVAPORATOR TEMPERATURE AT THE REDUCED LOAD – °F																	
			40			26			20			0			-20			-40		
			CONDENSING TEMPERATURE – °F																	
			80	100	120	80	100	120	80	100	120	80	100	120	80	100	120	80	100	120
ADJUSTABLE MODELS																				
22	ADRI-1-1/4 ADRIE-1-1/4	0/55	–	–	–	0.34	0.44	0.56	0.41	0.52	0.66	0.49	0.63	0.79	0.46	0.59	0.75	0.43	0.56	0.70
		0/75	0.45	0.58	0.73	0.50	0.64	0.81	0.50	0.65	0.81	0.47	0.60	0.76	0.39	0.50	0.63	0.33	0.42	0.54
		0/100	0.41	0.53	0.67	0.42	0.54	0.67	0.41	0.53	0.66	0.38	0.49	0.62	0.34	0.44	0.56	0.31	0.40	0.50
	ADRS-2 ADRSE-2	0/30	–	–	–	–	–	–	–	–	–	3.02	3.90	4.91	2.91	3.75	4.74	2.81	3.63	4.58
		0/80	2.73	3.51	4.42	2.77	3.57	4.50	2.79	3.59	4.53	2.84	3.66	4.61	2.83	3.65	4.60	2.71	3.50	4.42
	ADRP-3 ADRPE-3	0/30	–	–	–	–	–	–	–	–	–	5.73	7.38	9.31	5.78	7.45	9.41	5.47	7.07	8.94
		0/80	4.65	5.99	7.54	4.86	6.26	7.88	4.95	6.37	8.03	5.13	6.61	8.34	5.14	6.64	8.38	4.98	6.43	8.13
	ADRHE-6	0/30	–	–	–	–	–	–	–	–	–	10.8	13.9	17.6	10.9	14.1	17.8	10.5	13.5	17.1
		0/80	7.12	9.16	11.5	7.69	9.90	12.5	7.92	10.2	12.8	8.44	10.9	13.7	8.55	11.0	13.9	8.24	10.6	13.5
134a	ADRI-1-1/4 ADRIE-1-1/4	0/55	0.30	0.40	0.51	0.31	0.41	0.53	0.31	0.41	0.53	0.29	0.38	0.49	–	–	–	–	–	–
		0/75	0.32	0.43	0.55	0.30	0.39	0.50	0.28	0.37	0.48	0.23	0.31	0.40	–	–	–	–	–	–
		0/100	0.26	0.34	0.44	0.24	0.32	0.41	0.24	0.31	0.40	0.21	0.28	0.36	–	–	–	–	–	–
	ADRS-2 ADRSE-2	0/30	–	–	–	1.97	2.60	3.34	1.94	2.56	3.30	1.87	2.46	3.18	–	–	–	–	–	–
		0/80	2.02	2.67	3.43	1.85	2.44	3.15	1.85	2.44	3.15	–	–	–	–	–	–	–	–	–
	ADRP-3 ADRPE-3	0/30	–	–	–	3.75	4.95	6.38	3.76	4.96	6.39	3.70	4.89	6.31	–	–	–	–	–	–
		0/80	3.74	4.94	6.37	3.35	4.42	5.70	3.36	4.43	5.71	–	–	–	–	–	–	–	–	–
	ADRHE-6	0/30	–	–	–	7.09	9.36	12.1	7.09	9.37	12.1	7.12	9.41	12.1	–	–	–	–	–	–
		0/80	7.07	9.34	12.0	5.50	7.26	9.36	5.53	7.31	9.41	–	–	–	–	–	–	–	–	–
401A	ADRI-1-1/4 ADRIE-1-1/4	0/55	0.34	0.45	0.57	0.36	0.47	0.60	0.36	0.47	0.59	0.34	0.44	0.56	–	–	–	–	–	–
		0/75	0.37	0.48	0.61	0.34	0.45	0.57	0.33	0.42	0.54	0.27	0.36	0.45	–	–	–	–	–	–
		0/100	0.30	0.39	0.49	0.28	0.37	0.47	0.27	0.36	0.45	0.25	0.32	0.41	–	–	–	–	–	–
	ADRS-2 ADRSE-2	0/30	–	–	–	2.28	2.97	3.77	2.26	2.93	3.72	2.18	2.83	3.59	–	–	–	–	–	–
		0/80	2.12	2.76	3.50	2.14	2.79	3.54	2.15	2.79	3.54	2.11	2.74	3.48	–	–	–	–	–	–
	ADRP-3 ADRPE-3	0/30	–	–	–	4.36	5.66	7.19	4.36	5.67	7.20	4.32	5.62	7.14	–	–	–	–	–	–
		0/80	3.81	4.95	6.28	3.88	5.04	6.40	3.90	5.06	6.43	3.85	5.01	6.36	–	–	–	–	–	–
	ADRHE-6	0/30	–	–	–	8.23	10.7	13.6	8.24	10.7	13.6	8.30	10.8	13.7	–	–	–	–	–	–
		0/80	6.15	7.99	10.1	6.36	8.26	10.5	6.41	8.32	10.6	6.40	8.32	10.6	–	–	–	–	–	–
402A	ADRI-1-1/4 ADRIE-1-1/4	0/55	–	–	–	–	–	–	–	–	–	0.52	0.66	0.81	0.55	0.69	0.85	0.51	0.64	0.78
		0/75	–	–	–	0.52	0.65	0.80	0.55	0.70	0.85	0.57	0.72	0.88	0.50	0.63	0.77	0.41	0.52	0.63
		0/100	0.43	0.54	0.65	0.47	0.60	0.73	0.48	0.60	0.74	0.46	0.57	0.70	0.41	0.52	0.64	0.37	0.47	0.57
	ADRS-2 ADRSE-2	0/30	–	–	–	–	–	–	–	–	–	–	–	–	3.35	4.22	5.17	3.22	4.06	4.98
		0/80	–	–	–	3.10	3.91	4.79	3.12	3.93	4.81	3.18	4.00	4.90	3.21	4.04	4.96	3.14	3.96	4.85
	ADRP-3 ADRPE-3	0/30	–	–	–	–	–	–	–	–	–	–	–	–	6.44	8.11	9.94	6.41	8.08	9.91
		0/80	–	–	–	5.29	6.66	8.16	5.38	6.78	8.30	5.69	7.16	8.77	5.82	7.33	8.98	5.73	7.23	8.86
	ADRHE-6	0/30	–	–	–	–	–	–	–	–	–	–	–	–	12.2	15.3	18.6	12.3	15.5	18.8
		0/80	–	–	–	8.16	10.3	12.6	8.43	10.6	13.0	9.26	11.7	14.3	9.65	12.2	14.9	9.59	12.1	14.8
404A & 507	ADRI-1-1/4 ADRIE-1-1/4	0/55	–	–	–	–	–	–	–	–	–	0.53	0.67	0.83	0.54	0.68	0.84	0.49	0.63	0.77
		0/75	–	–	–	0.53	0.67	0.83	0.55	0.71	0.87	0.56	0.71	0.87	0.48	0.61	0.75	0.39	0.50	0.62
		0/100	0.43	0.55	0.68	0.47	0.60	0.74	0.47	0.60	0.74	0.44	0.56	0.70	0.40	0.51	0.63	0.36	0.45	0.56
	ADRS-2 ADRSE-2	0/30	–	–	–	–	–	–	–	–	–	–	–	–	3.29	4.17	5.15	3.16	4.01	4.95
		0/80	–	–	–	3.08	3.91	4.82	3.10	3.93	4.85	3.15	4.00	4.93	3.17	4.02	4.96	3.08	3.90	4.82
	ADRP-3 ADRPE-3	0/30	–	–	–	–	–	–	–	–	–	–	–	–	6.38	8.08	9.97	6.27	7.95	9.81
		0/80	–	–	–	5.28	6.70	8.26	5.38	6.81	8.41	5.65	7.16	8.84	5.75	7.28	9.00	5.63	7.13	8.80
	ADRHE-6	0/30	–	–	–	–	–	–	–	–	–	–	–	–	12.0	15.3	18.7	12.1	15.4	18.9
		0/80	–	–	–	8.19	10.4	12.8	8.45	10.7	13.2	9.23	11.7	14.4	9.53	12.1	14.9	9.4	11.9	14.7
407C	ADRI-1-1/4 ADRIE-1-1/4	0/55	–	–	–	0.48	0.61	0.77	0.54	0.69	0.86	0.58	0.74	0.93	0.53	0.68	0.85	–	–	–
		0/75	0.61	0.78	0.97	0.61	0.78	0.97	0.60	0.77	0.96	0.53	0.68	0.85	0.43	0.56	0.69	–	–	–
		0/100	0.51	0.65	0.81	0.50	0.63	0.79	0.48	0.62	0.77	0.44	0.56	0.70	0.39	0.50	0.62	–	–	–
	ADRS-2 ADRSE-2	0/30	–	–	–	–	–	–	–	–	–	3.52	4.51	5.63	3.38	4.33	5.41	–	–	–
		0/80	3.32	4.25	5.30	3.32	4.25	5.30	3.33	4.27	5.32	3.36	4.31	5.38	3.30	4.23	5.28	–	–	–
	ADRP-3 ADRPE-3	0/30	–	–	–	–	–	–	–	–	–	6.74	8.63	10.8	6.74	8.64	10.8	–	–	–
		0/80	5.86	7.50	9.36	5.86	7.50	9.36	5.95	7.61	9.50	6.10	7.81	9.75	6.02	7.71	9.63	–	–	–
	ADRHE-6	0/30	–	–	–	–	–	–	–	–	–	12.7	16.3	20.3	12.8	16.5	20.5	–	–	–
		0/80	9.43	12.1	15.1	9.43	12.1	15.1	9.67	12.4	15.5	10.1	13.0	16.2	10.1	12.9	16.1	–	–	–

SPORLAN DISCHARGE BYPASS VALVES

ADJUSTABLE "REMOTE BULB" DISCHARGE BYPASS VALVE CAPACITIES – Tons

Capacities based on discharge temperatures 50°F above isentropic compression, 25°F superheat at the compressor, 10°F subcooling, and includes both the hot gas bypassed and liquid refrigerant for desuperheating, regardless of whether the liquid is fed through the system thermostatic expansion valves or an auxiliary desuperheating thermostatic expansion valve.

REFRIGERANT	VALVE TYPE	ADJUSTMENT RANGE psig	MINIMUM ALLOWABLE EVAPORATOR TEMPERATURE AT THE REDUCED LOAD – °F																	
			40			26			20			0			-20			-40		
			CONDENSING TEMPERATURE – °F																	
			80	100	120	80	100	120	80	100	120	80	100	120	80	100	120	80	100	120
*ADJUSTABLE "REMOTE BULB" MODELS																				
22	DRHE-6	55/70	14.9	19.8	24.6	13.1	16.9	21.2	These models are recommended for air conditioning temperature ranges only.											
134a	DRHE-6	25/35	7.30	9.64	12.4	6.29	8.31	10.7												
401A	DRHE-6	32/44	8.43	11.0	13.9	7.30	9.49	12.0												
404A	DRHE-6	65/80	–	–	–	16.9	21.4	25.3												
407C	DRHE-6	55/70 or 32/44	17.7	22.9	27.9	15.1	19.3	23.9												

*The DRP(E) adjustable remote bulb is obsolete. It may be replaced with the ADRP(E) adjustable model.

PILOT OPERATED DISCHARGE BYPASS VALVE CAPACITIES – Tons

Capacities based on discharge temperatures 50°F above isentropic compression, 25°F superheat at the compressor, 10°F subcooling, and includes both the hot gas bypassed and liquid refrigerant for desuperheating, regardless of whether the liquid is fed through the system thermostatic expansion valves or an auxiliary desuperheating thermostatic expansion valve. Valve capacity is based on the valve stroked fully open.

REFRIGERANT	VALVE TYPE	MINIMUM ALLOWABLE EVAPORATOR TEMPERATURE AT THE REDUCED LOAD – °F																	
		40			26			20			0			-20			-40		
		CONDENSING TEMPERATURE – °F																	
		80	100	120	80	100	120	80	100	120	80	100	120	80	100	120	80	100	120
ADJUSTABLE MODELS																			
22	SHGB-8 SHGBE-8	11.5	15.5	19.9	12.1	15.8	20.1	12.2	15.9	20.1	12.4	16.1	20.3	12.5	16.2	20.5	12.7	16.4	20.8
	SHGB-15 SHGBE-15	43.0	61.0	80.9	47.4	64.7	84.5	48.7	65.9	85.6	52.6	69.6	89.3	55.3	72.5	92.3	57.4	74.9	95.1
134a	SHGB-8 SHGBE-8	7.9	10.8	14.0	8.2	10.9	14.0	8.2	10.9	14.0	8.3	11.0	14.1	–	–	–	–	–	–
	SHGB-15 SHGBE-15	30.6	44.2	59.5	33.2	46.4	61.3	34.1	47.1	62.0	36.4	49.2	64.1	–	–	–	–	–	–
401A	SHGB-8 SHGBE-8	7.8	10.6	13.8	8.0	10.7	13.9	8.1	10.7	13.9	8.2	10.8	14.0	–	–	–	–	–	–
	SHGB-15 SHGBE-15	29.6	42.9	58.1	32.4	45.4	60.2	33.3	46.1	60.9	35.7	48.3	63.3	–	–	–	–	–	–
402A	SHGB-8 SHGBE-8	12.7	16.9	21.1	13.4	17.2	21.2	13.5	17.2	21.2	13.6	17.3	21.4	13.8	17.4	21.5	13.9	17.6	21.7
	SHGB-15 SHGBE-15	47.6	66.6	85.8	52.5	70.4	88.8	54.0	71.6	90.1	57.7	75.2	93.8	60.8	77.9	96.5	62.9	80.1	98.9
404A & 507	SHGB-8 SHGBE-8	13.0	17.2	21.5	13.5	17.5	21.6	13.6	17.5	21.6	13.8	17.6	21.8	13.9	17.6	21.8	14.0	17.7	22.0
	SHGB-15 SHGBE-15	48.6	67.9	87.8	53.2	71.6	90.9	54.8	72.9	91.9	58.8	76.6	95.5	61.5	78.9	97.7	63.4	80.8	100.0
407C	SHGB-8 SHGBE-8	11.7	15.9	20.5	12.2	16.1	20.6	12.2	16.1	20.6	12.4	16.3	20.8	12.5	16.4	21.0	–	–	–
	SHGB-15 SHGBE-15	44.6	64.0	85.5	48.8	67.7	88.8	50.1	68.8	89.7	53.8	72.1	93.3	56.3	74.7	96.1	–	–	–

Direct Acting Discharge Bypass Valve Capacities

(Tons * PSI * Deg F)

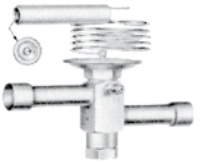
R-410A Capacities

Valve Type	Adjustment Range (PSIG)	Maximum Allowable Evaporator Temerature at Reduced Load (Deg F)								
		40			26			20		
		Condensing Temperature (Deg F)								
		80	100	120	80	100	120	80	100	120
HGBE-1	90/120	1.34	1.65	2.05	1.30	1.66	2.06	1.30	1.66	2.07
HGBE-5	95/115	4.27	5.43	6.76	4.29	5.46	6.80	4.30	5.47	6.81
HGBE-6	95/115	9.05	11.2	13.9	8.78	11.2	14.0	8.80	11.2	14.0


ADRHE-6


SHGB-15


ADRI


DRHE-6

SPORLAN DISCHARGE BYPASS VALVES

Operation

Direct Acting Valves — HGBE-5

Sporlan DBVs respond to changes in downstream or suction pressure. See Figure 7. When the evaporating pressure is above the valve setting, the valve remains closed. As the suction pressure drops below the valve setting, the valve responds and begins to open. As with all modulating type valves, the amount of opening is proportional to the change in the variable being controlled — in this case the suction pressure. As the suction pressure continues to drop, the valve continues to open until the limit of the valve stroke is reached. However, on normal applications there is not sufficient pressure change to open these valves to the limit of their stroke. The amount of pressure change from the point at which it is desired to have the valve closed, to the point at which it is to open, varies widely with the type of refrigerant used and the evaporating temperature. For this reason Sporlan DBVs are rated on the basis of allowable evaporator temperature change from closed position to rated opening. For direct acting valves, a 6°F (3.3°C) change is considered normal for most applications and is the basis of our capacity ratings. Multipliers for other temperature changes are given in the Selection Procedures section.

Desuperheating Thermostatic Expansion Valves

For information on desuperheating thermostatic expansion valves visit our website at www.sporlan.com and reference Bulletin 90-40 or consult Sporlan Division of Parker, Washington, MO.

Adjustment Ranges Pressure Setting

Adjustable Spring Heads on Direct Acting Valves

The adjustable type utilizes a spring assembly which can be fixed at the desired pressure setting (opening pressure). This setting will not be affected by other factors such as ambient or hot gas temperatures. The HGBE-5 is available with an adjustment range of 95/115 psig (6.6/7.93 bar). The standard factory setting for this valve is 105 psig (7.24 bar).

Pilot Operated Valves

The HGBE-8 is adjustable from 75 to 150 psi (5.2 to 10.3 bar). The standard factory setting is 110 psig (7.58 bar). Adjustment is made by turning the adjustment screw on the pilot valve. Turning this screw clockwise will increase the valve's setting and a counterclockwise rotation will decrease the valve's setting.

Adjusting these valves can be complicated because the load must be varied during the setting procedure. The load on the system must be decreased to lower the suction pressure so that the valve can control. The valve should then be adjusted to maintain the desired pressure. The load on the system should then be increased to raise the suction pressure above the valve setting to close the valve. Once this is accomplished, the valve setting can be checked by slowly decreasing the load until the discharge bypass valve begins to open (a hissing sound and/or an accompanying pressure rise at the outlet connection will indicate that the bypass valve has opened).

Specifications

VALVE TYPE	STANDARD COPPER CONNECTIONS ODF - Inches	PORT SIZE		ADJUSTMENT RANGE		BODY MATERIAL	SEATING MATERIAL	SOCKET DEPTH		EXTERNAL EQUALIZER ODF Inches	NET WEIGHT	
		Inches	mm	psi	bar			Inches	mm		lbs.	kg
HGB-5	3/8	1/2	13	95/115	6.6/7.93	Brass	Synthetic Metal	0.31	7.9	1/4	1.25	0.57
HGBE-5	1/2							0.37	9.4			
	5/8							0.50	12.7			
HGB-8	7/8	0.43	11	75/150	5.2/10.3			0.75	19	1/4	3.0	1.4
HGBE-8	1-1/8							0.91	23			

■ Maximum working pressure of 680 psig (46.9 bar) ■ Maximum Fluid Temperature of 240°F (116°C). ■ Maximum Ambient Temperature of 120°F (48.9°C).

Capacity Multipliers

For Evaporator Temperature Changes Other Than 6°F (3.3°C) Nominal Change

Tons ■ psi ■ °F

EVAPORATOR TEMPERATURE CHANGE °F	EVAPORATOR TEMPERATURE °F		
	40	26	20
2	0.45	0.40	0.38
4	0.82	0.78	0.76
8	1.08	1.11	1.13
10	1.11	1.17	1.20

Direct Acting Discharge Bypass Valve Capacities

Tons ■ psi ■ °F

VALVE TYPE	ADJUSTMENT RANGE (psig)	MINIMUM ALLOWABLE EVAPORATOR TEMPERATURE AT REDUCED LOAD °F								
		40			26			20		
		CONDENSING TEMPERATURE °F								
		80	100	120	80	100	120	80	100	120
HGBE-5	95/115	4.27	5.43	6.76	4.29	5.46	6.80	4.30	5.47	6.81

Pilot Operated Discharge Bypass Valve Capacities

Tons ■ psi ■ °F

VALVE TYPE	ADJUSTMENT RANGE (psig)	MINIMUM ALLOWABLE EVAPORATOR TEMPERATURE AT REDUCED LOAD °F								
		40			26			20		
		CONDENSING TEMPERATURE °F								
		80	100	120	80	100	120	80	100	120
HGB-8	95/115	18.9	25.2	31.9	19.8	25.8	32.2	20.2	25.9	32.3
HGBE-8										

Capacities based on discharge temperatures 50°F (28°C) above isentropic compression, 25°F (14°C) superheat at the compressor, 10°F (5°C) subcooling, and includes both the hot gas bypassed and liquid refrigerant for desuperheating, regardless of whether the liquid is fed through the system thermostatic expansion valves or an auxiliary desuperheating thermostatic expansion valve.

SPORLAN HEAD PRESSURE CONTROL VALVES

* Can use Sporlan Selection Program (sporlanonline.com) for selections

Sporlan Head Pressure Control for systems with air cooled condensers can be accomplished with any of the three valve combinations - the ORI/ORD, the OROA-5 and the LAC-4. The non-adjustable ORD-4 is used with the adjustable ORI valves. All valves have been designed specifically for head pressure control.

CAPACITIES - Ratings for the common refrigerants are given at several pressure drops for the ORI's, OROA, and LAC below. Maximum capacities for the ORD-4 are given below also. Normally, a 2 psi pressure drop across the ORI or OROA is recommended; however, this can be exceeded provided the total pressure drop through the condenser and ORI or OROA does not exceed 14 psi.



HEAD PRESSURE CONTROL VALVE CAPACITIES
High Ambient (SUMMER) Capacities - Tons of Refrigeration

Capacities are based on 0°F evaporator temperature.

Refrigerant	Pressure Drop Across Valve (psi)	Valve Type							
		LAC-4	LAC-5	LAC-10	ORI-6	ORI-10	OROA-5	ORIT-15	ORIT-20
22	1	2.72	5.82	12.4	7.79	20.8	11.0	---	---
	2	3.80	8.24	17.2	11.3	28.7	15.5	---	---
	3	4.63	10.1	20.8	14.1	34.7	19.0	---	---
	4	5.32	11.7	23.9	16.5	39.7	21.9	35.3	82.8
	5	5.92	13.0	26.5	18.6	44.0	24.5	46.7	149
	6	6.47	14.3	28.9	20.5	47.9	26.8	58.7	163
	8	7.43	16.5	33.2	23.9	54.8	30.9	84.2	189
	10	8.28	18.4	36.8	27.0	60.8	34.5	94.8	212
134a	1	2.46	5.28	11.2	5.26	13.0	9.98	---	---
	2	3.45	7.47	15.6	7.65	18.0	14.1	---	---
	3	4.19	9.15	18.9	9.52	21.7	17.2	---	---
	4	4.82	10.6	21.6	11.1	24.9	19.8	31.9	75.1
	5	5.37	11.8	24.0	12.5	27.6	22.2	42.3	135
	6	5.86	12.9	26.2	13.8	30.0	24.3	53.1	148
	8	6.73	14.9	30.0	16.2	34.3	28.0	76.3	171
	10	7.50	16.7	33.4	18.2	38.1	31.2	85.9	192
404A	1	1.78	3.81	8.14	5.53	15.3	7.21	---	---
	2	2.49	5.39	11.3	8.05	21.2	10.2	---	---
	3	3.03	6.60	13.7	10.0	25.6	12.4	---	---
	4	3.49	7.62	15.7	11.7	29.2	14.3	23.1	54.1
	5	3.88	8.52	17.4	13.2	32.4	16.0	30.6	96.9
	6	4.24	9.33	19.0	14.6	35.3	17.5	38.5	106
	8	4.87	10.8	21.8	17.0	40.4	20.2	55.2	123
	10	5.43	12.1	24.2	19.2	44.8	22.6	62.2	138
507	1	1.73	3.70	7.90	5.46	15.1	7.01	---	---
	2	2.42	5.24	11.0	7.94	20.9	9.88	---	---
	3	2.95	6.42	13.3	9.88	25.2	12.1	---	---
	4	3.39	7.41	15.2	11.5	28.8	13.9	22.5	52.6
	5	3.77	8.29	16.9	13.0	32.0	15.6	29.7	94.3
	6	4.12	9.08	18.5	14.4	34.8	17.0	37.4	104
	8	4.74	10.5	21.2	16.8	39.8	19.6	53.6	120
	10	5.28	11.7	23.5	18.9	44.2	21.9	60.5	134

SPECIFICATIONS

Valve Type	Standard Factory Setting (psig)	Connections ODF Solder (Inches)		LIST
		Inlet(s)	Outlet	
LAC-4	100, 180, or 210	1/4	1/4	469.00
		3/8	3/8	387.00
		1/2	1/2	387.00
LAC-4-DS		3/8	3/8	POA
		1/2	1/2	POA
LAC-5		1/2	1/2	815.00
		5/8	5/8	815.00
		7/8	7/8	815.00
		1-1/8	1-1/8	
LAC-10		① 1-3/8 ② 7/8	7/8	POA
		① 1-3/8 ② 1-1/8	1-1/8	POA
ORI-6-65/225-H	120	5/8	5/8	589.00
		7/8	7/8	606.00
		1-1/8	1-1/8	606.00
ORI-10-65/225-H	120	1-1/8	1-1/8	1,071.00
		1-3/8	1-3/8	1,071.00
ORD-4-20	20	5/8	5/8	222.80
OROA-5	100, 180, or 210	① 5/8 ② 5/8	5/8	783.00
		① 5/8 ② 7/8	7/8	783.00
ORIT-15-65/225	150	1-3/8	1-3/8	Obsolete
ORIT-20-65/225	150	1-5/8	1-5/8	Obsolete
CROT-12-65/225	140	1-1/8	1-1/8	
CROT-15-65/225	140	1-3/8	1-3/8	

① Discharge Connection
② Condenser Connection

SPORLAN HEAD PRESSURE CONTROL VALVES

* Can use Sporlan Selection Program (sporlanonline.com) for selections

HEAD PRESSURE CONTROL VALVE CAPACITIES
Low Ambient (WINTER) Capacities - Tons of Refrigeration

Capacities are based on 0°F evaporator temperature.

Refrigerant Valve Setting (psig)	Minimum Ambient Design Temp. °F	Pressure Drop Across Valve (psi)	Valve Type					
			LAC-4	LAC-5	LAC-10	ORD-4	ORIT-15 CROT-12	ORIT-20 CROT-15
22	-20	1	1.77	3.13	7.53	2.90	---	---
		2	2.49	4.43	10.6	4.09	---	---
		5	3.89	6.98	16.4	6.41	32.9	58.6
		10	5.44	9.84	22.8	8.95	46.3	82.6
		15	6.59	12.0	27.6	10.8	56.4	101
		20	7.54	13.8	31.4	12.3	64.7	116
		25	8.34	15.4	34.6	13.6	72.0	129
		30	9.05	16.8	37.4	14.7	78.4	141
	0	1	1.91	3.37	8.08	3.33	---	---
		2	2.68	4.77	11.3	4.70	---	---
		5	4.20	7.52	17.6	7.37	37.8	67.4
		10	5.86	10.6	24.5	10.3	53.2	95.0
		15	7.10	12.9	29.5	12.4	64.8	116
		20	8.12	14.9	33.6	14.2	74.4	133
		25	8.99	16.6	37.0	15.6	82.8	149
		30	9.75	18.1	40.0	16.8	90.2	162
	+20	1	2.09	3.68	8.79	4.00	---	---
		2	2.93	5.20	12.3	5.64	---	---
		5	4.59	8.21	19.1	8.85	45.4	80.8
		10	6.40	11.6	26.5	12.3	63.8	114
		15	7.75	14.1	31.9	14.9	77.8	139
		20	8.86	16.2	36.3	17.0	89.3	160
		25	9.81	18.1	40.0	18.7	99.3	179
		30	10.6	19.7	43.2	20.2	108	195
134a	-20	1	1.47	2.61	6.30	2.29	---	---
		2	2.07	3.69	8.82	3.22	---	---
		5	3.23	5.82	13.7	5.02	25.9	46.2
		10	4.49	8.17	18.9	6.95	36.3	65.0
		15	5.41	9.95	22.6	8.32	44.1	79.2
		20	6.15	11.4	25.6	9.39	50.5	91.0
		25	6.77	12.7	28.0	10.3	55.9	101
		30	7.30	13.8	30.0	11.0	60.7	110
	0	1	1.60	2.84	6.81	2.63	---	---
		2	2.25	4.01	9.54	3.70	---	---
		5	3.51	6.31	14.8	5.78	29.8	53.2
		10	4.88	8.87	20.4	8.00	41.8	74.8
		15	5.88	10.8	24.4	9.58	50.7	91.2
		20	6.69	12.4	27.6	10.8	58.1	105
		25	7.36	13.8	30.2	11.8	64.4	117
		30	7.94	15.0	32.3	12.6	69.9	127
	+20	1	1.78	3.14	7.51	3.18	---	---
		2	2.50	4.44	10.5	4.48	---	---
		5	3.89	6.99	16.3	6.99	36.0	64.2
		10	5.41	9.82	22.4	9.67	50.5	90.4
		15	6.51	12.0	26.8	11.6	61.3	110
		20	7.40	13.7	30.3	13.1	70.2	127
		25	8.15	15.2	33.1	14.3	77.8	141
		30	8.79	16.6	35.5	15.2	84.5	154

Refrigerant Valve Setting (psig)	Minimum Ambient Design Temp. °F	Pressure Drop Across Valve (psi)	Valve Type					
			LAC-4	LAC-5	LAC-10	ORD-4	ORIT-15 CROT-12	ORIT-20 CROT-15
404A	-20	1	1.27	2.24	5.41	2.02	---	---
		2	1.78	3.17	7.59	2.85	---	---
		5	2.79	5.01	11.8	4.48	22.9	40.9
		10	3.91	7.06	16.5	6.26	32.3	57.6
		15	4.74	8.61	19.9	7.58	39.4	70.4
		20	5.43	9.91	22.7	8.65	45.3	81.1
		25	6.02	11.0	25.1	9.56	50.4	90.4
		30	6.54	12.1	27.2	10.3	55.0	98.8
	0	1	1.35	2.39	5.74	2.29	---	---
		2	1.90	3.38	8.05	3.23	---	---
		5	2.98	5.33	12.5	5.07	26.0	46.2
		10	4.17	7.51	17.5	7.09	36.6	65.2
		15	5.05	9.17	21.1	8.58	44.6	79.7
		20	5.78	10.6	24.0	9.79	51.2	91.8
		25	6.41	11.8	26.5	10.8	57.0	102
		30	6.97	12.8	28.7	11.7	62.2	112
	+20	1	1.46	2.58	6.18	2.70	---	---
		2	2.06	3.64	8.65	3.81	---	---
		5	3.22	5.75	13.5	5.99	30.7	54.6
		10	4.50	8.11	18.7	8.37	43.2	77.0
		15	5.45	9.90	22.6	10.1	52.6	94.1
		20	6.24	11.4	25.7	11.6	60.5	108
		25	6.92	12.7	28.4	12.8	67.3	121
		30	7.51	13.9	30.7	13.8	73.4	132
507	-20	1	1.24	2.21	5.31	2.01	---	---
		2	1.75	3.12	7.45	2.83	---	---
		5	2.75	4.92	11.6	4.45	22.8	40.6
		10	3.84	6.94	16.2	6.22	32.1	57.2
		15	4.66	8.47	19.6	7.53	39.1	69.9
		20	5.34	9.74	22.3	8.59	45.0	80.5
		25	5.92	10.9	24.6	9.50	50.0	89.8
		30	6.43	11.9	26.7	10.3	54.6	98.1
	0	1	1.34	2.37	5.68	2.31	---	---
		2	1.88	3.34	7.96	3.26	---	---
		5	2.95	5.28	12.4	5.12	26.2	46.7
		10	4.13	7.44	17.3	7.16	36.9	65.9
		15	5.01	9.08	20.8	8.67	45.0	80.5
		20	5.73	10.5	23.8	9.89	51.7	92.7
		25	6.35	11.7	26.2	10.9	57.6	103
		30	6.90	12.7	28.4	11.8	62.8	113
	+20	1	1.46	2.57	6.15	2.78	---	---
		2	2.05	3.63	8.61	3.92	---	---
		5	3.21	5.73	13.4	6.16	31.6	56.2
		10	4.48	8.08	18.6	8.62	44.4	79.3
		15	5.44	9.87	22.5	10.4	54.2	96.8
		20	6.22	11.4	25.6	11.9	62.3	112
		25	6.90	12.7	28.3	13.2	69.3	124
		30	7.49	13.8	30.6	14.2	75.6	136

SPORLAN HEAD PRESSURE CONTROL VALVES

Selection Procedures

The actual selection of Sporlan Head Pressure Control Valves involves four basic items:

1. System capacity in tons
2. Refrigerant
3. Minimum ambient design temperature
4. Allowable pressure drop across the valve

When selecting these valves it is necessary to consider the valve's capacity when it is controlling at the minimum ambient design temperature. The minimum ambient design temperature is a factor because the bypassed discharge gas must heat the subcooled liquid leaving the condenser to maintain the receiver pressure. This subcooled liquid will approach the ambient temperature. It is the flow of the discharge gas and liquid mixture flowing through the valve at the minimum design ambient conditions that will determine the valve's capacity. Once the valve's capacity and pressure drop have been determined at minimum design ambient conditions, the capacity of the valve during high ambient conditions should be checked to determine the pressure drop of the valve with full liquid flow.

Example: Select a LAC valve for a 10 ton (35 kW), R-410A unit with a minimum design ambient temperature of -20°F (-28°C). The LAC-10 has a capacity of 12.8 tons (47.3 kW) at a 5 psi (0.35 bar) drop across the valve according to the Low Ambient Capacity table below. The LAC-10 also has a capacity of 11.4 tons (49.6 kW) at a 2 psi (0.21 bar) drop across the valve according to the High Ambient Capacity table below. The LAC-10 is the correct selection.

Dimensions

lbs. ▪ psi ▪ inches

VALVE SERIES	STANDARD FACTORY SETTING (psig)	CONNECTIONS ODF SOLDER (Inches)		DIMENSIONS (Inches)					WEIGHT (lbs.)	
		Inlet(s)	Outlet	A	B	C	D	E	Net	Ship
LAC-4	295	1/2	1/2	1.78	1.87	3.02	2.38	4.73	0.82	0.90
LAC-5		1/2	1/2	1.65	1.60	3.77	2.99	5.59	2.50	2.65
		5/8	5/8	1.74	1.69	3.86	3.08	5.68	2.55	2.70
LAC-10		① 1-3/8 ② 7/8	7/8	2.82	2.67	4.39	3.43	6.49	3.20	3.42
		① 1-3/8 ② 1-1/8	1-1/8		2.56	4.83	3.87	6.93	3.28	3.50

① Discharge connection.
② Condenser connection.

Special consideration needs to be taken when utilizing the valves with remote bulbs. Because of the air charge, these models are Affected by ambient temperatures at the remote bulb. (Although the remote bulb is affected by ambient temperature, it is strictly a pressure regulating valve and not a temperature control device.) Therefore, it is necessary to locate the remote bulb in as nearly constant ambient as possible to maintain a constant pressure setting. For example, the remote bulb located in the return air can be used. Since these models are set in 80F (26.7C) ambient, any appreciable variation from this will cause variations. 1 psi for every 7F (3.9C) increase or decrease in ambient T.

Capacities

Low Ambient (Winter)

Tons ▪ psi ▪ °F

VALVE TYPE	MINIMUM AMBIENT DESIGN TEMP. °F	PRESSURE DROP ACROSS VALVE – psi			
		1	2	5	10
LAC-4	-20	1.74	2.46	3.85	5.40
	0	1.88	2.65	4.16	5.82
	+20	2.06	2.90	4.54	6.35
LAC-5	-20	3.09	4.37	6.90	9.74
	0	3.33	4.71	7.44	10.5
	+20	3.63	5.14	8.11	11.4
LAC-10	-20	5.83	8.18	12.8	17.8
	0	6.27	8.79	13.7	19.0
	+20	6.82	9.56	14.9	20.7

Based on a R-410A valve setting of 295 psig (20.3 bar).
Capacities based on 0°F (-18°C) evaporator, 94°F (35°C) condenser, 10°F (6°C) subcooled liquid.

High Ambient (Summer)

Tons ▪ psi ▪ °F

VALVE TYPE	PRESSURE DROP ACROSS VALVE – psi				
	1	2	3	4	5
LAC-4	2.44	3.42	4.15	4.77	5.32
LAC-5	5.22	7.38	9.04	10.4	11.7
LAC-10	8.23	11.4	13.9	15.9	17.6

Capacities based on 0°F (-18°C) evaporator, 110°F (43°C) condenser, 10°F (6°C) subcooled liquid.

Nomenclature

LAC	–	5	–	295 HP	–	5/8	x	5/8	x	5/8	x	5/8
Valve Type Low Ambient Control		**Valve Size**		**Valve Setting(s) (psig)** Specify one setting for standard dome element.		**Discharge Connection** (Inches)		**Condenser Connection** (Inches)		**Receiver Connection** (Inches)		**Solder Connections**

SPORLAN CRANKCASE PRESSURE REGULATING VALVES

CRO Capacities - Tons

Capacities based on 100°F condensing temperature, 10°F superheat, 0°F subcooling, and 1 psi pressure drop across valve port.

Connections - (Standard Connections are in **BOLD** type)
CRO-4, *CROT-4 - 3/8", **1/2"**, ODF Solder and 3/8", 1/2" SAE Flare
CRO-6, *CROT-6 - 5/8", **7/8"**, 1-1/8" ODF Solder and 1/2", 5/8" SAE Flare
CRO-10, *CROT-10 - 7/8", 1-1/8", **1-3/8"** ODF Solder



* Can use Sporlan Selection Program (sporlanonline.com) for selections

REFRIGERANT 22 - CAPACITIES – Tons
Capacities based on 100°F condensing temperature, 10°F superheat, and 0°F subcooling

Type and Adjustment Range	Design Evaporator Temperature °F	Saturated Suction Pressure – psig (Reference)	Pressure Drop Across Valve (psi)																	
			0.5						1						2					
			Valve Settings (psig)																	
			10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60
CRO-4 0/20	-40	0.6	0.09	0.09	–	–	–	–	0.13	0.13	–	–	–	–	0.17	0.20	–	–	–	–
	-30	4.9	0.09	0.11	–	–	–	–	0.13	0.15	–	–	–	–	0.17	0.20	–	–	–	–
	-20	10.2	–	0.12	–	–	–	–	–	0.17	–	–	–	–	–	0.23	–	–	–	–
	-10	16.5	–	0.11	–	–	–	–	–	0.15	–	–	–	–	–	0.21	–	–	–	–
CRO-4 0/50	-40	0.6	0.08	0.09	0.09	0.09	0.09	–	0.13	0.13	0.13	0.13	0.13	–	0.14	0.19	0.24	0.17	0.17	–
	-30	4.9	0.08	0.10	0.11	0.11	0.11	–	0.11	0.14	0.15	0.15	0.15	–	0.14	0.19	0.20	0.20	0.20	–
	-20	10.2	–	0.10	0.12	0.12	0.12	–	–	0.14	0.17	0.17	0.17	–	–	0.19	0.23	0.23	0.23	–
	-10	16.5	–	0.10	0.12	0.14	0.14	–	–	0.13	0.17	0.19	0.19	–	–	0.18	0.24	0.27	0.27	–
	0	24.0	–	–	0.12	0.15	0.16	–	–	–	0.16	0.21	0.22	–	–	–	0.22	0.29	0.30	–
	10	32.8	–	–	–	0.14	0.17	–	–	–	–	0.19	0.24	–	–	–	–	0.26	0.33	–
	20	43.1	–	–	–	–	0.15	–	–	–	–	–	0.21	–	–	–	–	–	0.29	–
CRO-4 0/75	-40	0.6	0.07	0.09	0.09	0.09	0.09	0.09	0.13	0.12	0.13	0.13	0.13	0.13	0.13	0.17	0.22	0.17	0.17	0.17
	-30	4.9	0.08	0.09	0.11	0.11	0.11	0.11	0.10	0.13	0.15	0.15	0.15	0.15	0.14	0.17	0.20	0.20	0.20	0.20
	-20	10.2	–	0.10	0.11	0.12	0.12	0.12	–	0.13	0.16	0.17	0.17	0.17	–	0.18	0.22	0.23	0.23	0.23
	-10	16.5	–	0.09	0.12	0.14	0.14	0.14	–	0.13	0.16	0.19	0.19	0.19	–	0.18	0.22	0.27	0.27	0.27
	0	24.0	–	–	0.11	0.14	0.16	0.16	–	–	0.16	0.19	0.22	0.22	–	–	0.22	0.29	0.30	0.30
	10	32.8	–	–	–	0.13	0.16	0.18	–	–	–	0.18	0.22	0.25	–	–	–	0.25	0.31	0.34
	20	43.1	–	–	–	–	0.14	0.17	–	–	–	–	0.20	0.25	–	–	–	–	0.28	034
	30	55.0	–	–	–	–	–	0.15	–	–	–	–	–	–	–	–	–	–	–	–

Type and Adjustment Range	Design Evaporator Temperature °F	Saturated Suction Pressure – psig (Reference)	Pressure Drop Across Valve (psi)																	
			0.5						1						2					
			Valve Settings (psig)																	
			10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60
CRO(T)-6 0/60	-40	0.6	0.26	0.39	0.52	0.64	0.64	0.64	0.36	0.54	0.72	0.89	0.89	0.89	0.46	0.71	0.97	1.21	1.21	1.21
	-20	10.2	–	0.36	0.52	0.69	0.84	0.84	–	0.49	0.72	0.96	1.18	1.18	–	0.66	0.97	1.32	1.62	1.62
	-10	16.5	–	0.29	0.47	0.66	0.84	0.95	–	0.39	0.66	0.92	1.18	1.34	–	0.52	0.90	1.27	1.65	1.85
	0	24.0	–	–	0.38	0.59	0.80	1.01	–	–	0.52	0.82	1.12	1.42	–	–	0.71	1.13	1.55	1.97
	10	32.8	–	–	–	0.45	0.69	0.92	–	–	–	0.63	0.96	1.30	–	–	–	0.86	1.33	1.81
	20	43.1	–	–	–	–	0.50	0.76	–	–	–	–	0.70	1.07	–	–	–	–	0.96	1.48
	30	55.0	–	–	–	–	–	0.50	–	–	–	–	–	0.70	–	–	–	–	–	0.96
CRO(T)-10 0/60	-40	0.6	0.75	1.40	1.40	1.40	1.40	1.40	1.06	1.98	1.98	1.98	1.98	1.98	1.48	2.78	2.78	2.78	2.78	2.78
	-20	10.2	–	1.02	1.83	1.83	1.83	1.83	–	1.43	2.58	2.58	2.58	2.58	–	2.01	3.63	3.63	3.63	3.63
	-10	16.5	–	0.41	1.58	2.07	2.07	2.07	–	0.58	2.23	2.92	2.92	2.92	–	0.80	3.15	4.11	4.11	4.11
	0	24.0	–	–	0.79	2.11	2.32	2.32	–	–	1.11	2.98	3.28	3.28	–	–	1.57	4.20	4.63	4.63
	10	32.8	–	–	–	1.06	2.54	2.60	–	–	–	1.50	3.58	3.67	–	–	–	2.11	5.06	5.18
	20	43.1	–	–	–	–	1.14	2.78	–	–	–	–	1.61	3.93	–	–	–	–	2.27	5.55
	30	55.0	–	–	–	–	–	0.93	–	–	–	–	–	1.31	–	–	–	–	–	1.84

Type and Adjustment Range	Design Evaporator Temperature °F	Saturated Suction Pressure – psig (Reference)	Pressure Drop Across Valve (psi)																	
			0.5						1						2					
			Valve Settings (psig)																	
			40	50	60	70	80	90	40	50	60	70	80	90	40	50	60	70	80	90
CRO(T)-6 30/110	0	24.0	0.48	0.62	0.76	0.90	1.05	1.07	0.66	0.87	1.07	1.27	1.47	1.51	0.91	1.19	1.48	1.76	2.04	2.10
	10	32.8	0.26	0.55	0.71	0.87	1.03	1.19	0.55	0.78	1.00	1.22	1.45	1.67	0.75	1.07	1.39	1.07	2.02	2.34
	20	43.1	–	0.44	0.61	0.79	0.97	1.14	–	0.61	0.86	1.11	1.36	1.61	–	0.84	1.19	1.54	1.90	2.25
	30	54.9	–	–	0.45	0.64	0.84	1.04	–	–	0.63	0.91	1.18	1.46	–	–	0.87	1.26	1.65	2.04
	40	68.6	–	–	–	0.42	0.64	0.85	–	–	–	0.59	0.90	1.20	–	–	–	0.81	1.24	1.67
CRO(T)-10 30/110	0	24.0	1.43	2.32	2.32	2.32	2.32	2.32	2.02	3.28	3.28	3.28	3.28	3.28	2.84	4.62	4.62	4.62	4.62	4.62
	10	32.8	0.72	1.72	2.60	2.60	2.60	2.60	1.02	2.43	3.67	3.67	3.67	3.67	1.43	3.42	5.18	5.18	5.18	5.18
	20	43.1	–	0.78	1.89	2.89	2.89	2.89	–	1.10	2.66	4.09	4.09	4.09	–	1.54	3.76	5.77	5.77	5.77
	30	54.9	–	–	0.64	1.86	3.09	3.21	–	–	0.90	2.63	4.37	4.53	–	–	1.25	3.71	6.17	6.40
	40	68.6	–	–	–	–	1.57	2.92	–	–	–	–	2.22	4.13	–	–	–	–	3.12	5.84

Part Number	LIST
CRO-4-0/20	544.00
CRO-4-0/50	544.00
CRO-4-0/75	POA
CRO-6	625.00
CROT-6	616.00
CRO-10	
CROT-10-0/60	786.00
CROT-10-30/110	864.00

SPORLAN CRANKCASE PRESSURE REGULATING VALVES

* Can use Sporlan Selection Program (sporlanonline.com) for selections

REFRIGERANT 134a - CAPACITIES – Tons

Capacities based on 100°F condensing temperature, 10°F superheat, and 0°F subcooling

Type and Adjustment Range	Design Evaporator Temperature °F	Saturated Suction Pressure – psig (Reference)	Pressure Drop Across Valve (psi)																	
			0.5						1						2					
			Valve Settings (psig)																	
			10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60
CRO-4 0/20	-40	*-14.7*	0.06	0.06	–	–	–	–	0.08	0.08	–	–	–	–	0.10	0.10	–	–	–	–
	-30	*9.7*	0.07	0.07	–	–	–	–	0.09	0.09	–	–	–	–	0.12	0.12	–	–	–	–
	-20	*3.6*	0.08	0.08	–	–	–	–	0.11	0.11	–	–	–	–	0.15	0.15	–	–	–	–
	-10	2.0	0.09	0.10	–	–	–	–	0.13	0.13	–	–	–	–	0.17	0.18	–	–	–	–
CRO-4 0/50	-40	*14.7*	0.06	0.06	0.06	0.06	–	–	0.07	0.08	0.08	0.08	0.08	–	0.09	0.10	0.10	0.10	0.10	–
	-30	*9.7*	0.06	0.07	0.07	0.07	–	–	0.09	0.09	0.09	0.09	0.09	–	0.11	0.12	0.12	0.12	0.12	–
	-20	*3.6*	0.07	0.08	0.08	0.08	0.08	–	0.10	0.11	0.11	0.11	0.11	–	0.12	0.15	0.15	0.15	0.15	–
	-10	2.0	0.07	0.09	0.10	0.10	0.10	–	0.10	0.13	0.13	0.13	0.13	–	0.13	0.17	0.18	0.18	0.18	–
	0	6.5	0.08	0.10	0.11	0.11	0.11	–	0.10	0.14	0.15	0.15	0.15	–	0.14	0.18	0.21	0.21	0.21	–
	10	12.0	–	0.10	0.12	0.13	0.13	–	–	0.14	0.17	0.18	0.18	–	–	0.19	0.24	0.24	0.24	–
	20	18.4	–	–	0.12	0.14	0.14	–	–	–	0.17	0.20	0.20	–	–	–	0.24	0.28	0.28	–
	30	26.1	–	–	–	0.15	0.16	–	–	–	0.16	0.21	0.23	–	–	–	0.22	0.28	0.32	–
CRO-4 0/75	-40	*14.7*	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.10	0.10	0.10	0.10	0.10
	-30	*9.7*	0.06	0.07	0.07	0.07	0.07	0.07	0.08	0.09	0.09	0.09	0.09	0.09	0.10	0.12	0.12	0.12	0.12	0.12
	-20	*3.6*	0.07	0.08	0.08	0.08	0.08	0.08	0.09	0.11	0.11	0.11	0.11	0.11	0.12	0.14	0.15	0.15	0.15	0.15
	-10	2.0	0.07	0.09	0.10	0.10	0.10	0.10	0.10	0.12	0.13	0.13	0.13	0.13	0.13	0.16	0.18	0.18	0.18	0.18
	0	6.5	0.07	0.09	0.11	0.11	0.11	0.11	0.10	0.13	0.15	0.15	0.15	0.15	0.14	0.17	0.21	0.21	0.21	0.21
	10	12.0	–	0.09	0.11	0.13	0.13	0.13	–	0.13	0.16	0.18	0.18	0.18	–	0.18	0.24	0.24	0.24	0.24
	20	18.4	–	–	0.12	0.14	0.14	0.14	–	–	0.16	0.19	0.20	0.20	–	–	0.22	0.27	0.28	0.28
	30	26.1	–	–	–	0.14	0.16	0.16	–	–	0.16	0.19	0.23	0.23	–	–	0.21	0.27	0.32	0.32
	40	35.0	–	–	–	0.13	0.16	0.18	–	–	–	0.18	0.22	0.26	–	–	–	–	0.31	0.36

Type and Adjustment Range	Design Evaporator Temperature °F	Saturated Suction Pressure – psig (Reference)	Pressure Drop Across Valve (psi)																	
			0.5						1						2					
			Valve Setting (psig)																	
			10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60
CRO(T)-6 0/60	-40	*14.7*	0.23	0.31	0.39	0.40	0.40	0.40	0.29	0.41	0.53	0.55	0.55	0.55	0.35	0.51	0.68	0.71	0.71	0.71
	-20	*3.6*	0.25	0.37	0.48	0.56	0.56	0.56	0.34	0.50	0.66	0.78	0.78	0.78	0.43	0.66	0.88	1.05	1.05	1.05
	-10	2.0	0.25	0.38	0.51	0.64	0.65	0.65	0.34	0.52	0.71	0.89	0.91	0.91	0.43	0.69	0.95	1.21	1.24	1.24
	0	6.5	0.22	0.37	0.52	0.67	0.76	0.76	0.30	0.51	0.73	0.94	1.05	1.05	0.38	0.68	0.98	1.28	1.45	1.45
	10	12.0	–	0.34	0.51	0.69	0.85	0.87	–	0.46	0.71	0.95	1.19	1.21	–	0.62	0.95	1.30	1.64	1.67
	20	18.4	–	0.26	0.45	0.65	0.84	0.99	–	0.35	0.63	0.90	1.18	1.38	–	0.47	0.85	1.24	1.63	1.92
	30	26.1	–	–	0.35	0.56	0.78	1.01	–	–	0.48	0.79	1.10	1.41	–	–	0.64	1.08	1.52	1.96
	40	35.0	–	–	–	0.42	0.67	0.71	–	–	–	0.58	0.93	0.99	–	–	–	0.79	1.28	1.38
CRO(T)-10 0/60	-40	*14.7*	0.88	0.90	0.90	0.90	0.90	0.90	1.23	1.26	1.26	1.26	1.26	1.26	1.72	1.76	1.76	1.76	1.76	1.76
	-20	*3.6*	0.82	1.23	1.23	1.23	1.23	1.23	1.16	1.74	1.74	1.74	1.74	1.74	1.61	2.44	2.44	2.44	2.44	2.44
	-10	2.0	0.65	1.43	1.43	1.43	1.43	1.43	0.92	2.02	2.02	2.02	2.02	2.02	1.28	2.83	2.83	2.83	2.83	2.83
	0	6.5	0.33	1.26	1.64	1.64	1.64	1.64	0.46	1.78	2.32	2.32	2.32	2.32	0.63	2.50	3.26	3.26	3.26	3.26
	10	12.0	–	0.86	1.88	1.88	1.88	1.88	–	1.21	2.65	2.65	2.65	2.65	–	1.70	3.74	3.74	3.74	3.74
	20	18.4	–	0.20	1.41	2.13	2.13	2.13	–	0.27	1.98	3.02	3.02	3.02	–	0.37	2.79	4.25	4.25	4.25
	30	26.1	–	–	0.54	1.91	2.41	2.41	–	–	0.76	2.70	3.42	3.42	–	–	1.07	3.81	4.81	4.81
	40	35.0	–	–	–	0.77	2.31	2.61	–	–	–	1.09	3.27	3.69	–	–	–	1.53	4.61	5.21

Type and Adjustment Range	Design Evaporator Temperature °F	Saturated Suction Pressure – psig (Reference)	Pressure Drop Across Valve (psi)																	
			0.5						1						2					
			Valve Settings (psig)																	
			40	50	60	70	80	90	40	50	60	70	80	90	40	50	60	70	80	90
CRO(T)-6 30/110	0	6.5	0.51	0.61	0.71	0.76	0.76	0.76	0.70	0.85	0.99	1.05	1.05	1.05	0.95	1.15	1.36	1.45	1.45	1.45
	10	12.0	0.52	0.64	0.75	0.87	0.87	0.87	0.72	0.89	1.05	1.21	1.21	1.21	0.99	1.21	1.44	1.67	1.67	1.67
	20	18.4	0.51	0.64	0.77	0.90	0.99	0.99	0.71	0.89	1.08	1.26	1.38	1.38	0.98	1.23	1.49	1.75	1.92	1.92
	30	26.1	0.47	0.61	0.76	0.91	1.06	1.12	0.65	0.86	1.07	1.27	1.48	1.57	0.88	1.18	1.47	1.77	2.07	2.18
	40	35.0	0.47	0.61	0.76	0.91	1.06	1.12	0.65	0.86	1.07	1.27	1.48	1.57	0.88	1.18	1.47	1.77	2.07	2.18
CRO(T)-10 30/110	0	6.5	1.64	1.64	1.64	1.64	1.64	1.64	2.32	2.32	2.32	2.32	2.32	2.32	3.26	3.26	3.26	3.26	3.26	3.26
	10	12.0	1.88	1.88	1.88	1.88	1.88	1.88	2.65	2.65	2.65	2.65	2.65	2.65	3.74	3.74	3.74	3.74	3.74	3.74
	20	18.4	1.77	2.14	2.14	2.14	2.14	2.14	2.50	3.02	3.02	3.02	3.02	3.02	3.53	4.25	4.25	4.25	4.25	4.25
	30	26.1	1.30	2.22	2.42	2.42	2.42	2.42	1.83	3.14	3.42	3.42	3.42	3.42	2.58	4.43	4.81	4.81	4.81	4.81
	40	35.0	1.53	1.57	2.61	2.72	2.72	2.72	0.74	2.22	3.69	3.85	3.85	3.85	1.04	3.12	5.21	5.42	5.42	5.42

Numbers shown in italic indicate vacuum in inches.

SPORLAN CRANKCASE PRESSURE REGULATING VALVES

* Can use Sporlan Selection Program (sporlanonline.com) for selections

REFRIGERANT 404A - CAPACITIES – Tons

Capacities based on 100°F condensing temperature, 10°F superheat, and 0°F subcooling

Type and Adjustment Range	Design Evaporator Temperature °F	Saturated Suction Pressure – psig (Reference)	Pressure Drop Across Valve (psi)																	
			0.5						1						2					
			Valve Settings (psig)																	
			10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60
CRO-4 0/20	-40	4.6	0.06	0.07	–	–	–	–	0.09	0.10	–	–	–	–	0.11	0.13	–	–	–	–
	-30	9.9	–	0.08	–	–	–	–	–	0.12	–	–	–	–	–	0.16	–	–	–	–
	-20	16.3	–	0.08	–	–	–	–	–	0.11	–	–	–	–	–	0.15	–	–	–	–
CRO-4 0/50	-40	4.6	0.05	0.07	0.07	0.07	0.07	–	0.07	0.09	0.10	0.10	0.10	–	0.10	0.12	0.13	0.13	0.13	–
	-30	9.9	–	0.07	0.08	0.08	0.08	–	–	0.10	0.12	0.12	0.12	–	–	0.13	0.16	0.16	0.16	–
	-20	16.3	–	0.07	0.09	0.10	0.10	–	–	0.09	0.12	0.14	0.14	–	–	0.13	0.16	0.19	0.19	–
	-10	24.0	–	–	0.08	0.11	0.11	–	–	–	0.12	0.15	0.16	–	–	–	0.14	0.20	0.22	–
	0	33.0	–	–	–	0.10	0.12	–	–	–	–	0.14	0.17	–	–	–	–	0.19	0.24	–
	10	43.5	–	–	–	–	0.11	–	–	–	–	–	0.16	–	–	–	–	–	0.22	–
CRO-4 0/75	-40	4.6	0.05	0.06	0.07	0.07	0.07	0.07	0.07	0.09	0.10	0.10	0.10	0.10	0.09	0.11	0.13	0.13	0.13	0.13
	-30	9.9	–	0.07	0.08	0.08	0.08	0.08	–	0.09	0.11	0.12	0.12	0.12	–	0.12	0.15	0.16	0.16	0.16
	-20	16.3	–	0.07	0.08	0.10	0.10	0.10	–	0.09	0.11	0.14	0.14	0.14	–	0.13	0.15	0.19	0.19	0.19
	-10	24.0	–	–	0.08	0.10	0.11	0.11	–	–	0.11	0.14	0.16	0.16	–	–	0.14	0.19	0.22	0.22
	0	33.0	–	–	–	0.09	0.11	0.13	–	–	–	0.13	0.16	0.18	–	–	–	0.18	0.22	0.25
	10	43.5	–	–	–	–	0.11	0.13	–	–	–	–	0.15	0.18	–	–	–	–	0.21	0.25
	20	55.7	–	–	–	–	–	0.12	–	–	–	–	–	0.16	–	–	–	–	–	0.23

Type and Adjustment Range	Design Evaporator Temperature °F	Saturated Suction Pressure – psig (Reference)	Pressure Drop Across Valve (psi)																	
			0.5						1						2					
			Valve Settings (psig)																	
			10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60
CRO(T)-6 0/60	-40	4.6	0.16	0.26	0.36	0.46	0.49	0.49	0.22	0.36	0.50	0.63	0.68	0.68	0.28	0.48	0.67	0.86	0.94	0.94
	-20	16.3	–	0.20	0.33	0.46	0.60	0.67	–	0.28	0.46	0.62	0.85	0.93	–	0.37	0.63	0.89	1.17	1.30
	-10	24.0	–	–	0.27	0.42	0.58	0.72	–	–	0.37	0.59	0.81	1.01	–	–	0.51	0.81	1.13	1.40
	0	33.0	–	–	–	0.33	0.51	0.67	–	–	–	0.45	0.71	0.94	–	–	–	0.62	0.99	1.30
	10	43.5	–	–	–	–	0.38	0.55	–	–	–	–	0.52	0.78	–	–	–	–	0.72	1.08
	20	55.7	–	–	–	–	–	0.36	–	–	–	–	–	0.50	–	–	–	–	–	0.68
CRO(T)-10 0/60	-40	4.6	0.33	0.94	1.07	1.07	1.07	1.07	0.46	1.32	1.51	1.51	1.51	1.51	0.63	1.86	2.12	2.12	2.12	2.12
	-20	16.3	–	0.30	1.13	1.45	1.45	1.45	–	0.43	1.59	2.04	2.04	2.04	–	0.59	2.24	2.88	2.88	2.88
	-10	24.0	–	–	0.58	1.51	1.67	1.67	–	–	0.81	2.14	2.35	2.35	–	–	1.14	3.01	3.32	3.32
	0	33.0	–	–	–	0.76	1.91	1.91	–	–	–	1.07	2.69	2.69	–	–	–	1.51	3.80	3.80
	10	43.5	–	–	–	–	0.88	1.99	–	–	–	–	1.24	2.82	–	–	–	–	1.75	3.97
	20	55.7	–	–	–	–	–	0.57	–	–	–	–	–	0.80	–	–	–	–	–	1.12

Type and Adjustment Range	Design Evaporator Temperature °F	Saturated Suction Pressure – psig (Reference)	Pressure Drop Across Valve (psi)																	
			0.5						1						2					
			Valve Settings (psig)																	
			40	50	60	70	80	90	40	50	60	70	80	90	40	50	60	70	80	90
CROT-6 30/110	0	33.0	0.29	0.41	0.52	0.63	0.76	0.86	0.40	0.57	0.72	0.89	1.07	1.21	0.54	0.79	1.00	1.23	1.49	1.69
	10	43.5	–	0.33	0.45	0.58	0.73	0.84	–	0.46	0.63	0.82	1.02	1.18	–	0.63	0.87	1.13	1.43	1.65
	20	55.7	–	–	0.33	0.48	0.64	0.77	–	–	0.46	0.67	0.90	1.08	–	–	0.63	0.93	1.26	1.51
	30	69.7	–	–	–	–	0.49	0.63	–	–	–	–	0.68	0.88	–	–	–	–	0.95	1.23
	40	85.7	–	–	–	–	–	0.40	–	–	–	–	–	0.57	–	–	–	–	–	0.78
CROT-10 30/110	0	33.0	0.52	1.29	1.91	1.91	1.91	1.91	0.73	1.83	2.69	2.69	2.69	2.69	1.02	2.57	3.80	3.80	3.80	3.80
	10	43.5	–	0.60	1.35	2.17	2.17	2.17	–	0.84	1.91	3.06	3.06	3.06	–	1.18	2.69	4.32	4.32	4.32
	20	55.7	–	–	0.39	1.33	2.36	2.45	–	–	0.54	1.87	3.33	3.46	–	–	0.76	2.64	4.70	4.89
	30	69.7	–	–	–	–	1.17	2.07	–	–	–	–	1.66	2.92	–	–	–	–	2.34	4.13
	40	85.7	–	–	–	–	–	0.42	–	–	–	–	–	0.60	–	–	–	–	–	0.84

SPORLAN CRANKCASE PRESSURE REGULATING VALVES

* Can use Sporlan Selection Program (sporlanonline.com) for selections

REFRIGERANT 507 - CAPACITIES – Tons

Capacities based on 100°F condensing temperature, 10°F superheat, and 0°F subcooling

Type and Adjustment Range	Design Evaporator Temperature °F	Saturated Suction Pressure – psig (Reference)	Pressure Drop Across Valve (psi)																	
			0.5						1						2					
			Valve Setting – psig																	
			10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60
CRO-4 0/20	-40	5.5	0.06	0.07	–	–	–	–	0.08	0.10	–	–	–	–	0.11	0.13	–	–	–	–
	-30	11.1	–	0.08	–	–	–	–	–	0.12	–	–	–	–	–	0.16	–	–	–	–
	-20	17.8	–	0.07	–	–	–	–	–	0.10	–	–	–	–	–	0.13	–	–	–	–
CRO-4 0/50	-40	5.5	0.05	0.06	0.07	0.07	0.07	–	0.07	0.09	0.10	0.10	0.10	–	0.09	0.12	0.13	0.13	0.13	–
	-30	11.1	–	0.07	0.08	0.08	0.08	–	–	0.09	0.12	0.12	0.12	–	–	0.13	0.16	0.16	0.16	–
	-20	17.8	–	0.06	0.08	0.10	0.10	–	–	0.09	0.12	0.14	0.14	–	–	0.12	0.16	0.19	0.19	–
	-10	25.8	–	–	0.08	0.10	0.11	–	–	–	0.11	0.14	0.16	–	–	–	0.15	0.20	0.22	–
	0	35.2	–	–	–	0.09	0.12	–	–	–	–	0.13	0.16	–	–	–	–	0.18	0.23	–
	10	46.2	–	–	–	–	0.10	–	–	–	–	–	0.14	–	–	–	–	–	0.20	–
CRO-4 0/75	-40	5.5	0.05	0.06	0.07	0.07	0.07	0.07	0.07	0.08	0.10	0.10	0.10	0.10	0.09	0.11	0.13	0.13	0.13	0.13
	-30	11.1	–	0.06	0.08	0.08	0.08	0.08	–	0.09	0.11	0.12	0.12	0.12	–	0.12	0.15	0.16	0.16	0.16
	-20	17.8	–	0.06	0.08	0.09	0.10	0.10	–	0.09	0.11	0.14	0.14	0.14	–	0.12	0.15	0.18	0.19	0.19
	-10	25.8	–	–	0.08	0.09	0.11	0.11	–	–	0.11	0.13	0.16	0.16	–	–	0.15	0.18	0.22	0.22
	0	35.2	–	–	–	0.09	0.11	0.13	–	–	–	0.13	0.15	0.18	–	–	–	0.17	0.21	0.25
	10	46.2	–	–	–	0.08	0.10	0.12	–	–	–	–	0.14	0.17	–	–	–	–	0.19	0.24
	20	58.8	–	–	–	–	–	0.11	–	–	–	–	–	0.15	–	–	–	–	–	0.21

Type and Adjustment Range	Design Evaporator Temperature °F	Saturated Suction Pressure – psig (Reference)	Pressure Drop Across Valve (psi)																	
			0.5						1						2					
			Valve Settings (psig)																	
			10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60
CRO(T)-6 0/60	-40	5.5	0.15	0.25	0.35	0.44	0.49	0.49	0.21	0.35	0.48	0.62	0.68	0.68	0.26	0.46	0.65	0.85	0.93	0.93
	-20	17.8	–	–	0.31	0.44	0.57	0.66	–	–	0.43	0.62	0.80	0.93	–	–	0.59	0.85	1.10	1.29
	-10	25.8	–	–	0.24	0.39	0.54	0.69	–	–	0.33	0.54	0.75	0.97	–	–	0.45	0.75	1.04	1.35
	0	35.2	–	–	–	0.29	0.45	0.63	–	–	–	0.40	0.63	0.88	–	–	–	0.54	0.87	1.23
	10	46.2	–	–	–	–	0.30	0.50	–	–	–	–	0.42	0.71	–	–	–	–	0.58	0.98
CRO(T)-10 0/60	-40	5.5	0.27	0.88	1.06	1.06	1.06	1.06	0.37	1.24	1.50	1.50	1.50	1.50	0.52	1.75	2.11	2.11	2.11	2.11
	-20	17.8	–	–	0.99	1.44	1.44	1.44	–	–	1.40	2.03	2.03	2.03	–	–	1.97	2.86	2.86	2.86
	-10	25.8	–	–	0.39	1.33	1.65	1.65	–	–	0.55	1.88	2.33	2.33	–	–	0.77	2.65	3.29	3.29
	0	35.2	–	–	–	0.52	1.56	1.88	–	–	–	0.73	2.20	2.66	–	–	–	1.03	3.10	3.75
	10	46.2	–	–	–	–	0.44	1.70	–	–	–	–	0.63	2.40	–	–	–	–	0.88	3.30

Type and Adjustment Range	Design Evaporator Temperature °F	Saturated Suction Pressure – psig (Reference)	Pressure Drop Across Valve (psi)																	
			0.5						1						2					
			Valve Setting (psig)																	
			40	50	60	70	80	90	40	50	60	70	80	90	40	50	60	70	80	90
CRO(T)-6 30/110	0	35.2	0.26	0.37	0.49	0.61	0.71	0.83	0.36	0.52	0.69	0.85	1.00	1.17	0.49	0.71	0.95	1.18	1.40	1.63
	10	46.2	–	–	0.42	0.55	0.67	0.80	–	–	0.58	0.77	0.94	1.13	–	–	0.80	1.07	1.31	1.58
	20	58.8	–	–	–	0.43	0.57	0.72	–	–	–	0.60	0.80	1.01	–	–	–	0.84	1.12	1.42
	30	73.3	–	–	–	–	0.40	0.57	–	–	–	–	0.56	0.80	–	–	–	–	0.78	1.12
CRO(T)-10 30/110	0	35.2	0.36	1.06	1.81	1.88	1.88	1.88	0.50	1.49	2.55	2.66	2.66	2.66	0.70	2.10	3.60	3.75	3.75	3.75
	10	46.2	–	–	1.15	1.98	2.14	2.14	–	–	1.63	2.80	3.02	3.02	–	–	2.30	3.95	4.26	4.26
	20	58.8	–	–	–	1.07	1.94	2.41	–	–	–	1.51	2.74	3.41	–	–	–	2.12	3.86	4.81
	30	73.3	–	–	–	–	0.67	1.73	–	–	–	–	0.95	2.44	–	–	–	–	1.33	3.44

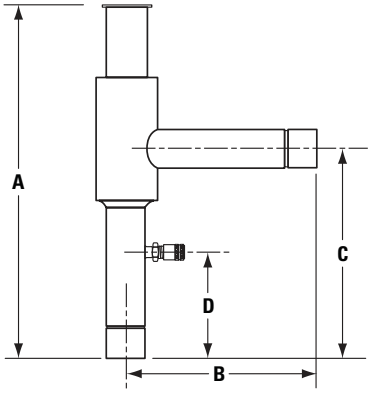
SPORLAN EVAPORATOR PRESSURE REGULATING VALVES

ORIT-6 and ORIT-10

Features

- Direct acting (most economical)
- Adjustable
- Hermetic construction (no gaskets or seals)
- Corrosion resistant construction
- Inlet pressure tap (standard)
- Inlet strainer (standard on ODF models)

and and Recognized.



Specifications

- Maximum Rated Pressure = 400 psig
- Maximum Test Pressure = ORI-6 = 300 psi
  ORI-10 = 200 psi
- Maximum Ambient Temperature = 155°F
- Maximum Fluid Temperature = 240°F
- Minimum Ambient/Fluid Temperature = -40°F
- Factory Setting = See table
- Agency Certifications:

Agency	Product	Guide	File	Country
UL	ORI-6, -10	SFJQ	SA5460	USA
CSA	ORI-6, -10	1223-01	19953	Canada

Part Number	Conn.	LIST
ORIT-6-0/50 ORIT-6-30/100	1/2, 5/8 Flare	763.00
	5/8 ODF	619.00
	7/8 ODF	763.00
	1-1/8 ODF	763.00
ORIT-10-0/50 ORIT-10-30/100	7/8 ODF	1,078.00
	1-1/8 ODF	1,078.00
	1-3/8 ODF	1,078.00

* Can use Sporlan Selection Program (sporlanonline.com) for selections

VALVE TYPE	ADJUSTMENT RANGE psig (Standard BOLD)	CONNECTION Inches Standard Connections BOLD	DIMENSIONS – Inches					WEIGHT – Pounds		INLET STRAINER PART NUMBER
			A	B	C	D	SOCKET	NET	SHIPPING	
ORIT-6	**0/50** (Factory set 30)* 30/100 (Factory Set 60)*	5/8 ODF Solder	9.75	5.25	6.38	4.06	0.50	1.00	1.25	825-5
		7/8 ODF Solder	9.75	5.25	6.38	4.06	0.75	1.00	1.25	825-7
		1-1/8 ODF Solder	9.75	5.25	6.38	4.06	0.91	1.25	1.50	825-9
		1/2 SAE Flare	6.41	2.68	2.86	0.94	—	1.00	1.25	Not Available
		5/8 SAE Flare	6.38	2.81	3.00	1.06	—	1.00	1.25	
ORIT-10	**0/50** (Factory set 30)* 30/100 (Factory Set 60)*	7/8 ODF Solder	11.19	5.69	6.50	3.25	0.75	2.50	2.75	825-7
		1-1/8 ODF Solder	11.19	5.69	6.50	3.25	0.91	2.50	2.75	825-9
		1-3/8 ODF Solder	11.19	5.69	6.50	3.25	0.91	2.50	2.75	825-11

** Manufacturers can specify special settings.*

Materials and Construction Details

VALVE TYPE	ELEMENT TYPE AND MATERIAL	CONNECTIONS		BODY MATERIAL	SEATING MATERIAL
		TYPE	MATERIAL		
ORIT-6	Bellows – Brass	ODF Solder	Copper	Brass	Metal-to-Metal
		SAE Flare	Brass		
ORIT-10	Bellows – Brass	ODF Solder	Copper		

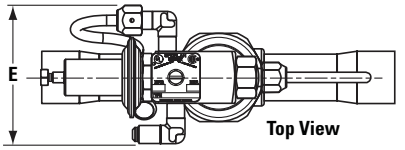
Valve Nomenclature:

ORI	T	–	6	–	0/50	–	7/8" ODF
Valve type: **O**pen on **R**ise of **I**nlet Pressure	Pressure tap on inlet connection		Port size in eighths of an inch		Adjustment range psig*		Connections ODF Solder or SAE Flare

** Other pressure ranges are available*

SPORLAN EVAPORATOR PRESSURE REGULATING VALVES

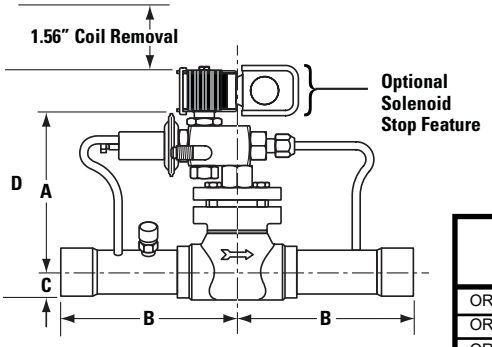
(S)ORIT-12, -15, and -20



UL and cUL and CE Recognized.

Features

- High side pilot for improved temperature control and low ΔP operation
- Adjustable settings up to 150 psig
- Optional solenoid stop feature to close valve during system defrost
- Normally open design allows system evacuation without a manual operator



Specifications

- Maximum Rated Pressure = 450 psig
- Maximum Test Pressure = 450 psig
- MOPD = 300 psi (SORIT model only)
- Maximum Ambient Temperature = 120°F
- Maximum Fluid Temperature = 240°F
- Minimum Ambient/Fluid Temperature = -40°F
- Factory Setting = See table
- Agency Certifications:

Agency	Product	Guide	File	Country
UL	SORIT-12, -15, -20	YIOZ	MH4576	USA
ULc	SORIT-12, -15, -20	YIOZ7	MH4576	Canada
UL	ORIT-12, -15, -20	SFJQ	SA5460	USA
ULc	ORIT-12, -15, -20	SFJQ7	SA5460	Canada

Part Number	Conn. ODF	LIST
ORIT-12-0/100-1-1/8	1-1/8	1,746.00
ORIT-15-0/100-1-3/8	1-3/8	2,294.00
ORIT-20-0/100-1-5/8	1-5/8	2,872.00
SORIT-12-0/100-1-1/8	1-1/8	1,935.00
SORIT-15-0/100-1-3/8	1-3/8	2,538.00
SORIT-20-0/100-1-5/8	1-5/8	3,088.00
ORIT-15-65/225-1-3/8	1-3/8	
ORIT-15-65/225-1-5/8	1-5/8	
ORIT-20-65/225-1-5/8	1-5/8	
CDA-12		
CDA-15		
CDA-20		
MKC-1 Coil, Std Single AC Voltage		124.00

VALVE TYPE	PORT SIZE	ADJUSTMENT RANGE psig (Standard BOLD)	STANDARD COIL RATINGS **MKC-1		CONNECTION ODF SOLDER Inches	DIMENSIONS – Inches					WEIGHT – Pounds with solenoid stop		WEIGHT – Pounds without solenoid stop	
			Volts/Cycles	Watts		A	B	C	D	E	NET	SHIPPING	NET	SHIPPING
(S)ORIT-12	25/32	**0/100** (Factory set 30)*	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	10	7/8, **1-1/8**, 1-3/8	4.99	4.25	0.72	6.50	3.46	4.00	4.75	3.50	4.25
(S)ORIT-15	1	75/150 (Factory set 120)*			**1-3/8**	4.91	5.53	0.88	6.42	3.46	5.75	7.00	5.25	6.50
(S)ORIT-20	1-5/16				**1-5/8**, 2-1/8	5.66	5.53	1.44	7.16	3.50	9.75	11.00	9.25	10.50

** Manufacturers can specify special settings.*
*** Available with junction box or conduit boss at no extra charge. For voltages other than listed consult Bulletin 30-10.*

Valve Nomenclature:

S – Solenoid Stop feature (optional)

ORI – Valve type: **O**pen on **R**ise of **I**nlet pressure

T – Pressure tap on inlet connection

15 – Valve size

0/100 – Adjustment range psig*

1-3/8" ODF – Connections ODF Solder

120/50-60 – Electrical specifications for Solenoid Stop Feature (optional)

** Other pressure ranges are available*

Omission of designation for an optional item indicates a request for a valve less that specific option. ***Example: ORIT-15-0/75-1-3/8 ODF; this indicates a valve less the solenoid stop feature.***

When ordering a valve with a solenoid stop feature, specify voltage and cycles.

When ordering the solenoid coil assembly only, specify MKC-1 coil, voltage and cycles. ***Example: MKC-1-120 volts/50-60 cycles.***

* Can use Sporlan Selection Program (sporlanonline.com) for selections

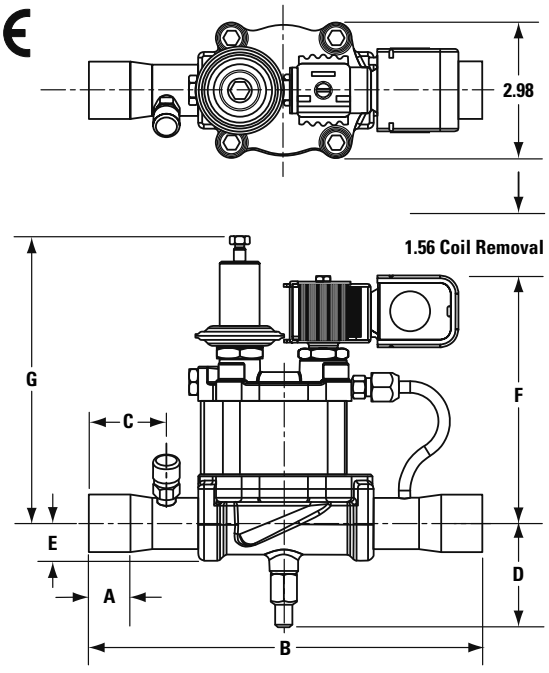
SPORLAN EVAPORATOR PRESSURE REGULATING VALVES

(S)ORIT-PI-2, -3, -4, and -5

Features

- Piloted internally (no high side connection required)
- Adjustable settings up to 150 psig
- Optional solenoid stop feature to close valve during system defrost
- Optional electric open feature for "two temperature operation"
- Corrosion resistant construction
- Manual lift stem to allow system evacuation

Recognized.



Specifications

- Maximum Rated Pressure = 400 psig
- Maximum Test Pressure = 400 psig
- MOPD = 190 psig (SORIT-PI model only)
- Maximum Ambient Temperature = 120°F
- Maximum Fluid Temperature = 240°F
- Minimum Ambient/Fluid Temperature = -40°F
- Factory Setting = See table
- Agency Certifications:

Agency	Product	Guide	File	Country
UL	SORIT-PI-2, -3, -4, -5	YIOZ	MH4576	USA
ULc	SORIT-PI-2, -3, -4, -5	YIOZ7	MH4576	Canada
UL	ORIT-PI-2, -3, -4, -5	SFJQ	SA5460	USA
ULc	ORIT-PI-2, -3, -4, -5	SFJQ7	SA5460	Canada

VALVE TYPE	PORT SIZE	ADJUSTMENT RANGE psig (Standard BOLD)	STANDARD COIL RATINGS **MKC-1		CONNECTION ODF SOLDER Inches	DIMENSIONS – Inches							WEIGHT – Pounds with solenoid stop		WEIGHT – Pounds without solenoid stop	
			Volts/Cycles	Watts		A	B	C	D	E	F	G	NET	SHIPPING	NET	SHIPPING
(S)ORIT-PI-2	1/2	**0/100** (Factory set 30)* or 75/150 (Factory Set 120)*	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	10***	5/8	.50	8.63	1.70	2.28	.72	5.25	6.30	5.94	7.12	5.83	7.00
					7/8	.78	8.63	1.70	2.28	.72	5.25	6.30	6.04	7.22	5.47	6.65
					1-1/8	.91	8.63	1.70	2.28	.72	5.25	6.30	6.06	7.24	5.84	7.00
					1-3/8	1.00	10.9	2.54	2.28	.72	5.25	6.30	6.00	7.18	6.05	7.22
(S)ORIT-PI-3	3/4				7/8	.78	8.63	1.70	2.28	.72	5.25	6.30	6.06	7.24	5.87	7.04
					1-1/8	.91	8.63	1.70	2.28	.72	5.25	6.30	6.06	7.24	5.47	6.65
					1-3/8	1.00	10.9	2.54	2.28	.72	5.25	6.30	6.06	7.24	5.99	7.16
					1-5/8	1.09	10.9	2.54	2.28	.72	5.25	6.30	6.20	7.38	5.99	7.16
(S)ORIT-PI-4	1				1-1/8	.91	8.63	1.70	2.28	.72	5.25	6.30	6.06	7.24	5.47	6.65
					1-3/8	1.00	10.9	2.54	2.28	.72	5.25	6.30	5.94	7.12	5.84	7.00
					1-5/8	1.09	10.9	2.54	2.28	.72	5.25	6.30	6.06	7.24	5.89	7.06
					2-1/8	1.25	10.9	2.54	2.28	.72	5.25	6.30	6.10	7.28	6.43	7.60
(S)ORIT-PI-5	1-1/4				1-3/8	1.00	10.9	2.25	2.78	1.28	5.69	6.74	6.30	7.92	7.00	8.60
					1-5/8	1.09	10.9	2.25	2.78	1.28	5.69	6.74	7.00	8.62	7.00	8.60
					2-1/8	1.25	10.9	2.25	2.78	1.28	5.69	6.74	7.28	8.90	7.00	8.60

** Manufacturers can specify special settings.*
*** Available with junction box or conduit boss at no extra charge. For voltages other than listed consult Bulletin 30-10.*
**** 10 watts/coil if specifying SORIT-PI-xxx, SE would be 20 watts with both coils energized.*

Valve Nomenclature:

S	ORI	T	–	PI	–	2	7	S	E	–	0/100	120/50-60
Solenoid Stop feature (optional)	Basic type: **O**pen on **R**ise of **I**nlet pressure	Pressure tap on inlet connection		Piloted internally		Port size in 1/4 of an inch	Fitting size in 1/8 of an inch	Solenoid stop feature (optional)	Electric open feature (optional)		Adjustment range psig *	Electrical specifications for Solenoid Stop Feature (optional)

** Other pressure ranges are available.*

Omission of designation for an optional item indicates a request for a valve less that specific option.
Example: ORIT-PI-411-0/100; this indicates a valve less the solenoid stop feature.
When ordering a valve with a solenoid stop feature, specify voltage and cycles.
When ordering the solenoid coil assembly only, specify MKC-1 coil, voltage and cycles. ***Example: MKC-1-120 volts/50-60 cycles.***

Instructions for upsizing/downsizing ports on the (S)ORIT-PI Valves

(for product dated 3204 or later)

Once the system (or circuit) has been properly pumped down, and refrigerant has been removed:

1. On SORIT-PI models, switch off power to solenoid coil, and remove coil from solenoid enclosing tube.
2. Loosen the cap screws evenly, disconnect the external bleed flare nut, and remove the pilot valve assembly, piston sleeve, and piston assembly.

NOTE: For proper valve operation, DO NOT REUSE old piston. New piston supplied with kit MUST be used.

3. The (S)ORIT-PI-4 and (S)ORIT-PI-5 seats are an integral part of the body, and are not removable. The throat of these valves are threaded, and will accept smaller seats to reduce the valve size. Therefore, not every valve upsizing/downsizing will require removing an old seat and/or adding a new seat. Refer to Table 1 for upsizing/downsizing instructions. When necessary, remove the old seat. If required, insert the new seat into the threaded throat (with O-Ring) and torque to 9 ft.-lbs.


Bottom of piston sleeve

4. Install the guide pin with O-Ring. Reassemble using new piston assembly and body O-Rings. If piston was removed from piston sleeve, insert piston from bottom of piston sleeve to prevent damage to the piston cup seal.
5. Replace body O-Ring on pilot valve assembly. Place the pilot valve assembly on top of piston sleeve. Evenly tighten cap screws to 25 ft.-lbs. Reconnect external bleed flare nut.
6. On SORIT-PI models, reinstall solenoid coil. Switch on power to the solenoid coil.
7. Check the valve for leaks, evacuate, and restart system (circuit).
8. Apply new label to adjustable element reflecting corrected valve size. If the valve has the solenoid stop feature, a new nameplate is also provided and should be replaced.
9. Adjust pilot assembly for desired evaporator setting.

Table 1

Current Valve Size	Desired Valve Size	Remove Existing Seat	Install New Seat	Piston Assembly and Seat Kit
(S)ORIT-PI-2	(S)ORIT-PI-3	Yes	Yes	SK-PI-4 to 3
(S)ORIT-PI-2	(S)ORIT-PI-4	Yes	No	SK-PI-4*
(S)ORIT-PI-3	(S)ORIT-PI-2	Yes	Yes	SK-PI-4 to 2
(S)ORIT-PI-3	(S)ORIT-PI-4	Yes	No	SK-PI-4*
(S)ORIT-PI-4	(S)ORIT-PI-2	N/A	Yes	SK-PI-4 to 2
(S)ORIT-PI-4	(S)ORIT-PI-3	N/A	Yes	SK-PI-4 to 3
(S)ORIT-PI-5	(S)ORIT-PI-3	N/A	Yes	SK-PI-5 to 3
(S)ORIT-PI-5	(S)ORIT-PI-4	N/A	Yes	SK-PI-5 to 4

* Seat not supplied or required.

CAPACITY TABLE — Capacity (Tons)

VALVE TYPE	EVAPORATOR DESIGN TEMPERATURE °F	SATURATION PRESSURE - psig				REFRIGERANT																	
						22						134a						404A & 507					
		REFRIGERANT				PRESSURE DROP ACROSS VALVE - psi																	
		22	134a	404A	507	0.5	1	2	5	10	20	0.5	1	2	5	10	20	0.5	1	2	5	10	20
ORIT-6 0/50 or 30/100	40	68.5	35.4	85.7	89.8	–	0.93	1.29	1.94	2.50	2.84	–	0.71	0.97	1.39	1.61	1.62	–	0.84	1.17	1.76	2.30	2.69
	20	43.1	18.4	55.7	58.8	–	0.76	1.04	1.52	1.86	1.92	–	0.55	0.74	0.99	1.04	–	–	0.67	0.92	1.36	1.69	1.80
	0	24.0	06.5	32.9	35.2	–	0.60	0.81	1.13	1.25	1.25	–	0.41	0.54	0.64	–	–	–	0.51	0.70	0.99	1.14	1.14
	-20	10.2		16.3	17.8	–	0.46	0.61	0.70	0.78	0.79	–	–	–	–	–	–	–	0.38	0.52	0.68	0.70	0.70
ORIT-10 0/50 or 30/100	40	68.5	35.4	85.7	89.8	–	2.27	3.20	5.02	6.99	9.61	–	1.76	2.48	3.85	5.31	7.10	–	2.04	2.88	4.52	6.31	8.70
	20	43.1	18.4	55.7	58.8	–	1.86	2.61	4.08	5.65	7.66	–	1.38	1.94	3.00	4.07	–	–	1.63	2.29	3.59	4.98	6.79
	0	24.0	06.5	32.9	35.2	–	1.49	2.09	3.25	4.45	5.88	–	1.06	1.49	2.26	–	–	–	1.22	1.72	2.67	3.66	4.88
	-20	10.2		16.3	17.8	–	1.18	1.65	2.53	3.40	4.30	–	–	–	–	–	–	–	0.97	1.36	2.10	2.84	3.66
(S)ORIT-12 0/75 or 75/150	40	68.5	35.4	85.7	89.8	2.04	2.88	4.06	6.34	8.79	11.9	1.58	2.23	3.13	4.85	6.54	8.62	1.84	2.59	3.66	5.72	7.94	10.8
	20	43.1	18.4	55.7	58.8	1.67	2.36	3.31	5.15	7.06	9.39	1.25	1.75	2.45	3.75	5.00	–	1.47	2.07	2.91	4.53	6.24	8.36
	0	24.0	06.5	32.9	35.2	1.34	1.89	2.65	4.08	5.51	7.06	0.96	1.35	1.87	2.80	–	–	1.15	1.61	2.27	3.50	4.76	6.18
	-20	10.2		16.3	17.8	1.06	1.49	2.08	3.15	4.14	4.94	–	–	–	–	–	–	0.88	1.23	1.72	2.62	3.48	4.28
(S)ORIT-15 0/75 or 75/150	40	68.5	35.4	85.7	89.8	3.38	4.76	6.70	10.4	14.3	19.1	2.62	3.69	5.16	7.91	10.6	13.3	3.04	4.29	6.03	9.40	13.0	17.4
	20	43.1	18.4	55.7	58.8	2.76	3.89	5.46	8.42	11.4	14.8	2.06	2.89	4.03	6.07	7.89	–	2.42	3.42	4.80	7.42	10.1	13.2
	0	24.0	06.5	32.9	35.2	2.22	3.12	4.36	6.63	8.79	10.7	1.58	2.21	3.06	4.47	–	–	1.89	2.66	3.73	5.71	7.63	9.53
	-20	10.2		16.3	17.8	1.75	2.46	3.41	5.07	6.43	6.61	–	–	–	–	–	–	1.45	2.03	2.82	4.24	5.47	6.24
(S)ORIT-20 0/75 or 75/150	40	68.5	35.4	85.7	89.8	7.40	10.4	14.7	22.9	31.5	42.3	5.74	8.09	11.3	17.4	23.4	29.8	6.66	9.40	13.2	20.7	28.5	38.5
	20	43.1	18.4	55.7	58.8	6.06	8.53	12.0	18.5	25.2	32.8	4.52	6.35	8.85	13.4	17.5	–	5.31	7.49	10.5	16.3	22.3	29.4
	0	24.0	06.5	32.9	35.2	4.86	6.84	9.57	14.6	19.5	24.1	3.48	4.86	6.72	9.91	–	–	4.15	5.84	8.19	12.6	16.9	21.3
	-20	10.2		16.3	17.8	3.85	5.39	7.49	11.2	14.4	15.8	–	–	–	–	–	–	3.17	4.45	6.20	9.35	12.2	14.2
(S)ORIT-PI-2 0/100 or 75/150	40	68.5	35.4	85.7	89.8	–	2.19	3.04	4.67	6.92	9.07	–	1.72	2.39	3.83	5.05	6.14	–	1.95	2.70	4.16	6.27	8.31
	20	43.1	18.4	55.7	58.8	–	1.81	2.51	3.87	5.48	6.90	–	1.37	1.90	2.91	3.70	–	–	1.57	2.18	3.36	4.86	6.22
	0	24.0	06.5	32.9	35.2	–	1.48	2.04	3.20	4.16	4.86	–	1.08	1.48	2.12	–	–	–	1.25	1.73	2.76	3.63	4.37
	-20	10.2		16.3	17.8	–	1.18	1.63	2.41	2.95	3.07	–	–	–	–	–	–	–	0.97	1.34	2.03	2.55	2.74
(S)ORIT-PI-3 0/100 or 75/150	40	68.5	35.4	85.7	89.8	–	3.89	5.42	8.42	12.1	16.1	–	3.05	4.25	6.71	8.94	11.1	–	3.47	4.85	7.52	11.0	14.7
	20	43.1	18.4	55.7	58.8	–	3.21	4.47	6.94	9.66	12.4	–	2.42	3.38	5.14	6.61	–	–	2.79	3.90	6.05	8.56	11.1
	0	24.0	06.5	32.9	35.2	–	2.60	3.63	5.62	7.39	8.88	–	1.88	2.59	3.76	–	–	–	2.20	3.07	4.84	6.43	7.92
	-20	10.2		16.3	17.8	–	2.07	2.88	4.25	5.33	5.70	–	–	–	–	–	–	–	1.70	2.37	3.58	4.58	5.09
(S)ORIT-PI-4 0/100 or 75/150	40	68.5	35.4	85.7	89.8	–	5.85	8.22	12.9	18.9	25.2	–	4.57	6.42	10.4	14.0	17.6	–	5.25	7.38	11.6	17.1	23.0
	20	43.1	18.4	55.7	58.8	–	4.81	6.76	10.6	15.1	19.5	–	3.62	5.08	8.00	10.4	–	–	4.21	5.91	9.26	13.3	17.5
	0	24.0	06.5	32.9	35.2	–	3.89	5.46	8.75	11.6	14.2	–	2.81	4.03	5.90	–	–	–	3.30	4.64	7.52	10.1	12.6
	-20	10.2		16.3	17.8	–	3.07	4.32	6.65	8.43	9.25	–	–	–	–	–	–	–	2.54	3.57	5.59	7.21	8.26
(S)ORIT-PI-5 0/100 or 75/150	40	68.5	35.4	85.7	89.8	–	7.32	10.3	16.1	22.4	30.4	–	5.67	7.97	12.3	16.8	22.0	–	6.59	9.28	14.5	20.2	27.6
	20	43.1	18.4	55.7	58.8	–	5.98	8.42	13.1	18.0	24.0	–	4.46	6.24	9.55	12.8	–	–	5.25	7.39	11.5	15.9	21.3
	0	24.0	06.5	32.9	35.2	–	4.80	6.73	10.4	14.1	18.1	–	3.42	4.76	7.15	–	–	–	4.10	5.76	8.90	12.1	15.8
	-20	10.2		16.3	17.8	–	3.77	5.26	7.98	10.5	12.7	–	–	–	–	–	–	–	3.13	4.37	6.68	8.89	11.0

Capacities are calculated in accordance with ASHRAE Standard 158.2, "Methods of testing Capacity of Refrigerant Pressure Regulators". Capacities are based on 90°F Liquid Temperature entering the expansion valve and 25°F superheated vapor entering the compressor.
ORIT-6 and ORIT-10 are rated based on a valve setting 8 psi lower than the Evaporator Design Temperature for the 0/50 psi adjustment range, and 12 psi lower for the 30/100 psi adjustment range.

Refrigerant Liquid Temperature Correction Factors for 90°F Liquid

	0	10	20	30	40	50	60	70	80	90	100
R-22	1.38	1.34	1.30	1.26	1.22	1.17	1.13	1.09	1.04	1.00	0.95
R-134a	1.48	1.43	1.38	1.33	1.27	1.22	1.17	1.11	1.06	1.00	0.94
R-404A & R-507	1.65	1.58	1.51	1.45	1.38	1.31	1.23	1.16	1.08	1.00	0.92

* Can use Sporlan Selection Program (sporlanonline.com) for selections

QUICK PICK SELECTION TABLES for SUPERMARKET MULTIPLE EVAPORATOR SYSTEMS – Valve Capacity Btuh

COMMON SUCTION °F	CIRCUIT or EVAP. °F	REFRIGERANT 22							REFRIGERANT 404A & 507						
		(S)ORIT-PI				(S)ORIT			(S)ORIT-PI				(S)ORIT		
		2	3	4	5	12	15	20	2	3	4	5	12	15	20
-35	-35*	8,900	15,500	23,000	28,000	11,000	18,500	39,900	8,800	15,300	22,700	27,700	10,900	18,300	39,500
	-33	12,900	22,500	33,600	40,900	16,100	27,000	58,100	12,700	22,300	33,200	40,600	16,000	26,800	57,700
	-30	20,600	36,200	56,300	66,700	26,200	44,000	94,100	20,500	36,000	56,000	66,300	26,100	43,700	93,500
	-25	29,900	52,900	82,700	99,600	39,100	65,400	138,700	29,700	52,600	82,300	99,300	39,000	65,100	138,100
-25	-25*	11,100	19,400	28,700	35,000	13,800	23,200	50,000	11,000	19,200	28,500	35,000	13,800	23,100	49,900
	-23	16,000	28,100	41,900	51,200	20,100	33,800	72,700	15,800	27,800	41,700	51,200	20,100	33,800	72,700
	-21	23,000	40,300	62,600	73,800	29,000	48,700	104,400	23,000	40,300	62,600	73,900	29,000	48,700	104,400
	-18	30,800	54,200	84,500	100,600	39,500	66,200	141,300	30,800	54,300	84,600	100,900	39,600	66,400	141,600
	-15	37,300	66,000	103,200	124,100	48,700	81,400	173,000	37,400	66,200	103,500	124,600	48,900	81,800	173,600
	-10	46,900	83,700	131,400	160,300	62,800	104,800	221,100	47,000	84,000	132,000	161,400	63,200	105,500	222,200
-15	-15*	13,600	23,900	35,400	43,400	17,100	28,700	61,900	13,500	23,700	35,400	43,700	17,200	28,900	62,200
	-13	19,600	34,500	51,500	63,300	24,900	41,800	90,000	19,400	34,400	51,600	63,700	25,100	42,100	90,600
	-10	31,900	56,000	87,000	102,900	40,500	67,800	145,300	32,200	56,400	87,700	103,800	40,800	68,400	146,500
	-5	46,100	81,500	127,300	152,800	60,000	100,300	213,400	46,500	82,300	128,600	154,600	60,700	101,500	215,600
	0	57,900	103,100	161,700	196,900	77,200	128,800	272,000	58,500	104,200	163,700	199,700	78,300	130,600	275,500
	5	68,700	123,200	194,200	239,500	93,700	156,200	327,600	69,500	124,800	197,000	243,600	95,300	158,800	332,500
10	10*	21,600	38,200	57,100	70,800	27,900	46,800	101,000	21,800	38,700	58,300	72,500	28,600	48,000	103,400
	11	22,000	38,800	58,200	72,100	28,400	47,700	102,800	22,200	39,400	59,400	73,900	29,100	48,900	105,400
	12	30,900	54,900	82,900	102,800	40,500	67,900	146,300	31,300	55,800	84,600	105,500	41,500	69,700	150,100
	13	37,900	67,700	102,500	127,000	50,000	83,900	180,300	38,400	68,800	104,800	130,400	51,300	86,100	185,100
	14	44,000	78,800	119,700	147,900	58,200	97,600	209,500	44,600	80,200	122,500	151,900	59,800	100,200	215,200
	15	51,900	91,000	141,300	166,700	65,600	110,000	235,800	53,300	93,500	145,100	171,400	67,400	113,000	242,300
	20	74,900	132,100	206,000	246,300	96,700	161,900	344,800	77,000	135,900	212,100	254,000	99,700	166,900	355,200
	25	93,700	166,400	260,600	315,500	123,700	206,700	437,600	96,600	171,600	269,000	326,300	127,900	213,700	452,000
15	15*	23,600	41,600	62,400	77,500	30,500	51,300	110,600	23,900	42,400	63,900	79,800	31,400	52,700	113,700
	16	24,000	42,400	63,500	78,900	31,100	52,200	112,600	24,300	43,200	65,100	81,300	32,000	53,700	115,900
	17	33,700	59,900	90,500	112,500	44,300	74,400	160,100	34,200	61,100	92,800	115,900	45,600	76,600	164,900
	18	41,300	73,800	112,000	139,000	54,700	91,800	197,400	41,900	75,300	114,900	143,200	56,400	94,600	203,400
	19	47,900	85,800	130,700	161,800	63,600	106,800	229,300	48,700	87,700	134,300	166,900	65,600	110,100	236,400
	20	56,800	99,600	154,600	182,400	71,700	120,300	258,000	58,600	102,700	159,400	188,200	74,000	124,100	266,100
	25	81,900	144,500	225,200	269,100	105,700	176,900	377,100	84,600	149,300	232,900	278,600	109,400	183,100	390,000
	35	121,200	216,400	340,200	416,000	163,000	271,900	572,700	125,700	224,700	353,500	433,500	169,800	283,100	595,500
20	20*	25,600	45,400	68,100	84,700	33,400	56,000	120,800	26,100	46,400	70,000	87,500	34,400	57,900	124,800
	21	26,100	46,100	69,300	86,200	33,900	57,000	123,000	26,500	47,200	71,300	89,100	35,100	58,900	127,100
	22	36,600	65,200	98,700	122,900	48,400	81,200	174,900	37,300	66,800	101,600	127,100	50,000	84,000	180,900
	23	44,800	80,300	122,000	151,700	59,700	100,200	215,500	45,700	82,300	125,700	157,000	61,800	103,700	223,000
	24	52,000	93,400	142,400	176,600	69,500	116,600	250,400	53,100	95,800	146,900	182,900	71,900	120,700	259,200
	25	62,100	108,700	168,800	199,100	78,300	131,300	281,700	64,300	112,600	174,800	206,300	81,100	136,100	291,800
	35	111,900	198,500	310,600	375,300	147,200	246,000	521,400	116,300	206,400	323,300	391,400	153,500	256,500	543,000

Capacities are calculated in accordance with ASHRAE Standard 158.2, "Methods of testing Capacity of Refrigerant Pressure Regulators". Capacities are based on 60°F Liquid Temperature entering the expansion valve and 25°F superheated vapor entering the compressor.

**Capacities are calculated at 1 psi ΔP when common suction and circuit evaporator temperatures are the same. For capacities at conditions other than those shown in the tables, use Sporlan Selection Program or contact Sporlan Headquarters.*

Refrigerant Liquid Temperature Correction Factors for 60°F Liquid											
	0	10	20	30	40	50	60	70	80	90	100
R-22	1.22	1.18	1.15	1.11	1.07	1.04	1.00	0.96	0.92	0.88	0.84
R-404A & R-507	1.33	1.28	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.81	0.74

* Can use Sporlan Selection Program (sporlanonline.com) for selections

QUICK PICK SELECTION TABLES for SUPERMARKET MULTIPLE EVAPORATOR SYSTEMS – Valve Capacity Btuh

COMMON SUCTION °F	CIRCUIT or EVAP. °F	REFRIGERANT 134a							REFRIGERANT 401A						
		(S)ORIT-PI				(S)ORIT			(S)ORIT-PI				(S)ORIT		
		2	3	4	5	12	15	20	2	3	4	5	12	15	20
-35	-35*	4,600	7,900	12,000	14,400	5,700	9,500	20,500	4,800	8,400	12,700	15,300	6,000	10,100	21,800
	-33	6,600	11,600	17,600	21,100	8,300	13,900	30,000	7,100	12,300	18,700	22,400	8,800	14,800	31,900
	-30	10,600	18,700	29,100	34,600	13,600	22,800	48,700	11,300	19,900	30,900	36,700	14,400	24,200	51,700
	-25	15,400	27,400	42,900	52,100	20,400	34,100	72,200	16,400	29,100	45,500	55,200	21,600	36,100	76,500
-25	-25*	5,900	10,300	15,500	18,700	7,400	12,300	26,600	6,200	10,900	16,300	19,700	7,800	13,000	28,100
	-23	8,600	15,100	22,700	27,400	10,800	18,100	38,900	9,100	15,900	23,900	28,900	11,400	19,100	41,000
	-21	12,300	21,500	33,500	39,600	15,600	26,100	55,900	13,000	22,700	35,300	41,700	16,400	27,500	58,900
	-18	16,500	29,100	45,300	54,300	21,300	35,700	75,900	17,400	30,600	47,700	57,100	22,400	37,500	79,900
	-15	20,000	35,400	55,500	67,200	26,400	44,000	93,200	21,000	37,300	58,400	70,600	27,700	46,300	98,100
	-10	25,100	45,100	71,000	87,500	34,300	57,100	119,800	26,500	47,400	74,700	91,800	35,900	59,900	125,900
-15	-15*	7,600	13,200	19,700	23,900	9,400	15,800	34,100	8,000	13,900	20,700	25,100	9,900	16,600	35,700
	-13	11,000	19,300	28,900	35,000	13,800	23,100	49,800	11,600	20,200	30,200	36,700	14,400	24,200	52,100
	-10	17,600	31,000	48,200	57,200	22,500	37,700	80,600	18,500	32,400	50,400	59,800	23,500	39,400	84,300
	-5	25,500	45,300	70,800	85,600	33,600	56,100	118,900	26,700	47,300	74,000	89,300	35,000	58,600	124,200
	0	32,100	57,400	90,400	111,100	43,500	72,500	152,400	33,500	59,900	94,300	115,700	45,300	75,600	158,900
	5	38,200	68,900	109,100	136,300	53,300	88,600	184,700	39,900	71,900	113,700	141,600	55,400	92,100	192,200
10	10*	13,300	23,200	34,400	42,200	16,600	27,900	60,200	13,700	23,900	35,400	43,500	17,100	28,700	62,000
	11	13,500	23,700	35,200	43,200	17,000	28,500	61,500	14,000	24,400	36,200	44,400	17,500	29,300	63,300
	12	19,100	33,600	50,200	61,600	24,200	40,700	87,600	19,600	34,600	51,600	63,300	24,900	41,800	90,100
	13	23,500	41,500	62,300	76,200	30,000	50,300	108,000	24,100	42,700	64,000	78,300	30,800	51,700	111,000
	14	27,700	48,500	75,300	88,800	34,900	58,600	125,600	28,400	49,800	77,400	91,200	35,900	60,200	129,100
	15	31,000	54,500	84,700	100,300	39,400	66,100	141,500	31,900	56,000	87,000	103,000	40,500	67,900	145,300
	20	44,800	79,300	123,900	149,000	58,500	97,800	207,700	46,000	81,400	127,100	152,700	59,900	100,300	213,100
	25	56,200	100,200	157,400	192,100	75,300	125,600	264,800	57,600	102,700	161,300	196,600	77,000	128,600	271,300
15	15*	14,700	25,700	38,200	46,900	18,500	31,000	66,900	15,100	26,400	39,200	48,100	19,000	31,800	68,600
	16	15,000	26,200	39,000	47,900	18,900	31,700	68,300	15,400	26,900	40,000	49,100	19,300	32,500	70,000
	17	21,100	37,200	55,600	68,400	26,900	45,200	97,300	21,600	38,100	57,000	70,100	27,600	46,300	99,700
	18	25,900	45,900	69,000	84,600	33,300	55,800	120,000	26,500	47,000	70,600	86,600	34,100	57,200	122,900
	19	30,700	53,800	83,600	98,600	38,800	65,000	139,500	30,800	54,800	82,600	100,900	39,700	66,600	142,900
	20	34,500	60,500	94,000	111,300	43,700	73,300	157,000	35,300	62,000	96,300	113,900	44,800	75,100	160,800
	25	49,700	88,000	137,400	165,200	64,800	108,400	230,400	50,900	90,000	140,600	168,800	66,200	110,800	235,600
	35	73,800	132,600	209,300	258,800	101,300	168,700	353,300	75,400	135,300	213,400	263,300	103,100	171,700	360,100
20	20*	16,200	28,400	42,200	52,000	20,500	34,400	74,200	16,600	29,000	43,200	53,200	20,900	35,200	75,800
	21	16,500	28,900	43,100	53,100	20,900	35,100	75,700	16,900	29,600	44,000	54,300	21,400	35,900	77,400
	22	23,200	41,000	61,500	75,800	29,800	50,100	107,800	23,700	41,900	62,800	77,400	30,500	51,100	110,100
	23	28,500	50,600	76,200	93,700	36,900	61,800	132,900	29,100	51,700	77,800	95,600	37,600	63,100	135,700
	24	34,100	59,600	92,600	109,200	42,900	72,000	154,500	33,800	60,200	91,000	111,400	43,800	73,500	157,700
	25	38,200	67,000	104,200	123,200	48,400	81,200	173,900	39,000	68,400	106,300	125,700	49,400	82,800	177,500
	35	69,000	122,900	193,000	235,100	92,100	153,800	324,500	70,300	125,200	196,400	238,900	93,600	156,400	330,300

Capacities are calculated in accordance with ASHRAE Standard 158.2, "Methods of testing Capacity of Refrigerant Pressure Regulators." Capacities are based on 60°F Liquid Temperature entering the expansion valve and 25°F superheated vapor entering the compressor.

**Capacities are calculated at 1 psi ΔP, when common suction and circuit evaporator temperatures are the same. For capacities at conditions other than those shown in the tables, use Sporlan Selection Program, or contact Sporlan Headquarters.*

Refrigerant Liquid Temperature Correction Factors for 60°F Liquid

	0	10	20	30	40	50	60	70	80	90	100
R-134a	1.26	1.22	1.18	1.14	1.09	1.05	1.00	0.95	0.90	0.86	0.81
R-401A	1.23	1.19	1.15	1.12	1.08	1.04	1.00	0.96	0.92	0.88	0.84

* Can use Sporlan Selection Program (sporlanonline.com) for selections

Electric Evaporator Control Valves - CDS-2, -4, -7, -9, -16 and -17

The CDS valves are designed for more precise and energy efficient control of temperatures in evaporators. Proper temperature is obtained by regulating refrigerant flow in the evaporator in response to signals generated by an electronic controller and sensor combination. The valves are built around balanced ports, which allows input power of only 4 watts, less than one quarter of the power used by older heat motor and analog designs. When not actively stepping, power to the motor is removed for further energy savings. The step motors used are standard 12-volt DC bipolar designs, which in concert with the integral gear reduction, give the valves unsurpassed accuracy and repeatability over the entire operating range. Since the valves are powered from an external controller, no pilot lines or high to low side bleeds are required. The properly applied CDS valve and controller can replace standard mechanical evaporator pressure regulators (EPR), suction stop solenoid valves, and conventional thermostats.

All CDS valves may be applied as head pressure control, or liquid line differential valves for R-744. Contact Sporlan for more information. All Sporlan CDS valves are rated at 620 psig (42 barg) MRP.

Simplified cartridge design allows all moving parts to be replaced as a unit. Only the valve body is left in the line. This will allow maintenance or repair without unsweating the entire valve.



CDS-9

Note: CDS"T" indicates a 1/4" access fitting on the EPR valves.

Specifications

* CDS -2, -4, -7 Now Using M12 Cable

(Standard Connections and Cable Lengths are in **BOLD** type.)

TYPE	CONNECTIONS ODF SOLDER – Inches	CONFIGURATION	CABLE LENGTH		CABLE ENDS
			Feet	Meters	
CDS-4	1/2, **5/8**, 7/8	Straight Through	**10**	**3**	**S**-Stripped and Tinned
CDS-7	5/8, **7/8**, 1-1/8, 1-3/8				
CDS-9					
CDS-16	**1-3/8**	Angle			
CDS-17	1-3/8, **1-5/8**	Straight Through			

Model	Connections Inches	Style	Max Cap Tons @ 2 ΔP R-22 @20°F	Max Cap kW @ 14 Bar ΔP R-22 @-7°F	Nominal Steps
CDS9	5/8, 7/8, 1-1/8 ODF	Straight Through	5.0 / 7.7	17.5 / 27	3193 / 6386
CDS16	1-3/8 ODF	Angle	12.8	45	6386
CDS17	1-3/8, 1-5/8	Straight	14.3	50	6386

CDS - 16 - 1-3/8 ODF ANGLE - 10 - S

- CDS: CONTROLS DISCHARGE STEP
- 16: SIZE
- 1-3/8 ODF: CONNECTIONS
- ANGLE: STYLE
- 10: CABLE LENGTH - FEET
- S: STRIPPED and TINNED CABLE ENDS

CORRECTION FACTORS - SUCTION & DISCHARGE

REFRIGERANT	Liquid Temperature Entering Expansion Valve °F										
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
	Correction Factor, CF Liquid Temperature										
R-22	1.22	1.18	1.15	1.11	1.07	1.04	1.0	0.96	0.92	0.88	0.84
R-134a	1.27	1.22	1.18	1.14	1.09	1.05	1.0	0.95	0.91	0.86	0.81
R-404A	1.34	1.29	1.23	1.17	1.12	1.06	1.0	0.94	0.88	0.81	0.74
R-407A	1.28	1.23	1.19	1.14	1.10	1.05	1.0	0.95	0.90	0.85	0.79
R-407C	1.26	1.22	1.18	1.13	1.09	1.05	1.0	0.95	0.91	0.86	0.81
R-410A	1.26	1.22	1.18	1.13	1.09	1.05	1.0	0.95	0.90	0.85	0.80
R-422D	1.34	1.29	1.23	1.17	1.12	1.06	1.0	0.94	0.88	0.81	0.75
R-507A	1.35	1.29	1.24	1.18	1.12	1.06	1.0	0.94	0.87	0.81	0.74
R-744	1.09	1.05	1.0	0.95	0.90	–	–	–	–	–	–

REFRIGERANT	Liquid Temperature Entering Expansion Valve °C										
	-15°	-10°	-5°	0°	5°	10°	15°	20°	25°	30°	35°
	Correction Factor, CF Liquid Temperature										
R-22	1.19	1.16	1.13	1.10	1.07	1.03	1.0	0.97	0.93	0.90	0.86
R-134a	1.24	1.20	1.16	1.12	1.08	1.04	1.0	0.96	0.92	0.87	0.83
R-404A	1.30	1.25	1.20	1.15	1.10	1.05	1.0	0.95	0.89	0.83	0.77
R-407A	1.25	1.21	1.17	1.13	1.09	1.04	1.0	0.96	0.91	0.87	0.82
R-407C	1.23	1.20	1.16	1.12	1.08	1.04	1.0	0.96	0.92	0.87	0.83
R-410A	1.23	1.20	1.16	1.12	1.08	1.04	1.0	0.96	0.92	0.87	0.83
R-422D	1.30	1.25	1.20	1.15	1.10	1.05	1.0	0.95	0.89	0.84	0.78
R-507A	1.31	1.26	1.21	1.16	1.11	1.05	1.0	0.94	0.89	0.83	0.77
R-744	1.08	1.04	1.0	0.96	0.91	–	–	–	–	–	–

These correction factors correct for net refrigerating effect and are based on an evaporator temperature of 0°F (-15°C), however they may be used for any evaporator temperature because the variation in the factors across the range is insignificant.

Electric Evaporator Control Valves - CDS -2, -4, -7, -9, -16 and -17

Flow Capacity - Suction (Tons)

* Can use Sporlan Selection Program (sporlanonline.com) for selections

Valve Model	Evaporator Temp. (°F)	REFRIGERANT																			
		R-22					R-134a					R-404A					R-407A				
		Pressure Drop Across Valve (psid)																			
		0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10
CDS-2	40	0.53	0.73	1.25	1.59	2.28	0.42	0.59	1.00	1.29	1.76	0.48	0.67	1.14	1.46	2.12	0.51	0.71	1.20	1.53	2.19
	20	0.43	0.61	1.03	1.32	1.84	0.34	0.47	0.79	1.01	1.35	0.39	0.55	0.93	1.19	1.68	0.41	0.57	0.97	1.26	1.73
	0	0.35	0.49	0.84	1.07	1.45	0.26	0.37	0.61	0.76	0.98	0.31	0.44	0.74	0.96	1.30	0.32	0.45	0.77	0.98	1.32
	-20	0.28	0.39	0.65	0.82	1.09	0.20	0.28	0.45	0.54	0.66	0.24	0.34	0.58	0.73	0.97	0.25	0.35	0.58	0.73	0.96
	-40	0.22	0.31	0.49	0.61	0.76	0.15	0.20	0.31	0.36	0.38	0.19	0.26	0.43	0.53	0.68	0.19	0.27	0.42	0.52	0.64
CDS-4	40	1.10	1.54	2.64	3.39	4.78	0.88	1.23	2.11	2.70	3.62	1.01	1.42	2.43	3.12	4.45	1.06	1.48	2.54	3.26	4.59
	20	0.91	1.27	2.18	2.79	3.82	0.70	0.98	1.67	2.09	2.71	0.82	1.15	1.97	2.53	3.51	0.85	1.20	2.05	2.65	3.58
	0	0.73	1.03	1.76	2.23	2.95	0.55	0.77	1.26	1.55	1.89	0.65	0.92	1.57	2.00	2.68	0.67	0.95	1.62	2.04	2.68
	-20	0.58	0.82	1.37	1.70	2.15	0.42	0.58	0.91	1.07	1.16	0.51	0.71	1.21	1.51	1.95	0.52	0.73	1.22	1.50	1.87
	-40	0.45	0.63	1.02	1.22	1.41	0.31	0.41	0.61	0.65	0.65	0.39	0.54	0.89	1.08	1.30	0.39	0.55	0.87	1.03	1.14
CDS-7	40	3.12	4.31	7.22	9.17	13.0	2.51	3.47	5.81	7.38	9.53	2.85	3.94	6.60	8.38	12.2	3.00	4.15	6.93	8.81	12.5
	20	2.59	3.58	5.99	7.61	10.2	2.02	2.79	4.57	5.60	6.82	2.33	3.22	5.38	6.84	9.5	2.44	3.37	5.64	7.27	9.5
	0	2.11	2.93	4.89	6.04	7.62	1.59	2.20	3.40	4.01	4.36	1.87	2.58	4.32	5.47	7.03	1.94	2.69	4.50	5.50	6.87
	-20	1.69	2.34	3.72	4.48	5.21	1.22	1.69	2.36	2.58	2.58	1.47	2.03	3.31	4.03	4.86	1.52	2.10	3.29	3.93	4.43
	-40	1.33	1.84	2.69	3.07	3.15	0.92	1.10	1.44	1.44	1.44	1.13	1.56	2.37	2.77	2.95	1.16	1.60	2.27	2.53	2.55
CDS-9	40	4.65	6.46	10.9	13.9	19.7	3.73	5.19	8.74	11.2	14.9	4.26	5.91	9.96	12.7	18.4	4.47	6.21	10.5	13.3	18.9
	20	3.85	5.35	9.01	11.5	15.7	2.99	4.16	6.89	8.6	11.0	3.47	4.82	8.11	10.3	14.5	3.62	5.03	8.48	10.9	14.7
	0	3.14	4.36	7.34	9.17	12.1	2.35	3.27	5.20	6.33	7.60	2.77	3.85	6.49	8.27	11.0	2.89	4.01	6.75	8.39	10.9
	-20	2.51	3.48	5.64	6.96	8.71	1.81	2.51	3.73	4.33	4.58	2.17	3.02	4.99	6.20	7.93	2.25	3.12	5.01	6.15	7.56
	-40	1.96	2.72	4.17	4.98	5.60	1.35	1.69	2.45	2.56	2.56	1.67	2.31	3.64	4.41	5.20	1.71	2.37	3.56	4.19	4.52
CDS-16	40	7.95	11.1	18.8	24.1	33.1	6.37	8.89	15.1	18.8	23.9	7.30	10.2	17.3	22.1	31.1	7.64	10.7	18.1	23.1	31.8
	20	6.57	9.17	15.6	19.9	25.8	5.09	7.11	11.7	14.1	16.7	5.93	8.27	14.0	17.9	24.0	6.19	8.63	14.6	18.6	24.0
	0	5.34	7.45	12.6	15.3	18.9	3.99	5.57	8.60	10.0	10.4	4.73	6.61	11.2	13.9	17.6	4.91	6.86	11.6	14.0	17.0
	-20	4.26	5.94	9.47	11.3	12.5	3.06	4.27	5.87	6.16	6.16	3.70	5.17	8.44	10.2	11.8	3.82	5.32	8.36	9.8	10.6
	-40	3.32	4.63	6.75	7.49	7.54	2.28	2.80	3.45	3.45	3.45	2.83	3.94	5.99	6.85	7.06	2.89	4.03	5.68	6.09	6.09
CDS-17	40	8.31	11.6	19.5	24.9	35.6	6.67	9.28	15.7	20.1	26.7	7.62	10.6	17.9	22.8	33.2	7.99	11.1	18.8	24.0	34.2
	20	6.88	9.57	16.2	20.6	28.3	5.34	7.43	12.5	15.5	19.7	6.20	8.62	14.6	18.6	26.1	6.47	9.01	15.2	19.8	26.5
	0	5.60	7.79	13.2	16.6	21.6	4.19	5.83	9.37	11.3	13.4	4.95	6.89	11.6	14.9	19.7	5.15	7.17	12.1	15.1	19.6
	-20	4.47	6.22	10.2	12.5	15.5	3.22	4.48	6.68	7.69	7.99	3.88	5.40	9.02	11.2	14.1	4.01	5.57	9.05	11.0	13.4
	-40	3.49	4.85	7.50	8.88	9.77	2.40	3.04	4.34	4.47	4.47	2.97	4.13	6.57	7.90	9.13	3.04	4.23	6.40	7.45	7.9

Capacities based upon 60°F liquid and 25°F superheated vapor. Reference page 14 for liquid temperature correction factors.
* R-744 capacities based upon 20°F liquid and 25°F superheat.

SPORLAN ELECTRONIC EPR

Electric Evaporator Control Valves - CDS-2, -4, -7, -9, -16 and -17

Flow Capacity - Suction (Tons)

* Can use Sporlan Selection Program (sporlanonline.com) for selections

Valve Model	Evaporator Temp. (°F)	REFRIGERANT																								
		R-407C					R-410A					R-422D					R-507A					R-744*				
		Pressure Drop Across Valve (psid)																								
		0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10	0.5	1	3	5	10
CDS-2	40	0.51	0.71	1.21	1.55	2.21	0.65	0.91	1.55	1.98	2.77	0.43	0.60	1.02	1.31	1.87	0.48	0.67	1.14	1.46	2.12	–	–	–	–	–
	20	0.41	0.58	0.98	1.27	1.74	0.54	0.76	1.29	1.64	2.36	0.35	0.48	0.82	1.07	1.46	0.39	0.55	0.93	1.19	1.69	–	–	–	–	–
	0	0.33	0.46	0.77	0.98	1.32	0.44	0.62	1.05	1.34	1.88	0.27	0.38	0.64	0.82	1.10	0.31	0.44	0.74	0.96	1.31	1.03	1.44	2.45	3.13	4.38
	-20	0.25	0.36	0.59	0.73	0.95	0.35	0.49	0.84	1.07	1.45	0.21	0.29	0.48	0.60	0.78	0.25	0.34	0.58	0.73	0.98	0.87	1.22	2.07	2.64	3.69
	-40	0.19	0.27	0.42	0.52	0.62	0.28	0.39	0.64	0.81	1.07	0.16	0.22	0.34	0.42	0.51	0.19	0.26	0.43	0.54	0.69	0.72	1.01	1.71	2.19	3.06
CDS-4	40	1.07	1.50	2.56	3.29	4.61	1.37	1.93	3.30	4.23	5.94	0.91	1.27	2.18	2.79	3.91	1.01	1.42	2.43	3.13	4.47	–	–	–	–	–
	20	0.86	1.21	2.07	2.66	3.58	1.13	1.59	2.73	3.50	4.97	0.72	1.01	1.74	2.24	3.01	0.82	1.15	1.97	2.53	3.53	–	–	–	–	–
	0	0.68	0.96	1.63	2.04	2.66	0.92	1.29	2.22	2.85	3.92	0.57	0.79	1.36	1.70	2.22	0.65	0.92	1.57	2.02	2.71	2.17	3.05	5.22	6.70	9.40
	-20	0.53	0.74	1.22	1.50	1.84	0.74	1.03	1.77	2.24	2.97	0.43	0.61	1.00	1.23	1.52	0.51	0.72	1.22	1.52	1.98	1.83	2.57	4.39	5.64	7.92
	-40	0.40	0.56	0.87	1.02	1.10	0.57	0.80	1.35	1.67	2.12	0.32	0.45	0.70	0.83	0.90	0.39	0.55	0.90	1.10	1.34	1.51	2.12	3.63	4.65	6.53
CDS-7	40	3.03	4.20	7.02	8.91	12.5	3.87	5.35	8.95	11.4	15.7	2.56	3.54	5.92	7.52	10.6	2.85	3.94	6.60	8.4	12.2	–	–	–	–	–
	20	2.47	3.41	5.71	7.29	9.5	3.22	4.46	7.45	9.47	13.6	2.06	2.85	4.76	6.13	7.97	2.33	3.22	5.39	6.8	9.5	–	–	–	–	–
	0	1.97	2.72	4.47	5.49	6.76	2.64	3.65	6.11	7.76	10.5	1.62	2.25	3.72	4.57	5.63	1.87	2.59	4.33	5.51	7.1	6.06	8.39	14.0	17.8	24.6
	-20	1.54	2.13	3.29	3.89	4.27	2.12	2.94	4.91	6.08	7.75	1.25	1.73	2.71	3.21	3.53	1.47	2.04	3.34	4.09	5.0	5.14	7.11	11.9	15.1	20.9
	-40	1.17	1.62	2.24	2.45	2.45	1.67	2.31	3.67	4.43	5.18	0.94	1.30	1.83	2.01	2.01	1.13	1.57	2.41	2.84	3.06	4.28	5.92	9.90	12.6	17.4
CDS-9	40	4.52	6.28	10.6	13.5	19.0	5.78	8.02	13.5	17.2	23.9	3.82	5.30	8.93	11.4	16.1	4.26	5.92	10.0	12.7	18.4	–	–	–	–	–
	20	3.67	5.09	8.58	11.0	14.7	4.80	6.67	11.2	14.3	20.5	3.06	4.26	7.17	9.24	12.4	3.47	4.82	8.12	10.4	14.5	–	–	–	–	–
	0	2.92	4.06	6.73	8.40	10.9	3.92	5.45	9.18	11.7	16.1	2.41	3.35	5.60	6.99	9.04	2.78	3.86	6.51	8.33	11.1	9.08	12.6	21.2	27.1	37.6
	-20	2.27	3.16	5.02	6.13	7.4	3.15	4.37	7.36	9.23	12.2	1.86	2.58	4.13	5.05	6.11	2.18	3.03	5.03	6.27	8.06	7.68	10.7	18.0	22.9	31.8
	-40	1.73	2.40	3.54	4.12	4.35	2.47	3.43	5.55	6.86	8.61	1.39	1.93	2.89	3.37	3.58	1.68	2.33	3.69	4.49	5.36	6.38	8.86	14.9	19.0	26.4
CDS-16	40	7.72	10.8	18.3	23.4	31.7	9.90	13.8	23.4	30.0	41.8	6.54	9.13	15.5	19.8	26.9	7.31	10.2	17.3	22.1	31.3	–	–	–	–	–
	20	6.25	8.73	14.8	18.6	23.8	8.21	11.5	19.4	24.8	34.7	5.24	7.31	12.4	15.6	20.0	5.94	8.29	14.1	18.0	24.2	–	–	–	–	–
	0	4.96	6.93	11.4	13.9	16.6	6.70	9.34	15.8	20.3	26.7	4.11	5.74	9.51	11.6	13.8	4.75	6.63	11.2	14.1	17.9	15.6	21.8	36.9	47.2	65.9
	-20	3.86	5.38	8.33	9.68	10.2	5.36	7.48	12.7	15.5	19.3	3.15	4.40	6.86	7.98	8.44	3.72	5.19	8.53	10.3	12.2	13.2	18.4	31.2	39.9	55.6
	-40	2.92	4.07	5.58	5.85	5.85	4.19	5.85	9.33	11.1	12.4	2.35	3.29	4.56	4.81	4.81	2.84	3.97	6.10	7.03	7.33	10.9	15.2	25.8	33.0	46.1
CDS-17	40	8.07	11.2	19.0	24.2	34.3	10.3	14.4	24.3	31.0	43.1	6.83	9.50	16.0	20.5	29.1	7.62	10.6	17.9	22.9	33.3	–	–	–	–	–
	20	6.55	9.11	15.4	19.8	26.5	8.58	11.9	20.2	25.7	37.0	5.48	7.62	12.9	16.7	22.2	6.21	8.64	14.6	18.6	26.2	–	–	–	–	–
	0	5.21	7.25	12.2	15.1	19.4	7.01	9.75	16.5	21.0	29.1	4.31	5.99	10.1	12.6	16.2	4.97	6.91	11.7	15.0	20.0	16.3	22.6	38.2	48.8	67.9
	-20	4.05	5.64	9.05	11.0	13.1	5.62	7.82	13.2	16.7	21.9	3.31	4.61	7.45	9.05	10.8	3.90	5.42	9.10	11.3	14.4	13.7	19.1	32.3	41.2	57.4
	-40	3.07	4.27	6.35	7.31	7.59	4.40	6.13	10.0	12.3	15.3	2.48	3.44	5.18	5.98	6.24	2.99	4.16	6.66	8.05	9.44	11.4	15.9	26.8	34.2	47.6

Capacities based upon 60°F liquid and 25°F superheated vapor. Reference page 14 for liquid temperature correction factors.

* R-744 capacities based upon 20°F liquid and 25°F superheat.

SPORLAN SORIT TO CDS

(S)ORIT to CDS
CONVERSION KITS



The (S)ORIT-12, -15 and -20 Evaporator Pressure Regulating Valves were developed by Sporlan as the first of a new generation of evaporator pressure regulators. The (S)ORIT series of valves are mechanical regulators which use highside system pressure as a source of operating power. They were developed specifically for systems where accurate control and minimum pressure drop are important requirements.

The CDS valves are electronically operated step motor evaporator pressure regulating valves. Synchronized signals to the motor provide discrete angular movement, which translates into precise linear positioning of the valve piston. Valve pistons and ports are uniquely characterized, providing superb flow resolution and performance. The CDS valves are easily interfaced with microprocessor based controllers, including Sporlan supplied controllers.

Since supermarket equipment is evolving towards electronic control, Sporlan has created a product to allow update of the older mechanical (S)ORIT Evaporator Pressure Regulator (EPR) valves to CDS style Electric Evaporator Pressure Regulator (EEPR) valves.

FEATURES AND BENEFITS

- No need to remove the existing SORIT or ORIT-12, -15 or -20 valve body from the piping
- Economical equipment update, fast installation
- Step motor for precise control
- Tight seating for defrost and pumpdown application
- No pilot gas flow required
- Increased efficiency
- No pressure drop required for operation
- Field proven reliability
- Sporlan quality

ORDERING INSTRUCTIONS

The CDS-16 is the only angled valve. The CDS-4, CDS-7, CDS-9 and CDS-17 are straight through valves.

CDS	–	T	–	17	–	1-3/8 X 1-3/8 ODF	–	20	–	S	–	ANGLE
Controls Discharge, Stepmotor		Optional Inlet Pressure Tap		Model Number		Fitting Size		Cable Length 20' standard, others available		S = Stripped and tinned cable ends. Custom Connectors available		Used only if angled configuration (CDS-16 ONLY)

Table 1

(S)ORIT Model	Kit Model	Kit Part Number	Parts Included
(S)ORIT-12	Kit SORIT-12 to CDS	901656	Motor, adaptor, lock nut and 2645-000 seal gasket, SD-297 instructions
(S)ORIT-15	Kit SORIT-15 to CDS	901654	Motor, adaptor with hex cap screws and 0621-129 o-ring, SD-297 instructions
(S)ORIT-20	Kit SORIT-20 to CDS	901655	Motor, adaptor with hex cap screws and 2539-000 gasket, SD-297 instructions

SPORLAN A8/A9 TO CDS



FEATURES AND BENEFITS

- Converts a mechanical A8, SPORT or A9 valve to a stepper motor driven modulating valve
- Eliminates the need for brazing, because the existing A8, SPORT or A9 valve body stays in the system piping
- Economical system upgrade opportunity, with a typical 30 minute valve installation
- Reduces the external seal surface area
- Improves performance and system efficiency
- No manual setting or adjustment required
- Tight seating for defrost and pumpdown applications
- No pressure drop required for operation
- Field proven reliability and Sporlan quality

For nearly a decade, Sporlan has offered an innovative and economical method to convert currently installed SORIT Evaporator Pressure Regulators into stepper motor driven CDS valves. After tens of thousands of successful conversions and in response to growing demand for more productivity and efficiency tools, Sporlan is pleased to offer the next generation of CDS Conversion Kits. Now it is possible to convert nearly all A8, SPORT and A9 Pressure Regulators into Sporlan stepper motor valves using only one of four kits, and the retrofit has never been easier.

By utilizing the existing A8, SPORT or A9 valve body, there is no brazing required to complete the conversion, saving considerable time and expense. The conversion kit reduces the seal surface area of the installed valve, making this an ideal upgrade opportunity versus a seal rebuild, or even as a full store scheduled retrofit. Once the retrofit is complete, you will find that the solution pays for itself through improvements in system performance, and through future serviceability and diagnostic capabilities.

Review Installation Instruction SD-399 for A8/SPORT and SD-420 for A9 valves for step by step instructions to complete a typical conversion. And for easy implementation and optimal performance, make sure to pair your Conversion Kit with a Sporlan Pressure or Temperature Control.

SPECIFICATIONS

Motor Type	2 phase, bipolar internal (wet) motor
Compatible Refrigerant	All common HCFC and HFC refrigerants
Compatible Oils	All common Mineral, Polyolester and Alkybenzene oils
Supply Voltage	12 VDC +10% -5% (measured at the valve leads)
Cable Type	20' (6m) hermetic cable w/ stripped ends
Phase Resistance	75Ω ± 10% at 70°F (21°C)
Phase Inductance	43MHz ± 20%
Nominal Current	160 mA / winding
Holding Current	Not recommended
Number of Steps	6,386
Recommended Step Rate	200 steps / second (PPS)
Initialization Steps	7,500 steps closing
Overdriving	Recommended one 10% overdrive closed per day maximum (overdriving open not permitted)
MRP	700 psig (48 bar)
Max Internal Leakage	400 cc/min at 100 psid (6.9 bar), dry air
Ambient Temp Range	-50°F to 140°F (-45°C to 60°C)
Refrigerant Temp Range	-50°F to 240°F (-45°C to 116°C)
Relative Humidity	0-100% (Condensing)

SPORLAN A8/A9 TO CDS

Valve Type	Port Size	Conversion Kit	Item Number
A81	5/8"	A81 to SDR-5	183903
A8A	3/8"		
	5/8"		
(S)PORT or (S)PORT-II	3/8"		
	5/8"		
A81	7/8"	A81 to CDS-17	183904
	1-1/8"		
	1-3/8"		
A8A	7/8"		
(S)PORT or (S)PORT-II	7/8"		
	1-1/8"		
	1-3/8"		
A82*	1-5/8"	A82 to CDS-17	183905
	2-1/8"		
(S)PORT*	1-5/8"		
	2-1/8"		
A9	3/8"	A9 to CDS	805580
	5/8"		
	7/8"		
	1-1/8"		

*2-5/8" port not supported.

EEV Cross Reference

EEV CROSS REFERENCE				
ORIGINAL VALVE			PREFERRED VALVE	
Steps	Model		Model	Steps
1,596	SEI-.5	SER-1.5	SER-AA	2,500
	SEI-1.5		SER-A SER-B	
	SEI-2.5 SEI-3.5 SEI-6	SER-6	SER-C	
	SEI-8.5 SEI-11	SER-11	SER-D	
3,193	SEI-30	SER-20*	SERI-F SERI-G(S)	
		—	SERI-J(S)	
6,386	SEI-50	—	SERI-K(S)	
	SEH(I)-100	—	SERI-L(S)	
			SEH(I)-175	6,386
			SEH-P	
			SEHI-400	
			SEHI-T	

*SER-20 has 1,596 steps.

SPORLAN ELECTRONIC EXPANSION VALVES

SPORLAN

Electric Expansion Valves * SERI - F, G, J, K, L Now using M12 Cables

SPORLAN ELECTRIC EXPANSION VALVES					
VALVE TYPE	INLET – Inches (ODF)	OUTLET – Inches (ODF)	CONFIGURATION	CABLE LENGTH	
				FEET	METERS
SER-AA, SER-A	3/8	1/2	Angle	10, 20, Less Cable	3, 6, Less Cable
SER-B*	1/4, 3/8	3/8, 1/2, 5/8	Angle		
SER-C*	1/4, 3/8	3/8, 1/2, 5/8	Angle		
SER-D*	3/8, 1/2, 5/8	1/2, 5/8, 7/8, 1-1/8	Straight Through Offset		
SERI-G*	5/8, 7/8	1/2, 5/8, 7/8, 1-1/8, 1-3/8	Angle or Straight Through Offset	10, 20, 30, 40, Less Cable	3, 6, 9, 12, Less Cable
SERI-J*	7/8, 1-1/8	7/8, 1-1/8, 1-3/8			
SERI-K†	1-1/8	7/8, 1-1/8, 1-3/8, 1-5/8			
SERI-L†	1-1/8, 1-3/8	1-1/8, 1-3/8, 1-5/8			
SEHI-175	1-1/8, 1-3/8, 1-5/8	2-1/8		10, 20, 30, 40	3, 6, 9, 12
SEHI-400	1-5/8, 2-1/8, 2-5/8	1-5/8, 2-1/8, 2-5/8, 3-1/8 ODM	Angle		

*Suitable for bi-directional applications. †Bi-sealing, reduced flow in reverse direction.

*Use Product Selection Guide or bulletins 100-20s to size EEVs

SPECIFICATIONS					
VALVE	SER-AA, -A,-B,-C	SER-D	SERI-G, -J, -K, -L	SEHI-175	SEHI-400
Motor type	2 phase, bipolar wet motor				
Compatible refrigerant	All common HCFC and HFC refrigerants- most including R-410A and subcritical R-744				
Compatible oils	All common Mineral, Polyolester and Alkybenzene oils				
Supply voltage (L/R)	12 volt DC, -5%, +10% measured at the valve leads				
Cable type	IP67 Removable Quad-Position		IP66 Removable	Hermetic	Hermetic
Phase resistance	100 ohms +- 10%		100 ohms +-10%	75 ohms +-10%	75 ohms +-10%
Current range (L/R)	120 ma/ winding		120 ma/ winding	160 ma/ winding	160 ma/ winding
Maximum power input (L/R)	2.8 watts		2.8 watts	3.8 watts	3.8 watts
Recommended step rate	200/second (L/R), up to 400/second (current limited)				
Number of steps	2500		2500	6386	6386
Resolution	.00009" (.0023 mm) / step		.00012" (.003 mm) / step	.00008" (.002 mm) / step	.00008" (.002 mm) / step
Stroke	0.23" (5.8 mm)		.297" (7.5 mm)	.500" (12.7mm)	.500" (12.7mm)
MOPD	580 psid (40 bar)		500 psid (34 bar)	500 psid (34 bar)	300 psid (21 bar)
MRP	1015 psig(70 bar)	700 psig (48 bar)	700 psig (48 bar)	620 psig (43 bar)	500 psig (34 bar)
Max. internal leakage	100 cc/min @ 100 psid (6.9 bar), dry air				
Max. external leakage	.10 oz./yr at 300 psig (2.8 gram/yr @ 20 bar)				
Operating temp range	-50°F to 155°F (-45°C to 68°C)				
Materials of construction	Brass, copper, synthetic seals, stainless steel				

**When sizing electronic valves, size for 60-70% of valve capacity at max load.

CAPACITY - Full Stroke Capacity in Tons (at Evaporator Temperature °F)

R-134a

Valve Type	40°F								20°F								0°F							
	Pressure Drop Across Valve (psid)																							
	40	60	80	100	120	140	160	180	40	60	80	100	120	140	160	180	40	60	80	100	120	140	160	180
SER-AA	0.36	0.44	0.50	0.56	0.62	0.67	0.71	0.76	0.34	0.42	0.48	0.54	0.59	0.64	0.68	0.72	0.32	0.40	0.46	0.51	0.56	0.60	0.65	0.68
SER-A	0.77	0.94	1.09	1.22	1.33	1.44	1.54	1.63	0.73	0.90	1.04	1.16	1.27	1.37	1.47	1.56	0.70	0.85	0.99	1.10	1.21	1.30	1.39	1.48

R-22

Valve Type	40°F								20°F								0°F							
	Pressure Drop Across Valve (psid)																							
	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
SER-AA	0.52	0.60	0.67	0.74	0.80	0.85	0.90	0.95	0.51	0.59	0.66	0.72	0.78	0.83	0.88	0.93	0.49	0.57	0.64	0.70	0.76	0.81	0.86	0.90
SER-A	1.13	1.30	1.46	1.60	1.72	1.84	1.96	2.06	1.10	1.27	1.42	1.56	1.68	1.80	1.91	2.01	1.07	1.24	1.38	1.51	1.63	1.75	1.85	1.95

R-407A/C/F

Valve Type	40°F								20°F								0°F								-20°F							
	Pressure Drop Across Valve (psid)																															
	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
SER-AA	0.48	0.56	0.62	0.68	0.73	0.79	0.83	0.88	0.46	0.53	0.60	0.65	0.70	0.75	0.80	0.84	0.44	0.51	0.57	0.62	0.67	0.72	0.76	0.80	0.42	0.48	0.54	0.59	0.64	0.69	0.73	0.77
SER-A	1.04	1.20	1.34	1.47	1.59	1.70	1.80	1.90	1.00	1.15	1.29	1.41	1.52	1.63	1.73	1.82	0.95	1.10	1.23	1.35	1.45	1.55	1.65	1.74	0.91	1.05	1.17	1.28	1.39	1.48	1.57	1.66

R-448A/449A

Valve Type	40°F								20°F								0°F							
	Pressure Drop Across Valve (psid)																							
	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
SER-AA	0.48	0.56	0.62	0.68	0.74	0.79	0.84	0.88	0.47	0.54	0.60	0.66	0.71	0.76	0.81	0.85	0.45	0.52	0.58	0.63	0.69	0.73	0.78	0.82
SER-A	1.05	1.21	1.35	1.48	1.60	1.71	1.81	1.91	1.01	1.17	1.30	1.43	1.54	1.65	1.75	1.84	0.97	1.12	1.25	1.37	1.48	1.58	1.68	1.77

Valve Type	-20°F								-40°F							
	Pressure Drop Across Valve (psid)															
	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
SER-AA	0.43	0.49	0.55	0.61	0.65	0.70	0.74	0.78	0.41	0.47	0.53	0.58	0.62	0.67	0.71	0.74
SER-A	0.93	1.07	1.20	1.31	1.41	1.51	1.60	1.69	0.88	1.02	1.14	1.24	1.34	1.44	1.52	1.61

R-404A/507A

Valve Type	40°F								20°F								0°F							
	Pressure Drop Across Valve (psid)																							
	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
SER-AA	0.34	0.39	0.44	0.48	0.52	0.55	0.59	0.62	0.32	0.37	0.41	0.45	0.49	0.52	0.56	0.59	0.30	0.35	0.39	0.43	0.46	0.49	0.52	0.55
SER-A	0.73	0.85	0.94	1.04	1.12	1.20	1.27	1.34	0.69	0.80	0.89	0.98	1.06	1.13	1.20	1.27	0.65	0.75	0.84	0.92	1.00	1.07	1.13	1.19

Valve Type	-20°F								-40°F							
	Pressure Drop Across Valve (psid)															
	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
SER-AA	0.28	0.33	0.36	0.40	0.43	0.46	0.49	0.51	0.26	0.30	0.34	0.37	0.40	0.43	0.45	0.48
SER-A	0.61	0.70	0.79	0.86	0.93	1.00	1.06	1.11	0.57	0.65	0.73	0.80	0.87	0.93	0.98	1.03

R-410A

Valve Type	40°F								20°F								0°F							
	Pressure Drop Across Valve (psid)																							
	80	120	160	200	240	280	320	360	80	120	160	200	240	280	320	360	80	120	160	200	240	280	320	360
SER-AA	0.51	0.63	0.72	0.81	0.89	0.96	1.02	1.08	0.50	0.61	0.71	0.79	0.86	0.93	1.00	1.06	0.48	0.59	0.69	0.77	0.84	0.91	0.97	1.03
SER-A	1.10	1.35	1.56	1.75	1.91	2.07	2.21	2.34	1.08	1.32	1.52	1.70	1.87	2.02	2.15	2.29	1.05	1.28	1.48	1.66	1.81	1.96	2.09	2.22

R-744

Valve Type	0°F					-20°F					-40°F				
	Pressure Drop Across Valve (psid)														
	100	150	200	250	300	150	200	250	300	350	200	250	300	350	400
SER-AA	0.88	1.08	1.24	1.39	1.52	1.08	1.24	1.39	1.52	1.64	1.24	1.38	1.51	1.63	1.75
SER-A	1.90	2.32	2.68	3.00	3.29	2.33	2.69	3.00	3.29	3.55	2.67	2.98	3.27	3.53	3.78

Liquid Temperature Correction Factors

°F	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-134a	1.69	1.63	1.56	1.49	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.86	0.78	0.71
R-22	1.57	1.51	1.46	1.40	1.34	1.29	1.23	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-407A	1.78	1.70	1.63	1.55	1.48	1.40	1.32	1.24	1.16	1.08	1.00	0.92	0.83	0.75	0.66
R-407C	1.72	1.65	1.58	1.51	1.44	1.37	1.30	1.22	1.15	1.08	1.00	0.92	0.85	0.77	0.69
R-407F	1.72	1.65	1.58	1.51	1.44	1.37	1.30	1.23	1.15	1.08	1.00	0.92	0.84	0.76	0.68
R-448A	1.78	1.70	1.63	1.55	1.48	1.40	1.32	1.24	1.16	1.08	1.00	0.92	0.83	0.75	0.66
R-449A	1.78	1.71	1.63	1.56	1.48	1.40	1.32	1.25	1.17	1.08	1.00	0.92	0.83	0.75	0.66
R-404A	2.01	1.92	1.82	1.72	1.62	1.52	1.42	1.32	1.22	1.11	1.00	0.89	0.78	0.66	0.54
R-507A	2.05	1.95	1.85	1.75	1.64	1.54	1.44	1.33	1.22	1.11	1.00	0.89	0.77	0.65	0.52
R-410A	1.77	1.70	1.62	1.55	1.48	1.40	1.32	1.25	1.17	1.09	1.00	0.92	0.83	0.73	0.63
R-744	1.13	1.07	1.00	0.93	0.86	0.79	0.71	0.62	0.51	--	--	--	--	--	--

Capacity is calculated at full stroke, with no reserve capacity. Valve should be selected with consideration given to entire range of potential system conditions.

SPORLAN 228-314

R-22 Capacities in Tons (at Evaporator Temperature °F)

	VALVE TYPE	40°F								20°F								0°F							
		Pressure Drop Across Valve (psid)																							
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
R-22	SER-B	2.17	2.51	2.80	3.07	3.32	3.55	3.76	3.96	2.12	2.44	2.73	2.99	3.23	3.46	3.67	3.87	2.06	2.38	2.66	2.91	3.14	3.36	3.56	3.76
	SER-C	5.89	6.80	7.60	8.33	8.99	9.61	10.20	10.75	5.74	6.63	7.41	8.12	8.77	9.38	9.94	10.48	5.58	6.44	7.20	7.89	8.52	9.11	9.66	10.18
	SER-D	12.0	13.8	15.5	16.9	18.3	19.6	20.7	21.9	11.7	13.5	15.1	16.5	17.8	19.1	20.2	21.3	11.3	13.1	14.6	16.0	17.3	18.5	19.7	20.7
	SERI-G	23.0	26.6	29.7	32.5	35.1	37.6	39.8	42.0	22.4	25.9	29.0	31.7	34.3	36.6	38.9	41.0	21.8	25.2	28.1	30.8	33.3	35.6	37.8	39.8
	SERI-J	41.4	47.8	53.5	58.6	63.2	67.6	71.7	75.6	40.4	46.6	52.1	57.1	61.7	65.9	69.9	73.7	39.2	45.3	50.6	55.5	59.9	64.1	67.9	71.6
	SERI-K	75.1	86.7	96.9	106	115	123	130	137	73.2	84.5	94.5	104	112	120	127	134	71.1	82.1	91.8	101	109	116	123	130
	SERI-L	102	118	132	144	156	167	177	186	99.5	115	128	141	152	162	172	182	96.6	112	125	137	148	158	167	176
	SEHI-175	178	205	229	251	271	290	308	324	173	200	224	245	265	283	300	316	168	194	217	238	257	275	291	307
	SEHI-400	376	434	485	532	574	614	651	686	367	423	473	519	560	599	635	669	356	411	460	504	544	582	617	650

R-134a Capacities in Tons (at Evaporator Temperature °F)

	VALVE TYPE	40°F								20°F								0°F							
		Pressure Drop Across Valve (psid)																							
		40	60	80	100	120	140	160	180	40	60	80	100	120	140	160	180	40	60	80	100	120	140	160	180
R-134a	SER-B	1.48	1.82	2.10	2.34	2.57	2.77	2.96	3.14	1.41	1.72	1.99	2.22	2.44	2.63	2.81	2.98	1.34	1.64	1.89	2.12	2.32	2.51	2.68	2.84
	SER-C	4.02	4.92	5.68	6.35	6.96	7.52	8.04	8.53	3.81	4.67	5.39	6.03	6.60	7.13	7.63	8.09	3.63	4.45	5.14	5.74	6.29	6.79	7.26	7.70
	SER-D	8.18	10.0	11.6	12.9	14.2	15.3	16.4	17.3	7.76	9.50	11.0	12.3	13.4	14.5	15.5	16.5	7.39	9.05	10.4	11.7	12.8	13.8	14.8	15.7
	SERI-G	15.6	19.2	22.1	24.8	27.2	29.3	31.3	33.2	15.1	18.4	21.2	23.6	25.9	28.0	29.9	31.6	14.2	17.4	20.1	22.5	24.7	26.6	28.5	30.2
	SERI-J	28.2	34.5	39.9	44.6	48.8	52.7	56.4	59.8	26.9	33.1	38.1	42.6	46.6	50.4	53.8	57.1	25.6	31.4	36.2	40.5	44.4	47.9	51.2	54.4
	SERI-K	51.1	62.6	72.2	80.8	88.5	95.6	102	108	48.8	59.8	69.1	77.2	84.5	91.3	97.6	104.0	46.4	56.9	65.6	73.4	80.4	86.9	92.9	98.5
	SERI-L	69.6	85.3	98.5	110	121	130	139	148	66.1	80.9	93.4	104	114	124	132	140	62.9	77.0	89.0	99.5	109	118	126	133
	SEHI-175	121	148	172	192	211	227	242	258	116	142	164	184	201	216	232	246	110	135	156	174	191	206	220	234
	SEHI-400	250	307	354	396	434	469	501	531	238	291	336	376	412	445	475	504	226	277	320	358	392	423	453	480

R-404A Capacities in Tons (at Evaporator Temperature °F)

	VALVE TYPE	40°F								20°F								0°F							
		Pressure Drop Across Valve (psid)																							
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
R-404A	SER-B	1.41	1.62	1.81	1.99	2.15	2.29	2.43	2.57	1.33	1.54	1.72	1.89	2.04	2.18	2.31	2.44	1.26	1.45	1.63	1.78	1.92	2.06	2.18	2.30
	SER-C	3.81	4.40	4.92	5.39	5.82	6.22	6.60	6.96	3.62	4.18	4.67	5.12	5.53	5.91	6.27	6.61	3.41	3.94	4.41	4.83	5.22	5.58	5.91	6.23
	SER-D	7.75	8.95	10.0	11.0	11.8	12.7	13.4	14.2	7.36	8.50	9.51	10.4	11.2	12.0	12.8	13.4	6.95	8.02	8.97	9.82	10.6	11.3	12.0	12.7
	SERI-G	15.2	17.6	19.6	21.5	23.2	24.8	26.4	27.8	14.4	16.7	18.6	20.4	22.0	23.5	25.1	26.4	13.6	15.6	17.5	19.2	20.7	22.2	23.5	24.8
	SERI-J	27.4	31.6	35.3	38.7	41.8	44.7	47.4	50.0	25.9	30.0	33.5	36.7	39.6	42.4	44.9	47.4	24.4	28.2	31.5	34.5	37.3	39.9	42.4	44.6
	SERI-K	49.6	57.3	64.1	70.2	75.8	81.1	86.0	90.6	47.1	54.4	60.7	66.5	71.9	76.8	81.5	85.9	44.4	51.1	57.1	62.6	67.6	72.4	76.6	80.8
	SERI-L	66.0	76.2	85.2	93.4	101	108	114	121	62.7	72.4	81.0	88.7	95.8	102	109	114	59.2	68.3	76.4	83.7	90.4	96.6	102	108
	SEHI-175	118	136	152	167	180	193	205	215	112	129	145	158	171	182	193	204	105	121	135	148	160	172	182	192
	SEHI-400	237	274	307	336	363	388	411	434	226	260	291	319	345	368	391	412	213	246	275	301	325	348	369	389

	VALVE TYPE	-20°F								-40°F							
		Pressure Drop Across Valve (psid)															
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
R-404A	SER-B	1.18	1.36	1.52	1.67	1.80	1.93	2.04	2.15	1.10	1.27	1.42	1.55	1.68	1.79	1.90	2.00
	SER-C	3.20	3.69	4.13	4.52	4.89	5.22	5.54	5.84	2.97	3.43	3.84	4.21	4.54	4.86	5.15	5.43
	SER-D	6.51	7.51	8.40	9.20	9.94	10.6	11.3	11.9	6.05	6.99	7.81	8.56	9.24	9.88	10.5	11.0
	SERI-G	12.7	14.6	16.4	17.9	19.4	20.7	21.9	23.1	11.6	13.6	15.2	16.6	17.9	19.2	20.4	21.4
	SERI-J	22.8	26.4	29.4	32.2	34.8	37.2	39.5	41.6	21.1	24.4	27.3	29.9	32.4	34.5	36.6	38.6
	SERI-K	41.3	47.6	53.4	58.4	63.1	67.5	71.6	75.5	38.4	44.2	49.5	54.2	58.5	62.6	66.4	69.9
	SERI-L	55.4	64.0	71.5	78.4	84.6	90.5	96.0	101	51.5	59.5	66.5	72.9	78.7	84.1	89.3	94.1
	SEHI-175	98.1	113	127	139	149	160	169	179	90.9	105	117	128	139	148	158	166
	SEHI-400	199	230	257	282	305	326	345	364	185	214	239	262	283	303	321	338

Liquid Temperature Correction Factors

°F	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
°C	-18	-12	-7	-1	4	10	16	21	27	32	38	43	49	54	60
R-22	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-134a	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-404A	2.04	1.94	1.84	1.74	1.64	1.54	1.43	1.33	1.22	1.11	1.00	0.89	0.77	0.65	0.53

R-407A Capacities in Tons (at Evaporator Temperature °F)

	VALVE TYPE	40°F								20°F								0°F							
		Pressure Drop Across Valve (psid)																							
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
R-407A	SER-B	2.03	2.34	2.62	2.87	3.10	3.31	3.52	3.71	1.94	2.24	2.50	2.74	2.96	3.16	3.35	3.54	1.84	2.12	2.38	2.60	2.81	3.00	3.19	3.36
	SER-C	5.50	6.35	7.10	7.78	8.41	8.99	9.53	10.0	5.25	6.06	6.78	7.43	8.02	8.58	9.10	9.59	4.99	5.76	6.44	7.06	7.62	8.15	8.64	9.11
	SER-D	11.2	12.9	14.5	15.8	17.1	18.3	19.4	20.4	10.7	12.3	13.8	15.1	16.3	17.4	18.5	19.5	10.1	11.7	13.1	14.4	15.5	16.6	17.6	18.5
	SERI-G	21.5	24.8	27.8	30.4	32.8	35.1	37.2	39.3	20.5	23.7	26.5	29.0	31.3	33.5	35.5	37.5	19.5	22.5	25.2	27.6	29.8	31.8	33.8	35.6
	SERI-J	38.7	44.7	50.0	54.7	59.1	63.2	67.0	70.7	36.9	42.7	47.7	52.2	56.4	60.3	64.0	67.4	35.1	40.5	45.3	49.6	53.6	57.3	60.8	64.1
	SERI-K	70.2	81.0	90.6	99.2	107	115	122	128	67.0	77.3	86.4	94.7	102	109	116	122	63.6	73.4	82.1	90.0	97.2	104	110	116
	SERI-L	95.3	110	123	135	146	156	165	174	91.0	105	117	129	139	149	158	166	86.4	99.8	112	122	132	141	150	158
	SEHI-175	166	192	214	235	254	271	288	303	158	183	205	224	242	259	274	289	151	174	194	213	230	246	261	275
	SEHI-400	351	406	454	497	537	574	609	642	335	387	433	474	512	548	581	612	319	368	411	451	487	520	552	582

R-407C Capacities in Tons (at Evaporator Temperature °F)

	VALVE TYPE	40°F								20°F								0°F							
		Pressure Drop Across Valve (psi)																							
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
R-407C	SER-B	2.05	2.37	2.65	2.90	3.13	3.35	3.55	3.74	1.98	2.28	2.55	2.80	3.02	3.23	3.43	3.61	1.90	2.20	2.45	2.69	2.90	3.10	3.29	3.47
	SER-C	5.56	6.42	7.18	7.86	8.49	9.08	9.63	10.1	5.36	6.19	6.92	7.59	8.19	8.76	9.29	9.79	5.15	5.95	6.65	7.29	7.87	8.42	8.93	9.41
	SER-D	11.3	13.1	14.6	16.0	17.3	18.5	19.6	20.6	10.9	12.6	14.1	15.4	16.7	17.8	18.9	19.9	10.5	12.1	13.5	14.8	16.0	17.1	18.2	19.1
	SERI-G	21.1	24.4	27.3	29.9	32.4	34.5	36.6	38.6	20.2	23.4	26.2	28.7	30.9	33.2	35.2	37.1	19.4	22.4	25.1	27.4	29.6	31.6	33.5	35.3
	SERI-J	38.0	43.9	49.1	53.8	58.1	62.1	65.8	69.4	36.5	42.1	47.2	51.6	55.8	59.6	63.3	66.7	34.8	40.2	45.1	49.3	53.2	56.9	60.4	63.6
	SERI-K	68.9	79.6	89.1	97.5	105	113	119	126	66.2	76.5	85.4	93.6	101	108	115	121	63.2	72.9	81.5	89.3	96.5	103	109	115
	SERI-L	96.3	111	124	136	147	157	167	176	92.9	107	120	131	142	152	161	170	89.3	103	115	126	136	146	155	163
	SEHI-175	164	189	212	232	249	267	284	299	156	181	202	222	240	256	272	287	149	173	194	212	229	245	260	274
	SEHI-400	346	400	447	490	529	566	600	632	334	386	432	473	511	546	579	610	321	371	415	454	491	525	556	586

R-410A Capacities in Tons (at Evaporator Temperature °F)

	VALVE TYPE	40°F								20°F								0°F							
		Pressure Drop Across Valve (psid)																							
		80	120	160	200	240	280	320	360	80	120	160	200	240	280	320	360	80	120	160	200	240	280	320	360
R-410A	SER-B	2.10	2.57	2.97	3.32	3.64	3.93	4.20	4.45	2.05	2.52	2.91	3.25	3.56	3.84	4.11	4.36	2.00	2.45	2.83	3.16	3.46	3.74	4.00	4.24
	SER-C	5.69	6.97	8.05	9.00	9.86	10.6	11.4	12.1	5.57	6.82	7.88	8.81	9.65	10.4	11.1	11.8	5.42	6.64	7.67	8.57	9.39	10.1	10.8	11.5
	SER-D	11.6	14.2	16.4	18.3	20.1	21.7	23.2	24.6	11.3	13.9	16.0	17.9	19.6	21.2	22.7	24.0	11.0	13.5	15.6	17.4	19.1	20.6	22.1	23.4
	SERI-G	22.5	27.5	31.8	35.5	38.9	42.1	45.1	47.8	22.0	26.9	31.1	34.7	38.0	41.1	43.9	46.6	21.3	26.1	30.1	33.8	36.9	39.9	42.7	45.3
	SERI-J	40.5	49.6	57.3	64.0	70.1	75.8	80.9	85.9	39.5	48.4	55.9	62.5	68.5	73.9	79.1	83.8	38.4	47.1	54.2	60.7	66.5	71.8	76.7	81.4
	SERI-K	73.4	89.9	104	116	127	138	147	155	71.6	87.8	101	113	124	134	144	152	69.5	85.2	98.4	110	120	131	139	147
	SERI-L	98.6	121	139	156	171	184	197	209	96.5	118	136	153	167	181	193	205	93.9	115	133	149	163	176	188	199
	SEHI-175	174	214	247	275	302	326	348	369	171	208	240	269	294	319	340	361	165	202	234	261	286	309	331	351
	SEHI-400	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

R-422D Capacities in Tons (at Evaporator Temperature °F)

	VALVE TYPE	40°F								20°F								0°F							
		Pressure Drop Across Valve (psid)																							
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
R-422D	SER-B	1.48	1.71	1.91	2.09	2.26	2.41	2.56	2.70	1.40	1.61	1.80	1.97	2.13	2.28	2.42	2.55	1.31	1.51	1.69	1.85	2.00	2.14	2.27	2.39
	SER-C	4.01	4.63	5.17	5.67	6.12	6.54	6.94	7.32	3.79	4.37	4.89	5.35	5.78	6.18	6.56	6.91	3.55	4.10	4.59	5.03	5.43	5.80	6.16	6.49
	SER-D	8.15	9.41	10.5	11.5	12.5	13.3	14.1	14.9	7.70	8.89	9.94	10.9	11.8	12.6	13.3	14.1	7.23	8.35	9.33	10.2	11.0	11.8	12.5	13.2
	SERI-G	15.7	18.1	20.2	22.1	23.9	25.6	27.1	28.6	14.8	17.1	19.1	20.9	22.6	24.2	25.6	27.0	13.9	16.0	17.9	19.6	21.2	22.7	24.1	25.4
	SERI-J	28.2	32.5	36.4	39.9	43.1	46.0	48.8	51.5	26.6	30.7	34.4	37.7	40.7	43.5	46.1	48.6	25.0	28.9	32.3	35.4	38.2	40.8	43.3	45.6
	SERI-K	51.1	59.0	66.0	72.3	78.0	83.4	88.5	93.3	48.3	55.7	62.3	68.3	73.7	78.8	83.6	88.1	45.3	52.3	58.5	64.1	69.2	74.0	78.5	82.7
	SERI-L	69.4	80.2	89.6	98.2	106	113	120	127	65.6	75.7	84.7	92.8	100	107	114	120	61.6	71.1	79.5	87.1	94.1	101	107	112
	SEHI-175	121	140	156	171	185	197	209	221	114	132	147	162	174	187	198	209	107	124	138	152	164	175	186	196
	SEHI-400	256	296	330	362	391	418	443	467	242	279	312	342	369	395	419	441	227	262	293	321	347	371	393	414

Liquid Temperature Correction Factors

°F	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
°C	-18	-12	-7	-1	4	10	16	21	27	32	38	43	49	54	60
R-407A	1.76	1.68	1.61	1.53	1.46	1.39	1.31	1.24	1.16	1.08	1.00	0.92	0.83	0.74	0.64
R-407C	1.69	1.62	1.55	1.49	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.77	0.69
R-410A	1.61	1.55	1.49	1.43	1.39	1.31	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-422D	1.99	1.90	1.80	1.70	1.60	1.50	1.41	1.31	1.20	1.10	1.00	0.90	0.79	0.68	0.57

R-507A Capacities in Tons (at Evaporator Temperature °F)

	VALVE TYPE	40°F								20°F								0°F							
		Pressure Drop Across Valve (psid)																							
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
R-507A	SER-B	1.36	1.57	1.76	1.93	2.08	2.22	2.36	2.49	1.29	1.49	1.67	1.83	1.97	2.11	2.24	2.36	1.22	1.41	1.57	1.72	1.86	1.99	2.11	2.22
	SER-C	3.69	4.26	4.77	5.22	5.64	6.03	6.40	6.74	3.50	4.05	4.52	4.96	5.35	5.72	6.07	6.40	3.30	3.81	4.26	4.67	5.04	5.39	5.72	6.03
	SER-D	7.51	8.67	9.70	10.6	11.5	12.3	13.0	13.7	7.13	8.23	9.20	10.1	10.9	11.6	12.3	13.0	6.71	7.75	8.67	9.50	10.3	11.0	11.6	12.3
	SERI-G	14.9	17.2	19.2	21.1	22.8	24.4	25.8	27.2	14.1	16.4	18.2	20.0	21.6	23.1	24.5	25.8	13.3	15.3	17.2	18.8	20.4	21.6	23.1	24.4
	SERI-J	26.8	31.1	34.6	37.9	41.1	43.8	46.4	49.1	25.4	29.3	32.8	35.9	38.8	41.5	44.0	46.4	23.9	27.6	30.9	33.8	36.5	39.1	41.4	43.6
	SERI-K	48.6	56.1	62.8	68.7	74.4	79.4	84.2	88.8	46.0	53.2	59.5	65.1	70.4	75.2	79.8	84.1	43.4	50.1	56.0	61.3	66.2	70.8	75.1	79.2
	SERI-L	64.0	73.9	82.6	90.5	97.7	104	111	117	60.7	70.1	78.4	85.8	92.7	99.1	105	111	57.2	66.0	73.8	80.9	87.4	93.4	99.0	104
	SEHI-175	115	133	149	164	176	188	200	211	109	126	141	154	167	179	189	200	103	119	133	146	158	168	179	188
	SEHI-400	230	266	297	325	352	376	399	420	218	252	282	309	334	357	378	399	206	238	266	291	314	336	356	376

	VALVE TYPE	-20°F								-40°F							
		Pressure Drop Across Valve (psid)															
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
R-507A	SER-B	1.14	1.31	1.47	1.61	1.74	1.86	1.97	2.08	1.06	1.22	1.36	1.49	1.61	1.73	1.83	1.93
	SER-C	3.09	3.56	3.98	4.36	4.71	5.04	5.35	5.63	2.86	3.31	3.70	4.05	4.38	4.68	4.96	5.23
	SER-D	6.28	7.25	8.10	8.88	9.59	10.3	10.9	11.5	5.83	6.73	7.52	8.24	8.90	9.51	10.1	10.6
	SERI-G	12.4	14.4	16.1	17.6	19.1	20.4	21.5	22.7	11.6	13.4	14.9	16.4	17.6	18.9	20.0	21.1
	SERI-J	22.4	25.8	28.9	31.6	34.2	36.6	38.8	40.9	20.8	24.0	26.9	29.4	31.8	34.0	36.0	38.0
	SERI-K	40.6	46.9	52.4	57.4	62.0	66.4	70.4	74.1	37.6	43.6	48.7	53.4	57.6	61.6	65.3	68.9
	SERI-L	53.5	61.7	69.0	75.6	81.7	87.3	92.6	97.6	49.6	57.3	64.1	70.2	75.8	81.0	85.9	90.6
	SEHI-175	96.4	111	125	136	147	158	167	176	89.6	103	116	127	136	146	155	164
	SEHI-400	192	222	248	272	294	314	333	351	179	206	230	252	273	292	309	326

R-744 Capacities in Tons (at Evaporator Temperature °F)

	VALVE TYPE	0°F					-20°F					-40°F				
		Pressure Drop Across Valve (psid)														
		100	150	200	250	300	150	200	250	300	350	200	250	300	350	400
R-744	SER-B	3.65	4.47	5.16	5.77	6.32	4.47	5.17	5.78	6.33	6.83	5.13	5.74	6.29	6.79	7.26
	SER-C	9.90	12.1	14.0	15.6	17.1	12.1	14.0	15.7	17.2	18.5	13.9	15.6	17.0	18.4	19.7
	SER-D	20.1	24.7	28.5	31.8	34.9	24.7	28.5	31.9	34.9	37.7	28.3	31.7	34.7	37.5	40.0
	SERI-G	38.6	47.3	54.7	61.1	66.9	47.4	54.7	61.2	66.9	72.4	54.4	60.8	66.6	71.9	76.8
	SERI-J	69.5	85.2	98.4	110	120	85.3	98.5	110	120	131	97.8	109	120	129	139
	SERI-K	126	154	179	199	219	154	179	200	219	236	178	199	218	234	251
	SERI-L	171	210	242	271	297	210	243	271	297	321	241	270	295	319	341
	SEHI-175	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	SEHI-400	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

R-744 Capacities in kW (at Evaporator Temperature °C)

	VALVE TYPE	-20°C				-30°C				-40°C			
		Pressure Drop Across Valve (bar)											
		8	12	16	20	12	16	20	24	16	20	24	28
R-744	SER-B	13.8	16.9	19.6	21.9	16.9	19.6	21.9	24.0	19.4	21.7	23.8	25.7
	SER-C	37.5	46.0	53.1	59.3	45.9	53.0	59.3	65.0	52.7	59.0	64.6	69.8
	SER-D	76.3	93.5	108	121	93	108	121	132	107	120	131	142
	SERI-G	144	175	204	227	175	204	227	248	202	226	247	267
	SERI-J	259	316	366	408	316	365	408	447	364	406	445	480
	SERI-K	468	574	662	741	573	662	740	811	659	736	806	871
	SERI-L	650	796	919	1028	796	919	1027	1125	913	1021	1119	1208
	SEHI-175	–	–	–	–	–	–	–	–	–	–	–	–
	SEHI-400	–	–	–	–	–	–	–	–	–	–	–	–

Liquid Temperature Correction Factors

°F	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
°C	-18	-12	-7	-1	4	10	16	21	27	32	38	43	49	54	60
R-507A	1.99	1.89	1.79	1.69	1.59	1.50	1.40	1.30	1.20	1.10	1.00	0.89	0.78	0.66	0.51
R-744	1.13	1.07	1.00	0.93	0.86	–	–	–	–	–	–	–	–	–	–

SPORLAN ELECTRONIC VALVE CONTROLLERS

Kelvin II Series
Valve Controllers



✓ standard

	Kelvin II Product Line				
	Superheat - s Item Number 952569	**Superheat - sd** Item Number 952567	**Subcool** Item Number 952570	**Temperature** Item Number 953462	**Pressure** Item Number 953474
Key Features					
Display	–	✓	✓	✓	✓
Temperature Sensor (type)	3K	3K	3K	3K	3K
Temperature Sensor (#)	4	4	4	4	4
Pressure Transducer	1	1	1	1	1
Valves Controlled (type)	EEV			SDR / CDS	
Valves Controlled (#)	1	1	1	1	1
Communication	✓	✓	✓	✓	✓
Power	24VAC/DC				
UL	✓	✓	✓	✓	✓
Typical Applications					
Commercial HVAC - Evaporator	✓	✓	–	–	–
Refrigerated Display Cases	✓	✓	–	–	–
Cold Rooms / Environmental Chambers	✓	✓	–	–	–
Primary Chillers	–	–	✓	–	–
Commercial HVAC - Heat Reclaim	–	–	–	✓	–
Compressor Discharge Temperature Control	–	–	–	✓	–
Supermarket					
- Rack Subcooling	–	–	✓	–	–
- Case Discharge Air	–	–	–	✓	–
- Case Low Side Pressure Control	–	–	–	–	✓
- High Side Head Pressure Control	–	–	–	–	✓
- Case / Lineup Liquid Pressure Control	–	–	–	–	✓
Commercial HVAC - Head Pressure Control	–	–	–	–	✓
Specialty Applications	✓	✓	✓	✓	✓
LIST	924.00	1,399.00	1,515.00	1,515.00	1,515.00

Accessories

Item Description	Item Number	Notes
Parker Sporlan Temperature Probes		
3K Sensor - Brass	952551	Not used with well
3K Well Sensor Ki t	805102	Sensor with well
98.6K Sensor	952565	High temperature sensor
Parker Sporlan Pressure Transducers*		
PSPT0500SVSP-S	952576	0-500 psis transducer (R744)
PSPT0300SVSP-S	952574	0-300 psis transducer (R410A)
PSPT0150SVSP-S	952572	0-150 psis transducer (all other refrigerants)
Transducer Cables		
PSPT000000CP50	953100	5 meter cable
PSPT000000CP20	953192	2 meter cable
Troubleshooting Accessories		
SMA-12	953276	Handheld digital instrument for testing EEV performance.

*Select one per controller based on refrigerant.

Accessory Directions: EEV- Select one Temperature Sensor, One pressure transducer and one transducer cable per valve
EPR – Select one pressure transducer and transducer cable or temperature sensor per valve
EDBP – Select one temperature sensor per valve

Troubleshoot with the SMA-12 Controller (953276)

Superheat Control
- True pressure / temperature stand-alone superheat controller via EEV control
- Remote access via Modbus
- Pumpdown mode via dry contact input
- Manual valve positioning
- Energy efficient system operation though more accurate valve control

Subcool Control
- Controls liquid temperature using an EEV
- Provides secondary control of superheat for system protection
- Displays actual leaving liquid temperature, superheat, suction pressure, valve position, controller status, and alarms
- Pumpdown mode via dry contact input
- Manual valve positioning
- Remote access via Modbus

Temperature Control
- Temperature control via electric valve (ie: SDR)
- Increased operating limits (-50°F to +299°F)
- Remote access via Modbus
- Pumpdown mode via dry contact input
- Manual valve positioning
- Advanced algorithm with AUTO PID to optimize system performance
- Optional high temperature selection for discharge control (60°F to +299°F) with 98.6K temperature sensor
- Optional temperature delta control (maintains T1-T2)

Pressure Control
- Controls electric evaporator regulator valve (CDS) or hot gas bypass valve (SDR) to regulate system pressure
- Remote access via Modbus
- Pumpdown mode via dry contact input
- Manual valve positioning
- Advanced algorithm with AUTO PID to optimize system performance
- Head pressure control to replace mechanical A8 and A9 valves
- Supports inlet or outlet regulator (ie: A80E)

All models are UL approved.

SPORLAN ELECTRONIC EPR

Electric Evaporator Control Valves - CDS -4, -7, -9, -16 and -17

Flow Capacity - Liquid

Tons psi °F

TYPE	Cv	PRESSURE DROP ACROSS VALVE – psi				
		0.5	1	3	5	10
CDS-4	2.88	9.26	13.0	22.3	28.6	40.1
CDS-7	7.28	24.3	33.6	56.2	71.4	98.7
CDS-9	11.2	37.0	51.5	86.6	110	153
CDS-16	17.9	59.9	82.7	138	175	242
CDS-17	20.4	66.8	93.0	157	200	279

kW bar °C

TYPE	Kv	PRESSURE DROP ACROSS VALVE – bar				
		0.03	0.07	0.20	0.40	0.70
CDS-4	2.49	29.8	45.1	75.4	106	139
CDS-7	6.30	78.4	117	191	264	343
CDS-9	9.72	119	179	294	408	532
CDS-16	15.5	193	287	469	648	841
CDS-17	17.6	216	323	533	741	968

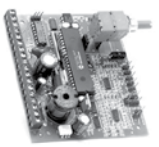
Ratings based on 20°F (-5°C) liquid, -20°F (-30°C) evaporator temperature.

LIQUID TEMPERATURE (°F)				
0°	10°	20°	30°	40°
CORRECTION FACTOR, LIQUID CAPACITY RATING				
1.13	1.07	1.00	0.93	0.86

LIQUID TEMPERATURE (°C)					
-20°	-15°	-10°	-5°	0°	5°
CORRECTION FACTOR, LIQUID CAPACITY RATING					
1.18	1.12	1.06	1.00	0.94	0.87

Controller Packages

TCB Temperature Control Board / IB Interface Board



The TCB interface/controller was designed to allow all Sporlan step motors to be modulated in response to an externally generated signal. The IB and TCB will accept a 4-20 milliamp, or 0-10 volt DC inputs and will stroke the valve in proportion to that signal. The TCB and IB will allow use of the CDS valves with an existing DDC system or other generic temperature controller for hot gas bypass, evaporator temperature, or reclaim applications. **While the TCB and IB will also control Sporlan's line of SER and SEI step motor electric expansion valves, an external signal must be generated in response to superheat and not simply temperature. Please contact Sporlan for more information.**

When the TCB is purchased with optional set point potentiometer and sensor, the TCB becomes a stand alone single point temperature control for the CDS valves. The sensor is installed in the air stream or affixed to the pipe containing the liquid to be controlled.

SMA-12 Step Motor Actuator



The SMA-12 is an instrument designed to help diagnose systems with step motor valves by proving operation of the step motor. The unit is powered by two 9 volt alkaline batteries and will power any standard 12-volt DC bipolar step motor. Step rate is selectable at 1, 50, 100 or 200 steps per second and will stroke the motor in both the open and closed directions. Red lamps indicate continuity of the motor windings and battery power, and binding posts are provided for quick connection of the motor leads. In the event of a controller failure, the SMA-12 can be used to manually open or close the valve or manually step it to any position. The SMA-12 is the basic troubleshooting tool for all step motor valve operated systems.

ITEM NUMBER	DESCRIPTION	CONNECTOR
953276	SMA-12	Binding Post

INTERFACE BOARDS	INPUT	VALVES*
TCB-L (952660)	4-20 ma, 0-10 VDC	CDS
TCB with Potentiometer (952664)	Temperature Sensor	CDS
IB-2 (983188)	4-20 ma, 0-10 VDC	CDS-4, -7
IB-6 (952957)		CDS-9, -16, -17
IB6Q (952960)		SER, SEI

ALL IB Replaced with IB-G. Details at bottom of page.

* Interface boards may be used with electric expansion valves SER and SEI only when used with external superheat controllers. Contact Sporlan for more information.

ACCESSORIES	ITEM NUMBERS	APPLICATION
0-500 psig (0-34.5 bar) Pressure Transducer 10' Cable (Yellow Color Code)	952505	Head Pressure and CO_2 Applications only
Surface Sensor - 2K (Black Color Code)	952662	All
Well Sensor	952795	All except IB and TCB less Potentiometer
Air Sensor	952669	All except IB and TCB less Potentiometer
Omnistat Sensor	952899	OmniStat only

* NEW * IB-G (953580) 4 -20ma,0-10VDC Controls All valves

EX VALVES & CONTROLS

EMERSON

EX4-EX8 Electrical Control Valves

The EX4-EX8 are stepper motor driven valves that are optimized for the control of liquid or gaseous mass f ow in refrigeration systems. Multifunction capability as expansion valve, hot gas bypass, suction gas throttling,head pressure, liquid line actuator and other applications systems.



Features

- Fully hermetic design
- Fast full stroke time
- Applicable to all common refrigerants (HCFC, HFC), for subcritical CO2 applications
- High resolution and excellent repeatability
- Bi-flow versions for heat pump applications
- Positive shut-off function to eliminate the use of an additional solenoid valve
- Linear flow capacity
- Wide capacity range (10 - 100%)
- Continuous modulation of mass flow, no stress (liquid hammering) in the refrigeration circuit
- Direct coupling of motor and valve for high reliability (no gear mechanism)
- Ceramic slide and port for accurate flow and minimal wear
- Balanced force design
- Corrosion resistant stainless steel body, and connections

***EXD-SH Kit Selection**

Refrigerants	Circuits	P/N	Pressure Range	Valve Type
R22, R23, R32, R124, R134a, R404A, R407A, R407C, R407F, R507	1	**920000**	22" to 100 psig	EX4 to EX8
	2	**920003**	22" to 100 psig	
R410A	1	**920001**	0 to 260 psig	
	2	**920004**	0 to 260 psig	
R744 (CO2)	1	**920002**	0 to 750 psig	EX4 to EX7 (870 psig), EX8 (653 psig)
	2	**920005**	0 to 750 psig	CX4 to CX7 (1,740 psig)

*Kits do not include valve.



		Kit Part Number					
		920000	**920003**	**920001**	**920004**	**920002**	**920005**
Description	**P/N**						
Controller EXD-SH1 (Single Circuit)	**807855**	**1**		**1**		**1**	
Controller EXD-SH2 (Two Circuit)	**807856**		**1**		**1**		**1**
EXD-M03 Molex Terminal 3.0 Metres	**807865**	**1**	**1**	**1**	**1**	**1**	**1**
EXV M60 EXV Cable Connector 6.0 Metres	**804665**	**1**	**2**	**1**	**2**	**1**	**2**
M12 Plug & Cable PT4-M60 6.0 Metres	**804805**	**1**	**2**	**1**	**2**	**1**	**2**
Pressure Transmitter PT5-50M 7/16"UNF 4-20MA Range 0-725 PSIG	**802353**					**1**	**2**
Pressure Transmitter PT5-07M 7/16"UNF 4-20MA Range 22"-100 PSIG	**802350**	**1**	**2**				
Pressure Transmitter PT5-18M 7/16"UNF 4-20MA Range 0-260 PSIG	**802351**			**1**	**2**		
Temperature Sensor ECN-N60 With 6.0 Metre Cable	**804497**	**1**	**2**	**1**	**2**	**1**	**2**
Transformer 120/208/240V TO 24V 50VA	**640-0040**		**1**		**1**		**1**
Transformer 120/208/240V TO 24V 40VA	**90-T40F3**	**1**		**1**		**1**	

EX & CX Valves

Part #	Description
800615	EX4 I21 3/8" X 5/8" ODF
800618	EX5 U21 5/8" X 7/8" ODF
800620	EX6 I21 7/8" X 1-1/8" ODF
800624	EX7 I21 1-1/8" X 1-3/8" ODF
800631	EX8 I21 1-5/8" ODF

EXD-SH1/2 Controller Accessories

Type	Description	Part #	
M12 Plug and cable for pressure transmitters PT5		**Multipack (20 pieces)**	**Single Pack**
PT4-M15	1.5 m	804803M	804803
PT4-M30	3.0 m	804804M	804804
PT4-M60	6.0 m	804805M	804805
Uninterruptible Power supply			
ECP-024	Backup battery with two outputs for two controllers	-	804558
K09-P00	Electrical Terminal Kit for ECP-024 (2 Required for 804558)		804560
EXD-PM	Super cap for only EXD-SH1 (two pieces of EXD-PM required for one EXD-SH2)		807854

SOLENOID VALVES
EMERSON

200RD Solenoid Valves

The 200RD is a pilot-operated, 2-way, normally closed solenoid valve that is suitable for all refrigerants, includingR-410A. 200RD valves are used for liquid, discharge, or suction gas refrigerant service.

R- 410A



Note: Mounting enclosing tube more than 90° off vertical up position is not recommended.

See Next Page For Coils

Features

- One coil fits all valve size
- Extended ends for easy installation (standard)
- Long-life molded coils
- PTFE O-ring for superior external sealing

Options

- Available in 7 orifice size
- Manual stem or mounting stud
- Bi-Flow operation-conversion either factory assembled or with kit except 200RD 7 and 200RD 9

Specifications

- Maximum fluid temperature: 250°F
- Maximum working pressure: 680 psig
- Minimum operating pressure drop: 2 psi
- MOPD: 550 psig
- UL/CUL file number: MP604

Nomenclature example: 200RD 4T3M VLC

200R	D	4	T	3	M	VLC
Valve Series	**Design Series**	**Port Size** (in 1/16”)	**Connection Type** T = Copper Extended Ends	**Connection Size** (In 1/8”)	M = manual stem T = mounting stud (optional)	**Coil***

**NOTE: Valves are shipped without the solenoid coils (VLC = Valve Less Coil). See available coil assemblies.*

Part #	Description	Connection Size	LIST
066159	200RD 2 T 3	3/8 ODF	169.20
066161	200RD 3 T 3	3/8 ODF	201.70
066162	200RD 3 T 4	1/2 ODF	201.70
066163	200RD 4 T 3	3/8 ODF	201.70
066164	200RD 4 T 4	1/2 ODF	242.50
066165	200RD 4 T 5	5/8 ODF	242.50
066166	200RD 5 T 3	3/8 ODF	242.50
066167	200RD 5 T 4	1/2 ODF	242.50

***** More solenoid valves available***

SOLENOID COILS
EMERSON

Coils For Solenoid Valves

Features

- Compact designs
- Coil windings are insulated to provide shock and vibration protection
- ASC2 is designed to provide weather protection
- Interchangeable housings

Voltage Options

- 24V 50/60 Hz
- 120V 50/60 Hz (standard)
- 208-220/208-240V 50/60 Hz
- 480V 50/60 Hz
- 120-240V 50/60 Hz
- 12V D.C. (MM Series recommended)
- 24V D.C. (MM Series recommended)



AMG - Junction Box

Nomenclature

Coil Code		
A	**M**	**G**
Series A = 12 Watt B = 15 Watt C = 18 Watt D = 7 Watt M = 4 Watt	**Insulation** B or G = Class B M = Class F H = Class H	**Enclosure** C = Conduit Connection F = Open Frame Leads G = Junction Box L = Grommet 18" Leads S = Spade Connection

Part #	Description	Voltage/ Frequency	LIST
057341	AMG 24V 50/60 Hz	24V 50/60 Hz	148.80
057343	AMG 120-240V 50/60 Hz	120-240V 50/60 Hz	148.80

***** More coils available***

HERMETIC MOISTURE INDICATORS
EMERSON

HMI - Hermetic Moisture Indicators

The HMI is designed to provide an accurate method of determining the moisture content of a system's refrigerant. The HMI has a unique high accuracy moisture indicator for CFC, HCFC, and HFC refrigerants.

Features

- Highest sensitivity moisture indicator available
- Hermetic, leak-free construction
- Single indicator for all common refrigerants
- Accurate color calibration at low ppm levels and higher temperatures
- Wide angle viewing/high visibility window for ease of monitoring
- All brass corrosion resistant body for fewer leaks
- Solid copper connections

Specifications

- Maximum working pressure: 680 psig
- UL/CUL file number: SA 4876

R- 410A



Nomenclature example: HMI 1TT4

HMI	1	TT	4
Hermetic Moisture Indicator	Series	Connection Style TT = Sweat x Sweat	Connection Size (in 1/8")

Part #	Description	LIST
065405	HMI1-1TT2	36.30
065406	HMI1-1TT3	40.40
065407	HMI1-1TT4	52.50
065408	HMI1-1TT5	60.60
065410	HMI1-1TT7	88.90
065411	HMI1-1TT9	101.00

SYSTEM PROTECTORS

EMERSON

EK Liquid Line Filter Drier

R- 410A

The EK Liquid Line Filter Drier is a premium compacted bead Filter Drier with a f ne 20 micron f ne outlet pad for maximum f ltration. The EK is a premium universal replacement liquid line Filter Drier for CFC, HCFC and HFC refrigerants including R-12, R-134a, R-22, R-404A, R-407C, R-410A, R-500, R-502, and R-507.



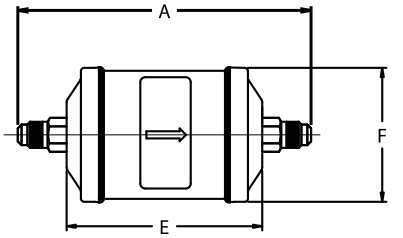
Features

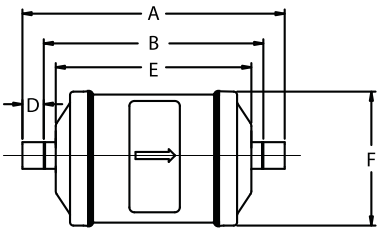
- Filtration f rst for more effective use of surface area of desiccant
- High moisture and acid removal capacity
- Solid copper connections
- Corrosion resistant epoxy powder paint finish
- Copeland® brand products approved for PO
- Shock resistant steel shell construction

Specifications

- Desiccant blend - optimized for high water capacity and acid capacity
- Filtration: 20 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124

Part #	Description	Dimensions (in)			LIST
		A	B	D	
060012	EK 032S	3.88	3.13	30.38	26.20
060014	EK 033S	4.06	3.19	0.44	26.20
047602	EK 052S	4.44	3.69	0.38	34.30
047604	EK 053S	4.50	3.63	0.44	34.30
047606	EK 082S	5.25	4.50	0.38	40.40
047608	EK 083S	5.31	4.44	0.44	40.40
047610	EK 084S	5.38	4.38	0.50	40.40
047612	EK 162S	6.19	5.44	0.38	52.50
047614	EK 163S	6.25	5.44	0.44	52.50
047618	EK 165S	6.56	5.31	0.63	52.50





EK Cap Tube Filter Drier

R- 410A

The EK Cap Tube f lter drier is designed for foodservice refrigeration systems.



Features

- Schrader valve on the inlet side acts as a maintenance and charging port
- Outlet is designed to accept capillary tubing without the need for crimping
- Extended solid copper 1/4 ODF connection inlet by cap tube
- Incorporates all the internal features of the premium EK

Specifications

- Desiccant blend - optimized for high water capacity and acid capacity
- Filtration: 20 microns
- Maximum working pressure: 680 psig
- UL/CUL f le number: SA 3124

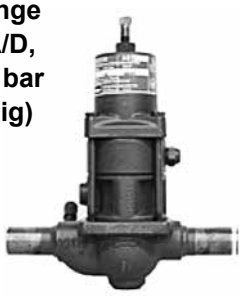
Part #	Description	LIST
063208	EK 032 SV CAP (3 cubic inch)	32.30
016141	EK 032C 1/4" INLET W/CAPTUBE OUT	29.30

FLO-CON PRESSURE REGULATORS

PARKER

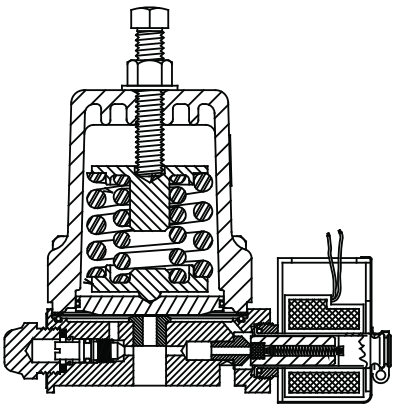
Inlet Pressure

- **compact wide-range**
- **standard range A/D, 250 mm Hg to 28 bar (10" Hg to 400 psig)**

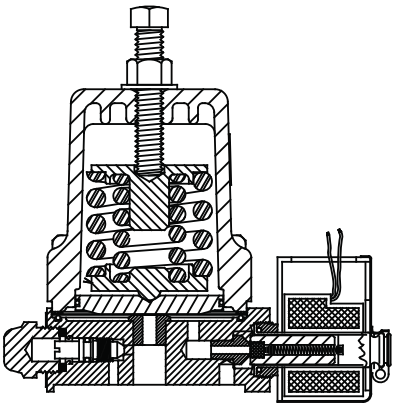


Type	Effective Port. Sizes Avail. (in.)	Connection Size (in.)
A8A	3/8, 5/8	5/8
A8A	3/8, 5/8, 7/8	7/8
A8A	3/8, 5/8, 7/8	1-1/8
A81	5/8, 7/8, 1-1/8	1-1/8
A81	7/8, 1-1/8, 1-3/8	1-3/8
A81	7/8, 1-1/8, 1-3/8	1-5/8
A81	7/8, 1-1/8, 1-3/8	2-1/8
A82	1-5/8	1-5/8
A82	1-5/8, 2-1/8	2-1/8
A82	1-5/8, 2-1/8, 2-5/8	2-5/8

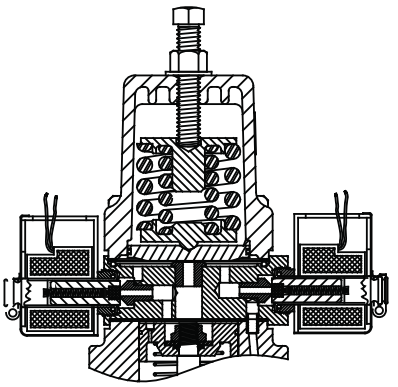
Valve	Description	Typical Applications
A8-S	Inlet Pressure Regulator with Electric Shut-off	Evaporator Pressure Regulator Defrost Relief Regulator Head Pressure Control Heat Reclaim
A8-B	Inlet Pressure Regulator with Electric Wide Opening	
A8-L	Differential Pressure Regulator	Liquid Main Pressure Control Heat Reclaim Oil Return Liquid Overfeed Control
A8-BL	Differential Pressure Regulator with Electric Wide Opening	
A8-OE	Outlet Pressure Regulator Externally Equalized	Crankcase Pressure Regulator Receiver Pressure Control Heat Reclaim
A8-OES	Outlet Pressure Regulator Externally Equalized with Electrical Shut-off	



A8AB / A81B / A82B
Inlet Pressure Regulator with Electric Wide Opening



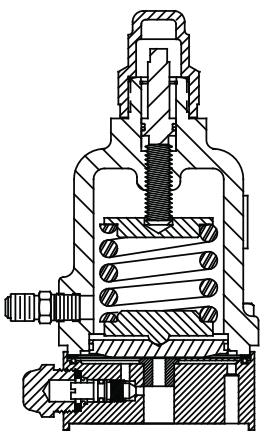
A8AS / A81S / A82S
Inlet Pressure Regulator with Electric Shut-off



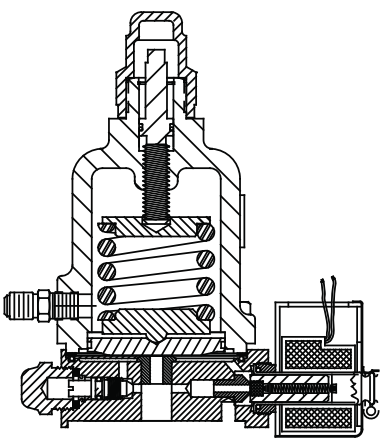
A8ABS / A81BS / A82BS
Inlet Pressure Regulator with Electric Wide Opening & Shut-off

Differential Pressure Regulators

- **Type A81L**
- **standard range "A" - 0 to 6.3 bar (0 to 90 psig)**

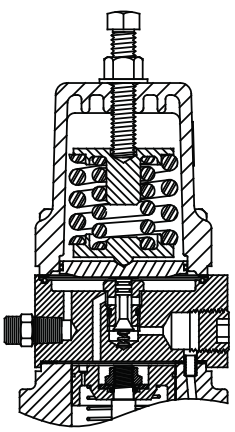


A8AL / A81L / A82L
Differential Pressure Regulator

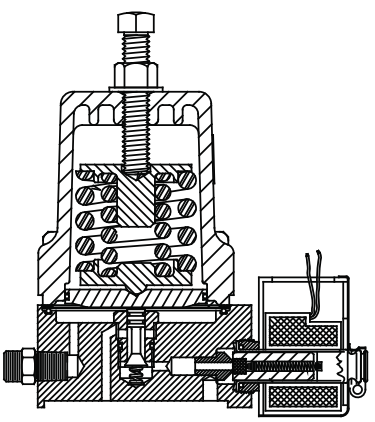


A8ABL / A81BL / A82BL
Differential Pressure Regulator with Electric Wide Opening

Outlet Pressure Regulators



A8AOE / A81OE / A82OE
Outlet Pressure Regulator Externally Equalized



A8AOES / A81OES
Outlet Pressure Regulator with Electric Shut-off

Note: When ordering a valve with a solenoid, coil must be ordered separately

FLO-CON PRESSURE REGULATORS

PARKER

Evapoator Pressure Regulator

A8 SPORT II

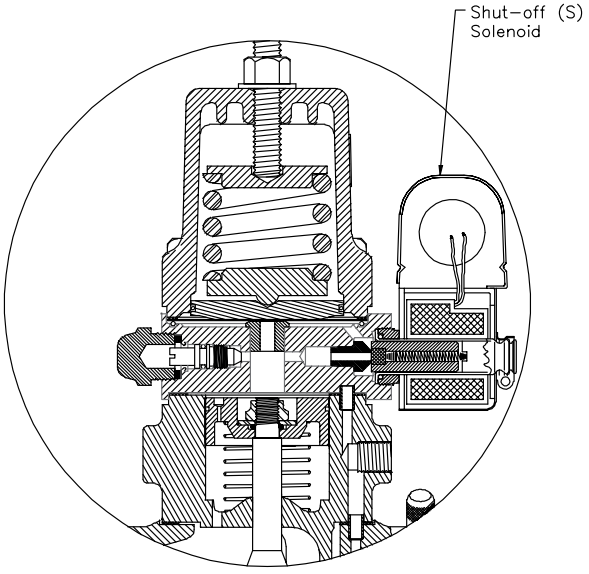
A8 SPORT II Evaporator Inlet Pressure Regulator with Electric Shut-off (energize coil to regulate), aluminized for reduced corrosion.



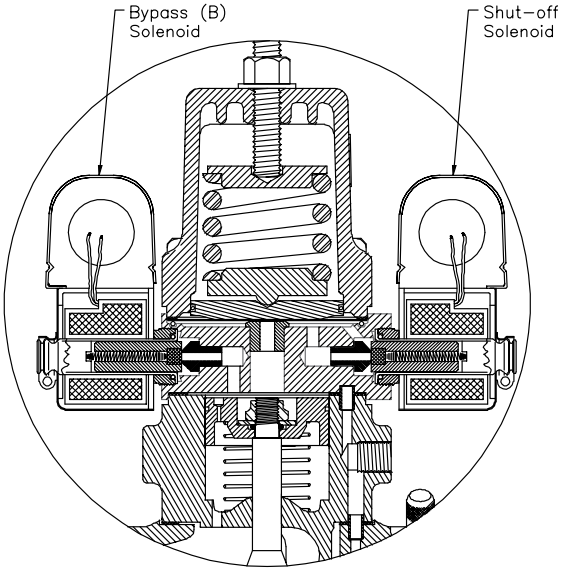
A8 SPORT

A8 SPORT Evaporator Inlet Pressure Regulator with Electric Shut-off (energize coil to regulate)





(S) PORT



(S) PORT - B

(S)PORT Port/Connection Size Combinations

Type	Port Size			Connection Sizes Available
	Connection	Inches	mm	
(S)PORT or (S)PORT-II	03	3/8	9	07, 09, 11, 13, 17 (7/8"/22mm, 1-1/8"/28mm, 1-3/8"/35mm, 1-5/8"/42mm, 2-1/8"/54mm)
	05	5/8	15	07, 09, 11, 13, 17 (7/8"/22mm, 1-1/8"/28mm, 1-3/8"/35mm, 1-5/8"/42mm, 2-1/8"/54mm)
	07	7/8	22	07, 09, 11, 13, 17 (7/8"/22mm, 1-1/8"/28mm, 1-3/8"/35mm, 1-5/8"/42mm, 2-1/8"/54mm)
	09	1-1/8	28	07, 09, 11, 13, 17 (7/8"/22mm, 1-1/8"/28mm, 1-3/8"/35mm, 1-5/8"/42mm, 2-1/8"/54mm)
	11	1-3/8	35	09, 11, 13, 17 (1-1/8"/28mm, 1-3/8"/35mm, 1-5/8"/42mm, 2-1/8"/54mm)
(S)PORT	13	1-5/8	42	13, 17, 21 (1-5/8"/42mm, 2-1/8"/54mm, 2-5/8"/66mm)
	17	2-1/8	54	17, 21 (2-1/8"/54mm, 2-5/8"/66mm)
	21	2-5/8	66	21 (2-5/8"/66mm)

Note: (S)PORT-II regulators have same port/connection combinations as standard (S)PORT regulators but are not available in the 13, 17, or 21 port size versions.

Note: When ordering a valve with a solenoid, coil must be ordered separately

FLO-CON PRESSURE REGULATORS

PARKER



Hot Gas Bypass Regulators

- **standard range "A" - 250mm Hg to 8 bar (10" Hg to 120 psig)**
- **optional range "B" - 5.6 to 15.5 bar (80 to 220 psig)**

Type	Effective Port. Sizes Avail. (in.)	Connection Size (in.)
A9, A9E	3/8, 5/8	5/8
A9, A9E	5/8, 7/8	7/8
A9, A9E	1-1/8	1-1/8

Type	Effective Port. Sizes Avail. (in.)	Connection Size (in.)
A9S, A9SE	3/8, 5/8	5/8
A9S, A9SE	5/8, 7/8	7/8
A9S, A9SE	7/8, 1-1/8	1-1/8



FLO-CON Solenoids

S81 and S82

- **Pilot Operated**
- **Low Pressure Drop**

SC1 and SC2

- **Pilot Operated**
- **Low Pressure Drop**
- **Suction Line Solenoid**



Replacement Parts for Refrigerant Retrofit

FLO- CON Valves

Part #	Product	Replacement Parts Needed
202420	A9	Gasket Kit
203714	A8A, L Types Only	Gasket Kit/O-Ring Kit
202701	A8A, All Except L Types	Gasket Kit/O-Ring Kit
203714	A81, L Types Only	Gasket Kit/O-Ring Kit
202701	A81, All Except L Types	Gasket Kit/O-Ring Kit
203819	A82, L Types Only	Gasket Kit/O-Ring Kit
203818	A82, All Except L Types	Gasket Kit/O-Ring Kit
202701	SPORT 3 to 11, Except L Type	Gasket Kit/O-Ring Kit
203818	SPORT 13 to 21, Except L Type	Gasket Kit/O-Ring Kit
202701	SPORT II	Gasket Kit/O-Ring Kit
202701	SC 03 to 11, Solenoid Valve	Gasket Kit/O-Ring Kit
203818	SC 13 to 21, Solenoid Valve	Gasket Kit/O-Ring Kit

Solenoid Coils

Part #	Description	LIST
206004	PARKER 120V Coil	264.90
206005	PARKER 208-240V Coil	264.90
206007	PARKER 24V Coil	273.80

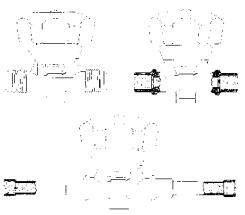
Note: When ordering a valve with a solenoid, coil must be ordered separately

LINE VALVES

SUPERIOR VALVE

Line Valves - Diaphragm Packless Valves

All diaphragm packless valves contain metal diaphragms and backseat metal to metal when the valve is fully open. Controlled stem travel assures life-time diaphragm performance; balanced bearing surfaces and polished stem heads eliminate wear and assure smooth, easy operation. Flow is unrestricted. Because of their unique construction, Superior diaphragm packless valves can be soldered into the line without disassembly.



Tuffy Standard SAE x SAE Flare

Part #	Size (inches)		LIST
	Inlet SAE	Outlet SAE	
214-4	1/4	1/4	127.20
214-6	3/8	3/8	127.20
215-8	1/2	1/2	167.90
216-10	5/8	5/8	190.00

Tuffy Standard ODS x ODS Sweat

Part #	Size (inches)		LIST
	Inlet ODS	Outlet ODS	
214-4S	1/4	1/4	89.40
214-6S	3/8	3/8	90.10
215-8S	1/2	1/2	
216-10S	5/8	5/8	147.00

Tuffy with tube extensions ODS x ODS Sweat

Part #	Size (inches)		LIST
	Inlet ODS	Outlet ODS	
214-4ST	1/4	1/4	98.70
214-6ST	3/8	3/8	131.60
215-8ST	1/2	1/2	200.20
216-10ST	5/8	5/8	202.20

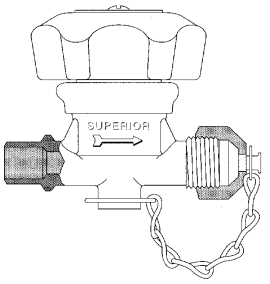
Line Valves - Diaphragm Packless Valves

Tuffy Purge and Drain ODS x SAE

Part #	Size (inches)		LIST
	Inlet ODS	Outlet SAE	
23	1/4	1/4	
234A-6	3/8	3/8	
235A-8	1/2	1/2	

Tuffy Angled Purge or Drain ODS x SAE

Part #	Size (inches)		LIST
	Inlet ODS	Outlet SAE	
134A-6	3/8	3/8	
135A-8	1/2	1/2	

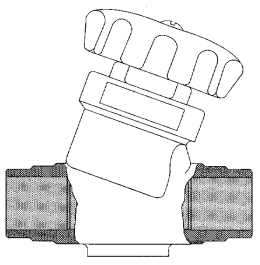


Line Valves - Diaphragm Packless Globe Valves

A low pressure drop is available in the 217 and 219 series forged brass diaphragm packless globe valves. The nylon seated stem assembly is inclined to provide maximum flow and minimum pressure drop. With this compact design, many headroom problems are eliminated.

ODS x ODS

Part #	Size (inches)		LIST
	Inlet ODS	Outlet ODS	
217-12S	3/4	3/4	
219-11S	1-1/8	1-1/8	



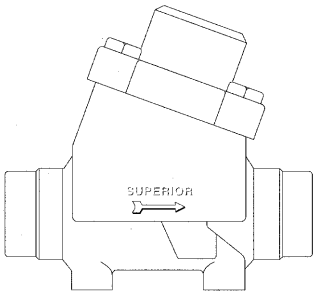
217S

H-V Globe Check Valves - Horizontal or Vertical Installation

Globe check valves feature the time proven piston construction simplified for easy reassembly after soldering. The improved "C" series with special non-metallic bonnet gaskets and teflon seat inserts permit the use of these valves in service temperatures as high as 400°F. Bolted bonnets are loosely assembled after testing to allow easy disassembly for soldering. All H-V globe check valves are of all forged brass construction in the low pressure drop "Y" type design.

Line Check Valves ODS x ODS

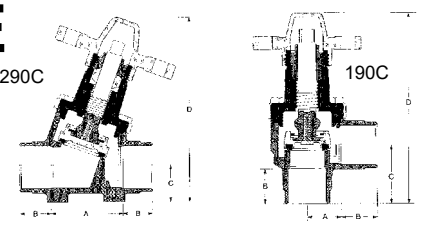
Part #	Size (inches)	LIST
805C-14S	7/8	432.00
806C-11S	1-1/8	432.00
807C-13S	1-3/8	490.00
808C-15S	1-5/8	505.00
809C-21S	2-1/8	784.00
884C-25S	2-5/8	
885C-31S	3-1/8	3,184.00
886C-35S	3-5/8	



LINE VALVES / CHECK VALVES

SUPERIOR VALVE

LPD Globe & Angle Valves



- Working pressure: 500 psig
- Body Construction: Forged brass or brass and copper
- Seat Material: Teflon
- Maximum Temperature: 400°F
- Minimum Temperature: -40°F
- Metal-to-metal back seat when fully open
- Can repack under pressure

290C Series Globe Valves ODS x ODS

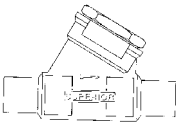
Part #	Dimensions (inches)				LIST
	A	B	C	D	
290C-14S	1-13/16	15/16	31/32	5-1/4	
291C-11S	1-11/16	1	31/32	5-1/4	907.00
292C-13S	2-5/8	1-1/16	1-5/16	7-1/16	
293C-15S	2-5/8	1-1/16	1-5/16	7-1/16	
294C-21S	3-3/8	1-1/2	1-11/16	8	1,650.00
295C-25S	5-1/8	1-7/8	2-1/8	10	
296C-31S	5-1/8	1-7/8	2-1/8	10	3,684.00
297C-35S	5-1/8	1-7/8	2-1/8	10	

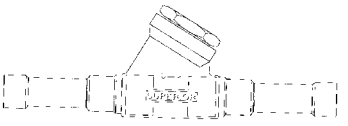
190C Series Globe Angle Valves ODS x ODS

Part #	Dimensions (inches)				LIST
	A	B	C	D	
190C-14S	1	15/16	1-41/64	5-9/16	
191C-11S	15/16	1	1-41/64	5-9/16	
192C-13S	1-5/16	1-1/16	2	7-11/32	
193C-15S	1-5/16	1-1/16	2	7-11/32	

Type 802B Check Valves - Horizontal or Vertical Installation

The internal parts can easily be removed and reassembled after soldering. This basic "Y" type design reduces pressure drop to a very low level. The seat insert is made of teflon. A specially designed secondary seat backs up the primary seat, after approximately 10000 cycles of operation the secondary seat becomes effective. This is done to insure even better shut-off characteristics as the valve gets older. These valves may be installed in any position except upside down.





802B Series Flare x Flare

Part #	Size (in.)	LIST
802B-4	1/4	
802B-6	3/8	194.20
802B-8	1/2	194.20

802B Series ODS x ODS

Part #	Size (in.)	LIST
802B-4S	1/4	
802B-6S	3/8	
802B-8S	1/2	
803B-10S	5/8	
804A-14S	7/8	226.60

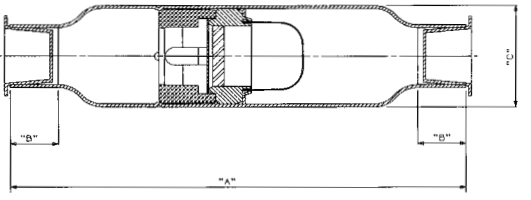
802B Series ODS x ODS Tube Extensions*

Part #	Size (in.)	LIST
802B-4ST	1/4	
802B-6ST	3/8	194.20
802B-8ST	1/2	211.40
803B-10ST	5/8	211.40
804A-14ST	7/8	338.00

* tube extensions permit valve to be silver soldered directly to line without disassembly

900MA Series Magni-Check In-Line Check Valves

- Copper connection sizes 1/4" through 2 5/8".
- Hermeticaly sealed spun copper body.
- 30 mesh screen to protect seat surface from debris.
- Full Range of Sizes.
- Magnetic Actuation.
- Arrow indicates direction of flow.
- Minimal Pressure Drop.
- U.L. and C-U.L. Recognized, File No. SA2989(N)



Specifications

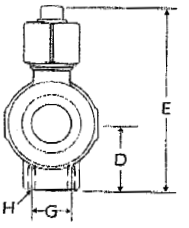
Catalog Number	Nominal Size (in.)	Dimensions Length A (in.)	Cup/Depth B (in.)	Diameter C (in.)	Opening Pressure (oz./sq.in.)	MWP (psig)	MWP (kPa)	Burst Pressure (psig)	Leak Rate CIM @ 60 psi	Nominal Tons R22 Suction 40°F @ 1 psi	Nominal Tons R22 Liquid 40°F @ 1 psi	LIST
900MA-4S	1/4	4.00	0.31	0.875	1.2	800	5516	4000	<0.015	0.4	2.6	61.00
900MA-6S	3/8	4.00	0.31	0.875	1.3	800	5516	4000	<0.015	0.6	3.1	61.00
900MA-8S	1/2	5.00	0.38	1.125	3.5	640	4413	3200	<0.034	1.2	9.4	62.00
900MA-10S	5/8	5.00	0.50	1.125	3.5	640	4413	3200	<0.034	1.4	13	62.00
900MA-12S	3/4	7.00	0.63	1.625	3.8	560	3861	2800	<0.074	3.3	27	
900MA-14S	7/8	7.00	0.75	1.625	3.8	560	3861	2800	<0.074	3.7	29	136.60
900MA-11S	1 1/8	8.38	0.94	2.125	6.8	400	2758	2000	<0.122	6.0	51	315.00
900MA-13S	1 3/8	9.38	1.00	2.625	10.2	440	3034	2200	<0.172	9.5	79	606.00
900MA-15S	1 5/8	10.50	1.09	3.125	11.4	420	2896	2100	<0.272	17.0	102	719.00
900MA-21S	2 1/8	12.00	1.34	3.625	18.1	400	2758	2000	<0.386	30.0	213	1,045.00
900MA-25S	2 5/8	13.00	1.50	4.125	23.0	380	2620	1900	<0.512	50.0	375	1,238.00

BALL VALVES

Mueller Streamline BALLMASTER Ball Valves

- May be used on high and low pressure refrigerant lines for either gas or liquid service
- Extended end construction permits installation without disassembling the valve.
- The ball seals on the ball valves are carbon filled teflon.
- Bi-flow direction is indicated on the side of the body of the ball valve.
- Maximum working pressure is 700 psig
- Maximum temperature range is -40°F to 300°F.





Part #	Size	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G** (mm)	H**	LIST
A17860	3/8	5-1/2	3	5/16	7/8	2-3/4	15/16	14	M4 x .07	77.50
A17861	1/2	6-3/8	3-7/16	3/8	7/8	2-3/4	1-3/16	14	M4 x .07	77.50
A17862	5/8	6-3/8	3-7/16	1/2	7/8	2-3/4	1-3/8	14	M4 x .07	
A17863	3/4	7-7/16	3-7/8	5/8	1-1/4	3-1/2	1-1/2	20	M4 x .07	95.20
A17864	7/8	7-7/16	3-7/8	3/4	1-1/4	3-1/2	1-5/8	20	M4 x .07	119.20
A17865	1-1/8	8-7/16	4-5/16	7/8	1-9/16	3-13/16	1-3/4	25	M4 x .07	
A17866	1-3/8	10	5	1	1-1/2	4-3/16	2-1/16	30	M6 x 1.0	
A17867	1-5/8	11	5-1/2	1-1/8	1-11/16	4-7/8	2-1/4	34	M6 x 1.0	322.00
A17868	2-1/8	12	6	1-3/8	2-1/8	5-9/16	2-7/16	34	M6 x 1.0	512.00
A17869	2-5/8	13-1/2	6-13/16	1-1/2	***	***	***	34	M6 x 1.0	1,364.00
A17870	3-1/8	16	8	1-3/8	3	7-3/8	3-1/8	34	M6 x 1.0	2,449.00
A17871*	2-5/8	12	6	1-3/8	2-1/8	5-5/8	2-3/8	34	M6 x 1.0	798.00
A17872*	3-1/8	12	6	1-11/16	2-1/8	5-5/8	3-1/16	34	M6 x 1.0	894.00

*reduced port ** where applicable *** consult factory for details

NDL Full Port Ball Valves

- R410-A Compliant
- Furnace Brazed
- Integral Schrader Valve for Service
- Use with R12, R22, R502, R134A, and 410A.
- Temperature Range -40 F to +325 F
- Forge Body and Seal Cap
- Teflon Seal and Gaskets



Full Port Ball Valve Series
- Size available 1/4", 3/8", 1/", 5/8", 3/4"
- Specially designed and engineered for mini and multi split HVAC units.

Part #	SAE Flare	LIST
NBV14FFS	1/4"	110.50
NBV38FSS	3/8"	65.20
NBV12FFS	1/2"	70.70
NBV58FFS	5/8"	80.00
NBV34FFS	3/4"	

Full Port Refrigeration Ball Valves
- Size available 3/8" to 4-1/8"
- "S" denotes valve with schrader



Part #	ODS		LIST
	MM	Inch.	
NBV02-S	10	1/4"	58.40
NBV03-S	-	3/8"	58.40
NBV04-S	-	1/2"	58.40
NBV05-S	16	5/8"	58.40
NBV06-S	-	3/4"	87.60
NBV07-S	22	7/8"	95.80
NBV09-S	-	1-1/8"	153.50
NBV11-S	35	1-3/8"	222.80
NBV13-S	-	1-5/8"	309.00
NBV17-S	54	2-1/8"	412.00
NBV21-S	67	2-5/8"	1,042.00
NBV25-S	80	3-1/8"	1,608.00

PRESSURE SAFETY DEVICES
HENRY TECHNOLOGIES

Relief valves:

These valves are available in standard pressure ratings of 235, 300, 350, 400, 425, & 450 psi. Other pressures are special order, sold at a higher price & are non-returnable:



Brass straight-thru type

Part #	Description
5230	1/2” MPT inlet 3/8” fl. Outlet
5231	3/8” MPT inlet 3/8” fl. Outlet
5231AN	3/8” MPT inlet 5/8” fl. Outlet
5232	1/2”MPT inlet 5/8” fl. Outlet
5240N	1/2” MPT inlet 3/4” FPT outlet
5242N	3/4” MPT inlet 3/4” FPT outlet
5244N	1” MPT inlet 1” FPT outlet

These pressure reliefs are also available in the following configurations: atmospheric, angle type, stainless steel, and cast iron, please contact your local branch for price & availability.

Rupture disc:

Part #	Description
5525	3/8” MPT inlet 3/8” FPT outlet
5526	1/2” MPT inlet 1/2” FPT outlet
5527	3/4” MPT inlet 3/4” FPT outlet

Rupture disc are also available in steel for ammonia systems.



Gauge / Pressure Indicator

Part #	Description
G15	1/8” MPT back mount gauge assembly

3 Way valves - packed stem dual shut-off

Brass

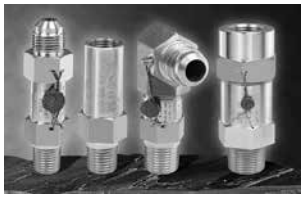
Part #	Description
923	3/8” FPT
925	1/2” FPT
927	3/4” FPT

Steel

Part #	Description
8021A	1/2” FPT 3-way valve
8022A	3/4” FPT 3 way valve
8024	1” FPT 3-way valve

PRESSURE RELIEF VALVES

SUPERIOR VALVE



These "A" series pressure relief valves are all teflon seated, permitting their use in applications of either high or low temperature where many times the conventional rubber seated valves are completely unsatisfactory.

Type 3212A - Angle

Positive pressure relief in this large capacity angle design. Available male pipe x flare.

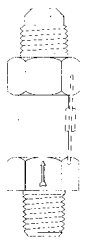
*Part #	Port Dia. (in.)	Size (in.)		LIST
		Inlet NPT	Outlet SAE	
3212	3/16	1/4	3/8	615.00
3214	3/16	3/8	3/8	242.00
3215	3/16	3/8	1/2	
3216	9/32	3/8	1/2	259.50
3220	9/32	1/2	5/8	259.50



Type 3012A - Straight-Through

An industry standard for all "in-line" installations. Excellent re-seating characteristics - brass.

Part #	Port Dia. (in.)	Size (in.)		LIST
		Inlet NPT	Outlet SAE	
3012	3/16	1/4	3/8	191.30
3014	3/16	3/8	3/8	
3015	3/16	3/8	1/2	195.60
3020	9/32	1/2	5/8	199.10



Type 3030A/3060A - Female Connection

These large size pressure relief valves with female outlet and either male or female inlet connections.

Part #	Port Dia. (in.)	Size (in.)		LIST
		Inlet NPT	Outlet FPT	
3030	7/16	1/2	1/2	380.00
3045	7/16	3/4	3/4	438.00
3060	23/32	1	1	627.00
3075	23/32	1-1/4	1-1/4	846.00



* Catalog numbers indicate style and size of pressure relief valve only - customer must specify pressure setting when ordering - standard settings are 235, 300, 350, 400, 425, 450 and 500 psig. Also available 550, 600, 650, 700, 750 and 800 psig.

DUAL PRESSURE RELIEF VALVE ASSEMBLY

Series 3155W



With the concerns over the release of refrigerants to atmosphere, dual pressure relief valves have become more common and mandated in many jurisdictions. The advantages of this device is twofold. Firstly, a pressure relief valve can now be changed when activated without having to recover the refrigerant from the system. Secondly, the contractor can easily replace the activated PRV easily and doesn't have to worry about being without a safety on the system.

Part #	Size (Inches)			LIST
	Inlet Connection (MPT)	Outlet Connection (FPT)	Ball Port Diameter	
3155W-E	3/4	3/4	10.2	919.00

CHECK VALVES

Streamline Magnetic Check Valves



Mueller's new Magnetic Check Valve has eliminated the use of braze materials that can ultimately overheat and damage internal components. The result is a valve that can be installed with hard or soft solder and exhibits a near zero leak rate, with exceptional performance characteristics.

Part #	Capacity Tons R-22 Suction 40°F ~1 psi	Capacity Tons R-22 Liquid ~1 psi	OD Tube Size	Valve Dia.	Length	LIST
A17934	0.4	2.6	1/4"	7/8"	4"	
A17935	0.6	3.2	3/8"	7/8"	4"	
A17936	1.2	9.4	1/2"	1-1/8"	5-1/8"	65.70
A17937	1.6	13.0	5/8"	1-1/8"	5-1/8"	65.70
A17938	3.3	27.0	3/4"	1-5/8"	7"	
A17939	3.8	29.0	7/8"	1-5/8"	7"	170.70
A17940	6.0	51.0	1-1/8"	2-1/8"	8-3/8"	335.00
A17941	9.5	79.0	1-3/8"	2-5/8"	9-3/8"	683.00
A17942	17.0	102.0	1-5/8"	3-1/8"	10-1/2"	788.00
A17943	30.0	213.0	2-1/8"	3-5/8"	12"	1,155.00
A17944	50.0	375.0	2-5/8"	4-1/8"	13"	1,307.00
A17981	59.0	405.0	3-1/8"	4-1/8"	13"	2,029.00

Danfoss Check Valves



NRV styled check valve are for use in liquid, suction, and hot gas lines in refrigeration and air conditioning systems with fluorinated refrigerants.

With a compact body design and extended copper ends, this check valve allows for easy installation with minimal risk of internal damage due to heat.

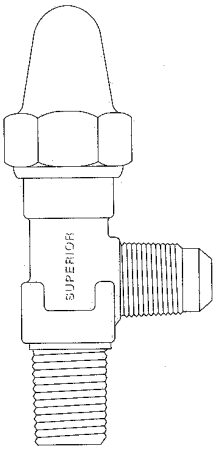
Part #	Capacity Tons R-22 Suction 40°F ~1 psi	Capacity Tons R-22 Liquid ~1 psi	OD Tube Size	Valve Dia.	Length	LIST
020-1010	.30	2.2	1/4"	11/16"	3-5/8"	73.60
020-1011	.74	5.3	3/8"	13/16"	4-5/16"	78.80
020-1012	.90	7.6	1/2"	7/8"	5-3/16"	86.80
020-1018	1.64	13.9	5/8"	1"	5-1/2"	99.90
020-1019	2.75	23.5	3/4"	1-1/8"	5-7/16"	178.60
020-1054	3.87	32.8	7/8"	1-1/8"	5-7/16"	182.10

*A1-Superior Product, Not Danfoss

VALVES

SUPERIOR

- Packed Line Valves are designed for many miscellaneous uses in a refrigeration system.
- Valves are of all forged brass and incorporate seal caps with copper or nylon gaskets.
- Underwriter's Labratories, Inc. listed.



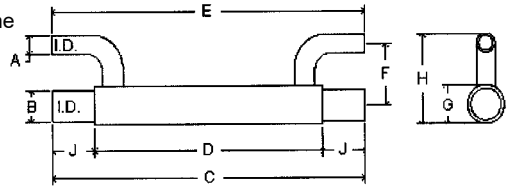
Part #	Bottom NPT Inlet	Side SAE Outlet	Socket for OD Tube	LIST
600A-4B	1/4"	1/4"	1/4"	54.90
600A-4C	3/8"	1/4"	3/8"	70.00
600A-6B	1/4"	3/8"	1/4"	57.00
600A-6C	3/8"	3/8"	3/8"	70.00
605-6D	1/2"	3/8"	1/2"	173.60
605-8B	1/4"	1/2"	1/4"	
605-8C	3/8"	1/2"	3/8"	97.10
605-8D	1/2"	1/2"	1/2"	120.50
606B-10D	1/2"	5/8"	1/2"	147.60
605-KB	1/4"	1/4" (FPT)	1/4"	

REFRIGERANT HEAT EXCHANGERS

PACKLESS

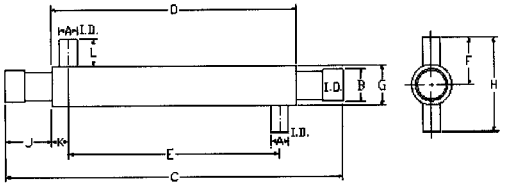
Intended for application on refrigeration systems to transfer heat between liquid refrigerant leaving the condenser on the high pressure side of the system and refrigerant vapor leaving the evaporator on the low pressure side of the system. This heat transfer may be desirable for several reasons:

(a) To raise the vapor temperature to prevent frosting or condensation on the suction line
(b) To evaporate any remaining liquid in the vapor stream to prevent possible compressor damage
(c) To subcool the liquid to prevent flash gas in the liquid line
(d) To increase system refrigerating capacity



HXR Series

Model #	Nom. HP	A	B	C	D	E	F	G	H	J	LIST
HXR-25	1/2	1/4	1/2	11-1/2	10	10-1/4	1-3/16	7/8	1-3/4	3/4	87.50
HXR-50	1	3/8	5/8	12-3/4	11	13	1-5/8	7/8	2-5/16	7/8	96.70
HXR-75	1-1/2	3/8	7/8	13-5/8	11	13	1-3/4	1-1/8	2-9/16	1-5/16	128.90
HXR-100	2	3/8	1-1/8	14-1/8	11	12-3/4	1-7/8	1-3/8	2-13/16	1-9/16	174.90
HXR-150	3	1/2	1-1/8	14-1/8	11	13-3/4	2	1-3/8	3	1-9/16	174.90
HXR-250A	5	5/8	1-3/8	14-1/4	11	14-1/4	2-3/8	1-5/8	3-9/16	1-5/8	304.00
HXR-350A	7-1/2	5/8	1-5/8	16-1/4	12	15-1/4	2-3/8	1-5/8	3-9/16	2-1/8	304.00
HXR-500	10	7/8	2-1/8	17-1/4	12	13	2-15/16	2-5/8	4-5/8	2-5/8	566.00



LHXR Series

Model #	Nom HP	A	B	C	D	E	F	G	H	J	K	L	LIST
LHXR-15	15	7/8	2-1/8	29-1/2	24	21-3/8	3-7/16	2-7/8	6-7/8	2-3/4	1-5/16	2	
LHXR-20	20	1-1/8	2-1/8	29-1/2	24	21-3/8	3-7/16	2-7/8	6-7/8	2-3/4	1-5/16	2	
LHXR-25	25	1-1/8	2-5/8	38	32-1/2	29-3/4	3-3/4	3-1/2	7-1/2	2-3/4	1-3/8	2	1,137.00
LHXR-30	30	1-3/8	2-5/8	38	32-1/2	29-3/4	4	3-1/2	8	2-3/4	1-3/8	2-1/4	
LHXR-35	35	1-3/8	2-5/8	40-1/8	34-5/8	31-7/8	4	3-1/2	8	2-3/4	1-3/8	2-1/4	
LHXR-40	40	1-3/8	3-1/8	31-3/4	26-1/4	22-3/4	4-3/8	4-1/4	8-3/4	2-3/4	1-3/4	2-1/4	1,570.00
LHXR-50	50	1-5/8	3-1/8	31-3/4	26-1/4	22-3/4	4-5/8	4-1/4	9-1/4	2-3/4	1-3/4	2-1/2	
LHXR-60	60	1-5/8	4-1/8	38-5/8	32-5/8	29-1/8	4-3/4	4-1/2	9-1/2	3	1-3/4	2-1/2	2,095.00
LHXR-80	80	2-1/8	4-1/8	40-7/8	34-7/8	31-3/8	5-1/4	4-1/2	10-1/2	3	1-3/4	3	

SUCTION ACCUMULATORS
REFRIGERATION RESEARCH

Suction Accumulators

Air conditioning, heat pump, truck refrigeration and many other applications require intermittent operation of the refrigeration compressor. Especially in remote applications, the suction line may trap or hold quantities of liquid which are suddenly dumped into the compressor as it starts up. This is frequently the cause of broken valves, pistons, broken or bent connecting rods, blown gaskets and bearing washout.
Proper installation of the Refrigeration Research suction accumulator in the suction line, just before the compressor, eliminates damage. If correctly sized, relatively large quantities of liquid refrigerant may return through the suction line and the suction accumulator prevents damage to the compressor. Liquid is temporarily held in the suction accumulator and metered back to the compressor along with any oil, at a controlled rate, through the metering orifice. Therefore, damage to the compressor is prevented and the compressor immediately and quietly goes to work.
The actual refrigerant holding capacity needed for a suction accumulator is governed by the requirements of the particular application. There is a great variation in refrigeration systems and this must be considered. Where possible the capacity selected should be checked by actual test. Normally the accumulator should not be sized for less than 50% of the total system capacity.



3841, 3840

3680



3639, 3641, 3640



Suction Accumulators

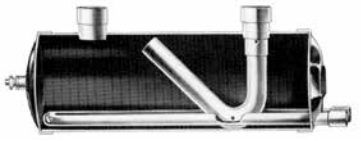
Part No.	Vert. or Hor.	Dia. (in)	Length	Maximum Refrigerant Holding Capacity (lbs.)				Suction Inlet/ Outlet I.D. Size	Refrigerant								LIST
									R-410A		R-134A		R-22		R-404A		
				R-410A	R-134A	R-22	R-404A		MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
3680	V	3.0	8.2	1.3	1.5	1.5	1.3	1/2	0.94	0.17	0.45	0.11	0.90	0.16	0.80	0.13	**233.10**
3816	V	4.0	7.1	1.9	2.2	2.1	1.9	1/2	0.65	0.15	0.31	0.09	0.62	0.14	0.58	0.10	**224.40**
3817	V	4.0	11.1	3.7	4.2	4.2	3.7	1/2	0.47	0.11	0.22	0.08	0.45	0.11	0.40	0.08	**258.30**
3701	V	4.0	7.1	1.9	2.2	2.1	1.9	5/8	2.10	0.19	0.90	0.13	2.00	0.18	1.55	0.15	**223.50**
3702	V	4.0	11.1	3.6	4.2	4.1	3.6	5/8	0.58	0.11	0.22	0.08	0.55	0.11	0.45	0.08	**265.90**
3703	V	4.0	11.4	3.5	4.1	4.0	3.7	3/4	2.21	0.19	1.03	0.11	2.1	0.18	2.0	0.18	**266.60**
3670	V	4.0	11.3	3.5	4.0	4.0	3.5	7/8									**301.00**
3738	V	5.0	13.2	7.0	8.0	7.9	6.9	7/8	3.15	0.47	1.62	0.30	3.0	0.45	3.0	0.45	**354.00**
3826	H	6.0	13.5	11.7	13.3	13.1	11.6	7/8									**450.00**
3700	V	6.0	15.0	11.5	13.1	12.9	11.4	1-1/8	4.51	0.59	1.83	0.36	4.3	0.56	4.0	0.39	**476.00**
3831	H	6.0	16.5	16.0	18.1	17.9	15.7	1-1/8									**492.00**
•3706	V	6.0	20.3	15.6	17.8	17.5	15.4	1-3/8	8.08	1.68	3.42	0.97	7.7	1.6	7.0	0.56	**636.00**
•3743	V	6.0	24.8	20.1	22.9	22.6	19.9	1-3/8	5.25	1.36	2.16	0.87	5.0	1.3	4.5	0.47	**793.00**
•3704	V	6.0	24.8	20.1	22.9	22.6	19.9	1-5/8	19.90	2.00	8.10	1.16	19.0	1.9	18.0	1.9	**835.00**
□3642	V	8-5/8	20.0	27.5	31.3	30.9	27.2	2-1/8	43.00	5.09	18.9	3.09	41.0	5.2	39.0	5.2	**3,038.00**
•3838	H	6.0	36.0	27.5	31.3	30.9	27.2	2-1/8	28.30	4.51	12.6	2.51	27.0	4.3	26.0	4.3	**2,505.00**
•3839	H	6.0	48.0	36.8	41.3	41.0	36.4	2-1/8	18.50	3.88	7.2	2.03	18.0	3.7	16.0	3.7	**2,072.00**
□3643	V	10-3/4	20.0	45.2	51.4	50.7	44.7	2-5/8	65.10	8.82	29.7	5.02	62.0	8.4	60.0	8.4	**3,692.00**

• Rated for 350 PSI for CE
□ Rated for 245 PSI for CE

HEAT EXCHANGER SUCTION ACCUMULATORS
REFRIGERATION RESEARCH

Heat Exchanger - Suction Accumulators

All Heat Exchanger - Suction Accumulators are complete with "Leak Pruf" fusible plug installed.



HX3836, HX3810, HX3839



HX3702, HX3703, HX3738

Part No.	Vert. or Hor.	Dia. (in)	Length	Maximum Refrigerant Holding Capacity (lbs.)				Suction Line I.D.	Liquid Line I.D.	Refrigerant								LIST
										R-410A		R-134A		R-22		R-404A		
				R-410A	R-134A	R-22	R-404A			MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
HX3702	V	4	11-1/8	3.6	4.2	4.0	3.6	5/8	3/8	0.58	0.11	0.22	0.08	0.55	0.11	0.45	0.08	**452.00**
HX3703	V	4	11-3/8	3.5	4.1	4.0	3.7	3/4	3/8	1.57	0.17	0.63	0.10	1.5	0.16	1.4	0.15	**440.00**
HX3738	V	5	13	7.0	8.0	7.9	6.9	7/8	1/2	3.15	0.47	1.62	0.30	3.0	0.45	3.0	0.45	**580.00**
HX3700	V	6	15	11.5	13.1	12.9	11.4	1-1/8	5/8	6.51	0.68	2.88	0.43	6.2	0.65	6.0	0.65	**748.00**
HX3706	V	6	20-1/4	15.6	17.8	17.5	15.4	1-3/8	5/8	11.5	2.00	5.40	1.16	11.0	1.90	10.0	1.90	**1,057.00**
HX3836	H	6	22-1/2	15.2	17.3	17.1	15.1	1-3/8	5/8	5.25	1.36	2.16	0.87	5.0	1.30	4.5	1.30	**1,082.00**
HX3839	H	6	48	36.8	41.3	41.3	36.4	2-1/8	7/8	18.5	3.88	7.2	2.03	18.0	3.7	16.0	3.7	**2,705.00**
HX3704	V	6	24-3/4	20.1	22.9	22.6	19.9	1-5/8	3/4	19.9	2.00	8.1	1.16	19.0	1.9	18.0	1.90	**1,312.00**
HX3810	H	6	30	19.0	21.6	21.3	18.8	1-5/8	3/4	8.40	1.36	3.6	0.87	8.0	1.3	7.0	1.30	**1,392.00**
HX3643	V	10-3/4	20	45	51	50	44	1-3/8	2-5/8	18.50	4.41	7.20	2.70	18.00	4.20	15.00	4.20	**6,266.00**

MUFFLERS
REFRIGERATION RESEARCH

Some systems are noisy due to vibration and pulsation of gas through the discharge line. To smooth out pulsations and reduce vibration and noise, Refrigeration Research offers the industry's most complete line of Discharge Mufflers.

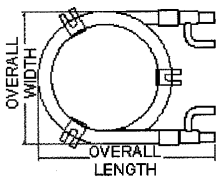
The "MH" Series of discharge mufflers are uniquely designed for the higher pressure requirements for systems using R-410A. The tough requirements needed for these special models are made to the approved UL requirements necessary to meet the 675 p.s.i.g. working pressure.

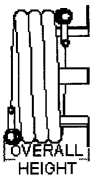
Model #	Tons	O.D.	Overall Length	Fitting Size	LIST
MH-2	2	2	7-7/16	3/8	129.10
MH-3	3	2	7-7/16	1/2	147.30
MH-5	5	2	7-7/16	5/8	176.80
MH-10	7-1/2 to 10	3	9	7/8	224.40
MH-15	10 to 15	3	9-1/4	1-1/8	291.60
MH-20	15 to 25	3	13-3/4	1-3/8	339.00
M-30	25 to 50	4	16	1-5/8	407.00
M-60	50 to 75	6	26-1/2	2-1/8	1,175.00
M-80	75 to 100	6	28	2-5/8	
M-110	100 to 125	6	36	3-1/8	1,552.00



COAXIAL CONDENSERS

PACKLESS





Helix with Bracket

Model No.	Nom'l Tons	Refrigerant Connection In/Out (I.D)	Water Connection In/Out (I.D)	Overall Dimensions			LIST
				Length	Height	Width	
COAX-2051H	1/2	3/8	1/2	9-15/16	5-1/8	6-5/8	313.00
COAX-2076H	3/4	3/8	1/2	9-15/16	6	6-5/8	341.00
COAX-2101H	1	3/8	1/2	9-15/16	6-15/16	6-5/8	424.00
COAX-2151H	1-1/2	3/8	5/8	13-5/16	6-7/16	10-3/16	529.00

Double Wound Helix with Brackets

Model No.	Nom'l Tons	Refrigerant Connection In/Out (I.D)	Water Connection In/Out (I.D)	Overall Dimensions			LIST
				Length	Height	Width	
COAX-2201J	2	3/8	5/8	12-15/16	3-7/8	10-5/8	644.00
COAX-2251J	2-1/2	1/2	3/4	12-7/16	5-1/8	10-3/8	792.00
COAX-2301J	3	5/8	7/8	13-7/8	5-1/16	12-5/16	852.00
COAX-2351J	3-1/2	5/8	7/8	14-1/4	6-1/8	12-3/8	1,050.00
COAX-2401J	4	5/8	7/8	16-1/4	4-15/16	14-1/8	1,390.00
COAX-2501J	5	3/4	1-1/8	17	6	15-3/8	1,616.00
COAX-2601J	6	3/4	1-1/8	17-3/4	7-1/4	15-1/4	2,187.00
COAX-2751J	7-1/2	3/4	1-1/8	18	7-3/8	17-1/2	2,730.00

Spiral

Model No.	Nom'l Tons	Refrigerant Connection In/Out (I.D)	Water Connection In/Out (O.D)	Overall Dimensions			LIST
				Length	Height	Width	
COAX-2100-S	1	3/8	1/2	11-5/8	2-1/8	9-3/8	433.00
COAX-2150-S	1-1/2	3/8	5/8	13-7/8	2-3/8	11-3/8	
COAX-2200-S	2	3/8	5/8	14-3/8	2-3/8	11-1/2	704.00
COAX-2250-S	2-1/2	1/2	3/4	16-7/16	2-11/16	13-1/4	819.00
COAX-2300-S	3	5/8	7/8	15-5/8	2-7/8	13-9/16	
COAX-2350-S	3-1/2	5/8	7/8	17-1/4	2-7/8	15-5/16	
COAX-2400-S	4	5/8	7/8	18-1/8	3-3/16	15-1/2	
COAX-2500-S	5	3/4	1-1/8	19-5/8	3-11/16	17-1/16	
COAX-2600-S	6	3/4	1-1/8	20-3/8	3-11/16	18-7/16	
COAX-2751J	7-1/2	3/4	1-1/8	22-1/2	3-7/8	21-1/8	2,730.00

Multi-Coil Assemblies

Model No.	Nom'l Tons	Refrigerant Connection In/Out (I.D)	Water Connection In/Out (I.D)	Overall Dimensions			LIST
				Length	Height	Width	
COAX-3010S	10	1-3/8	2-1/8	21-9/16	17-3/8	11-1/4	3,637.00
COAX-3012S	12-1/2	1-3/8	2-1/8	22-5/16	18-3/4	11-1/4	4,488.00
COAX-3015S	15	1-3/8	2-1/8	24-7/16	21-3/8	11-7/8	5,621.00
COAX-3020S	20	1-5/8	2-5/8	22-1/16	17-7/8	18-3/4	7,808.00
COAX-3025S	25	1-5/8	2-5/8	22-13/16	19-1/4	18-3/4	
COAX-3030S	30	1-5/8	2-5/8	25-1/16	21-7/8	20-1/8	11,707.00

ACCUMULATORS/ RECEIVERS 329-346

CONDENSERS

COCX Cupronickle Condensers



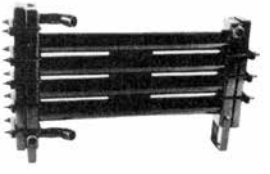
Helix Dimensions

Model No.	Nom'l Ton	Dimensions			Connections		LIST
		Width	Length	Height	Refrigerant in/out	Water (ods)	
COCX-2051H	1/2	6-5/8	9-15/16	5-1/8	3/8	1/2	387.00
COCX-2076H	3/4	6-5/8	9-15/16	6	3/8	1/2	456.00
COCX-2101H	1	6-5/8	9-15/16	6-15/16	3/8	1/2	566.00
COCX-2151H	1-1/2	10-3/16	13-5/16	6-7/16	3/8	5/8	709.00



Double Wound Helix Dimensions

Model No.	Nom'l Ton	Dimensions			Connections		LIST
		Width	Length	Height	Refrigerant in/out	Water (ods)	
COCX-2201J	2	10-5/8	12-15/16	3-7/8	3/8	5/8	898.00
COCX-2251J	2-1/2	10-3/8	12-7/16	5-1/8	1/2	3/4	1,040.00
COCX-2301J	3	12-5/16	13-7/8	5-1/16	5/8	7/8	1,169.00
COCX-2351J	3-1/2				5/8	7/8	1,409.00
COCX-2401J	4	14-1/8	16-1/4	4-15/16	5/8	7/8	1,860.00
COCX-2501J	5				5/8	1-1/8	2,168.00
COCX-2601J	6	15-1/4	17-3/4	7-1/4	3/4	1-1/8	2,560.00
COCX-2751J	7-1/2	17-1/2	18	7-3/8	3/4	1-1/8	3,218.00
COCX-3010S	10	17-3/16	21-3/16	13-15/16	1-1/8 OD	1-5/8	4,521.00



ELT Tube-in-tube condensers

Compact. Cleanable.

Model No.	Nom'l H.P.	Shipping Weight (lbs.)	Dimensions			Connections			LIST
						Refrig. (flare)		Water (ids)	
			Width	Length	Height	Inlet	Outlet		
ELT-100	1	21	3-1/8	22	11	5/8	1/2	3/4	
ELT-150A	1-1/2	23	3-7/32	25-1/2	11	3/4	1/2	3/4	
ELT-200A	2	27	3-7/32	25-1/2	12-9/16	3/4	1/2	3/4	2,540.00
ELT-300A	3	48	4-1/2	26-7/16	17-3/4	7/8•	5/8•	1-3/8	2,792.00
ELT-500A	5	50	4-1/2	28-7/16	17-3/4	7/8•	7/8•	1-3/8	
ELT-800A	8	85	6	28-7/16	22-1/4	1-3/8•	7/8•	1-3/8	
ELT-1000A	10	90	6	28-7/16	22-1/4	1-3/8•	7/8•	1-5/8	

• ids via straight rotalock adaptor

ICE MACHINE CONDENSERS
PACKLESS

Exact Replacement For Most Ice Machines
Exact Drop In For Manitowac

Model No.	Lbs. Ice per day	Refrigerant Connection I.D.	Water Connection O.D.	Overall Dimensions			LIST
				Length	Height	Width	
COCX-0934-H	150	1/4	1/2	9-7/8	5-5/8	6-5/8	
COCX-0945-H	200,250,320	1/4	1/2	9-7/8	6-5/8	6-5/8	580.00
COCX-0946-H	400,420,450	1/4 & 3/8	1/2	9-7/8	7-11/16	6-5/8	727.00
COCX-1074-H	600	1/4 & 3/8	1/2	11-13/16	6-3/8	8-11/16	783.00
COCX-1078-H	800	1/4 & 3/8	5/8	12-1/4	8-1/8	9-3/16	1,105.00
COCX-1079-H	1000	1/4 & 3/8	5/8	12-1/2	9-1/2	9-3/8	1,284.00
COCX-0968-H	1300	3/8 & 1/2	3/4	13-15/16	7-1/2	10-7/8	
COCX-1044-H	1800	3/8 & 1/2	3/4	13-15/16	8-13/16	10-7/8	

ACCUMULATORS/
RECEIVERS 329-346

POOL HEATERS

Pool Heaters

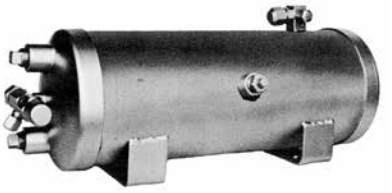
- High effieicncy corrugated titanium coil
- Corrosion resistant PVC plastic shell
- 600 psig DWP coil suitable for R-410A and other refrigerants at 200F maximum
- Handles up to 75 psig pool loops @ 55 gpm maximum
- Easy installation with 5/8" OD sweat copper and 2" female socket connections



Part #	HP	Refrig. Conn.	Water Conn.	Weight	LIST
PH-70	3	5/8" OD	2" SW	30	2,164.00
PH-95	5	5/8" OD	2" SW	30	2,352.00

CONDENSERS

Refrigeration Research Condenser - Receivers



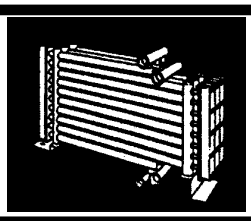
5803

Water circulates through finned copper tubes

Part #	Length Over End Caps	Dia.	† Tons	Refrigerant Inlet	Refrigerant Outlet	Water Connections	*Receiver PumpDown Capacity	LIST
5803	14	5	1/2	3/8 flare	1/4 valve	1/2 SAE Fem. Flare	7 lbs	1,435.00
5806	14	6	3/4	3/8 flare	3/8 valve	1/2 SAE Fem. Flare	11 lbs	1,855.00
5802	16-1/4	6	1	3/8 flare	3/8 valve	1/2 SAE Fem. Flare	14 lbs	1,952.00
5804	24	6	1-1/2	3/8 flare	3/8 valve	1/2 SAE Fem. Flare	19 lbs	2,540.00

† Tons rating for 105°F water delivery *90% at 90° for R22 and R502 - for R12 and R134a multiply by 1.1 - For 402b and R404a multiply by 0.9

SW Marine Tube-in-Tube Condensers



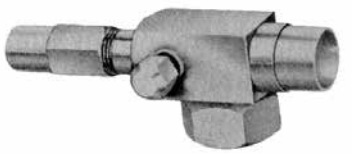
Model No.	Nom'l H.P.	Shipping Weight (lbs.)	Dimensions			Connections			LIST
						Refrig.		Water	
			Width	Length	Height	Inlet	Outlet	In/Out	
SW-1/3	1/3	8	2	18	8-7/8	3/8	3/8	5/8	
SW-1/2	1/2	9	2	22	8-7/8	3/8	3/8	5/8	
SW-3/4	3/4	12	2	22	11-3/4	3/8	3/8	5/8	
SW-1	1	16	2	22	14-9/16	1/2	3/8	5/8	
SW-1-1/2	1-1/2	18	2	23	17-7/16	1/2	3/8	5/8	
SW-2	2	30	2	22	17-7/16	1/2	1/2	7/8	
SW-2-1/2	2-1/2	33	2	26	17-7/16	5/8	1/2	7/8	
SW-3	3	36	2	30	17-7/16	5/8	1/2	7/8	
SW-3-1/3	3-1/3	37	2	33	17-7/16	5/8	1/2	7/8	
SW-3-3/4	3-3/4	40	2	36	17-7/16	5/8	5/8	7/8	
SW-4	4	42	2	38	17-7/16	5/8	5/8	7/8	
SW-4M2	4	62	4	22	17-11/16	1-1/8	5/8	1-1/8	
SW-5M2-1/2	5	68	4	26	17-11/16	1-1/8	5/8	1-1/8	
SW-6M3	6	74	4	30	17-11/16	1-1/8	7/8	1-1/8	7,094.00
SW-7-1/2M2-1/2	7-1/2	102	6	26	17-11/16	1-1/8	7/8	1-3/8	
SW-7-1/2M3-3/4	7-1/2	84	4	36	17-15/16	1-3/8	7/8	1-3/8	
SW-8M4	8	86	4	38	17-11/16	1-1/8	7/8	1-3/8	
SW-9M3	9	110	6	30	17-11/16	1-1/8	7/8	1-5/8	
SW-10M2-1/2	10	136	8	26	17-15/16	1-3/8	1-1/8	2 FPT	
SW-10M3-1/3	10	113	6	33	17-11/16	1-1/8	7/8	1-5/8	
SW-12M4	12	128	6	38	17-11/16	1-1/8	7/8	1-5/8	
SW-15M3-3/4	15	168	8	36	17-15/16	1-3/8	1-1/8	2 FPT	
SW-16M4	16	172	8	38	17-15/16	1-3/8	1-1/8	2 FPT	
SW-20M4	20	214	10	38	19-3/16	1-3/8	1-1/8	2 FPT	
SW-26-1/4M3-3/4	26	290	14	36	19-3/16	1-5/8	1-5/8	2 FPT	
SW-30M3-3/4	30	340	16	36	19-3/16	2-5/8	1-5/8	2 FPT	
SW-36M4	36	390	18	38	19-3/16	2-5/8	1-5/8	2 FPT	
SW-40M4	40	430	20	38	19-3/16	2-5/8	1-5/8	2 FPT	

ROTALOCK VALVES
STANDARD

Valves Rotalock

Horizontal

Part #	Connection	Coupling Size	LIST
H03FT	3/8 Flare	3/4 - 16	91.00
H04FT	1/2 Flare	1 - 14	112.90
H05FT	5/8 Flare	1 - 14	121.90
H04ST	1/2 ids	1 - 14	97.20
H05ST•	5/8 ids	1 - 14	112.90
H07ST	7/8 ids	1-1/4 - 12	225.80
H09ST	1-1/8 ids	1-1/4 - 12	236.10
H11ST	1-3/8 ids	1-3/4 - 12	426.00



Vertical

Part #	Connection	Coupling Size	LIST
V03FT	3/8 Flare	3/4 - 16	77.80
V04FT	1/2 Flare	1 - 14	112.90
V05FT	5/8 Flare	1 - 14	121.90
V04ST	1/2 ids	1 - 14	111.60
V05ST	5/8 ids	1 - 14	112.90
V07ST	7/8 ids	1-1/4 - 12	225.80
V09ST	1-1/8 ids	1-1/4 - 12	236.10
V11ST	1-3/8 ids	1-3/4 - 12	426.00



Brass Adaptors

Part #	Connection		Thread Size	LIST
	ids	ods		
BA03X06	3/8	1/2	3/4 - 16	112.90
BA03X08	3/8	1/2	1 - 14	123.20
BA04X08	1/2	5/8	1 - 14	148.80
BA05X08	5/8	7/8	1 - 14	148.80
BA05X10	5/8	7/8	1-1/4 - 12	169.30
BA07X10	7/8	1-1/8	1-1/4 - 12	189.90
BA09X10	1-1/8	1-3/8	1-1/4 - 12	200.10
BA09X14	1-1/8	1-3/8	1-3/4 - 12	200.10
BA11X14	1-3/8	1-5/8	1-3/4 - 12	225.80



ACCUMULATORS/
RECEIVERS 329-346

BRAZED PLATE HEAT EXCHANGERS

DOUCETTE

Brazed Plate Heat Exchangers



Evaporators

Model No.	Nom'l* TR	Flatplate Equivalent Model	Width	Height	Depth	Refrig. O.D.F.	Refrig. O.D.F.	Shipping Wt. (lbs)	LIST
BP-1/2	1/2	CH 1/2A	3.5	12.8	2	5/8	7/8	4	734.00
BP-3/4	3/4	CH 3/4A	3.5	12.8	2.2	5/8	7/8	5	
BP-1	1	CH 1A	3.5	12.8	2.6	5/8	7/8	5	931.00
BP-1-1/2	1-1/2	CH 1-1/2A	3.5	12.8	3.2	5/8	1-1/8	6	
BP-1-1/2	2	CH 2A	3.5	12.8	3.2	5/8	7/8	6	
BP-2	2-1/2	CH 2-1/2A	3.5	12.8	3.6	5/8	7/8	7	1,355.00
BP-3	3	CH 3A	4.9	13.1	3.2	7/8	1-1/8	9	
BP-3-1/2	3-1/2	CH 3-1/2A	4.9	13.1	3.6	7/8	1-1/8	10	
BP-5	4	CH 4A	4.9	20.8	3.2	7/8	1-3/8	15	1,929.00
BP-6	5	CH 5A	4.9	20.8	3.6	7/8	1-3/8	17	1,929.00
BP-7-1/2	6	CH 6	4.9	20.8	4.1	1-3/8	1-3/8	20	2,390.00
BP-8	7-1/2	CH 7-1/2	4.9	20.8	4.5	1-3/8	1-3/8	22	2,390.00
BP-12	10	CH 10B	4.9	20.8	5.4	1-3/8	1-3/8	28	
BP-14E	12-1/2	CH 12B	4.9	20.8	6.9	1-3/8	1-3/8	36	
BP-15E	15	CH 15B	4.9	20.8	7.9	1-3/8	1-3/8	41	4,779.00
BP-25E	20	CH 20	4.9	20.8	10.7	1-3/8	1-3/8	57	6,962.00
BP-30E	25	CH 25	10.6	20.8	6	2-1/8	2-1/8	78	8,251.00
BP-35E	30	CH 30	10.6	20.8	6.9	2-1/8	2-1/8	91	8,496.00

* Performance: Cool 2.4 GPM/TR water from 54°F to 44°F with R-22 at 35°F evaporating temperature with 6°F superheat

Condensers

Model No.	Nom'l† TR	Flatplate Equivalent Model	Width	Height	Depth	Refrig. O.D.F.	Refrig. O.D.F.	Shipping Wt. (lbs)	LIST
BP-1/2	1/2	-	3.5	12.8	2	5/8	7/8	4	734.00
BP-3/4	3/4	-	3.5	12.8	2.2	5/8	7/8	5	
BP-1	1	C 1A	3.5	12.8	2.6	5/8	7/8	5	931.00
BP-1-1/2	1-1/2	C 1-1/2A	3.5	12.8	3.2	5/8	7/8	6	
BP-2	2	C 2A	3.5	12.8	3.6	5/8	7/8	7	
BP-2-1/2	2-1/2	C 2-1/2A	3.5	12.8	4.1	5/8	7/8	8	
BP-3-1/2	3	C 3A	4.9	13.1	3.6	7/8	1-1/8	10	
BP-3-1/2	3-1/2	C 3-1/2A	4.9	13.1	3.6	7/8	1-1/8	10	
BP-5	4	C 4	4.9	20.8	3.2	7/8	1-3/8	15	1,929.00
BP-5	5	C 5	4.9	20.8	3.2	7/8	1-3/8	15	1,929.00
BP-6	6	C 6	4.9	20.8	3.6	7/8	1-3/8	17	1,929.00
BP-7-1/2	7-1/2	C 7-1/2	4.9	20.8	4.1	1-3/8	1-3/8	20	
BP-10	10	C 10	4.9	20.8	5.1	1-3/8	1-3/8	26	
BP-12-1/2	12-1/2	C 12B	4.9	20.8	6	1-3/8	1-3/8	31	
BP-15C	15	C 15B	4.9	20.8	7.9	1-3/8	1-3/8	41	4,779.00
BP-20	20	C 20	4.9	20.8	8.8	1-3/8	1-3/8	47	
BP-25C	25	C 25	4.9	20.8	10.7	1-3/8	1-3/8	57	
BP-30	30	C 30	10.6	20.8	6	2-1/8	2-1/8	78	

† Performance: Condense R-22 at 105°F using 3 GPM/HP of water at 85°F

BRAZED PLATE HEAT EXCHANGERS

SWEP

Brazed Plate Heat Exchangers



Part #	Capacity	Glycol Side Press. Drop	Glycol side Connections	Refrigerant Inlet	Refrigerant Outlet	LIST
B10THX14/1P-SC-M	1 TR	0.49 psi	1" mpt	1/4" solder	7/8" solder	677.00
B10THX20/1P-SC-M	1.5 TR	0.54 psi	1" mpt	3/8" solder	7/8" solder	776.00
B10THX26/1P-SC-M	2 TR	1.5 psi	1" mpt	3/8" solder	7/8" solder	875.00
B80HX16/1P-SC-M	2.5 TR	2.26 psi	1 1/4" MNPT	1/2" solder	7/8" solder	1,112.00
B80HX18/1P-SC-M	3 TR	3.1 psi	1 1/4" MNPT	1/2" solder	7/8" solder	1,168.00
B80HX20/1P-SC-M	3.5 TR	4.1 psi	1 1/4" MNPT	5/8" solder	1 3/8" solder	1,220.00
B80HX30/1P-SC-M	4 TR	2.6 psi	1 1/4" MNPT	5/8" solder	1 3/8" solder	1,492.00
	5 TR	3.8 psi	1 1/4" MNPT	5/8" solder	1 3/8" solder	
B80HX40/1P-SC-M	6.5 TR	3.7 psi	1 1/4" MNPT	5/8" solder	1 3/8" solder	1,755.00
V80X52/1P-SC-M	7.5 TR	3.0 psi	1 5/8" Solder	7/8" solder	1 3/8" solder	2,065.00
	10 TR	5.1 psi	1 5/8" Solder	7/8" solder	1 3/8" solder	

30% Prop. Glycol in: 54 deg. F and out at 44 deg. F
R404a: SST = 35 deg. F with 9 deg. F superheat. Liquid to valve at 115 deg. F

Receivers

Part #	Diameter & Length Over End Caps	*Pump Down Capacity	Inlet	Outlet	Mount	LIST
1911	6 x 12	10 lbs	3/8 SAE	3/8 SAE	Vertical	466.00
1917	3-1/2 x 10	3 lbs	1/4 SAE	1/4 SAE	Vertical	269.60
1918	5 x 10	6 lbs	1/4 SAE	1/4 SAE	Vertical	349.00
1920	3-1/2 x 7-1/2	2 lbs	1/4 SAE	1/4 SAE	Vertical	260.20
1921	4 x 10	4 lbs	1/4 SAE	1/4 SAE	Vertical	314.00
3212	6 x 18	16 lbs	1/2 SAE	1/2 SAE	Vertical	615.00
5315	5 x 10	6 lbs	3/8 SAE	3/8 SAE	Vertical	349.00
1915	5 x 18	12 lbs	1/4 Sweat	3/8 SAE	Horizontal	517.00
1916	4 x 19	8 lbs	1/4 Sweat	1/4 SAE	Horizontal	448.00
1923	5 x 23	15 lbs	1/2 Sweat	1/2 SAE	Horizontal	656.00



1911
1917
1918
1920
1921
3212
5315



1915, 1916



1923

*90% at 90° for R22, R134a and R502 - for R12 multiply by 1.1 - For 402b and R404a multiply by 0.9

High Pressure Receivers

Part #	R410A Pump Down Capacity*	"A" Diameter	"B" Length	Figure	Inlet & Outlet Connection	Leek Pruf Fusible Plug	LIST
3307	1.8 lbs	3"	10"	II	3/4" Rotalock	Not Required	349.00
3308	3.6 lbs	4"	10"	II	1" Rotalock	Installed	450.00
3309	5.5 lbs	5"	10"	II	1" Rotalock	Installed	533.00
3310	9.0 lbs	6"	12"	II	1" Rotalock	Installed	637.00
3377	14.0 lbs	6"	18"	II	1" Rotalock	Installed	696.00
3378	19.3 lbs	6"	24"	II	1" Rotalock	Installed	789.00
3379	24.6 lbs	6"	30"	II	1" Rotalock	Installed	912.00

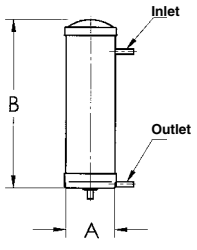


FIGURE I

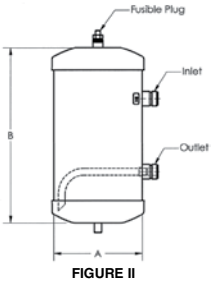


FIGURE II

BITZER PRODUCTS



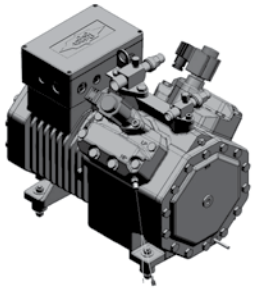
Vertical / Horizontal
Receivers



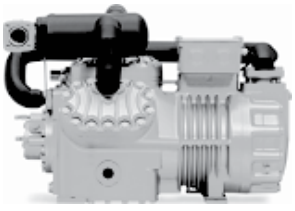
Primary Oil Separators



Centrifugal Oil Separators



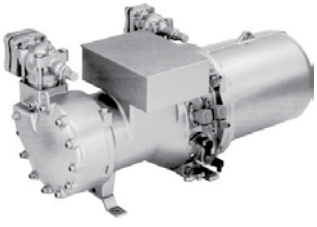
Single Stage
Semi-Hermetic Compressor



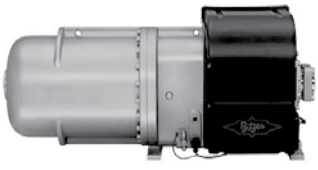
Two Stage
Semi-Hermetic Compressor



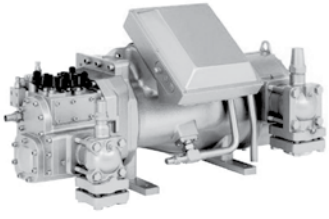
Scroll Compressor
Single / Tandem / Trio



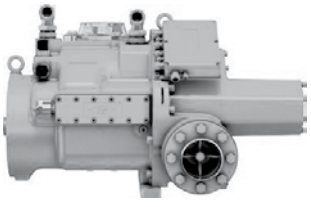
Compact Screw



Compact Screw w/ VFD



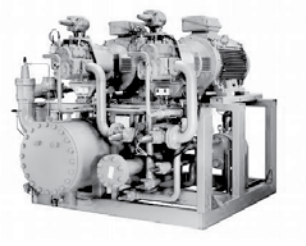
HSK Screw



Open Drive Screw



Eco Star Condensing Units
Full VFD

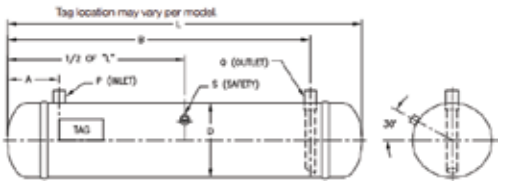


A.C.P.
Ammonia Package Units

Please see your local REFRIGERATIVE SUPPLY branch for details

RECEIVERS

BITZER



Horizontal Receivers (Standard and with Rotolock)

Model No.	Vessel Dimensions		Pumpdown Capacities					Weight	Standard conection size IDS		Safety NPT in.	Valve Conection Size (IDS)**		
	OD	Length	R134a lb	R407C lb	R404A lb	R507 lb	R22 lb		Inlet	Outlet		Roto Conn.	Inlet	Outlet
BH0014NL-RXX	6 5/8	30	33.6	29.6	27.7	28.9	33.3	64	5/8	5/8	1/2	1 - 14	5/8	5/8
BH0017NL-RXX	6 5/8	36	40.6	35.8	33.4	34.9	40.3	82	7/8	7/8	1/2	1 - 14	5/8	5/8
BH0030NL-RXX	8 5/8	36	70.1	61.7	57.7	60.3	69.5	91	1 1/8	1 1/8	1/2	1 1/4 - 12	7/8	7/8
BH0035NL-RXX	8 5/8	42	82.4	72.5	67.8	70.8	81.6	106	1 1/8	1 1/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BH0041NL-RXX	8 5/8	48	94.6	83.3	77.9	81.3	93.8	120	1 1/8	1 1/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BH0051NL-RXX	8 5/8	60	119.2	104.9	98.1	102.4	118.1	150	1 1/8	1 1/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BH0062NL-RXX	8 5/8	72	143.7	126.5	118.3	123.5	142.4	197	1 1/8	1 1/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BH0046NL-RXX	10 3/4	36	106.9	94.1	88	91.9	105.9	167	1 3/8	1 3/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BH0063NL-RXX	10 3/4	48	144.7	127.4	119.1	124.4	143.4	220	1 3/8	1 3/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BH0078NL-RXX	10 3/4	60	182.6	160.8	150.3	156.9	180.9	273	1 3/8	1 3/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BH0095NL-RXX	10 3/4	72	220.5	194.1	181.5	189.5	218.5	325	1 3/8	1 3/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BH0111NL-RXX	10 3/4	84	258.3	227.4	212.6	222	256	378	1 5/8	1 5/8	1/2	1 3/4 - 12	1 3/8	1 3/8
BH0127NL-RXX	10 3/4	96	296.2	260.8	243.8	254.6	293.5	445	1 5/8	1 5/8	1/2	1 3/4 - 12	1 3/8	1 3/8
BH0084NL-RXX	12 3/4	48	196.2	172.8	161.5	168.7	194.4	271	1 5/8	1 5/8	1/2	1 3/4 - 12	1 3/8	1 3/8
BH0106NL-RXX	12 3/4	60	248.1	218.4	204.2	213.3	245.8	336	1 5/8	1 5/8	1/2	1 3/4 - 12	1 3/8	1 3/8
BH0129NL-RXX	12 3/4	72	300	264.1	246.9	257.9	297.3	400	2 1/8	1 3/8	1/2	2 1/4 - 12	2 1/8	1 3/8
BH0173NL-RXX	12 3/4	96	403.8	355.5	332.4	347.1	400.1	539	2 1/8	1 3/8	1/2	2 1/4 - 12	2 1/8	1 3/8
BH0156NL-RXX	14	72	364.6	321.1	300.2	313.4	361.3	442	2 1/8	1 3/8	1/2	2 1/4 - 12	1 5/8	1 5/8
BH0211NL-RXX	14	96	491.2	432.5	404.3	422.2	486.7	626	2 5/8	2 1/8	1/2	2 1/4 - 12	1 5/8	1 5/8
BH0170NL-RXX	16	60	396.9	349.5	326.7	341.2	393.3	566	2 5/8	2 1/8	1/2	2 1/4 - 12	2 1/8	2 1/8
BH0206NL-RXX	16	72	480.7	423.3	395.7	413.2	476.3	674	2 5/8	2 1/8	1/2	2 1/4 - 12	2 1/8	2 1/8
BH0278NL-RXX	16	96	648.3	570.8	533.7	557.3	642.4	917	2 5/8	2 1/8	1/2	2 1/4 - 12	2 1/8	2 1/8
BH0262NL-RXX	18	72	612.1	538.9	503.8	526.1	606.5	795	3 1/8	2 1/8	1/2	2 1/4 - 12	-	2 1/8
BH0325NL-RXX	20	72	758.5	667.9	624.4	652	751.6	857	3 1/8	2 5/8	1/2	2 1/4 - 12	-	2 1/8
BH0383NL-RXX	20	84	892.1	785.4	734.3	766.8	884	993	3 1/8	2 5/8	1/2	2 1/4 - 12	-	2 1/8
BH0440NL-RXX	20	96	1025.6	903	844.2	881.6	1016.3	1198	3 1/8	2 5/8	1/2	2 1/4 - 12	-	2 1/8
BH0622NL-RXX	24	96	1450.8	1277.5	1194.3	1247.1	1437.7	1370	3 5/8	3 1/8	3/4	-	-	-
BH0786NL-RXX	24	120	1832.1	1613.1	1508.1	1574.8	1815.5	1470	4 1/8	3 5/8	3/4	-	-	-

Pumpdown capacities are 90% of receiver volume at 90° F
****Refers to "R" models: B(V/H)xxxxxx-Rxx with valves installed**

Model Number Explanation

B	V	0	0	0	5	X	L	-	X	X	X
Model designation B = Bitzer receiver											
B	V	0	0	0	5	X	L	-	X	X	X
Model orientation V = Vertical, H = Horizontal											
B	V	0	0	0	5	X	L	-	X	X	X
Nominal capacity xxxx = Volume in liters (l)											
B	V	0	0	0	5	X	L	-	X	X	X
Bracket and feet X = no feet and No top brackets N = Welded feet H = Welded feet and top brackets (single compressor assembly)											
B	V	0	0	0	5	X	L	-	X	X	X
Version L = HFC Refrigerant (450 psi rating) K = R410a Refrigerant (600 psi rating)											
B	V	0	0	0	5	X	L	-	X	X	X
Connection types X = standard IDS connections R = Rotalock connections*											
B	V	0	0	0	5	X	L	-	X	X	X
Connection types X = standard IDS connections R = Rotalock connections*											
B	V	0	0	0	5	X	L	-	X	X	X
Custom☐X = no options☑= Consult Bitzer											
* Rotalock valves installed where possible on both inlet/outlet or just inlet for larger sizes											

**Please contact your local branch for more information and pricing*

RECEIVERS

BITZER



Vertical Liquid Receivers (Standard and with Rotolock)

Model No.	Vessel Dimensions		Pumpdown Capacities					Weight	Standard conection size IDS		Safety NPT in.	Valve Conection Size (IDS)**		
	OD	Length	R134a lb	R407C lb	R404A lb	R507 lb	R22 lb		Inlet	Outlet		Roto Conn.	Inlet	Outlet
BV0007FL-RXX	6 5/8	15	16.0	14.1	13.2	13.8	15.9	39	5/8	5/8	3/8	1 - 14	1/2	1/2
BV0009FL-RXX	8 5/8	12	21.1	18.6	17.3	18.1	20.9	33	5/8	5/8	3/8	1 - 14	1/2	1/2
BV0013FL-RXX	8 5/8	16	29.2	25.7	24.1	25.1	29.0	43	5/8	5/8	3/8	1 - 14	1/2	1/2
BV0014FL-RXX	8 5/8	18	33.3	29.3	27.4	28.6	33.0	48	1/2	1/2	3/8	1 - 14	1/2	1/2
BV0020FL-RXX	8 5/8	24	45.6	40.1	37.5	39.2	45.2	62	5/8	5/8	3/8	1 - 14	5/8	5/8
BV0027FL-RXX	8 5/8	32	61.9	54.5	51.0	53.2	61.4	100	5/8	5/8	3/8	1 1/4 - 12	7/8	7/8
BV0021FL-RXX	10 3/4	18	50.1	44.1	41.2	43.0	49.6	88	1 1/8	7/8	1/2	1 - 14	5/8	5/8
BV0035FL-RXX	10 3/4	28	81.6	71.9	67.2	70.2	80.9	132	1 1/8	7/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BV0049FL-RXX	10 3/4	38	113.2	99.7	93.2	97.3	112.2	191	1 1/8	1 1/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BV0029FL-RXX	12 3/4	18	66.5	58.5	54.7	57.1	65.9	110	1 1/8	1 1/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BV0032FL-RXX	12 3/4	20	75.1	66.1	61.8	64.6	74.4	121	1 1/8	1 1/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BV0040FL-RXX	12 3/4	24	92.4	81.4	76.1	79.4	91.6	142	1 1/8	1 1/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BV0062FL-RXX	12 3/4	36	144.3	127.1	118.8	124.0	143.0	207	1 1/8	1 1/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BV0073FL-RXX	12 3/4	42	170.3	149.9	140.2	146.3	168.7	239	1 3/8	1 3/8	1/2	1 1/4 - 12	1 1/8	1 1/8
BV0084FL-RXX	12 3/4	48	196.2	172.8	161.5	168.7	194.4	281	1 3/8	1 1/8	1/2	1 3/4 - 12	1 3/8	1 3/8
BV0048FL-RXX	14	24	111.6	98.2	91.9	95.9	110.6	158	1 3/8	1 3/8	1/2	1 3/4 - 12	1 3/8	1 3/8
BV0098FL-RXX	14	46	227.6	200.4	187.3	195.6	225.5	330	1 3/8	1 3/8	1/2	1 3/4 - 12	1 3/8	1 3/8
BV0063FL-RXX	16	24	145.5	128.1	119.8	125.0	144.2	243	1 3/8	1 3/8	1/2	1 3/4 - 12	1 3/8	1 3/8
BV0134FL-RXX	16	48	313.1	275.7	257.7	269.1	310.2	459	2 1/8	1 5/8	1/2	2 1/4 - 12	1 5/8	1 5/8
BV0170FL-RXX	16	60	396.9	349.5	326.7	341.2	33.3	567	2 5/8	2 1/8	1/2	2 1/4 - 12	1 5/8	1 5/8
BV0079FL-RXX	18	24	183.2	161.3	150.8	157.4	181.5	279	1 5/8	1 5/8	1/2	2 1/4 - 12	1 5/8	1 5/8
BV0224FL-RXX	18	62	522.7	460.2	430.3	449.3	518.0	820	2 5/8	2 1/8	1/2	2 1/4 - 12	1 5/8	1 5/8

Pumpdown capacities are 90% of receiver volume at 90° F
****Refers to "R" models: B(V/H)xxxxxx-Rxx with valves installed**

Model Number Explanation

B	V	0	0	0	5	X	L	-	X	X	X
Model designation B = Bitzer receiver											
B	V	0	0	0	5	X	L	-	X	X	X
Model orientation V = Vertical, H = Horizontal											
B	V	0	0	0	5	X	L	-	X	X	X
Nominal capacity xxxx = Volume in liters (l)											
B	V	0	0	0	5	X	L	-	X	X	X
Bracket and feet X = no feet and No top brackets N = Welded feet H = Welded feet and top brackets (single compressor assembly)											
B	V	0	0	0	5	X	L	-	X	X	X
Version L = HFC Refrigerant (450 psi rating) K = R410a Refrigerant (600 psi rating)											
B	V	0	0	0	5	X	L	-	X	X	X
Connection types X = standard IDS connections R = Rotalock connections*											
B	V	0	0	0	5	X	L	-	X	X	X
Connection types X = standard IDS connections R = Rotalock connections*											
B	V	0	0	0	5	X	L	-	X	X	X
Custom□X = no options□= Consult Bitzer											
* Rotalock valves installed where possible on both inlet/outlet or just inlet for larger sizes											

ACCUMULATORS/
RECEIVERS 329-346

EVAPORATORS

BITZER

Evaporators

Model No.	R22			RI34a			Refrigerant connections (IDS)			Fluid Connections	Dimensions	
	Capacity	Nominal flow	Pressure drop (nominal)	Capacity	Nominal flow	Pressure drop (nominal)	Weight	Inlet	Outlet		Diameter	Length
	kBTU/h	gpm	psi	kBTU/h	gpm	psi	lbs	(in)	(in)	(in)	(in)	(in)
1 Circuit												
STEM030-1NTXXXX	77,663	1.9	16.0	79,094	1.9	16.0	18.0	6.0	30.0	3” MPT	6 5/8	82 1/4
STEM040-1NTXXXX	108,361	3.8	22.0	112,875	4.1	23.0	22.7	6.0	30.0	3” MPT	8 5/8	82 1/2
STEM050-1NTXXXX	136,912	4.0	28.0	141,802	4.2	29.0	20.9	7.5	37.5	4” FLANGE	8 5/8	82 1/4
STEM060-1NTXXXX	223,258	4.0	45.0	232,340	4.3	47.0	37.8	12.0	60.0	4” FLANGE	8 5/8	95 7/16
STEM075-1NTXXXX	297,677	1.7	60.0	310,307	1.9	63.0	64.6	21.0	105.0	5” FLANGE	8 5/8	95 11/16
STEM100-1NTXXXX	433,188	2.1	87.0	446,516	2.3	90.0	58.7	27.0	135.0	5” FLANGE	10 3/4	96 1/2
STEM120-1NTXXXX	506,051	2.0	102.0	524,000	2.1	106.0	98.9	33.0	165.0	6” FLANGE	12 3/4	96 1/16
2 Circuits												
STEM030-2NTXXXX	368	73.4	5.8	294	58.7	3.8	356	7/8	1 5/8	3” MPT	6 5/8	82 1/4
STEM040-2NTXXXX	502	100.1	5.1	402	80.1	3.3	468	1 1/8	2 1/8	3” MPT	8 5/8	82 1/2
STEM050-2NTXXXX	632	125.9	5.0	505	100.7	3.1	493	1 1/8	2 1/8	4” FLANGE	8 5/8	82 1/4
STEM060-2NTXXXX	744	148.4	5.2	595	118.7	4.0	562	1 1/8	2 5/8	4” FLANGE	8 5/8	95 7/16
STEM075-2NTXXXX	904	179.7	5.3	723	143.8	3.2	596	1 3/8	2 5/8	5” FLANGE	8 5/8	95 11/16
STEM100-2NTXXXX	1187	236.9	4.9	950	189.5	2.9	816	1 3/8	3 1/8	5” FLANGE	10 3/4	96 1/2
STEM120-2NTXXXX	1455	290.1	4.5	1164	232.1	2.7	1275	1 3/8	3 1/8	6” FLANGE	12 3/4	96 1/16
STEM150-2NTXXXX	1914	382.2	10.6	1531	305.7	6.2	1469	1 3/8	3 1/8	6” FLANGE	14	98 11/16
STEM175-2NTXXXX	2270	453.1	13.9	1816	362.4	8.2	1547	1 5/8	3 1/8	6” FLANGE	14	98 11/16
STEM200-2NTXXXX	2665	532	9.1	2132	425.6	5.4	1912	1 5/8	3 1/8	8” FLANGE	16	99 3/16
STEM250-2NTXXXX	3059	610.5	11.9	2447	488.4	7.0	1997	2 1/8	3 5/8	8” FLANGE	16	99 3/16
STEM275-2NTXXXX	3420	684.2	9.8	2736	547.4	7.3	2343	2 1/8	4 1/8	8” FLANGE	18	98 15/16
STEM300-2NTXXXX	3882	774.9	9.0	3106	619.9	6.0	2770	2 1/8	4 1/8	8” FLANGE	20	98 13/16

Standard Conditions: Inlet Water Temp: 85°F, Outlet Water Temp: 95°F, Subcooling: 3°F, Entering Refrigerant Temp: 125°F, Condensing Temp: 105°F, Fouling factor: 0.000244 [hr* ft:2*° F/Btu]

Model Number Explanation

S	T	E	M	0	3	0	-	1	N	T	X	X	X	X

Model Designation

STE = shell-and-tube evaporator

Pressure

M = low / medium pressure H = high pressure

Nominal capacity

Number of Circuits

1 = single

2 = two

3 = three

4 = four

Bracket and Feet Configuration

N = feet on bottom

H = feet on bottom, brackets on top for stacking evaporators

T = brackets on top for stacking evaporators

Water Connection Location

T = top L = left R = right

Water Connection Type

X = standard connections

J = flexible joint connections 1 .. 9 = flange patterns

Refrigerant Connection Type

X = standard configuration R = rotalock connection

C = flange and copper fitting S = flange and steel fitting

Design Variables

XX = standard configuration TX = 3/4 in. insulation

RX = 1 1/2 in. insulation UX = UV rated insulation



Please contact your local branch for more information and pricing

CONDENSERS

BITZER

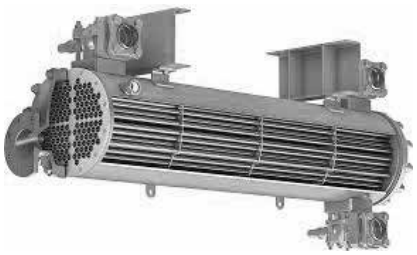
Shell and Tube Condensers

Model No.	R22			RI34a					
	Total Heat of Rejection	Water Pressure Drop	Water Flow Rate	Total Heat of Rejection	Water Pressure Drop	Water Flow Rate	Pumpdown Capacity	Water Flow	Water Flow
	Btu/h	psi	gpm	Btu/h	psi	gpm	(R22) lbs	Minimum gpm	Maximum gpm
Standard Models									
STC005XS-XXX	77,663	1.9	16.0	79,094	1.9	16.0	18.0	6.0	30.0
STC007XS-XXX	108,361	3.8	22.0	112,875	4.1	23.0	22.7	6.0	30.0
STC010XS-XXX	136,912	4.0	28.0	141,802	4.2	29.0	20.9	7.5	37.5
STC015XS-XXX	223,258	4.0	45.0	232,340	4.3	47.0	37.8	12.0	60.0
STC020XS-XXX	297,677	1.7	60.0	310,307	1.9	63.0	64.6	21.0	105.0
STC025XS-XXX	433,188	2.1	87.0	446,516	2.3	90.0	58.7	27.0	135.0
STC030XS-XXX	506,051	2.0	102.0	524,000	2.1	106.0	98.9	33.0	165.0
STC040XS-XXX	607,459	3.8	122.0	630,084	4.1	127.0	128.0	30.0	150.0
STC050XS-XXX	831,522	4.2	167.0	858,303	4.5	173.0	117.5	39.0	195.0
STC060XS-XXX	911,189	3.8	183.0	942,645	4.1	190.0	178.0	45.0	225.0
STC070XS-XXX	1,199,982	4.5	241.0	1,235,361	4.8	249.0	168.1	54.0	270.0
STC080XS-XXX	1,304,545	4.3	262.0	1,339,547	4.6	249.0	168.1	60.0	300.0
STC100XS-XXX	1,682,962	2.0	338.0	1,726,529	2.1	348.0	278.0	102.0	510.0
STC125XS-XXX	2,235,651	2.1	449.0	2,292,116	2.2	462.0	250.7	132.0	660.0
STC150NS-XXX	2,668,840	2.1	536.0	2,738,631	2.2	552.0	307.8	156.0	780.0
STC200NS-XXX	3,639,780	2.1	731.0	3,730,888	2.2	752.0	385.1	210.0	1050.0
STC250NS-XXX	4,302,011	2.0	864.0	4,420,508	2.1	891.0	496.2	258.0	1290.0
Marine Models									
STC003XB-XXX	39,118	2.4	8.0	42,236	3.0	9.0	12.8	3.5	17.3
STC005XB-XXX	57,174	3.0	12.0	58,248	3.0	12.0	11.1	4.6	23.1
STC007XB-XXX	98,153	1.5	20.0	102,309	1.7	21.0	19.2	9.2	46.2
STC010XB-XXX	127,133	2.7	26.0	132,023	2.9	27.0	23.3	9.2	46.2
STC015XB-XXX	203,412	2.5	41.0	211,797	2.7	43.0	41.9	15.4	77.0
STC020XB-XXX	325,083	1.5	66.0	336,151	1.6	68.0	73.9	27.7	138.5
STC025XB-XXX	386,980	1.4	78.0	400,416	1.5	81.0	67.5	33.8	169.3
STC030XB-XXX	435,020	2.4	88.0	449,850	2.6	91.0	84.9	30.8	153.9
STC035XB-XXX	494,340	1.5	100.0	511,013	1.5	101.2	114.0	43.1	215.5
STC040XB-XXX	533,887	LS	108.0	550,703	1.5	111.0	110.5	46.1	230.8
STC045XB-XXX	625,123	2.5	126.0	644,967	2.7	130.0	137.3	43.1	215.5
STC050XB-XXX	664,813	2.5	134.0	689,619	2.6	139.0	133.2	46.1	230.8
STC065XB-XXX	873,187	2.4	176.0	902,955	2.6	182.0	194.3	61.5	308.0
STC075XB-XXX	982,335	2.5	198.0	1,012,103	2.6	204.0	186.1	67.7	338.5
STC100XB-XXX	1,637,225	1.4	330.0	1,686,838	1.5	340.0	314.1	135.4	677.0
STC120XB-XXX	1,805,909	1.5	364.0	1,860,483	1.5	375.0	300.1	147.7	738.5

Standard Conditions: Inlet Water Temp: 85°F, Outlet Water Temp: 95°F, Subcooling: 3°F, Entering Refrigerant Temp: 125°F, Condensing Temp: 105°F, Fouling factor: 0.000244 [hr* ft:2*° F/Btu]

Model Number Explanation

S	T	C	0	0	5	X	S	-	X	X	X
Model Designatiom											
STC= Shell ant Tube Condenser											
S	T	C	**0**	**0**	**5**	X	S	-	X	X	X
Nominal Capacity											
S	T	C	0	0	5	**X**	S	-	X	X	X
Bracket and Feet Configuration											
X = No Brackets											
N = Bottom Brackets											
S	T	C	0	0	5	X	**S**	-	X	X	X
Version											
S = Standard Version											
B = Marine Version											
S	T	C	0	0	5	X	S	-	**X**	X	X
Connection Type											
X = Standard Connections											
R = Rotolock Connection											
S	T	C	0	0	5	X	S	-	X	**X**	**X**
Design Variables											
XX = Standard Configuration											
GX = With SightGlass											



**Please contact your local branch for more information and pricing*

CONDENSERS

BITZER

Shell and Tube Condensers (cont'd)

Model No.	Refrigerant connections					
	Outlet	Inlet	Safety Connection	Fluid Connection	Dimensions in Inches	
	IDS (in)	IDS (in)	NPT (in)	NPT (in)	Diameter	Length
Standard Models						
STC005XS-XXX	5/8	1 1/8	1/2	1	6 5/8	27 3/8
STC007XS-XXX	7/8	1 3/8	1/2	1 1/4	6 5/8	33 3/8
STC010XS-XXX	7/8	1 3/8	1/2	1 1/4	6 5/8	33 3/8
STC015XS-XXX	1 1/8	1 5/8	1/2	2	8 5/8	34 3/8
STC020XS-XXX	1 1/8	1 5/8	1/2	2	8 5/8	52 3/8
STC025XS-XXX	1 3/8	2 1/8	1/2	2	8 5/8	52 3/8
STC030XS-XXX	1 3/8	2 1/8	1/2	2 1/2	10 3/4	52 7/8
STC040XS-XXX	1 3/8	2 1/8	1/2	3	10 3/4	64 7/8
STC050XS-XXX	1 5/8	2 5/8	1/2	3	10 3/4	64 7/8
STC060XS-XXX	1 5/8	2 5/8	1/2	4	12 3/4	67 7/8
STC070XS-XXX	2 1/8	3 1/8	1/2	4	12 3/4	67 7/8
STC080XS-XXX	2 1/8	3 1/8	1/2	4	12 3/4	67 7/8
STC100XS-XXX	2 1/8	3 1/8	3/4	5	12 3/4	103 5/8
STC125XS-XXX	2 1/8	3 1/8	3/4	5	12 3/4	103 5/8
STC150NS-XXX	2 5/8	3 5/8	3/4	6	14	113 1/8
STC200NS-XXX	3 1/8	4 1/8	3/4	8	16	113 1/8
STC250NS-XXX	3 1/8	4 1/8	3/4	8	18	116
Marine Models						
STC003XB-XXX	5/8	7/8	3/8	3/4	6 5/8	21 3/8
STC005XB-XXX	5/8	1 1/8	3/8	3/4	6 5/8	21 3/8
STC007XB-XXX	7/8	1 3/8	3/8	1 1/4	6 5/8	33 5/8
STC010XB-XXX	7/8	1 3/8	3/8	1 1/4	6 5/8	39 5/8
STC015XB-XXX	1 1/8	1 5/8	1/2	2	8 5/8	39 7/8
STC020XB-XXX	1 1/8	2 1/8	1/2	2	8 5/8	63 7/8
STC025XB-XXX	1 3/8	2 1/8	1/2	2	8 5/8	64 3/4
STC030XB-XXX	1 3/8	2 5/8	1/2	2 1/2	8 5/8	76 3/8
STC035XB-XXX	1 3/8	2 5/8	1/2	2 1/2	10 3/4	64 5/8
STC040XB-XXX	1 5/8	2 5/8	1/2	2 1/2	10 3/4	65 3/8
STC045XB-XXX	1 5/8	2 5/8	1/2	2 1/2	10 3/4	77 5/8
STC050XB-XXX	1 5/8	2 5/8	1/2	2 1/2	10 3/4	77 3/4
STC065XB-XXX	2 1/8	3 1/8	1/2	4	12 3/4	79 7/8
STC075XB-XXX	2 1/8	3 1/8	1/2	4	12 3/4	79 7/8
STC100XB-XXX	2 1/8	3 1/8	1/2	5	12 3/4	131 7/8
STC120XB-XXX	2 1/8	3 5/8	1/2	5	12 3/4	131 7/8

Standard Conditions: Inlet Water Temp: 85°F, Outlet Water Temp: 95°F, Subcooling: 3°F, Entering Refrigerant Temp: 125°F, Condensing Temp: 105°F, Fouling factor: 0.000244 [hr* ft:2*° F/Btu]

Model Number Explanation

S	T	C	0	0	5	X	S	-	X	X	X
Model Designation											
STC= Shell ant Tube Condenser											
S	T	C	**0**	**0**	**5**	X	S	-	X	X	X
Nominal Capacity											
S	T	C	0	0	5	**X**	S	-	X	X	X
Bracket and Feet Configuration											
X = No Brackets											
N = Bottom Brackets											
S	T	C	0	0	5	X	**S**	-	X	X	X
Version											
S = Standard Version											
B = Marine Version											
S	T	C	0	0	5	X	S	-	**X**	X	X
Connection Type											
X = Standard Connections											
R = Rotolock Connection											
S	T	C	0	0	5	X	S	-	X	**X**	**X**
Design Variables											
XX = Standard Configuration											
GX = With SightGlass											



Please contact your local branch for more information and pricing

TWO-STAGE OIL SEPARATORS

TEMPRITE

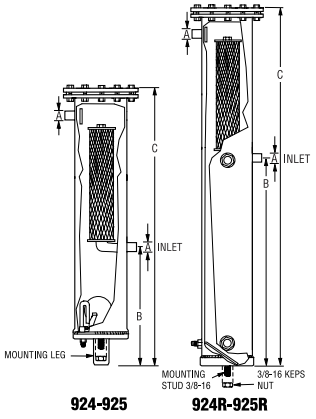
Accessible Coalescent Oil Separators

Features:

- Coalescent filter-separator, filters down to 0.3 microns
- Contains replaceable separator-filter for expanded usage
- 99% separating efficiency regardless of oil velocity
- Independently tested for high efficiency and durability
- OEM approved
- Enables clean-up at the separator when retrofitting
- Maximum working pressure 450 PSIG
- Includes one high-efficiency oil separator filter
- Capacity ratings listed below are nominal; capacity in tons at listed evaporator temperature

924, 925 Coalescent Oil Separator: Accessible
924R, 925R Coalescent Oil Separator/Reservoir: Accessible

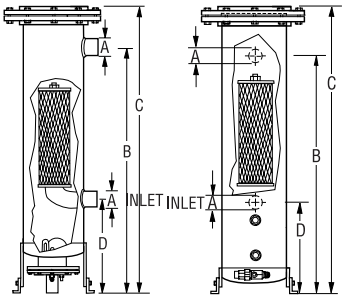
Part #	Maximum Working Pressure	Oil Connector Size	Diameter	Dimensions			Oil Charge Amount	LIST
				A	B	C		
924	650 PSIG	1/4″ SAE	4″	1-1/8″ ODS	9-3/8″	21-5/8″	16 oz	1,210.00
925	650 PSIG	1/4″ SAE	4″	1-3/8″ ODS	9-3/8″	21-5/8″	16 oz	1,246.00



924-925 924R-925R

928 Coalescent Oil Separator: Accessible
928R Coalescent Oil Separator/Reservoir: Accessible

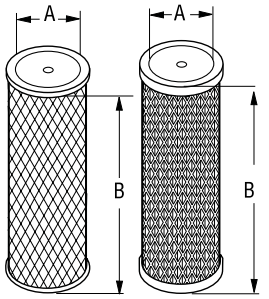
Part #	Maximum Working Pressure	Oil Connector Size	Diameter	Dimensions				Oil Charge Amount	LIST
				A	B	C	D		
928	650 PSIG	3/8″ SAE	8-5/8″	2-5/8″ ODS	33-5/8″	40-1/4"	12"	34oz	5,318.00
928R	650 PSIG	3/8″ SAE	8-5/8″	2-5/8″ ODS	32-5/8″	39″	11-1/2"	2.0 gal	5,431.00



928 928R

Coalescing Standard/Clean-Up® Filters

Standard Filter Kit Part #	Clean-Up® Filter Kit Part #	Model	A Norminal	B Norminal	Standard LIST	Clean-Up LIST
62037000	62047000	924-925, 924R-925R	2″	9"	220.50	310.00
62028000	62030000	926-927, 926R-927R	3-1/2″	14″	355.00	499.00
62051000	62092802	928, 928R	5-1/8″	16″	414.00	850.00
62085000	62086000	930, 930R	8-1/2″	16″	783.00	1,399.00



Standard Filter Kit Clean-Up® Filter Kit

ACCUMULATORS/ RECEIVERS 329-346

HELICAL OIL SEPARATORS
HENRY TECHNOLOGIES

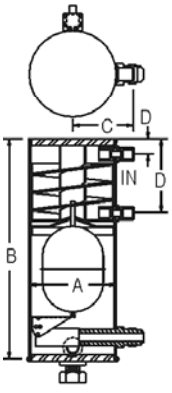


FIG. 1

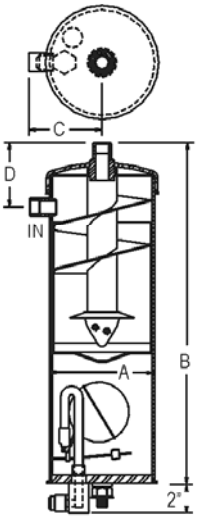


FIG. 2

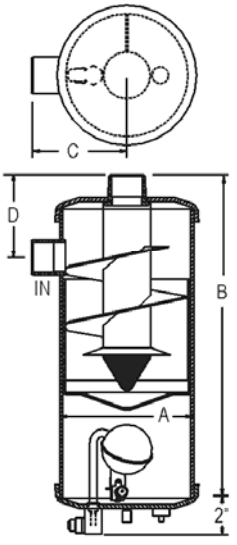


FIG. 3

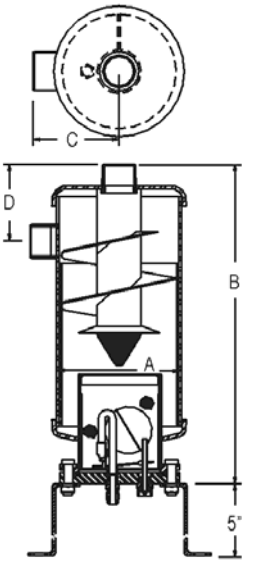


FIG. 4

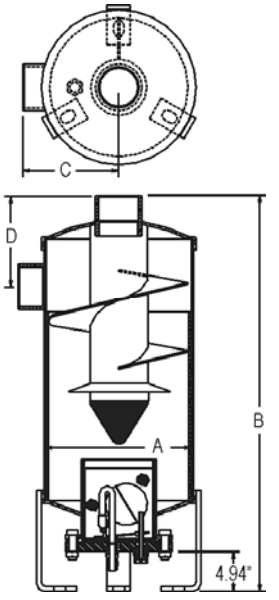


FIG. 5

Part #	Fig. No.	Size Conn. ODS	Dimensions in Inches					Capacity in Tons of Ref. at Evap. Temp.						Nom. DCFM	Pre-Charge Oil (oz)	LIST
			A	B	C	D		R-134a		R-22		R-404a/R-507				
								-40°F	+40°F	-40°F	+40°F	-40°F	+40°F			
S-5180	1	1/4"	2.5	6.38	1.75	0.44	2.12	0.40	0.50	0.55	0.60	0.50	0.60	0.5	14	594.00
S-5181	1	3/8"	2.5	7.5	1.75	0.5	3.25	0.90	1.00	1.20	1.40	1.00	1.20	1.1	14	594.00
S-5182	2	1/2"	4	13	2.75	2.44		1.30	1.50	1.80	2.00	1.50	1.90	1.7	14	644.00
S-5185	2	5/8"	4	15	2.75	2.5		2.40	2.90	3.60	4.00	3.00	3.70	3.4	14	678.00
S-5187	2	7/8"	4	17	3	2.94		4.70	5.70	6.80	7.60	5.70	7.00	6.5	14	712.00
S-5188	2	1 1/8"	4	19	3	3.06		8.00	9.50	11.40	12.70	9.30	11.50	10.7	14	746.00
S-5190	3	1 3/8"	6	15	4.25	3.69		11.60	13.90	16.40	18.40	13.60	16.40	15.5	40	814.00
S-5192	3	1 5/8"	6	17	4.25	3.95		16.40	19.10	22.90	25.60	18.60	22.90	21.4	40	882.00
S-5194	3	2 1/8"	6	17	4.38	4.19		24.90	29.40	35.40	39.10	28.60	35.40	33.0	40	
S-5290	4	1 3/8"	6	15	4.25	3.69		11.60	13.90	16.40	18.40	13.60	16.40	15.5	25	1,238.00
S-5292	4	1 5/8"	6	17	4.25	3.95		16.40	19.10	22.90	25.60	18.60	22.90	21.4	25	1,272.00
S-5294	4	2 1/8"	6	17	4.38	4.19		24.90	29.40	35.40	39.10	28.60	35.40	33.0	25	1,323.00
S-5202	5	2 1/8"	8	24	5.38	5.06		29.40	35.00	41.80	46.60	34.30	42.10	39.2	25	1,865.00
S-5203	5	2 5/8"	10	27	6.5	5.63		48.60	58.10	70.10	78.10	58.10	71.60	66.6	25	2,205.00
S-5204	5	3 1/8"	12	30	7.75	6.45		71.60	85.10	102.60	114.60	85.10	105.10	97.6	25	

DCFM & Tonnage Ratings revised for optimal oil separation and minimal pressure drop.

Standard 3/8" flare oil return connection & 1/8" FPT oil drain; 3/8" O.D.S. oil return connection available by ordering an "X" suffix (i.e. S-5292X). All the capacities shown are based on 105°F condensing.

c UL us LISTED

VENTILATION SYSTEMS

NU-AIR

ES and Windsor Series HRVs



ES Series



NU Series

Built for Quick, Easy Installation

- Aluminum cabinet is 30-60% lighter than competitive models.
- Removable terminal blocks make wiring simple and done safely from the floor.
- Independently adjustable motors means no mechanical dampers required, saved energy and reduced fan noise.
- Dual door construction on most models allows maximum versatility, minimum SKUs and minimum effort when routing ducts.
- 12 VDC or 24 VAC provide maximum design flexibility.
- Easily accessible components make service quick and easy.



Decora Controls

Reliable Performance and Peace of Mind

- Intelligent defrost adjusts to outdoor temperature and saves energy.
- Quiet, efficient European-built motors.
- Pressure-neutral 5th port defrost ensures dependable operation in extreme climates and DOES NOT recirculate dirty exhaust air. The perfect solution for wood stove heat distribution.
- Unlimited 3-year warranty on components and lifetime warranty on heat exchanger simplifies service and paperwork for the rare warranty claim.



Tandem Hoods



Lumina Controls

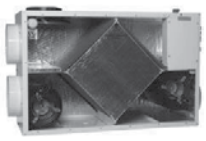
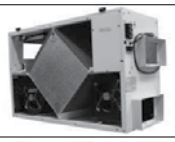
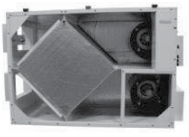
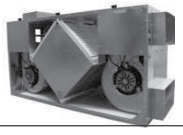
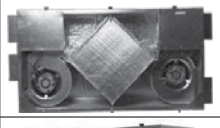
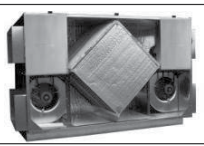
Part #	Description	LIST
ES100	118 CFM HRV	1,837.00
ES150	109 CFM HRV	2,007.00
ES170	160 CFM HRV	2,179.00
ES210	194 CFM HRV	2,345.00
NU145	109 CFM HRV	1,744.00
NU165	160 CFM HRV	2,008.00
NU205	194 CFM HRV	2,259.00
NAV-561	LUMINA WALL CONTROL	134.30
EST1	TIMER	88.50
ESM2	MODE CONTROL	92.60
THA5	Tandem Hood Kit	200.20

Please contact your local branch for pricing.

VENTILATION SYSTEMS

NU-AIR

Commercial HRVs and ERVs

LC Series		Nu-Air Advantage	Air Flow CFM (L/S)				Size LxHxD	Weight	Core	Duct Size	Defrost Type	Effectiveness Sensible
			0	0.2	0.3	0.4	in (mm)	lb (kg)		in (mm)		
NU305		- Lightweight aluminum cabinet - white - Quiet operation - 5000-7000 sq ft @.3 ACH - Excellent for large homes - Two FCDI Direct-drive blowers - Two speed motor, 115V - Light commercial applications	**320** (151)	**292** (137)	**253** (119)	**231** (109)	**36 x 23 x 17** (914 x 584 x 432)	**50** (22.7)	Polypropylene	**8** (203)	FSD or Damper Circulation	66-70%
NU500		- 7500-12000 sq ft @ 0.3 ACH - Two FCDI Direct-drive blowers - 1275 RPM/2 speed - Adjustable low and high speed - Lightweight aluminum cabinet- white	**554** (261)	**495** (233)	**480** (226)	**460** (216)	**36 x 23 x 17** (914 x 584 x 432)	**55** (25)	Polypropylene	**10 x 6** (254 x 150)	FSD or Damper Circulation	66-70%
NU600		- Fits above "T-bar" ceiling - Two FCDI direct-drive blowers - 1275 RPM/2-speed - Adjustable low and high speed - Popular for pools and hot tubs - Lightweight aluminum cabinet- white	**640** (301)	**590** (277)	**565** (266)	**535** (252)	**42 x 30 x 23** (1067 x 762 x 584)	**170** (77.3)	Polypropylene	**14 x 8** (356 x 203)	FSD or Damper Circulation	63-65%
NU800		- Galvanized steel cabinet - Two DWDI Direct Drive blowers - Two speed 1/3hp PSC motors, 115V - 1075 RPM/2-speed - Optional aluminum cabinet – white	**810** (381)	**750** (353)	**700** (329)	**675** (319)	**54 x 30 x 23** (1372 x 762 x 584)	**245** (111)	Polypropylene	**14 x 8** (356 x 203)	FSD or Damper Circulation	63-65%
NU1200		- Galvanized steel cabinet - Two DWDI Direct Drive blowers - Two speed 1/2hp PSC motors, 115V - Custom options available - Optional aluminum cabinet – white	**1160** (545)	**1120** (527)	**1090** (513)	**1075** (505)	**54 x 30 x 23** (1372 x 762 x 584)	**245** (111)	Polypropylene	**14 x 8** (356 x 203)	FSD or Damper Circulation	63-65%
NU1600		- Galvanized steel cabinet - 24v remote connections - Two DWDI Direct Drive blowers - Two speed 1hp PSC motors, 230V - 230v single point electrical connection - Custom options available	**1750** (823)	**1620** (761)	**1605** (754)	**1530** (719)	**64 x 38 x 30** (1626 x 965 x 762)	**340** (155)	Polypropylene	**20 x 10** (508 x 254)	FSD or Damper Circulation	59-62%
*NU2200		- Galvanized steel cabinet - Split motor pulley for field adjustment - Single speed 1.5hp PSC belt drive motors - 208-230v/ 1 or 3 phase electrical connection - Two section core for easy service	**2867** (1348)	**2567** (1207)	**2510** (1180)	**2475** (1164)	**64 x 38 x 30** (1626 x 965 x 762)	**400** (182)	Polypropylene	**24 x 12** (610 x 305)	FSD	59-62%

Standard Features (units up to NU1600)

- Forward curve DWDI blowers
- Permanently sealed bearings
- Temperature activated fan shut down defrost
- 1" pleated filters 30-40% ASHRAE dust spot efficiency
- Remote or automatic controls and sensors
- Condensate drain and anti-vibration kits included
- Large surface area heat recovery cores

Controls

- 24 V dry contacts available for 2-speed control, time-clocks, occupancy and CO sensors also available.
- For units up to NU1600, ES Series controls are available.



Please contact your local branch for pricing.

FANTECH

FIT 120H

Heat Recovery Ventilator



Apparent Recovery Efficiency

76% @ 32°F (0°C), 86 cfm (41 l/s)
81% @ -13°F (-25°C), 65 cfm (31 l/s)

Sensible Recovery Efficiency

64% @ 32°F (0°C), 86 cfm (41 l/s)
56% @ -13°F (-25°C), 65 cfm (31 l/s)

Maximum Continuous Ventilation

116 cfm (55 l/s)

Physical parameters

- Aluminum heat recovery core
- Supply fan modulation frost prevention
- Side port location
- Oval 5" (125 mm) ducts
- Electrical consumption: more than 1 cfm/W
- Net weight: 42 lbs (19 kg)
- Length - Width - Height:
  31" - 21" - 10 1/4" (785 mm - 531 mm - 260 mm)

Installation

- Drain needed
- Ceiling bracket included
- Balancing dampers included

Application

- Condo
- Apartments
- Single family homes

Wall Control Compatibility

ECO-TOUCH®, EDF7, EDF1, RTS2, RTS5, MDEH1

Part #	LIST
FIT120H	1,984.00

FIT 120E

Energy Recovery Ventilator



Apparent Recovery Efficiency

80% @ 32°F (0°C), 85 cfm (40 l/s)
80% @ 5°F (-15°C), 66 cfm (31 l/s)

Sensible Recovery Efficiency

64% @ 32°F (0°C), 85 cfm (40 l/s)
56% @ 5°F (-15°C), 66 cfm (31 l/s)

Maximum Continuous Ventilation

110 cfm (52 l/s)

Physical parameters

- Polymer membrane energy recovery core
- Supply fan modulation frost prevention
- Side port location
- Oval 5" (125 mm) ducts
- Electrical consumption: more than 1 cfm/W
- Net weight: 36 lbs (16 kg)
- Length - Width - Height:
  31 1/4" - 19" - 8 3/4" (870 mm - 485 mm - 222 mm)

Installation

- No drain needed
- Ceiling bracket included
- Balancing dampers included

Application

- Condo
- Apartments
- Single family homes

Wall Control Compatibility

ECO-TOUCH®, EDF7, EDF1, RTS2, RTS5, MDEH1

***No drain required for FIT 120E (only)**

Part #	LIST
FIT120E	2,420.00

VENTILATION SYSTEMS

FANTECH

Heat Recovery Ventilators



SHR



VHR

SHR Series / VHR Series

FEATURES:

- Simple Yet Sophisticated Design Makes These Units the Most Reliable HRVs on the Market
- Aluminum Cores
- EBM Motors with Backward Incline Impellers
- Steep Fan Curves for Superior Airflow Performance minimize the need to balance
- Insulated with 1" (25mm) Foil-Faced High Density Polystyrene Foam

OPTIONAL CONTROLS

- **RTS2** – FANTECH PUSH BUTTON TIMER 20 MIN. W/ LED FOR SHR & VHR
- **RTS3** – FANTECH 20/40/60 MIN. TIMER PUSH BUTTON F/ SHR/VHR SERIES
- **EDF1** – FANTECH HRV SWITCH / TIMER ON/OFF LOW/ HIGH SPEED & 20MIN. OR 40MIN. OFF CYCLE TIMER
- **EDF5** – FANTECH INTELITEK CONTROL 2-WIRE
- **MDEH1** – FANTECH LOW V. DEHUMIDISTAT F/ SHR/ VHR SREIES HRV'S
- **MDEH2** – FANTECH 4-WIRE DEHUMIDISTAT LOW V. W/ ON/OFF
- **VT20A** – MARTECH PUSH BUTTON TIMER & SPEED CONTROL AUX. SWITCH
- **VT20M** – MARTECH PUSH BUTTON TIMER & SPEED CONTROL MASTER SWITCH

MODEL #	DESCRIPTION	BOX SIZE LxWxH	WARRANTY (YEARS)	LIST

FLEX 100H HEAT RECOVERY VENTILATORS

FLEX 100H	HRV, 67cfm @ .3 "WG, 56 cfm	24x16x20	*	1,994.00

- Up to 100 CFM
- Lightweight: only 39lbs (17.7kg) including core
- Top port design fits in tight spaces
- Includes EZ-Mount wall bracket
- Aluminum heat recovery core
- Multiple speed operation
- Internal recirculation defrost
- Duct Connections: 5"
- OAL: 22.4"x15"x17.9"

SH "04" SERIES HEAT RECOVERY VENTILATORS (HRV with fan shut down defrost)

Super Compact, Low Maintenance, includes wall mounting bracket. (Drain hose not included)

SH 704	HRV, 67cfm @ .3 "WG, 56 cfm	24x13x21	*	1,657.00

Compact, Low Maintenance, Exclusive Electronic Control Board that accepts Fantech Low Voltage Controls.

SHR 2004	HRV, 60 - 200 cfm	34x18x26	*	2,507.00

SH 04 Series (Fan shut down design) provide exhaust only ventilation during defrost sequence.

SH "05" SERIES HEAT RECOVERY VENTILATORS (HRV with recirculation design)

Compact, Low Maintenance, Exclusive Electronic Control Board that accepts Fantech Low Voltage Controls and a Recirculation Defrost Strategy.

SHR 2005R	HRV, 60 - 200 cfm	34x18x26	*	3,070.00
SHR 3005R	HRV, 65 - 231cfm High-Efficient Unit	57x28x19	*	4,453.00
SHR 3205RD	HRV, 65 - 267cfm	35x26x25	*	3,872.00

SH "05" Recirculation design models (Identified with an R at the end of the model number) provide a unique damper defrost sequence with recirculation.

*Fantech Warranty:
Motors: 7 years (limited), Aluminum Core: Lifetime (limited) and Electrical Components: 5 years (limited)

VH "04" SERIES HEAT RECOVERY VENTILATORS (HRV with 4 Top Ports and fan shut down defrost)

Compact, Low Maintenance, Exclusive Electronic Control Board that accepts Fantech Low Voltage Controls.

VHR 2004	HRV, 60 - 200 cfm	33x26x19	*	2,507.00

VH "04" Series (Fan shut down design) provide exhaust only ventilation during defrost sequence.

FANTECH

HEPA Filtration Systems

Unit Size **DM3000P** – 20" x 16" x 10.5"; (2) 5" x 10" ports
CM3000 – 20" x 16" x 10.5"; (2) 8" diameter ports

Motor Powerful German manufactured EBM external rotor motorized impeller with permanently lubricated ball bearings for long life and vibration free operation. Delivers 240 cfm air flow.

Electrical Prewired with 5' cord and 3-prong plug. 115 volts; 1.0 amps

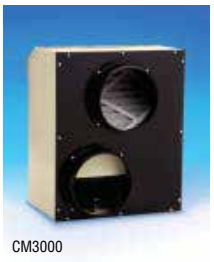
Filters Easy to replace. No tools needed. Pre-Filter captures larger particles. Replace every three months. Carbon Filter absorbs odors and gases. Replace every three months HEPA filter - 99.97% effective down to 0.3 microns. Specially designed to be the least expensive HEPA filter to replace. Lasts 2 to 5 years depending on proper maintenance of the pre-filters.*

*Homes with a high level of pollutants (such as a heavy smoker) will need to change the filter more often.

MODEL #	DESCRIPTION	BOX SIZE LxWxH	WARRANTY (YEARS)	LIST
HIGH EFFICIENT WHOLE-HOUSE HEPA FILTRATION SYSTEMS				
Collects 99.97% of particles down to 0.3 microns.				
Easily connects to furnace/air handler or may be independently ducted.				
DM 3000P	Duct mounted HEPA unit easily attaches to furnace plenum, 240 cfm with built-in pressure switch for automatic activation	23x17x16	***	1,142.00
CM 3000	Collar mounted HEPA kit included 2 pieces of 8" flex, 4 collars and hanging chains, 240 cfm	23x17x16	***	1,142.00

*** Warranty on the HEPA Series: Motor: 7 years (limited), Electrical Components: 5 years (limited) (filters not included)


DM3000P


CM3000

Inline Centrifugal Fans



Easy to install
Loaded with features

- Prewired and supplied with a mounting bracket for easy installation
- Available singularly with bracket or in a variety of kits for specific applications. Each kit includes the appropriate fan and accessories
- UL Listed; CSA Certified
- Approved for residential and commercial applications and for wet locations
- Suitable for airstream temperatures up to 140°F
- Easy connection using external wiring box with waterproof gasket
- 122-649 CFM
- 4" to 10" duct diameters
- 100% speed controllable
- Five-year factory warranty

FR Series Performance Data

Fan Model	Energy Star	RPM	Volts	Rated Watts	Wattage Range	Max. Amps	Static Pressure in Inches W.G							Max. Ps	Duct Dia.	LIST
							0"	.2"	.4"	.6"	.8"	1.0"	1.5"			
FR 100	√	2900	115	19	13 – 19	0.18	122	100	78	55	15	—	—	0.87"	4"	385.00
FR 110	—	2900	115	80	62 – 80	0.72	167	150	133	113	88	63	4	1.60"	4"	426.00
FR 125	√	2950	115	18	15 – 18	0.18	148	120	88	47	—	—	—	0.79"	5"	434.00
FR 140	√	2850	115	61	47 – 62	0.53	214	190	162	132	99	46	—	1.15"	6"	445.00
FR 150	√	2750	120	71	54 – 72	0.67	263	230	198	167	136	106	17	1.58"	6"	445.00
FR 160	—	2750	115	129	103 – 130	1.14	289	260	233	206	179	154	89	2.32"	6"	552.00

FR Series performance is shown with ducted outlet. Per HVI's Certified Ratings Program, charted air flow performance has been derated by a factor based on actual test results and the certified rate at .2 inches WG.

CONTROLS AND SWITCHES

FANTECH ACCESSORIES

Timers



FD60EM
Electronic push button timer. Select from 10, 20, 30 and 60 minute timed operation of fan. Includes Decora style white switch plate and screws. Fits standard single gang box. Ideal for multiple switching locations. Switch suitable for 115 volt supply. 20 amp rating.

LIST
203.30



RTS2
15-minute timer with LED light for use with Fantech Heat Recovery and Energy Recovery Ventilators. Works as an override switch to turn HRV or ERV on high speed for 15 minutes. Up to five timers can be used. Install in bathrooms, kitchen or laundry – where ever easy-access wall control is needed.

LIST
62.00



EDF1
Triple-Function Wall Control. It's easy to control your home's indoor air quality system with this triple function wall control. Press the button once to run your HRV/ERV at a continuous low speed (Green). Press the button twice and the unit will run 20 Minutes On/40 Minutes Off (Yellow). The cycle repeats continuously. Push the button three times and the system will run continuously on high speed (Red).

LIST
108.40



RTS3
Intermittent Timer. The ideal control for those areas of the home where excess moisture, steam and odors are created. Press the button once to energize your HRV/ERV system to high speed for 20 Minutes (Green). Press the button twice and the unit will run for 40 Minutes at high speed (Yellow). Press the button three times and the unit kicks to high speed for 60 minutes (Red). When time expires the unit will return to its original setting.

LIST
106.50

Variable Speed Controllers



WC Series
WC15 and WC25 (2 wire) rotary type variable speed controller with on/off switch. Brushed aluminum switch plate and screws included. Fits standard single gang box. WC15H (4 wire) contains all the features as the WC15 with a high speed bypass.

Model #	Volts	Amps	LIST
WC 15	115	5	77.40

Humidistat Controller



FH 20
Wall mounted dehumidistat. Adjustable between 20% and 80% relative humidity. Switch suitable for up to 115 volt supply. 7.5 amp rating. White.

LIST
92.90

Dehumidistats



MDEH 1
2-wire low voltage dehumidistat control with rotary dial. Just turn the dial to set the humidity level. Multiple units can be used with Fantech HRV's. Install in bath-rooms, kitchen or laundry for easy access.

LIST
73.60

FILTER RACK

Metal Filter Rack



- All filter racks come complete with access doors
- Standard sizes fits most applications & equipment
- Preassembled – saving time & labour
- Filters are sold separately

Part #	Alt #	Description	LIST
FR16251D	599629	16"x25"x1" c/w door, 3" wide total	82.70
FR16252D	599614	16"x25"x2" c/w door, 4" wide total	124.50
FR16254D	599637	16"x25"x4" c/w door, 7" wide total	326.00
FR20201D	599628	20"x20"x1" c/w door, 3" wide total	105.30
FR20202D	599613	20"x20"x2" c/w door, 4" wide total	84.00
FR20204D	599639	20"x20"x4" c/w door, 7" wide total	96.30
FR20251D	599641	20"x25"x1" c/w door, 3" wide total	81.50
FR20252D	599615	20"x25"x2" c/w door, 4" wide total	124.50
FR20254D	599638	20"x25"x4" c/w door, 7" wide total	228.50

POWER HUMIDIFIERS

HONEYWELL

HONEYWELL TrueEASE Evaporative Humidification System



- Multiple snap-into-place configuration options
- Water and energy savings* homeowners will invest in
- Eliminates time-consuming installation steps
- Easy-access pad replacement for easy maintenance
- Quiet operation for fewer callbacks
- Interchangeable bypass to easily change bypass direction
- Installs in the same space as existing evaporative humidifiers
- Quick connect gasket for single step plumbing
- Replacement pad sales create recurring revenues
- 5-Year Warranty

Part #	Description	LIST
HE300A1005	Fan-Powered 18 GPD	994.00
HE250C1014	Large Bypass Advanced 17 GPD	822.00
HE150C1014	Small Bypass Advanced 12 GPD	426.00
HE100C1001	Small Bypass Basic 12 GPD	333.00
HE100C1001	Whole-Home Bypass Humidifier 12GPD	320.00

AIR CLEANERS

HONEYWELL

F300 Electronic Air Cleaner



The High-Performance Renewable, Low-Maintenance Solution To Cleaner Air.

- Captures up to 100% of airborne particles passing through the system
- Self-regulating power supply maintains high efficiency as the filter loads
- Test button to verify operation
- Optional anti-microbial post filter to increase efficiency and provide replacement opportunity
- Also available in a Return Grille Model (F52)
- 5-Year warranty

Part #	Description	LIST
F300E1019	16X25 Envirocare Elite EAC	1,800.00
F300E1027	20X20 Envirocare Elite EAC	1,800.00
F300E1035	20X25 Envirocare Elite EAC	2,021.00

F100F Media Air Cleaner



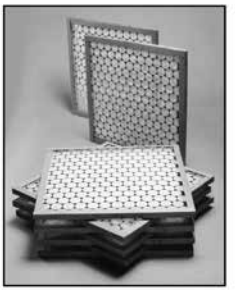
Cleaner Indoor Air.

- Captures up to 37 times more airborne particles passing through the filter than a standard 1" filter
- Six space-saving sizes to fit any application
- Free private labeling ensures filter replacement calls
- 5-Year warranty

Part Number	Nominal Return Air Opening	Airflow Capacity	LIST
	in.	cfm	
F100F1012	16 x 25	1400	508.00
F100F1020	20 x 20	1400	441.00
F100F1038	20 x 25	2000	508.00

DAFCO Filtration Group







All filters are available in standard sizes. Custom cuts are available upon request.

- Throwaway Paper-framed Filters In Fiberglass 1” & 2”.
- Standard Capacity Pleats With A Merv 8 Rating In 1", 2" & 4".
- High Capacity Pleats With A Merv 13 Rating In 1", 2" & 4".
- Cut Polyester Pads Dry Or Tacified In 1" & 2".
- Polyester Media Rolls In Various Sizes.

AIR PURIFIERS

NU-CALGON

iWave®-R



4900-20

With technology installed in over 100,000 applications worldwide, iWave-R is the world's first self-cleaning, bi-polar ionization air cleaner specially designed for residential duct air conditioning systems up to 6 tons (2400 CFM) in size. Needle-point ionization actively treats air in the living space with no replacement parts, no maintenance and universal voltage (24-260VAC). It can mount easily inside or outside of duct in about 15 minutes, or it can attach magnetically near indoor fan. iWave-R always works at peak performance, producing over 160 million ions/cc, more than any interior air quality product on the market. Patent-pending self-cleaning design includes programmable cleaning cycle with alarm contact option. UL and cUL approved. Three-year warranty.

Part #	LIST
4900-20	1,328.00

iWave®-C



4900-10

Although it can be used for residential applications, the original iWave-C is especially suitable for light commercial systems up to 12 tons (4800 CFM). iWave-C is a self-cleaning, bi-polar ionization generator for treating a building's air quality that does not require replacement parts in a year or two like competing technologies. iWave-C always works at peak performance, producing over 200 million ions/cc, making it superior to other market approaches. Special features include a programmable cleaning cycle, waterproof housing, digital display and integral alarm contact. Can be used to reduce outside air for commercial applications per ASHRAE 62.1 IAQP. Duct mount to air handler inside or outside of building. For systems larger than 12 tons, multiple iWave-C units can be applied. UL and cUL approved with universal voltage (24-240VAC). Three-year warranty.

Part #	LIST
4900-10	2,068.00

iWave®-F



4900-30

iWave-F is a flexible and highly versatile three foot ion-generating bar that can treat IAQ in nearly any HVAC application. Its revolutionary circuit bar with special ion-generating needles suitable for any HVAC cooling coil up to 48" wide. Plus, it can be shortened in the field to any size! Perfect for ducted package or ductless HVAC systems in living centers, hotels, commercial buildings, residential (including mini-splits), transport cooling coils or even in ice machines – applications where mold is an issue. Provides the highest level of ionization energy in the most compact size available on the market. Can be used to reduce outside air for commercial applications per ASHRAE 62.1 IAQP. UL and cUL approved with universal voltage (110-240VAC). Virtually maintenance free with no replacement parts. Produces over 240 million ions/cc per foot. Three-year warranty.

Part #	LIST
4900-30	1,518.00

Application	iWave-F	iWave-R	iWave-C
Residential - Mini-Split A/C Systems	X		
Commercial - VRF A/C Systems	X		
PTAC Systems	X		
Residential Duct HVAC Systems	X	X	X
Light Commercial Duct HVAC Systems	X		X
Transport HVAC Systems	X		
Industrial HVAC Systems	X		
Ice Machines to Reduce Mold in Cabinet	X		

Features	iWave-F	iWave-R	iWave-C
Patented Self-Cleaning Technology		X	X
No Replacement Parts	X	X	X
No Maintenance	*	X	X
Kills Mold, Bacteria, and Viruses	X	X	X
Controls Odor (Cooking, Pet, VOCs)	X	X	X
Reduces Allergens	X	X	X
Prevents/Eliminates Dirty Sock Syndrome	X	X	X
Controls Particles in Air	X	X	X
Reduces Smoke	X	X	X
Reduces Static Electricity	X	X	X
Actively Treats Pathogens in Space (entire coil/living space)	X	X	X
Universal Voltage (24-240VAC)	110 - 240VAC	X	X
Reduces Outside Air Requirement for Commercial Systems	X		X
Universal Mounting	X	X	Duct Mounted
Customizable Length	X		
Digital Display/Weatherproof Housing			X
Alarm Contact Option for Notification		X	X
Replaceable Emitters		X	X
Service Temperature Range	-40°F to 160°F	-40°F to 160°F	-40°F to 160°F

** iWave-F requires low maintenance. The ionizer tape may require a wipe with damp cloth from time to time to ensure ionizer tips are clear of particles.*

ULTRAVIOLET AIR PURIFIERS

SANUVOX

SRMax *In-Duct UV Air Purifier*



The Sanuvox SR Max is the ideal air purifier system for homes up to 2,000 sq.ft. Borrowing from the larger R Max, the SR Max is a smaller version using the same high-efficiency patented design to destroy airborne bio-chemical contaminants while providing important user information on the multi-color LED Status Display.

Installed into the return or supply plenum, the Sanuvox proprietary process maximizes contact time between the air and UV energy. Thanks to its new Cobalt Catalyst Oxidation, VOCs are destroyed.

- Designed to destroy viruses, germs, bacteria, mold, chemicals, odors & allergens
- New Cobalt Catalyst Oxidation against VOCs
- Patented process incl. 19 mm Quartz UVC/UVV 'J' Lamp
- Multi-color LED Status Display provides important user information
- Intelligent ballast automatically switches from 110V to 240V

Part #	LIST
SR-MAX	808.00

RMax *In-Duct UV Air Purifier*



The high-efficiency patented design destroys airborne bio-chemical contaminants while providing important user information on the 3" LCD display.

Installed into the return or supply plenum, the Sanuvox proprietary process maximizes contact time between the air and UV energy. Thanks to its new Cobalt Catalyst Oxidation, VOCs are destroyed. Able to treat homes up to 4,000 sq.ft.

- Designed to destroy viruses, germs, bacteria, mold, chemicals, odors & allergens
- New Cobalt Catalyst Oxidation against VOCs
- Patented process incl. 19 mm Quartz UVC/UVV 'J' Lamp
- 3" LCD Display showing real-time performance
- Intelligent ballast automatically switches from 110V to 240V
- Microprocessor controlled Thermistor for automatic operation
- UV Chamber rotates 360 degrees for up-flow or down-flow systems

Part #	LIST
R-MAX	1,256.00

QUATTRO-GX

- Light commercial / Residential
- Treats the entire duct and destroys up to 99.99% of biological contaminants on one pass
- Destroys chemicals & biological odors
- Four Aluminum Anodized Parabolic Reflectors intensify & maximize 360° of UV Energy
- Pressure Sensor turns purifier On & Off. Simple installation, just "Plug & Play"
- Adjustable Clutch mechanism allows for Reflectors & Lamps to easily extend up to 15" to the center of a 30" duct
- Recommended Lamp change-out: Commercial: 2 years / Residential: 3 years



Part #	LIST
QUATTRO-GX	2,985.00

Stand-Alone And/Or Ducted Models

P900-GX PORTABLE



- Portable, weighs 11 lbs
- Eradicates bacteria, viruses and mold.
- Destroys chemical and biological odors
- Purifies up to 900 sq ft
- 120 volt
- DC motor – very quiet
- Digital Controls – fan mode and timer
- Stand included
- 3 year warranty including UV light
- Homes, apartments, waiting rooms, break rooms, classrooms, offices, boats & RV's, hotel rooms, fire restoration and any application that would require spot biological & chemical purification

Part #	LIST
P900-GX	1,347.00

ULTRAVIOLET AIR PURIFIERS

SANUVOX

Stand-Alone And/Or Ducted Models



S300FX-GX

A complete IAQ solution with one unit!

- Dual “J” lamp UVC/UVV
- Two speed blower (200/300 cfm), 120 volt
- 2” pre-filter and true 2” HEPA filter capture particles down to .3 microns
- Destroys biological contaminants such as mold, bacteria, viruses, germs, allergens
- Destroys chemicals and biological odors
- 3 year warranty including UV lamp (residential)
- 12,000 hours (commercial)
- HVAC by-pass for whole home filtration / purification or Stand-alone wall mounting
- Home filtration / purification, smoking rooms, hotels, commercial buildings, laboratories, nail salons, doctor's office, hospital patient rooms, dentist offices, etc.
- Stand Alone Option requires Louvers for inlet & outlet. Part# MSCLOU1 (sold in pairs)

Part #	LIST
S300FX-GX	2,532.00



S1000FX-GX

- Destroys biological contaminants such as mold, bacteria, viruses, germs, allergens
- Destroys chemicals & biological odors
- Stand-Alone installation or can be ducted to multiple rooms
- Two 1” pre-filters & one 4” 95% ASHRAE pleated filter
- **“Clean Room Option”** includes HEPA Filter to capture particles down to 0.03 micron in size & additional UVC “J” Lamp
- 1750 cfm. blower. Under load with filters, 1000 cfm.
- Warranty: Lamp 12,000 hours, Motor: 1 year, Ballast: 3 years
- Ideal for smoking rooms, garbage rooms, bars, restaurants, casinos, homeless shelters, odor control
- **Clean Room Option:** Clean rooms, operating theatres, hospitals, manufacturing, laboratories, etc.

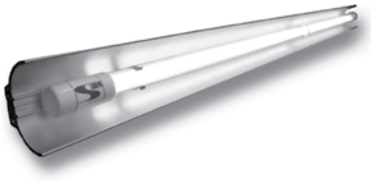
Part #	LIST
S1000FX-GX	7,316.00

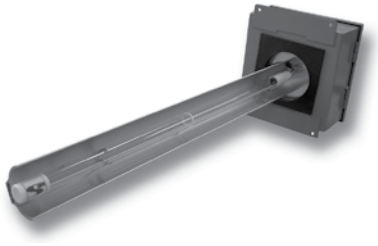
Object Purifiers

CoilClean IL

- Designed to be installed facing the return side (or supply side) of a commercial evaporator coil or fancoil
- Destroy and prevent mold and other microbial growth
- Available in 12”, 18”, 24”, 30”, 40”, 50” & 60” Lamp lengths
- Replace Lamps after 17,000 hours of operation. Warranty is 12,000 hours from installation

Part #	Description	LIST
IL12-G	12" Lamp	970.00
IL18-G	18" Lamp	1,075.00
IL24-G	24" Lamp	
IL30-G	30" Lamp	1,144.00
IL40-G	40" Lamp	1,239.00
IL50-G	50" Lamp	1,317.00
IL60-G	60" Lamp	1,433.00





CoilClean RT

- Specifically designed for exterior rooftop HVAC units
- Keep the A/C coil free from biological contaminants including mold and fungus.
- Uses a weatherproof NEMA 4X Housing
- Aluminum Anodized Parabolic Reflector to direct the UV Energy
- Available with 24”, 30”, & 40” Lamp lengths

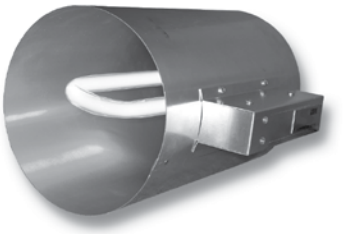
Part #	Description	LIST
RT24-G	24" Lamp	1,088.00
RT30-G	30" Lamp	1,121.00

ULTRAVIOLET AIR PURIFIERS

SANUVOX

Specialty Ultraviolet Products

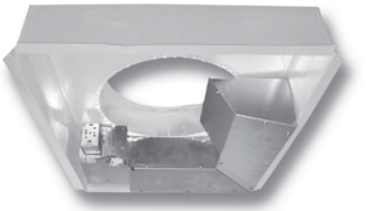
HRV ultraviolet Air Purifier



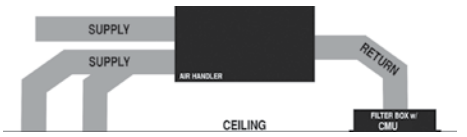
- Specifically designed to be connected to the “fresh air to inside duct” of an HRV / ERV unit
- Available in both 6” & 8” diameters.
- Commercial Odor & Chemical Exhaust Option
- Ideal for waste water processing, restaurants, hospitals, animal farms, manufacturing facilities, etc.
- Warranty: 3 years including Lamp

Part #	Description	LIST
HRV6-GX	6" Diameters	700.00
HRV-8	8" Diameters	743.00

CMU Ceiling Mount UV Air Purifier



- Mount in the return plenum filter box just before the filter
- Equipped with a Safety Cut-Off switch that disconnects power when filter is removed
- CMU-18 is for use in a plenum filter box with a return duct up to 18” diameter
- CMU-24 is for a filter box between 20” and 24” diameter.
- Filter box is field supplied.
- Warranty: 3 years including Lamp



Part #	Description	LIST
CMU-18-GX	18" Diameters	

Sanuvox Parts are also available. Please contact your local branch for details.

ULTRAVIOLET AIR PURIFIERS

SANUVOX

Sanuvox Parts

RESIDENTIAL UV OBJECT PURIFIERS	
SABERGN16/24110-G	SABER GENIUS 16” Straight UVC Lamp for 24 volt & 120 volt. Includes SECOND Lamp & step down transfomer 120 to 24volt included
Replacement parts	**Description**
MSCTFR12024	Step-down transfomer 120/24 volt for SABERGN16/24110-G
LMPRGPT160T5	T5 Germicidal (UVC) 16" straight lamp for SABERGN16/24110-G
REMKITGN	Remote installation kit for Saber Genius
MSCCON1	Gaynor plug for UV lamp
RESIDENTIAL IN-DUCT AIR PURIFIER	
SR Plus+	
Replacement parts	**Description**
LMPRGXJ65	T6 Dual Zone 6.5” UV “J” Lamp for SR+
LMPRGJ65	T6 Germicidal (UVC) 6.5” UV “J” Lamp for SR+
MSCCON1	Gaynor plug for UV lamp
R Plus +	In-duct mounted for homes up to 4000 sq. ft. 120 /230 volt
Replacement parts	**Description**
BST120/277GL	Multi voltage ballast 120 to 277 automatic sensing for use in R Plus + and R4000
LMPHGXJ105	T6 Dual Zone High Intensity 10.5” UV “J” Lamp for R Plus +
LMPHGJ105	T6 High Intensity Germicidal 10.5” UV “J” Lamp for R Plus-G
CVRTUBTURB6	Turbulator for R4000 and R Plus +
MSCCON1	Gaynor plug for UV lamp
Replacement parts	**Description of replacement parts for older models**
BST110/240G18	120/230 volt Ballast for R1500 & R3500
BST120/277GL	Ballast Replaces BST120/240GL20 120/230 volt with LED’s , R1700 & R4000
LMPHGXJ105	T6 Dual Zone High Intensity 10.5” UV “J” Lamp for R4000-GX
LMPHGJ105	T6 High Intensity Germicidal 10.5” UV “J” Lamp for R4000-G
LMPRGXJ105	T6 Dual Zone 10.5” UV “J” Lamp for R3500GX
LMPRGJ105	T6 Germicidal (UVC) 10.5” UV “J” Lamp for R3500-G
LMPRGXJ65	T6 Dual Zone 6.5” UV “J” Lamp for R1500-GX
LMPRGJ65	T6 Germicidal (UVC) 6.5” UV “J” Lamp for R1500-G
LMPHGXJ65	T6 Dual Zone High Intensity 6.5” UV “J” Lamp for R1700GX
LMPHGJ65	T6 High Intensity Germicidal 6.5” UV “J” Lamp for R1700G
MSCSWC4	On-Off Switch for R1700 & R4000
MSCSWC7	Vacuum switch for R4000
MSCSWC6	Vacuum switch for R3500 & C2000
MSCFUS3	Fuse holder for R3500
MSCFUS2	Fuse 3AG Glass Body F/A 2.5 Amp
MSCSWC1	Push button test switch for R3500 GREEN BUTTON
MSCLHT1	Purifier ON neon lamp & lamp assembly for R3500 RED BUTTON
MSCSWC2	Power ON neon lamp & lamp assembly for R3500 AMBER BUTTON
CVRTUBTURB5	Turbulator for R1500 & R3500
MSCCON1	Gaynor plug for UV lamp
RESIDENTIAL UV AIR PURIFIER	
P900-GX	Portable UV air purifier Residential and light commercial up to 900 square feet 120 volt
Replacement parts	**Description**
BST110/240G18	120/230 volt Ballast for P900
LMPRGXJ65	T6 Dual Zone 6.5” UV “J” Lamp for P900-GX
LMPRGJ65	T6 Germicidal (UVC) 6.5” UV “J” Lamp for P900-G
MSCFTR7	Metal inlet filter for P900
MSCFTR8	Inlet Grill for P900
MSCMTR8	Motor assembly for P900
MSCCON1	Gaynor plug for UV lamp
CMU18-GX	Return plenum filter box UV air purifier for return ducts up to 18’’ diameter. 120/230 volt
CMU24-GX	Return plenum filter box UV air purifier for return ducts up to 24’’ diameter. 120/230 volt
Replacement parts	**Description**
BST110/240G18	120/230 volt Ballast for CMU
LMPRGXJ65	T6 Dual Zone 6.5” UV “J” Lamp for CMU18-GX

ULTRAVIOLET AIR PURIFIERS

SANUVOX

Sanuvox Parts

LMPRGJ65	T6 Germicidal (UVC) 6.5" UV "J" Lamp for CMU18-G
LMPRGXJ105	T6 Dual Zone 10.5" UV "J" Lamp for CMU24-GX
LMPRGJ105	T6 Germicidal (UVC) 10.5" UV "J" Lamp for CMU24-G
MSCSWC11	Micro switch for CMU
MSCCON1	Gaynor plug for UV lamp
HRV6-GX	UV air purifier for heat recovery ventilation system 6'' diameter residential application 120/230 volt
HRV8-GX	UV air purifier for heat recovery ventilation system 8'' diameter residential application 120/230 volt
HRV10-GX	UV air purifier for heat recovery ventilation system 10'' diameter residential application 120/230 volt
Replacement parts	**Description**
BST120/240GL20	120/230 volt Ballast for HRV6 & HRV8
LMPHGXJ65	T6 Dual Zone 6.5" UV "J" Lamp for HRV6-GX
LMPHGJ65	T6 Germicidal (UVC) 6.5" UV "J" Lamp for HRV6-G
LMPHGXJ105	T6 Dual Zone 10.5" UV "J" Lamp for HRV8-GX
LMPHGJ105	T6 Germicidal (UVC) 10.5" UV "J" Lamp for HRV8-G
MSCCON1	Gaynor plug for UV lamp
COMMERCIAL UV AIR PURIFIER	
MB500-GX	Ceiling T-Bar UV air purifier fits a 2' x 2' ceiling tile. Applications up to 500 sq. ft. 120/230 volt
Replacement parts	**Description**
BST110/240G18	120/230 volt Ballast for MB500
LMPRGXJ65	T6 Dual Zone 6.5" UV "J" Lamp for MB500-GX
LMPRGJ65	T6 Germicidal (UVC) 6.5" UV "J" Lamp for MB500-G
MSCFTR5	Polypropylene Filter (inlet & outlet) for MB500
MSCSWC10	Micro switch for MB500
MSCCON1	Gaynor plug for UV lamp
C2000-GX	No longer available
Replacement parts	**Description**
BST120/240G11	120 electronic ballast for C2000
LMPRGXJ160	T6 Dual Zone 16" UV "J" Lamp for C2000-GX
LMPRGJ160	T6 Germicidal (UVC) 16'' UV "J" Lamp for C2000-G
MSCSWC6	Vacuum switch for C2000
MSCFUS3	Fuse holder for C2000
MSCSWC1	Push button test switch for C2000
MSCFUS2	Fuse 3AG Glass Body F/A 2.5 Amp
MSCLHT1	Purifier ON neon lamp & lamp assembly for C2000 RED BUTTON
MSCSWC2	Power ON neon lamp & lamp assembly for C2000 AMBER BUTTON
MSCCON1	Gaynor plug for UV lamp
QUATTRO-GX	In-duct UV air purifier. Residential and light commercial applications
QUATTRO-G	In-duct UV air purifier. Residential and light commercial applications
QUATTRO-GX4	In-duct UV air purifier. Residential and light commercial applications
QUATTRO-GX-REM	REMOTE TWO PARTS In-duct UV air purifier
Replacement parts	**Description**
BST120/240GL20	WHITE CASING BALLAST 120/230 volt with LED's for QUATTRO
BST120/277GL	Multi voltage ballast 120 to 277 automatic sensing for QUATTRO
LMPHGS180	T6 high intensity germicidal UVC 18" straight UV lamp
LMPHGXS180	T6 dual zone 18" high intensity straight UV lamp for QUATTRO-GX (1) per unit QUATTRO-GX4 (4) per unit
MSC7	Bio-Film Aluminum Foil for Quattro Installation 2ft x 6 ft
MSCBRK3	Circuit breaker 5 Amp
MSCSWC7	Vacuum switch for QUATTRO
MSCSWC4	On-Off Switch for QUATTRO
MSCCON1	Gaynor plug for UV lamp
RESIDENTIAL & COMMERCIAL STAND ALONE AND/OR DUCTED AIR PURIFIER	
S300FX-GX	HEPA/UV air purifier residential and commercial (smoking rooms & hospital application) 120 volt
S300FX-GX MED	HEPA/UV air purifier for medical use on wheels
S300FX-GX MED2	HEPA/UV air purifier for medical use on wheels PORTABLE SMALLER RACK
Replacement parts	**Description**
BST120/240GL20	120/230 volt Ballast with LED's , S300FX
LMPHGXJ105	T6 Dual Zone High Intensity 10.5" UV "J" Lamp for S300FX-GX
LMPHGJ105	T6 High Intensity Germicidal 10.5" UV "J" Lamp for S300FX-G
MSCCOL1	Collar inlet/outlet 8'' round for S300FX Sold and priced in pairs
MSCLOU1	Louver inlet/outlet for S300FX Sold INDIVIDUALLY
SUBKITCROS300	Clean room option including (1) additional lamp LMPHGJ105 and (1) additional ballast BST120/240GL20
SUBKITVOCS300	VOC kit includes (1) VOC sensor (1) BST120/240GL20 ballast (1) LMPHXJ105 UVV "J" lamp.

ULTRAVIOLET AIR PURIFIERS

SANUVOX

Sanuvox Parts

SUBKITOZDS300	VOC kit includes (1) Ozone sensor (1) BST120/240GL20 ballast (1) LMPHXJ105 UVV “J” lamp.
MSCFTR11	HEPA filter for S300FX
MSCFTR10	Pre-filter for S300FX
MSCMTR11	Motor for S300FX 120 volt
MSCMTR7	Motor for S300FX 230 volt * Must be ordered with MSCCAP3 Capacitor
MSCCAP3	Capacitor for S300FX motor 230 volt
MSCCON1	Gaynor plug for UV lamp
S1000FX-GX	Stand alone and/or Ducted combination filter & UV air purifier
Replacement parts	**Description**
BST120W5	Electornic ballast 120 volt for S1000FX
BST230W5	Electronic ballast 230 volt for S1000FX
LMPRGXJ160	T6 Dual Zone regular intensity 16. UV “J” lamp for S1000FX-GX
LMPRGJ160	Regular Intensity germicidal 16” UV “J” lamp for S1000FX-G
MSCSWC12	Speed control for S1000FX 120 volt
SUBKITVOCS1000	VOC kit
SUBKITCROS1000	Clean Room option
SUBKITOZDS1000	OZD kit
MSCFTR12	20”x20”X4” HEPA 99,97% filter
MSCFTR1	20”x20”X4” 95% filter
MSCFTR2	20”X20”x1” filter
MSCMTR9	Motor assembly 120 volt for S1000FX. *must be ordered with MSCCAP4 Capacitor
MSCCAP4	Capacitor for S1000FX motor 120 volt
MSCMTR10	Motor assembly 230 volt for S1000FX *must be ordered with MSCCAP5 Capacitor
MSCCAP5	Capacitor for S1000FX motor 230 volt
MSCCON1	Gaynor plug for UV lamp
COMMERCIAL AIR PURIFIER	
BIO30G or BIO30GX	In-duct UV air purifier. Available in 120 volt, 220 volt or 277 volt.
BIO40G or BIO40GX	In-duct UV air purifier. Available in 120 volt, 220 volt or 277 volt.
BIO50G or BIO50GX	In-duct UV air purifier. Available in 120 volt, 220 volt or 277 volt.
BIO60G or BIO60GX	In-duct UV air purifier. Available in 120 volt, 220 volt or 277 volt.
Replacement parts	**Description**
BST120W5	120 volt ballast for BIO30
BST230W5	230 volt ballast for BIO30
BST277W5	277 volt ballast for BIO30
BST120W7	120 volt ballast for BIO40, BIO50, BIO60
BST230W7	230 volt ballast for BIO40, BIO50, BIO60
BST277W7	277 volt ballast for BIO40, BIO50, BIO60
LMPHGS300	T6 High Intensity Germicidal (UVC) 40” Straight UV Lamp for BIO30-G (4 out of 5 for BIO30-GX)
LMPHGS400	T6 High Intensity Germicidal (UVC) 40” Straight UV Lamp for BIO40-G (4 out of 5 for BIO40-GX)
LMPHGS500	T6 High Intensity Germicidal (UVC) 50” Straight UV Lamp for BIO50-G (4 out of 5 for BIO50-GX)
LMPHGS600	T6 High Intensity Germicidal (UVC) 60” Straight UV Lamp for BIO60-G (4 out of 5 for BIO60-GX)
LMPHGXS300	T6 High Intensity Dual Zone (26”-UVC / 4”-UVV) 30” Straight UV Lamp for BIO30-GX 1 lamp out of 5
LMPHGXS400	T6 High Intensity Dual Zone (36”-UVC / 4”-UVV) 40” Straight UV Lamp for BIO40-GX 1 lamp out of 5
LMPHGXS500	T6 High Intensity Dual Zone (46”-UVC / 4”-UVV) 50” Straight UV Lamp for BIO50-GX 1 lamp out of 5
LMPHGXS600	T6 High Intensity Dual Zone (56”-UVC / 4”-UVV) 60” Straight UV Lamp for BIO60-GX 1 lamp out of 5
MSC6	Aluminum roll for lining duct roll of 150 feet
SUBFLGML	Flange for all BIO aluminum support tube. Priced per pair
MSCSWC14	Interlock switch for access door max 10 amp.
TUBAA66	Aluminum mounting tube 66 inches in length
MSCCON1	Gaynor plug for UV lamp
PENTA60-G	Stand alonde UV purifier. 120 volt INCLUDING MOTION DETECTOR
Replacement parts	**Description**
BST120W7	120 volt ballast for PENTA
LMPHGS600	T6 High Intensity Germicidal (UVC) 60” Straight UV Lamp for PENTA
COMMERCIAL ODOUR CONTROL UV FIXTURES - USED IN COMBINATION WITH BIOWALL	
MULTI18-GX	18” Multi-split UVC/UVV lamp in parabolic reflector w/ballast box 120 volt. (MULTI18/220: 230 volt)
MULTI24-GX	24” Multi-split UVC/UVV lamp in parabolic reflector w/ballast box 120 volt (MULTI24/220: 230 volt)
MULTI30-GX	30” Multi-split UVC/UVV lamp in parabolic reflector w/ballast box 120 volt (MULTI-30/220: 230 volt)
MULTI40-GX	40” Multi-split UVC/UVV lamp in parabolic reflector w/ballast box 120 volt (MULTI40/220: 230 volt)
MULTI50-GX	50” Multi-split UVC/UVV lamp in parabolic reflector w/ballast box 120 volt (MULTI50/220: 230 volt)
MULTI60-GX	60” Multi-split UVC/UVV lamp in parabolic reflector w/ballast box 120 volt (MULTI60/220: 230 volt)
Replacement parts	**Description**
BST120W5	120 volt ballast for MULTI18-GX, MULTI24-GX, MULTI30-GX
BST230W5	230 volt ballast for MULTI18-GX, MULTI24-GX, MULTI30-GX

ULTRAVIOLET AIR PURIFIERS

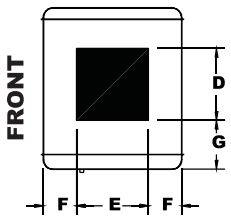
SANUVOX

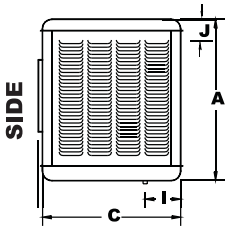
Sanuvox Parts

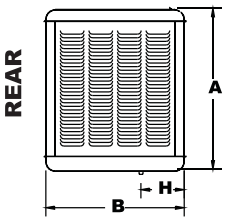
BST277W5	277 volt ballast for MULTI18-GX, MULTI24-GX, MULTI30-GX
BST120W7	120 volt ballast for MULTI40-GX, MULTI50-GX, MULTI60-GX
BST230W7	230 volt ballast for MULTI40-GX, MULTI50-GX, MULTI60-GX
BST277W7	277 volt ballast for MULTI40-GX, MULTI50-GX, MULTI60-GX
SUBFLGML	Flange for all BIO aluminum support tube. Priced per pair
MSCSWC14	Interlock switch for access door maximum 10 amp.
MSCELC7	Electronic module for IL - MULTI, including audible alarm, without dry contact
MSCELC12	Electronic module for IL - MULTI, including audible alarm, dry contact for remote communication
LMPMGXS180	T6 High Intensity Multi-split 18” Straight UV Lamp for MULTI18-GX
LMPMGXS240	T6 High Intensity Multi-split 24” Straight UV Lamp for MULTI24-GX
LMPMGXS300	T6 High Intensity Multi-split 30” Straight UV Lamp for MULTI30-GX
LMPMGXS400	T6 High Intensity Multi-split 40” Straight UV Lamp for MULTI40-GX
LMPMGXS500	T6 High Intensity Multi-split 50” Straight UV Lamp for MULTI50-GX
LMPMGXS600	T6 High Intensity Multi-split 60” Straight UV Lamp for MULTI60-GX
MSCCON1	Gaynor plug for UV lamp
COIL “OBJECT” PURIFIER	
BD30-GX	COMBINATION AIR/OBJECT PURIFIER for BARD wall mount air conditionner. 230 volt.
Replacement parts	**Description**
BST220/240EL2	230 Volt Electronic Ballast for B30
MSCSWC10	Micro Switch for BD30
LMPHGS300	T6 High Intensity Germicidal (UVC) 30” Straight UV Lamp for BD30, (1 out of 2 lamp on the unit)
LMPHGXS300	T6 High Intensity Dual Zone (291/2”-UVC / 1/2”-UVV) 30” Straight UV Lamp for BD30
MSCCON1	Gaynor plug for UV lamp
COIL “OBJECT” PURIFIER	
IL12-G	Inside Air Handler Lamp length. 12” long 120 volt (IL12/220-G, 230 volt) available in 277 volt
IL18-G	Inside Air Handler Lamp length. 18” long 120 volt (IL18/220-G, 230 volt) available in 277 volt
IL24-G	Inside Air Handler Lamp length. 24” long 120 volt (IL24/220-G: 230 volt) available in 277 volt
IL30-G	Inside Air Handler Lamp length. 30” long 120 volt (IL30/220-G: 230 volt) available in 277 volt
IL40-G	Inside Air Handler Lamp length. 40” long . 120 volt (IL40/220-G: 230 volt) available in 277 volt
IL50-G	Inside Air Handler Lamp length. 50” long 120 volt (IL50/220-G: 230 volt) available in 277 volt
IL60-G	Inside Air Handler Lamp length. 60” long 120 volt (IL60/220-G: 230 volt) available in 277 volt
Replacement parts	**Description**
BST120W5	120 volt ballast for IL18, IL24, IL30
BST230W5	230 volt ballast for IL18, IL24, IL30
BST277W5	277 volt ballast for IL18, IL24, IL30
BST120W7	120 volt ballast for IL40, IL50, IL60
BST230W7	230 volt ballast for IL40, IL50, IL60
BST277W7	277 volt ballast for IL40, IL50, IL60
SUBFLGML	Flange for all IL aluminum support tube. Priced per pair
TUBAA66	Aluminum mounting tube 66 inches in length
MSCELC7	Electronic module for IL, including audible alarm without dry contact
MSCELC12	Electronic module for IL, including audible alarm, dry contact for remote communication
MSCSWC14	Interlock switch for access door maximum 10 amp.
LMPHGS120	T6 High Intensity Germicidal (UVC) 12” Straight UV Lamp for IL12
LMPHGS180	T6 High Intensity Germicidal (UVC) 18” Straight UV Lamp for IL18
LMPHGS240	T6 High Intensity Germicidal (UVC) 24” Straight UV Lamp for IL24
LMPHGS300	T6 High Intensity Germicidal (UVC) 30” Straight UV Lamp for IL30
LMPHGS400	T6 High Intensity Germicidal (UVC) 40” Straight UV Lamp for IL40
LMPHGS500	T6 High Intensity Germicidal (UVC) 50” Straight UV Lamp for IL50
LMPHGS600	T6 High Intensity Germicidal (UVC) 60” Straight UV Lamp for IL60
MSCCON1	Gaynor plug for UV lamp
RT24/220-G	Rooftop Package Unit. 24” Lamp with NEMA 4X enclosure 230 volt Also available 120 volt, 277 volt
RT30/220-G	Rooftop Package Unit. 30” Lamp with NEMA 4X enclosure 230 volt Also available 120 volt, 277 volt
RT40/220-G	Rooftop Package Unit. 40” Lamp with NEMA 4X enclosure 230 volt Also available 120 volt, 277 volt
RT24/220-G-NN	Same as RT24 but with NO NEMA 4X enclosure.
RT30/220-G-NN	Same as RT30 but with NO NEMA 4X enclosure.
RT40/220-G-NN	Same as RT40 but with NO NEMA 4X enclosure.
Replacement parts	**Description**
BST120W5	120 volt ballast for RT24, RT30, RT24-NN, RT30-NN
BST230W5	230 volt ballast for RT24, RT30, RT24-NN, RT30-NN
BST230W7	230 Volt Electronic Ballast for RT40, RT40-NN
BST120W7	120 volt ballast for RT40, RT40-NN
LMPHGS240	T6 High Intensity Germicidal (UVC) 24” Straight UV Lamp for RT24, RT24-NN
LMPHGS300	T6 High Intensity Germicidal (UVC) 30” Straight UV Lamp for RT30, RT30-NN
LMPHGS400	T6 High Intensity Germicidal (UVC) 40” Straight UV Lamp for RT40, RT40-NN
MSCCON1	Gaynor plug for UV lamp

EVAPORATIVE COOLERS

ESSICK AIR









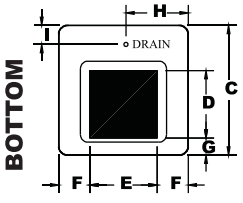
Side Discharge General Specifications (in inches)

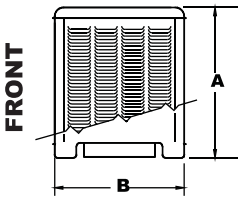
Model No.	Dimensions			Duct Opening			Drain Outlet		Water Inlet	Power Inlet	LIST
	A	B	C	5	E	F	G	H	I	J	
N40/N45S	34-1/2	34-1/8	34-1/8	17-3/4	17-3/4	8-3/16	12-1/16	10-21/32	8-3/4	4-5/8	2,820.00
N55/65S	42-7/16	39	39	19-3/4	19-3/4	9-5/8	16-21/32	15-21/32	8-3/4	4-5/8	3,563.00

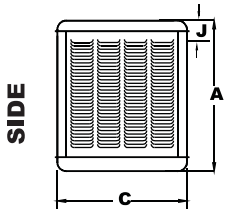
*** Motor is not included**

Performance Data

Model No.	Ind. Std. Rating	HP	Inches of Static Pressure						Area: Sq. Ft.	Pad Dimensions			HP	Speed	Volts	Blower Wheel	Blower Pulley Dia. x Bore	Motor Pulley Dia. x Bore	Belt Length
			0	-1	-2	-3	-4	-5		No. RQD	HGT.	Width							
N40/45S	4000 4000	1/3	2973	2726	2550	2230	NR	NR	700 to 1200	3	28	27	1/3	1 or 2	115	16x16	10x1	3-1/2x1/2	56
N40/45S	4500 4500	1/2	3432	3230	3000	2775	2140	1475	700 to 1200	3	28	27	1/2	1 or 2	115	16x16	10x1	3-1/2x1/2	56
N55/65S	5500 5500	1/2	4190	3910	3650	3330	2900	NR	1200 to 1600	3	36	33	1/2	1 or 2	115	20x16	12x1	3-1/2x1/2	67
N55/65S	6500 6500	3/4	4734	4600	4320	4060	3810	3630	1200 to 1600	3	36	33	3/4	1 or 2	115	20x16	12x1	3-1/2x1/2	67









Down Discharge General Specifications (in inches)

Model No.	Dimensions			Duct Opening			Drain Outlet		Water Inlet	Power Inlet	LIST
	A	B	C	D	E	F	G	H	I	J	
N43/N48D	34-1/2	34	34	17-3/4	17-3/4	8-3/16	4-1/4	16-3/8	5	4-5/8	2,476.00
N56/66D	42-7/16	39	39	19-3/4	19-3/4	9-5/8	4-1/4	25-3/8	5-1/2	4-5/8	3,819.00

*** Motor is not included**

Performance Data

Model No.	Ind. Std. Rating	HP	Inches of Static Pressure						Area: Sq. Ft.	Pad Dimensions			HP	Speed	Volts	Blower Wheel	Blower Pulley Dia. x Bore	Motor Pulley Dia. x Bore	Belt Length
			0	-1	-2	-3	-4	-5		No. RQD	HGT.	Width							
N43/48D	4100 4100	1/3	3077	2880	2565	2240	NR	NR	800 to 1400	4	28	27	1/3	1 or 2	115	16x16	10x1	3-1/2x1/2	56
N43/48D	4800 4800	1/2	3654	3430	3230	3064	2998	2010	800 to 1400	4	28	27	1/2	1 or 2	115	16x16	10x1	3-1/2x1/2	56
N56/66D	5600 5600	1/2	4334	4000	3620	3300	2610	2170	1400 to 1800	4	36	33	1/2	1 or 2	115	20x16	12x1	3-1/2x1/2	69
N56/66D	6600 6600	3/4	4983	4780	4530	4280	4020	3780	1400 to 1800	3	36	33	3/4	1 or 2	115	20x16	12x1	3-1/2x1/2	69

WATER SOURCE HEAT PUMPS

COMFORT-AIRE

HB Series Compact Commercial



	WATER LOOP PERFORMANCE*					
Model	86ºF EWT	EER	Heating BTUH @ 68ºF EWT	COP	Shipping Weight (lbs)	LIST
HBH/HBV006	5,800	13.2	7,500	4.7	113	CALL your local branch for pricing
HBH/HBV009	8,800	13.4	11,600	4.2	115	
HBH/HBV012	11,700	13.5	15,200	4.3	124	
HBH/HBV015	14,500	15.4	17,300	5.0	158	
HBH/HBV018	17,300	14.3	21,500	5.0	163	
HBH/HBV024	23,700	13.4	28,500	4.7	194	
HBH/HBV030	28,100	13.4	35,100	4.6	202	
HBH/HBV036	34,500	13.5	45,200	4.4	209	
HBH/HBV042	40,100	13.1	52,700	4.3	224	
HBH/HBV048	47,700	13.3	55,900	4.7	270	
HBH/HBV060	59,400	13.4	77,000	4.3	285	

Individually packaged units are designed specifically for boiler-tower closed loop applications. Each unit can be operated year 'round in heating or cooling mode, providing zone control and independent operation. This makes them ideal for multi-story stuctures such as office buildings, as well as single story facilities such as nursing homes and schools. Individual units are connected by a water loop which transfers energy into and out of the individual units.

Available voltages: 208/230-1-60, 208/230-3-60, 460-3-60, 575-3-60, 265-1-60, although all models are not available in all voltages. See HB Engineering Design Guide or Price Sheet for complete part number list.

All units available in right or left return.

See Engineering Design Guide for Ground Water/Ground Loop performance data.

** Units rated in accordance with ISO 13256-1*

Stainless Steel Hose Kit (2-2' foot hoses) with Balance Valve, Shut-Off Valve, with memory stop and PT Plugs
Hose Length 2', 3' overall.

MODEL	CONNECTION SIZE (in.)	CONN. TYPE UNIT	CONN. TYPE FIELD	FOR USE WITH MODELS	LIST
7602-130	1/2	MPT	FPT	HBH006, HBH/V009, HBH/V012, HBH/V018	352.00
7602-131	3/4	MPT	FPT	HBH/024, HBH/V030, HBH/036, HBH/V042	547.00
7602-132	1	MPT	FPT	HBH/V048, HBH/V060	761.00

Stainless Steel Hose Only
Unit connection and field connection are both MPT; no P/T port.

MODEL	CONNECTION SIZE (in.)	LENGTH	FOR USE WITH MODELS	LIST
CRH24-1/2	1/2	2'	HBH/006, HBH/V009, HBH/012, HBH/V018	76.90
CRH24-3/4	3/4	2'	HBH/024, HBH/V030, HBH/036, HBH/V042	104.00
CRH24-1	1	2'	HBH/V048, HBH/V060	207.60
CRH24-1-1/4	1-1/4	2'	HBH072, HBH096	317.00
CRH24-1-1/2	1-1/2	2'	HBH120	
CRH36-1/2	1/2"	3'	HBH/V006, HBH/V009, HBH/V012, HBH/V018	90.10
CRH36-3/4	3/4"	3'	HBH/V024, HBH/V030, HBH/V036, HBH/V042	122.40
CRH36-1	1"	3'	HBH/V048, HBH/V060	238.20

GEOTHERMAL HEAT PUMPS

BOSCH

SV

iSERIES

The iSeries Greensource water source heat pump comes equipped with the quality and innovative technology that only Bosch can provide.



Standard Features & Benefits:

- Low installation costs – Saving you money
- Easy to service – Saving you time
- Energy efficient – Meets ASHRAE 90.1 compliance
- Space saving technology – Small footprint cabinet
- Quiet operation
- Specifically designed for replacement applications
- Available in Vertical, Horizontal and Counterflow
- Standard copper evaporator coil with aluminum fins
- Standard PSC motor
- High and low pressure switches
- Electronic circuit board with alert display which can also be displayed via the thermostat
- 75 VA transformer
- G90 galvanized steel cabinet
- 1/2", 1 1/2 lb. Dual density fiberglass insulation
- Condensate overflow switch
- Water coil freeze protection
- Evaporator coil freeze protection
- Brown out low voltage protection
- Standard 1" glass fiber filter and 1" filter rack

Factory Installed Options:

- ECM constant CFM motor (variable speed)
- ECM fixed torque motor
- Tin-plated evaporator with coated fin coil – Providing environmental corrosion protection
- Compressor sound blanket
- Pump valve relay
- 40 Amp disconnect switch (single and three phase)
- Cupro-nickel coax coil
- Two position water valve
- TXV (Thermal Expansion Valve)
- Closed-cell foam insulation
- MERV-8 or -13 filters with 2" filter rack
- Energy management switch relay
- Hot gas reheat
- DDC control (field or factory installed)

Warranty :

- 1 year parts limited warranty
- 5 year compressor limited warranty

GEOTHERMAL HEAT PUMPS

BOSCH

BP
MODEL



Price includes complete unit w/ the following features:

- Geothermal extended range ready
- White pre-painted cabinet
- Tin plated, hair-pin evaporator coil with aluminum fin
- Schrader access ports
- Dust flange connection for supply
- Four sided 2"/1" filter rack with 2" MERV-8 filter
- Horizontal unit includes hanging brackets
- Constant Torque ECM (BP015 - 070)
- PSC Motor (BP007 - 012)
- Floating compressor base pan
- BP vertical and horizontal only
- Electronic circuit board
- Low and high pressure switch protection
- Alarm output
- Condensate overflow protection
- Anti-short cycling
- 5 minute delay
- Low pressure bypass at start up
- Random unit start
- Brown out protection
- Evaporator freeze protection
- Water coil/coaxial coil/condenser freeze protection
- 10-Year Parts & Labor Limited Warranty[(2)]
- 75VA transformer

(2) Full details of the warranty are included with the product at the time of sale and will be provided upon request. Extended Range option includes wrapped condenser (BP only)

Factory Installed Options:

Option includes the heat recovery package with following features:

- Copper double wall vented heat exchanger
- Hot water circulation pump
- Prices are list adds for each individual unit in addition to unit pricing
- On/Off/overload protection
- Hot water temperature (140° F) limit switch
- Air purge valve
- Available on (-1) voltage models only

Note:
1. Consult your Bosch sales representative for location of where the heat recovery package is mounted on the unit.
2. Robert Bosch Inc. reserves the right to change the mounting location without notice.
3. All dual compressor units have HR kits installed on first stage only.

Electric Heaters

Option includes the electric heater with following features:

- Internal factory installed UL package with primary thermal overload protection
- Magnetic contactors, branch circuit protection (15 kW & 20 kW), electric characteristics 230/1/60
- Prices are list adds for each individual unit in addition to unit price
- Heaters are single phase

Hot Gas Reheat Options

Option includes the hot gas reheat package with following features:

- Available only in left or right hand configurations and only in VT& HZ cabinets on ½ - 6 ton models
- Not available on 3, 4 & 5 ton models with belt drive options, and may not be compatible with certain configurations
- All models with this option will lose approximately 5% capacity and efficiency
- Not available with electric heat

GEOTHERMAL HEAT PUMPS

BOSCH

SM

CDi SERIES



Price includes complete unit with the following features:

- ENERGY STAR Tier 3
- White pre-painted steel cabinet
- Field configurability
- Two stage compressor

- Tin plated, hair-pin evaporator coil with aluminum fin
- Less than 2% air leakage through cabinet
- Floating compressor base pan
- 2” Return air filter rack with MERV-11 filter
- Constant Torque Motor
- Schrader access ports
- Electronic circuit board
- LCD display for easy view of unit operation
- Low and high pressure switch protection
- Alarm output
- Condensate overflow protection
- Anti-short cycling
- 5 minute delay
- Low pressure bypass at start up
- Random unit start
- Brown out protection
- Evaporator freeze protection
- Water coil/coaxial coil/condenser freeze protection
- 10 Year Parts and Labor Limited Warranty (2)
- 75VA transformer

Factory Installed Options | Model: SM Packaged

Electric Heaters

Option includes internal electric heat package with following features:

- Internal factory installed package with primary thermal overload protection
- Contactor, branch circuit protection (15 kW & 20 kW), electric characteristics 230/1/60
- Prices are list adds for each individual unit in addition to unit price
- Heaters are single phase

If there is no "X" under the model number then that heater size is not available on that unit model.

Electric Heat is only available on top blow verical cabinets, end blow horizontal cabinet or on down blow counterflow cabinets. In case Electric Heat is not available in a desired configuration, duct mounting Electric Heat field installed accessories are available. Internal Electric Heat cannot be provided with Hot Gas Reheat. Units with internal heat must have two field power supplies. (See Factory Installed Options chart for details.)

Factory Installed Options | Model: SM

Heat Recovery Package option includes the following:

- Copper double wall vented heat exchanger
- Hot water circulation pump
- On/off/overload protection
- Hot water temperature (140° F) limit switch
- Available on (-1) voltage models only
- Prices are list adds for each individual unit in addition to unit price
- All models with this option will lose approximately 5% capacity and efficiency
- Optional prices are to be added to the Unit List Price.
- Consult your Bosch sales representative when using multiple options. Some options may not be compatible with other options.
- Desuperheater

GEOTHERMAL HEAT PUMPS

BOSCH

TW

Water to Water



Price includes complete unit with the following features:

- White pre-painted cabinet
- 75VA transformer
- Two stage compressor
- Floating compressor base pan and compressor blanket
- Schrader access ports, high and low pressure switches, lockout circuit
- UPM Unit Protections Module Standard in -CSC, -CSN models
- Low and high pressure switch protection
- Alarm output
- Anti-short cycling
- 5 minute delay
- Low pressure bypass at start up
- Random unit start
- Brown out protection
- Water coil/coaxial coil/condenser freeze protection
- Unit Mounted Controller Standard on -USC, -USN models
- Single point electrical connections
- 10 Year Parts & Labor Limited Warranty (2)
- 1/2" dual density fiber insulation

(2) Full details of the Warranty are included with the Product at the time of sale and will be provided upon request.

Factory Installed Options | Model: TW

Desuperheater | Model: TW

Price includes the heat recovery package with following features:

- Copper double wall vented heat exchanger
- Hot water circulation pump
- Prices are list adds for each individual unit in addition to unit pricing
- On/Off/overload protection
- Hot water temperature (140° F) limit switch
- Air purge valve
- Available on (-1) voltage models only

Note:

1. Consult Bosch Thermotechnology Sales for location of where the heat recovery package is mounted on the unit.
2. Robert Bosch Inc. reserves the right to change the mounting location without notice.
3. All dual compressor units have HR kits installed on first stage only.

Factory Installed Options | Model: TW

- Optional Prices are to be added to the Unit List Price.
- Available only on the models TW025, TW035, TW049, TW061, TW071, TW122.
- Consult Bosch Thermotechnology Sales when using multiple options. Some options may not be compatible with certain other options.

Options include:

- Compressor Monitor Relay
- EMS Relay
- Fan/pump Interlock Relay
- Heat Recovery Package
- Residential DPS
- CuNi Load Side Heat Exchanger
- Wire to 208 Volt
- Comfort Alert
- 100VA Transformer
- Multi Protocol DDC (Modbus, BacNET, N2)
- DDC with LonWorks Card

GEOTHERMAL HEAT PUMPS

BOSCH

SL
iSERIES



LIGHT COMMERCIAL

- Uncoated air coil
- Extended range option is for entering fluid temperature below 50° F heating and above 100° F cooling - Standard on horizontal units only
- Electronic circuit board
- Low and high pressure switch protection
- Alarm output
- Condensate overflow protection
- Anti-short cycling
- 5 minute delay
- Low pressure bypass at start up
- Random unit start
- Brown out protection
- Evaporator freeze protection
- Water coil/coaxial coil/condenser freeze protection
- Condensate overflow switch
- Schrader tap
- 5 Years compressor Limited Warranty (2)
- 1 Year Parts Limited Warranty (2)
- 75VA transformer

Price includes: complete unit with the following features:

- Dual circuit (2 stage heat, 2 stage cool) and belt drive
- Schrader access ports, disposable air filter, high & low pressure switch, condensate overflow switch (Horizontal package units) and lockout circuit
- Duct flange connections for the supply and return duct work
- Single point electrical and water connections - on package units only

Factory Installed Options | Models: SL072 - 120

- Available only on the models SL072 VT/HZ, SL096 VT/HZ and SI120 VT/HZ
- Consult Bosch Thermothechnology Sales when using multiple options - Some options may not be compatible with certain option combinations
- **Dual compressor units may require a quantity of 2 each item noted below**

List of Options:

- 100VA Transformer
- DuoGuard Coil coating
- Closed Cell Insln
- EMS Relay
- Blower Monitor Relay
- Compressor Monitor Relay (1)
- Phase Protection Monitor
- Fan/Pump Interlock Relay
- Boilerless Control
- Differential Pressure Switch
- Fire Alarm Relay
- Wire for 208 Volt
- Hot Gas Bypass
- Hot Gas Reheat
- Modulating Hot Gas Reheat (2)
- DDC 7.03 with LonWorks Card
- DDC Option
- Water Side Economizer
- 4 Sided MERV-8 2" Filter Rack
- Extended Range (3)

Hot Gas Reheat & Hot Gas Bypass | Models: SL072 - 120

- Available in left or right hand configurations and only in VT and HZ cabinets on 1/2 - 6 ton models
- All models with HGRH option will lose approximately 5% capacity and efficiency
- Hot Gas Reheat Modulating available
- **Not available on split models**
- **Not available with electric heat**

(1) Unit sizes 072 - 120 require 2 each of these items. You must use a quantity of 2 when you price them.

(2) When you order HGRH, you need to order Duct Stat #854-007 and Leaving Air Temperature Sensor #854-008 (not required when ordering DDC).

(3) Vertical only.

SOLAR HOT WATER
HELIODYNE

COLLECTORS

The GOBI line of solar flat-plate collectors is one of the industry's highest rated. Over 30 years of design and engineering refinement have gone into making each GOBI collector a world-class performer for heat output, efficiency and durability. Available in three sizes and two surface types (blue sputtered and black paint), there is a GOBI collector for every type of solar heating application.

NEW STREAMLINED GOBI PROFILE

By optimizing space and adding new state-of-the-art insulation material, Heliodyne has managed to streamline the GOBI and reduce the profile by 1" while maintaining its stellar performance.

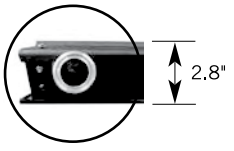


OG100 CERTIFIED

FSEC

Availability of new profile pending SRCC certification

Streamlined (S) profile



Collector Model	Gross Surface Area	Absorber Surface Area	Dimensions		Fluid Capacity	LIST
			Height	Width		
GOBI 406 001S	26.94 ft^2	24.91 ft^2	81.5"	47.5"	1 gal.	2,812.00
GOBI 408 001S	32.33 ft^2	29.94 ft^2	97.5"	47.5"	1.14 gal.	3,329.00
GOBI 410 001S	40.15 ft^2	37.48 ft^2	121.5"	47.5"	1.34 gal.	

All prices are LIST and are subject to change, please contact your local RSL for a quote.

EVACUATED TUBE COLLECTORS

When you have an application that requires higher working temperatures, evacuated tube collectors tend to be more efficient. They are better insulated, and so can maintain higher temperatures in very cold or low light conditions. One drawback is that they have a smaller aperture area compared to flat panel collectors, and require more panels (and more gross area) to get the same energy gains. Refrigerative Supply stocks FES panels, which are 16 tube collectors that use heat pipes to transfer heat from the tubes into the solar fluid.

FES evacuated tube collectors can be used with any Heliodyne heat transfer appliance for a complete packaged system.

EVACUATED TUBE COLLECTORS

Collector Model	Gross Surface Area	Absorber Surface Area	Dimensions		Fluid Capacity	LIST
			Height	Width		
FESP30	30 ft^2	21 ft^2	72"	60"	0.2 gal.	2,196.00

WATER COOLED AIR CONDITIONERS

THERMOPLUS AIR

KACE WATER-COOLED AIR CONDITIONERS

HORIZONTAL / VERTICAL SERIES
180,000 BTU/HR TO 720,000 BTU/HR

KACE packaged horizontal (up to model 360) and vertical units (up to model 720) feature R410a scroll compressor, are designed for ducted connections.

Standard Features:

- Factory installed water-regulating valve adjusted to provide a pressure regulated water flow thus keeping constant condensing pressure in the system
- 24V terminal strip for thermostat connection
- Refrigerant High and low pressure cut-out switches
- Access ports on high and low sides
- Thermostatic expansion valve
- Galvanized G90 casing with 1/2" insulation
- 1" Merv 8 Filter
- Co-Axial condenser

Optional Features:

- Back Discharge
- Aqua Aero coated coils
- Copper or Epoxy fin coils
- VFD or Larger motor for higher ESP applications (084+)
- Non-fused disconnect
- Compressor sound cover
- 2-stage or Digital compressor (exceptions apply)
- Cupro-nickel co-axial condenser
- 2" filters (Merv 8, 11 or 13)
- Prepainted galvanized cabinet
- Heat pump operation
- DDC Controls w/BACnet
- 300 psi operating condition on waterside



Operating Range:

- Entering Air 70F thru 80F DB/61F thru 67F WB
- Entering Water A/C mode 40F thru 90F
- ESP - Direct Drive up to 0.5"/ Belt Driven up to 2"

KACE SERIES (HORIZONTAL)												
Model	Norminal CFM	# of Comp	Total[1] Cooling (Btu/h)	Sensible[1] Cooling (Btu/h)	US GPM[2]	MCA[3] (60Hz)			Dimensions[4] (")			Approx Weight (lbs)
						208-230/3	460/3	575/3	W	H	D	
KACE-018H	600	19367	13,609	4.5	16	-	-	-	42.25	19.5	22.25	200
KACE-024H	800	25437	18,450	6.0	21	14	8	6	42.25	19.5	22.25	203
KACE-030H	1000	31253	22,278	7.5	22	16	8	7	54.25	21.5	26.25	240
KACE-036H	1200	35968	25,848	9.0	22	16	10	7	54.25	21.5	26.25	255
KACE-048H	1600	47776	35,384	12.0	33	25	12	8	54.25	21.5	26.25	307
KACE-060H	2000	65791	45,392	15.0	41	28	16	10	60.25	21.5	30.25	335
KACE-072H	2200	72333	51,688	18.0	46	34	16	12	60.25	21.5	30.25	357
KACE-084H	2800	83341	56,093	21.0	53	33	18	12	60.25	21.5	30.25	394
KACE-096H	3200	97215	69,932	24.0	-	39	18	13	75.25	27	38.25	713
KACE-120H	4000	127656	88,659	30.0	-	50	27	18	75.25	27	38.25	775
KACE-144H	4600	143851	99,902	35.0	-	60	28	23	75.25	27	38.25	787

1. *At air on 82FDB/67FWB*
2. *External Static Pressure at 0.5" WG*
3. *filter holder and outdoor air connections not included*

Data subject to change without notice

WATER COOLED AIR CONDITIONERS

THERMOPLUS AIR

KACE WATER-COOLED AIR CONDITIONERS

VERTICAL SERIES
18,000 BTU/HR TO 144,000 BTU/H

KACE packaged vertical units feature R410a scroll compressor, with right or left return and are suitable for duct connections or for use with optional free air discharge plenum



Standard Features:

- Factory installed water-regulating valve adjusted to provide a pressure regulated water flow thus keeping constant condensing pressure in the system
- X13 fan motor with 3 adjustable speeds (models 018-072)
- Adjustable motor pulley (models 084-144)
- 24V terminal strip for thermostat connection
- Access ports on high and low sides
- Thermostatic expansion valve
- Galvanized G90 casing with 1/2" insulation
- 1" Merv 8 Filter
- Co-Axial condenser

Optional Features:

- Discharge Plenum
- Aqua Aero coated coils
- Copper or Epoxy fin coils
- VFD or Larger motor for higher ESP applications (084+)
- Non-fused disconnect
- Compressor sound cover
- 2-stage or Digital compressor
- Cupro-nickel co-axial condenser
- 2" filters (Merv 8, 11 or 13)
- Prepainted galvanized cabinet
- Heat pump operation
- DDC Controls w/BACnet
- 300 psi operating condition on waterside

Operating Range:

- Entering Air 70F thru 80F DB/61F thru 67F WB
- Entering Water A/C mode 40F thru 90F
- ESP - Direct Drive up to 0.5"/ Belt Driven up to 2"

KACE SERIES (VERTICAL)												
Model	Norminal CFM	# of Comp	Total[1] Cooling (Btu/h)	Sensible[1] Cooling (Btu/h)	US GPM[2]	MCA[3] (60Hz)			Dimensions[4] (")			Approx Weight (lbs)
						208-230/3	460/3	575/3	W	H	D	
KACE-018V	600	19367	13,609	4.5	16	-	-	-	22.25	40.5	22.25	200
KACE-024V	800	25437	18,450	6.0	21	14	8	6	22.25	40.5	22.25	210
KACE-030V	1000	31253	22,278	7.5	22	16	8	7	26.25	47.5	26.25	245
KACE-036V	1200	35968	25,848	9.0	22	16	10	7	26.25	47.5	26.25	265
KACE-048V	1600	47776	35,384	12.0	33	25	12	8	26.25	47.5	26.25	305
KACE-060V	2000	65791	45,392	15.0	41	28	16	10	31.25	55.5	26.25	335
KACE-072V	2200	72333	51,688	18.0	46	34	16	12	31.25	55.5	26.25	360
KACE-084V	2800	83341	56,093	21.0	53	33	18	12	31.25	55.5	26.25	395
KACE-096V	3200	97215	69,932	24.0	-	39	18	13	42.25	66.5	32.25	715
KACE-120V	4000	127656	88,659	30.0	-	50	27	18	42.25	66.5	32.25	775
KACE-144V	4600	143851	99,902	35.0	-	60	28	23	42.25	66.5	32.25	790

1. At air on 82FDB/67FWB
2. External Static Pressure at 0.5" WG
3. filter holder and outdoor air connections not included

Data subject to change without notice

WATER COOLED AIR CONDITIONERS

THERMOPLUS AIR

KACE WATER-COOLED AIR CONDITIONERS

HORIZONTAL / VERTICAL SERIES
180,000 BTU/HR TO 720,000 BTU/HR

KACE packaged horizontal (up to model 360) and vertical units (up to model 720) feature R410a scroll compressor, are designed for ducted connections.

THERMOPLUS® AIR



Standard Features:

- Factory installed water-regulating valve adjusted to provide a pressure regulated water flow thus keeping constant condensing pressure in the system
- Adjustable motor pulley
- 24V terminal strip for thermostat connection
- Refrigerant High and low pressure cut-out switches
- Access ports on high and low sides
- Thermostatic expansion valve
- Galvanized G90 casing with 1/2" insulation
- 2" Merv 8 Filter
- Co-Axial condenser
- Right return

Optional Features:

- Aqua Aero coated coils
- Copper or Epoxy fin coils
- Larger motor for higher ESP applications
- Non-fused disconnect
- Compressor sound cover
- Digital compressor (on 1st circuit)
- Cupro-nickel co-axial condenser
- 2" Merv 11 or 13 filters
- VFD or EC Plenum fan
- Heat pump operation
- DDC Controls w/BACnet
- 300 psi operating condition on waterside

Operating Range:

- Entering Air 70F thru 80F DB/61F thru 67F WB
- Entering Water A/C mode 40F thru 90F
- ESP - up to 2.5"

KACE SERIES (LARGE)												
Model	Norminal CFM	# of Comp	Total[1] Cooling (Btu/h)	Sensible[1] Cooling (Btu/h)	US GPM[2]	MCA[3] (60Hz)			Dimensions[4] (")			Approx Weight (lbs)
						208-230/3	460/3	575/3	W	H	D	
KACE-180H	6000	2	183881	130,601	45	62	30	22	86	44	52.5	1800
KACE-240H	8000	2	244301	176,288	60	76	42	33	86	44	52.5	2200
KACE-300H	10000	2	301330	223,665	75	129	59	55	112	55	64	2800
KACE-360H	12000	2	379364	259,096	90	137	62	58	112	55	64	2950
KACE-048H	1600	47776	35,384	12.0	33	25	12	8	54.25	21.5	26.25	307
KACE-180V	6000	2	183881	130,601	45	62	30	22	82	63.25	32	2000
KACE-240V	8000	2	244301	176,288	60	76	42	33	82	69.25	32	2200
KACE-300V	10000	2	301330	223,665	75	129	59	55	86	87.75	38.25	2800
KACE-360V	12000	2	379364	259,096	90	137	62	58	86	87.75	38.28	2950
KACE-480V	16000	3	480473	356,974	120	135	71	52	112	84.25	40	3800
KACE-600V	20000	3	612229	393,314	150	270	118	97	112	97.25	48	4000
KACE-720V	24000	4	783277	549,924	180	233	125	110	140	93	54	4250

1. *At air on 82FDB/67FWB*
2. *External Static Pressure at 0.5" WG*
3. *filter holder and outdoor air connections not included*

Data subject to change without notice

WATER COOLED AIR CONDITIONERS

THERMOPLUS AIR

KACSE WATER-COOLED AIR CONDITIONERS

SPLIT INDOOR CONDENSING UNIT
18,000 BTU/HR TO 144,000 BTU/HR

KACE packaged vertical units feature R410a scroll compressor, with right or left return and are suitable for duct connections or for use with optional free air discharge plenum

Standard Features:

- Factory installed water-regulating valve adjusted to provide a pressure regulated water flow thus keeping constant condensing pressure in the system
- Refrigerant High and low pressure cut-out switches
- Access ports on high and low sides
- Thermostatic expansion valve
- Galvanized G90 casing with 1/2" insulation
- 1" Merv 8 Filter
- Co-Axial condenser
- Sweat-type refrigerant connections
- Front access electrical service panel
- 24V dry contact terminal to enable/disable compressor(s)

Optional Features:

- Non-fused disconnect
- 2-stage or Digital compressor
- Cupro-nickel co-axial condenser
- 2" filters (Merv 8, 11 or 13)
- Prepainted galvanized cabinet
- 300 psi operating condition on waterside

Operating Range:

- 45F Suction (SST) & 105F Condensing (SCT)
- Entering Water A/C mode 40F thru 90F



KACE SERIES (CONDENSING UNIT										
Model	Total[1] Cooling (Btu/h)	US GPM[2]	MCA[3] (60Hz)				Dimensions[2] (")			Approx Weight (lbs)
			208-230/1	208-230/3	460/3	575/3	W	H	D	
KACSE-018	17832	4.5	12	-	-	-	26	23	26	120
KACSE-024	22918	6.0	17	10	5	-	26	23	26	125
KACSE-030	29508	7.5	18	12	7	5	26	23	26	140
KACSE-036	34003	9.0	18	12	7	5	26	23	26	150
KACSE-048	43896	10.5	25	17	8	6	26	23	26	210
KACSE-060	59722	12.0	33	20	10	8	26	23	31	225
KACSE-072	66965	16.0	38	26	12	10	26	23	31	240
KACSE-084	83600	21.0	-	29	14	10	26	23	31	260
KACSE-096	87792	24.0	-	31	14	10	32	26	42	290
KACSE-120	119444	30.0	-	36	18	13	32	26	42	320
KACSE-144	133930	35.0	-	47	22	18	32	26	42	345

1. At 45F Suction(SST) & 105F Condensing (SCT)
2. Water + refrigerant connections not included

Data subject to change without notice

DEHUMIDIFYING UNITS

THERMOPLUS AIR

SDA PACKAGE DEHUMIDIFIER

COMPACT DEHUMIDIFIER
5.7 LBS/HR TO 27 LBS/HR

SDA indoor packaged dehumidification unit with optional air or water-cooled air conditioning for light commercial and residential dehumidfication applications (greenhouses, restaurants, warehouses, storage facilities, etc…)

Standard Features:

- Forward curve EC fan motor (except 012 + 016)
- EC Plenum fan motor (012 + 016 only)
- 24V terminal strip for thermostat connection
- Refrigerant High and low pressure cut-out switches
- Access ports on high and low sides
- Thermostatic expansion valve
- Rotary (012/016) or scroll compressor (024-060)
- Epoxy fin coils
- Pre-painted G90 galvanized casing with 1/2" insulation
- 2" Merv 8 Filter
- Partial reheat

Optional Features:

- Multi Discharge options (012+016)
- Copper or Epoxy fin coils
- Aqua Aero coated coils
- Copper fin coils
- Non-fused disconnect
- Compressor sound cover
- Full Reheat
- Air or water-cooled option
- Remote air-cooled condenser
- Merv 11 or 13 filters
- Humidistat/Thermostat
- DDC Controls w/BACnet



Operating Range:

- Entering Air 70F thru 100F DB
- Relative Humidity from 40 thru 70%
- ESP - Direct Drive up to 0.5"

KACE SERIES (CONDENSING UNIT											
Model	Moisture Removal[1] lb/h	Nominal CFM	Sensible Cooling[1] Btu/h	MCA[2] (60Hz)				Dimensions[3] (")			Approx Weight (lbs)
				115/1	208-230/1	208-230/3	575/3	W	H	D	
SDAF-012	5.7	300	7750	14	9	-	29	23	18	195	120
SDAF-016	7.0	400	9750	-	11	-	29	23	18	205	125
SDAF-024	11.9	565	16000	-	23	15	38	28	18	310	140
SDAF-030	13.1	660	18000	-	25	16	38	28	18	340	150
SDAF-036	16.5	800	22400	-	28	20	43	31	22	420	210
SDAF-042	18.4	875	24800	-	30	20	43	31	22	440	225
SDAF-048	20.4	970	27400	-	32	22	43	31	22	455	240
SDAF-060	27.0	1280	36000	-	40	27	51	36	22	565	260

1. At air on 80F and 60% RH
2. External Static Pressure at 0.5" WG
3. Add 4" for filter rack and 1" for supply duct connection

Data subject to change without notice

DEHUMIDIFYING UNITS

THERMOPLUS AIR

IRD PACKAGE DEHUMIDIFIER

ICE RINK DEFOGGER
15 LBS/HR TO 27 LBS/HR

IRD indoor packaged dehumidification unit specifically designed for optimal airflow and maximum moisture removal for arenas (skating, hockey, curling)

Standard Features:

- Refrigerant components out of air stream to ease service accesibility
- Plenum fan motor
- Continous fan operation to prevent humidity build-up on off cycle
- Innovative demand defrost system for quick and efficient defrost
- Heated stainless steel drain pan
- True subcooling circuit
- Refrigerant High and low pressure cut-out switches
- External high & low pressure service access valves and sight glass
- Thermostatic expansion valve
- Pre-painted G90 galvanized casing with 1/2" insulated duct liner
- 2" Merv 8 Filter

Optional Features:

- Aqua Aero coated coils
- Non-fused disconnect
- Compressor sound cover
- Merv 11 or 13 filters
- DDC Controls w/BACnet
- Air Supply Diffuser

Operating Range:

- Entering Air 40F thru 80F DB
- Relative Humidity from 50 thru 100%
- ESP - Direct Drive up to 1.5"



KACE SERIES (CONDENSING UNIT										
Model	Moisture Removal[1] lb/h	Nominal CFM	MCA[2] (60Hz)				Dimensions[3] (")			Approx Weight (lbs)
			208-230/1	208-230/3	460/3	600/3	W	H	D	
IRD-035	15.0	2800	44	30	14	10	60	37 1/2	48	915
IRD-050	16.5	3400	38.4	29.4	15.4	11.6	60	37 1/2	48	932
IRD-075	24.8	4000	-	35.9	20.3	20	60	37 1/2	48	932
IRD-100	27.0	5500	-	51.6	24.6	17.3	60	54 3/4	48	1306

1. At air on 60F and 55% RH
2. External Static Pressure at 0.5" WG
3. ESP - Direct Drive up to 1.5"

Data subject to change without notice

AIR COOLED CONDENSERS

THERMOPLUS AIR

CDS AIR COOLED CONDENSER

OUTDOOR REMOTE AIR COOLED CONDENSER
43,500 BTU/HR TO 174,900 BTU/HR

CDS outdoor remote air cooled condensers are designed for R410a operation

Standard Features:

- Top discharge dissipates sound away
- Efficient AC Axial fans
- Galvanized G90 casing with 1/2" insulated duct liner
- Sweat-type refrigerant coil connections
- Front access electrical service panel

Optional Features:

- Non-fused disconnect
- Prepainted galvanized cabinet
- EC Axial Fan w/pressur controller
- Copper or Epoxy fin coating
- Aqua Aero coated coils
- Dry-type fluid cooler application (FDS)
- Low ambient operation

Operating Range:

- Entering Air -40F thru 100F DB



KACE SERIES (CONDENSING UNIT															
Model	THR (MBH) - R410a TEMPERATURE DIFFERENCE				FAN ARR.		CONN. SIZE [1]		REF. CHARGE LBS.		WEIGHT	MCA (60Hz)[2]			
	1	15	20	25	WIDE	LONG	DISCH.	LIQUID	SUM	WINTER	LBS	-4	-5	-7	-8
CDS-044	1.7	26.1	34.8	43.5	1	1	5/8"	1/2"	2.90	9.13	160	6	5	3	-
CDS-066	2.6	39.5	52.6	65.8	1	1	5/8"	1/2"	4.35	13.69	175	6	5	3	-
CDS-085	3.4	50.8	67.7	84.7	1	1	3/4"	1/2"	5.80	18.26	200	6	5	3	-
CDS-098	3.9	58.5	78.0	97.5	1	2	7/8"	5/8"	5.38	16.96	260	11	9	5	-
CDS-131	5.2	78.3	104.4	130.5	1	2	7/8"	5/8"	8.08	25.43	290	11	9	5	-
CDS-175	7.0	104.9	139.9	174.9	1	2	1-1/8"	5/8'	10.77	33.91	340	11	9	5	-

1. Maximum 50 FT equivalent distance. Condenser location above or same level of the unit
2. For 575V applications (-8) please contact factory

Data subject to change without notice

PORTABLE AIR CONDITIONERS

PERFECT AIRE

PORT12000A

Features:

- Electronic controls
- Temperature output range of 62°F–88°F (17°C–30°C)
- Bucketless drain system
- Auto restart function
- Easy to install & operate
- Sleep mode
- Easy access washable filter
- Full function remote control
- Easy roll casters
- Variable cooling speeds
- Slider kit & quick connect vent hose included



SPECIFICATIONS	
COOLING CAPACITY (Btu)	12,000
COVERAGE (sq. ft.)	450 –550
EER	8.9
FAN SPEEDS (Cool/Fan)	3/3
AMPS	12.0
WATTS	1,350
OUTLET CONFIGURATION	15 AMP 115V
DECIBELS (Hi/Mi/Lo)	56/55/54
VENT HOSE LENGTH (in.)	59
UNIT DIMENSIONS (WxHxD) (in.)	17 1/4 x 28 1/2 x 13
WEIGHT (Net/Gross) (lbs.)	63/73
REFRIGERATION	R410A
LIST	**1,106.00**

DEHUMIDIFIERS

FRIEDRICH

70 Pint Capacity

Comfort & Conveience

- Powerful dehumidification
- Built-in drain pump (models D50AP and D70P) can pump condensation vertically or horizontally up to a combined distance of 15 ft.
- Continuous drainage operation
- Removable condensate bucket with carry handle holds up to 16 pts.
- Set humidity level from 30% to 90% RH
- 24 hr. ON/OFF timer
- 2 speed fan
- Low temperature operation to 41°F
- Washable, slide-out filter
- Top-mount, digital touch controls
- Displays room temp and humidity %
- Auto-restart saves humidity setting after power interruption
- Built-in casters for easy mobility (models D50AP and D70AP); casters included with model D25ANP

Model #	D70BPA
SPECIFICATIONS	
Dehumidification Pints / 24 hrs	70
Energy Star	YES
Controls	DIGITAL
Unit Dimensions W x H x D"	15”W x 23 1/4”H x 12”D
Refrigerant Type	R-410A/11.0Oz
LIST	**1,119.00**



Model	Circuit Rating Breaker or TD Fuse	Plug Face (NEMA#)	Wall Outlet Appearance	Power Cord Length
All Models	125-15A	5-15P		6 FT.

PORTABLE AIR CONDITIONERS

FRIEDRICH

P12B PORTABLE AIR CONDITIONER
PH14B PORTABLE HEAT PUMP

Comfort & Convenience

HEAT PUMP

- 4-IN-1 SYSTEM: Air conditioner, heater, dehumidifier and fan
- Dual hoses for closed loop cooling and exhaust functions for up to 40% faster, more efficient cooling
- Built-in drain pump to remove condensate in heating mode (drain hose included)
- Self-evaporative condensate system means no bucket to empty
- Condensate overflow protection- the unit will automatically shut off if tank should become full. The unit can be drained through the water outlet drain
- 24-hour timer
- 3 fan speeds
- Washable, antimicrobial air filter
- Auto restart after power outage
- Stores easily in most closets

AIR CONDITIONER

- 3-IN-1 SYSTEM: Air conditioner, dehumidifier and fan
- Dual hoses for closed loop cooling and exhaust functions for up to 40% faster, more efficient cooling
- Self-evaporative condensate system means no bucket to empty
- Condensate overflow protection- the unit will automatically shut off if tank should become full. The unit can be drained through the water outlet drain
- 24-hour timer
- 3 fan speeds
- Washable, antimicrobial air filter
- Auto restart after power outage
- Stores easily in most closets





Use remote to select MODE, FAN SPEED, adjust TEMPERATURE and set theTIMER.

Model		P12B	PH14B
PERFORMANCE			
Cooling Capacity	Btu	11600	13500
Heating Capacity	Btu	—	10700
Energy Ef ciency Rating	EER	8.8	9.5
Coef cient of Performance	COP	—	2.8
Air Movement	CFM	235	250
Moisture Removal	Pts/hr.	6.0	6.0
SPECIFICATIONS			
Refrigerant Type		R-410A	
Power Supply	Volts	115	
Rated Current	Cooling Amps	11.5	10.8
	Heating Amps	—	10.8
Watts		1318	1421/1120
Dimensions (Inches)	W x H x D	19 1/2 x 33 1/2 x 15 1/2	
Weight (Net/Shipping)	Lbs.	72/90	78/95
Carton Dimensions (Inches)	W x H x D	20 7/8 x 43 1/8 x 16 3/4	
	LIST	1,639.00	2,029.00

Portable Accessories

INSTALLATION KIT- Dual intake and exhaust hoses. Flexible, heavy duty intake/exhaust hoses extend from 24" to 60". The hoses can be vented through a window or through a wall opening to the outside.

WINDOW SLIDER KIT (Included)



Fits HORIZONTAL or VERTICAL WINDOWS
WINDOW OPENING:
Minimum: 26"* Maximum: 46"

* Window slider kit can be trimmed to t a smaller opening.

Model	Circuit Rating Breaker or T-D Fuse	Plug Face (NEMA#)	Wall Outlet Appearance	Power cord length
P12B, PH14B	125V - 15A	5 - 15P		6 ft.

Due to continuing research in new energy-saving technology, specifications are subject to change without notice.

NOTE: Air conditioners will provide cooling at outdoor temperatures down to 41° F and heat pumps will provide heating at outdoor temperatures down to 14° F with single hose installation.

c UL us LISTED

R-401A OZONE FRIENDLY REFRIGERANT

ROOM AIR CONDITIONERS

FRIEDRICH

Kühl® ULTRA PREMIUM LINE

Experience the control and convenience of a central air conditioning system in ways you never thought possible. Control Kühl units via FriedrichLink™.

You'll find more options, features and ways to customize each cooling experience than you ever thought possible in a window air conditioning solution.

NEW smaller size

FITS WINDOWS FROM 22" TO 42" WIDE



Neutral Gray

(S T A N D A R D)

COOL

COOL & HEAT

Kühl®
5400-9600 Btu
Up to 11.2 EER

Kühl®+
Electric Heat
COOLING
7600 Btu
Up to 10.5 EER
ELECTRIC HEAT
4000 Btu



Full LCD display shows MODE, FAN SPEED, SET TEMPERATURE and SCHEDULE. Adjust TEMPERATURE and FAN SPEEDS, set AUTO MODE and turn the SCHEDULE ON/OFF.

FITS WINDOWS FROM 27 3/8" TO 42" WIDE



Neutral Gray

(S T A N D A R D)

COOL

COOL & HEAT

Kühl®
7900-36000 Btu
Up to 11.2 EER

Kühl®+
Electric Heat
COOLING
7600-36000 Btu
Up to 10.9 EER
ELECTRIC HEAT
4000-17300 Btu

Kühl®+
Heat Pump
COOLING
9500-23500 Btu
Up to 10.5 EER
HEATING
8000-23500 Btu

ROOM AIR CONDITIONERS

KÜHL® FEATURES

FRIEDRICH

Comfort

- Convenient control from your smartphone or computer via FriedrichLink™ (required accessory sold separately)
- 24-hour timer
- Up to 4 cooling and 4 fan-only speeds on select models
- Automatic fan speed adjustment
- Auto-changeover from cool to heat; heat to cool to maintain set temperature (Kuhl+ models except EQ08)
- 8-way air flow control
- Temperature readout can display set temperature and room temperature
- LCD panel auto dims if not in use
- LCD settings lockout option (ON/OFF)
- Premium remote control allows user to activate schedule, adjust temperature, adjust fan speed or select auto-fan; can also switch from cool to heat and heat to cool (Kühl + models)

Maintenance & Installation

- Check filter reminder and error code storage
- Same sleeve dimensions for 30+ years for easy replacement
- Slideout chassis for more permanent installation and easier access for maintenance
- Installs in a window or in-wall
- Heavy-duty installation hardware lasts longer and provides a superior barrier from the outside elements (optional accessory on Kühl+ models)
- Rugged hardboard side panels or (heavy duty side curtains on SQ and EQ models) for a more permanent installation
- Power cord can run either left or right
- Firm grip handles for easier chassis installation and removal
- Front cover attaches easily and securely. Nut driver included**

Durability

- Sealed control panel for protection from dust, moisture and contaminants
- Control module is separate from touch controls for better protection from the elements, abusive handling or accidental damage and to minimize repair costs
- Robust 20 gauge steel cabinet
- Solid-sleeve top keeps out falling debris*
- Solid-steel blower housing offers enhanced protection
- Totally enclosed commercial grade fan motor runs at a lower temperature to prevent overheating and is double-mounted for added stability and reduced wear
- Durable base pans and steel inner walls
- Unit's structural integrity allows it to be removed, cleaned and maintained outside of its sleeve
- Aluminum end plates will not contribute to rust-stained building exteriors
- Scratch-resistant cabinet
- High-tech aluminum fins with rifled copper tubing are more efficient and less prone to corrosion
- Defrost control protects coil against freeze up

Sound Reduction Technology

- Steel inner wall and extra dense insulation materials block outdoor noise
- Vibration isolating design and components diminish traditional operating sound levels
- Precision engineering maximizes air flow while delivering ultra quiet operation

Energy Management & Compliance

- 2 ready-to-go 7-day energy management programs*
- Autofan mode saves money by conserving energy
- ENERGY STAR® qualified models, including heat pumps
- 24V low voltage interface
- Environmentally-friendly R-410A refrigerant used in all models
- Recyclable packaging
- RoHS compliant

Safety & Security

- EntryGard™ anti-intrusion protection - secures chassis to the sleeve with a steel retaining wire to deter 'kick-in' intrusion
- Power cord current leakage protected
- Aluminum rear grille protects the outdoor coil from damaging debris and vandalism
- Insect barrier*

Health & IAQ

- Superior fresh air intake and stale air exhaust vent*
- Washable, antimicrobial air filter
- Optional premium carbon filter provides superior air filtration with ratings as high as MERV 6, while also adsorbing odors, and reducing ozone and VOCs when used in conjunction with standard filter
- Hinged door for easy filter access

5YR. LIMITED WARRANTY

COMMERCIAL GRADE

ENERGY STAR

RECYCLABLE PACKAGING

R-401A OZONE FRIENDLY REFRIGERANT

* Feature not available on Kühl SQ and EQ models. **Nut driver not required for Kühl SQ and EQ models.

KÜHL® ACCESSORIES

FRIEDRICHLINK™ ADAPTER

Wi-Fi Adapter Accessory connects to unit to allow for remote wireless access and programming from a computer, tablet or mobile device

Model	Kit No.	LIST
N Series	KWIFI	164.80



PREMIUM CARBON FILTERS

Remove odors and VOCs (volatile organic compounds). Achieve up to a MERV 6 rating when used with standard filter. Sold in packs of 3.



Model	Kit No.	LIST
SQ and EQ	KWCFQ	69.40
SS, ES and YS	KWCFS	69.40
SM, EM and YM	KWCFM	69.40
SL, EL and YL	KWCFL	69.40

DRAIN KIT

Drain tube field installed to the bottom on the base pan.



Model	Kit No.	LIST
All Kühl Series Models	DC2	73.70

FRIEDRICH

Wireless Thermostat- KWW*

One thermostat can control up to 8 Kühl units. Additional units require 1 KCM communication module per unit. KWW Thermostat ships with 1 KCM Communication Module.

LIST 620.00



Communication Module- KCM*

Communicates with KWW thermostat or building management system.

*Not compatible with Kühl SQ and EQ models.



COLORED FRONT COVERS

Colored front cover kits available



Deep Red Shown

Model	COLORS: Deep Red	Cobalt Blue	Classic Beige	Designer White	Black Onyx	Pink Diamond
	Kit No.					
SQ and EQ	KWREDQA	KWBLUQA	KWBGEQA	KWWHTQA	KWBLKQA	KWPNKQA
SS, ES and YS	KWREDSA	KWBLUSA	KWBGESA	KWWHTSA	KWBLKSA	KWPNKSA
SM, EM and YM	KWREDMA	KWBLUMA	KWBGEMA	KWWHTMA	KWBLKMA	KWPNKMA
SL, EL and YL	KWREDLA	KWBLULA	KWBGELA	KWWHTLA	KWBLKLA	KWPNKLA

WINDOW MOUNTING KITS: KÜHL+

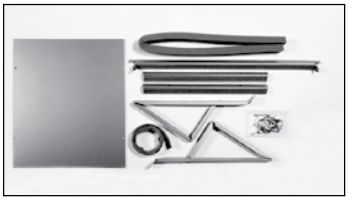
Heavy duty kits required for installation of these Kühl+ models in a window.

Heat/Cool Models	Kit No.	LIST
EQ08N11B*	KWIKQ	
ES12N33B, ES16N33, YS10N10B and YS12N33B.	KWIKSA	
EM18N34 and YM18N34B.	KWIKMA	
EL24N35, EL36N35B and YL24N35B.	KWIKLA	

*EQ08N11B window kit KWIKQ does not include window brackets.



KWIKQ



KWIKSA, KWIKMA, KWIKLA

SPECIFICATIONS

★ Indicates ENERGY STAR® models

	Model	UPC	Cooling Btu	Heating Btu	Volts	Cooling Amps	Cooling Watts	Heating Amps	Heating Watts	EER	CEER	Estimated Yearly Energy Cost	COP	Moisture Removal-Pints/HR	CFM	Net Wt. lbs.	Ship Wt. lbs.	Sleeve	LIST
	Kühl® (Cool Only)																		
★	SQ06N10C	724587432664	5800	—	115	4.1	472	—	—	**12.3**	**12.1**	**$43**	—	1.5	190	72	85	Q	
	SQ08N10D	724587432671	8000	—	115	6.1	656	—	—	**12.2**	**12.0**	**$59**	—	1.9	200	72	85		**2,047.00**
★	SS08N10C	724587432589	8000	—	115	5.8	656	—	—	**12.2**	**12.0**	**$59**	—	1.9	255	99	121	S	**2,645.00**
★	SS10N10C	724587432640	10000	—	115	7.2	820	—	—	**12.2**	**12.0**	**$74**	—	2.5	300	106	128		**2,762.00**
★	SS12N10C	724587432688	11900	—	115	8.7	975	—	—	**12.2**	**12.0**	**$88**	—	3.9	300	112	134		**2,957.00**
★	SS12N30C	724587432695	12000/11800	—	230/208	4.5/4.9	964/957	—	—	**12.2/12.2**	**12.0/12.0**	**$89**	—	3.6	300	112	134		**2,957.00**
	SS14N10C	724587432701	13600	—	115	10.4	1214	—	—	**11.2**	**10.9**	**$109**	—	4.3	275	116	138		**2,992.00**
★	SM14N10	724587432435	13700	—	115	9.9	1123	—	—	**12.2**	**12.0**	**$101**	—	3.0	360	141	154	M	
★	SM14N30	724587432442	13800/13300	—	230/208	5.0/5.3	1131/1099	—	—	**12.2/12.1**	**12.0/12.0**	**$102**	—	3.6	360				
	SM18N30B	724587432718	20000/20000	—	230/208	9.3/10.2	2092/2041	—	—	**9.8/9.8**	**9.8/9.8**	**$184**	—	6.0	425	141	154		
	SM21N30D	724587432725	20500/20000	—	230/208	9.3/10.2	2092/2041	—	—	**9.8/9.8**	**9.8/9.8**	**$188**	—	6.0	425	132	153		
★	SL24N30C	724587432626	24000/24000	—	230/208	10.2/11.1	2308/2308	—	—	**10.4/10.4**	**10.3/10.3**	**$208**	—	7.0	640	191	212	L	**4,149.00**
★	SL28N30C	724587432657	28000/28000	—	230/208	13.1/14.1	2800/2800	—	—	**10.0/10.0**	**9.9/9.9**	**$252**	—	8.5	640	193	214		**4,522.00**
	SL36N30B	724587429961	36000/35500	—	230/208	17.5/19.2	4000/3944	—	—	**9.0/9.0**	**9.0/9.0**	**$360**	—	12.0	725	212	248		**5,546.00**
	Kühl® + (Heat Pump)																		
★	YS10N10C*	724587432541	10000	8800	115	7.9	917	9.0	978	**10.9**	**10.8**	**$83**	2.6	2.0	300	109	131	S	**3,048.00**
★	YS12N33C	724587432558	12000/12000	11300/11000	230/208	4.9/5.2	1101/1101	5.6/5.9	1257/1213	**10.9/10.9**	**10.8/10.8**	**$99**	2.6/2.7	3.0	375	115	136		**3,443.00**
★	YM18N34C	724587432732	17500/17200	15200/15200	230/208	7.1/7.6	1606/1578	19.5/17.0	1665/1665	**10.9/10.9**	**10.8/10.8**	**$144**	2.7/2.7	5.4	370	141	154	M	
★	YL24N35C	724587432633	24000/24000	22000/22000	230/208	10.1/11.0	2330/2330	10.7/11.4	2391/2391	**10.3/10.3**	**10.2/10.2**	**$210**	2.6/2.6	7.0	600	197	211	L	
	Kühl® + (Electric Heat)																		
	EQ08N11D	724587432749	8000	4000	115	6.1	682	11.2	1290	**12.2**	**12.0**	**$61**	—	1.9	200	72	85	Q	**2,285.00**
	ES12N33B	724587430004	12000/12000	10700/8900	230/208	4.9/5.2	1062/1062	16.0/14.7	3500/2900	**11.3/11.3**	**11.2/11.2**	**$96**	—	3.4	325	113	128	S	**3,170.00**
	ES14N33	724587432466	13100/13000	10700/8900	230/208	5.2/5.6	1180/1171	16.0/14.7	3500/2900	**11.1/10.9**	**10.9/10.9**	**$106**	—	4.0	325	116	138		
	EM18N34A	724587432091	20000/20000	13000/10600	230/208	9.3/10.2	2041/2041	19.5/17.0	4200/3500	**9.8/9.8**	**9.8/9.8**	**$184**	—	6.0	425	141	154	M	
	EM21N34	724587432459	20500/20000	13000/10600	230/208	9.3/10.2	2092/2041	19.5/17.0	4200/3500	**9.8/9.8**	**9.8/9.8**	**$188**	—	6.0	425				
	EL24N35	724587431612	23500/23200	17300/14300	230/208	11.2/12.0	2500/2468	24.0/22.4	5500/4650	**9.4/9.4**	**9.4/9.4**	**$225**	—	7.0	750	197	211	L	
	EL36N35B	724587429954	36000/35500	17300/14300	230/208	17.5/19.2	4000/3944	24.0/22.4	5500/4650	**9.0/9.0**	**9.0/9.0**	**$360**	—	12.0	725	213	246		**5,567.00**

* YS10N10C heat pump operates on 115 volt and IS NOT equipped with supplemental heat . Will not provide heat at temperatures below 40˚F. Friedrich room air conditioners are designed to operate in outdoor temperatures from 60˚F to 115˚F.

Kühl+ Heat Pump heating information indicates heat pump performance. Kühl+ Electric Heat heating information indicates electric heat strip performance. For Kühl+ Heat Pump electric heating performance refer to corresponding Kühl+ Electric Heat model.

As an ENERGY STAR® partner, Friedrich Air Conditioning Co. has determined that the selected ENERGY STAR® models meet the ENERGY STAR® guidelines for energy efficiency.

The consumer, through the AHAM Room Air Conditioner Certification Program, can be certain that the AHAM Certification Seal accurately states the unit's cooling and heating capacity rating, the amperes and the energy efficiency ratio. EER is the unit's Energy Efficiency Ratio; CEER is the unit's Combined Energy Efficiency Ratio.

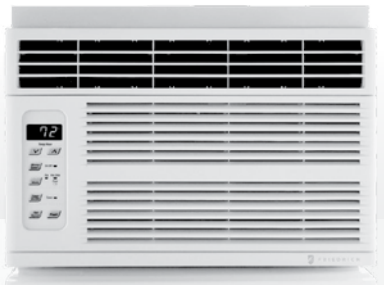
Your operating costs will depend on your utility rates and use. The estimated operating cost is based on an electricity cost of $.12 per kWh. For more information, visit www.ftc.gov/energy.

Due to continuing research in new energy-saving technology, specifications are subject to change without notice.

ROOM AIR CONDITIONERS

FRIEDRICH

FITS WINDOWS FROM
20 1/8" TO 36" WIDE



CP05

Chill™
5450 Btu
10.7 EER



COOL

Select MODE, FAN SPEED, MONEY SAVER®, AUTO AIR SWEEP*, adjust TEMPERATURE and set the TIMER.

FITS WINDOWS FROM
20 1/8" TO 42" WIDE



Chill™
6000-23500 Btu
Up to 10.8 EER

Chill™+
Electric Heat
COOLING
8000-23500 Btu
Up to 9.8 EER

ELECTRIC HEAT
3850-12000 Btu

COOL COOL & HEAT

* Feature not available on CP05. ** CP05 has a fixed chassis and is for window installation only.

Comfort & Convenience

- 24-hour timer
- Auto air sweep swing louvers* provide more even air distribution
- 3 cooling speeds, plus 3 fan-only settings; 2 cooling speeds, 2 heating speeds, plus fan-only setting on Chill+
- Ultraquiet operation
- 4-way air flow control
- Auto-restart saves settings if power is interrupted

Energy Management & Compliance

- ENERGY STAR® qualified models
- Money Saver® setting saves money by operating the fan only when cooling

Health & IAQ

- Washable, antimicrobial air filter
- Stale air exhaust

Installation Features

- Slideout chassis*
- Install in window or thru-wall**
- Standard installation hardware
- Expandable side curtains
- Power cord can run either left or right out of the side of the unit front*

Safety & Security Features

- EntryGard™ anti-intrusion protection

ROOM AIR CONDITIONER MODEL IDENTIFICATION GUIDE

C P 24 G 3 0 A

FUNCTION
S–Straight Cool **C**–Straight Cool
X–Straight Cool **Y**–Heat Pump
E–Electric Heat

CHASSIS
Q–Portable **P**–Programmable
S–Small Chassis **M**–Medium Chassis
L–Large Chassis

MODEL SERIES

APPROXIMATE
Btu (000) Cooling

Letter at end of model number indicates a modification to an existing model.

0 – Straight Cool and 115V Heat Pump Models
1 – 1 KW heat strip, Nominal
3 – 3 KW heat strip, Nominal
4 – 4 KW heat strip, Nominal
5 – 5 KW heat strip, Nominal

VOLTAGE
1–115 Volts **3**–230/208 Volts

SPECIFICATIONS

★ Indicates ENERGY STAR® models

	Model	UPC	Cooling Btu	Heating Btu	Volts Rated	Cooling Amps	Cooling Watts	Heating Amps	Heating Watts	EER	CEER	Estimated Yearly Energy Cost	Moisture Removal-Pints/HR	Refrigerant	CFM	Net Wt. lbs.	Ship Wt. lbs.	Sleeve	LIST
	Chill® (Cool Only)																		
	CP05G10B	724587431728	5200	—	115	4.3	460	—	—	11.3	11.0	$42	1.5	R410A	140	46	50	P1	**785.00**
★	CP06G10B	724587432824	6000	—	115	4.6	490	—	—	12.2	12.1	$44	1.8	R410A	200	62	71	P6	**1,084.00**
★	CP08G10B	724587432831	8000	—	115	6.2	660	—	—	12.2	12.0	$60	2.2	R32	250	63	72		**1,275.00**
★	CP10G10B	724587432848	10000	—	115	7.7	820	—	—	12.0	12.0	$74	3.0	R32	300	75	85	P7	**1,401.00**
★	CP12G10B	724587432855	12000	—	115	9.3	990	—	—	12.1	12.0	$89	3.3	R32	330	83	93		**1,635.00**
★	CP15G10B	724587432862	15000	—	115	11.9	1300	—	—	11.9	11.8	$117	4.0	R32	400	117	132	P8	**2,233.00**
★	CP18G30B	724587432879	18200/17700	—	230/208	7.7/7.1	1490/1530	—	—	11.8/11.9	11.8/11.8	$138	5.5	R32	520	132	147	P9	**2,450.00**
★	CP24G30B	724587432886	24000/23500	—	230/208	11.4/10.6	2260/2310	—	—	10.4/10.4	10.3/10.3	$209	6.8	R32	590	137	152		**2,701.00**
	Chill®+ (Electric Heat)																		
	EP08G11B	724587431735	7500	3850	115	6.3	670	11.0	1260	11.2	11.0	$61	2.1	R410A	250	79	85	P6	**1,583.00**
	EP12G33B	724587431742	12000/11500	11200/9200	230/208	4.8/5.1	1060/1010	14.0/15.5	3500/2900	11.3/11.3	11.2/11.2	$96	3.3	R410A	265	87	93	P7	**2,094.00**
	EP18G33B	724587431759	18000/17500	12000/9800	230/208	7.3/7.8	1600/1560	16.0/15.0	3670/3100	11.2/11.2	11.1/11.1	$144	5.5	R410A	430	136	150	P9	**2,801.00**
	EP24G33B	724587431766	23000/22500	12000/9800	230/208	10.6/11.5	2340/2290	16.0/15.0	3670/3100	9.8/9.8	9.8/9.8	$211	6.5	R410A	560	146	160		**3,152.00**

Chill+ Electric Heat heating information indicates electric heat strip performance.

As an ENERGY STAR® partner, Friedrich Air Conditioning Co. has determined that the selected ENERGY STAR® models meet the ENERGY STAR® guidelines for energy efficiency.

The consumer, through the AHAM Room Air Conditioner Certification Program, can be certain that the AHAM Certification Seal accurately states the unit's cooling and heating capacity rating, the amperes and the energy efficiency ratio.

EER is the unit's Energy Efficiency Ratio; CEER is the unit's Combined Energy Efficiency Ratio.

Your operating costs will depend on your utility rates and use. The estimated operating cost is based on a electricity cost of $ .12 per kWh. For more information, visit www.ftc.gov/energy.

Due to continuing research in new energy-saving technology, specifications are subject to change without notice.

ROOM AIR CONDITIONERS

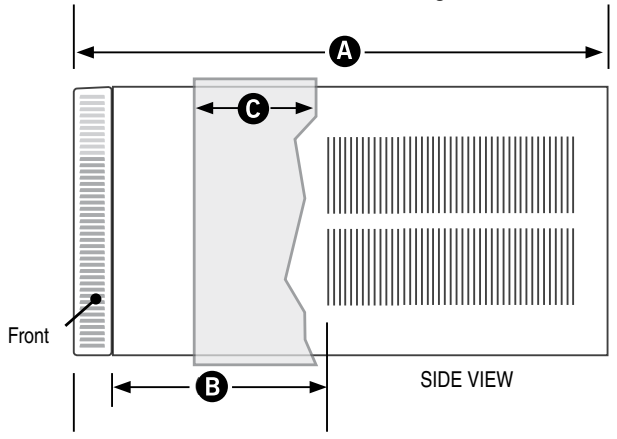
FRIEDRICH

Sleeve	Height Inches	Width Inches	Depth with Front Inches (A)	Shell Depth to Louvers Inches (B)	Minimum Extension Into Room* Inches	Minimum Extension Outside * Inches	Window Width INCHES Minimum**	Window Width INCHES Maximum	In-wall Installation Finished Hole Inches Height	In-wall Installation Finished Hole Inches Width	In-wall Installation Finished Hole Inches Max. Depth (C)	Carton Dimensions Inches Height	Carton Dimensions Inches Width	Carton Dimensions Inches Depth
Q	14 1/4"	19 3/4"	21 3/8"	8 1/2"	5 1/2"	10 3/4"	22"	42"	14 1/2"	20"	8 1/2"	18 1/4"	24 3/8"	26 1/2"
S	15 15/16"	25 15/16"	29"	8 3/4"	5 3/4"	16 15/16"	27 3/8"	42"	16 3/16"	26 3/16"	7 3/8"	19"	29"	34 1/2"
M	17 15/16"	25 15/16"	29"	8 3/4"	5 3/4"	16 15/16"	27 3/8"	42"	18 3/16"	26 3/16"	7 3/8"	21"	29"	34 1/2"
L	20 3/16"	28"	35 1/2"	16 1/2"	5 3/8"	18 15/16"	29 7/8"	42"	20 3/8"	28 1/4"	15 1/8"	24 1/2"	38 7/8"	31 5/8"
P1†	12"	18 1/2"	15"	5"	3 1/2"	10 3/4"	20 1/8"	36"	NOT FOR THRU-WALL			15 1/4"	22 1/4"	17 1/2"
P6	14"	18 3/8"	20 7/8"	8 1/8"	4 1/2"	11"	20 1/8"	36"	14 1/8"	18 7/8"	7 1/2"	17 7/8"	22 3/4"	22"
P7	15"	23 5/8"	21 3/4"	8 3/4"	4 1/2"	12"	25 1/4"	39"	15 1/4"	23 7/8"	8"	18 3/4"	26 3/4"	23 7/8"
P8	16 7/8"	26"	26 7/8"	10 1/4"	5 1/2"	16 5/8"	26 1/2"	42"	17 1/8"	26 1/4"	9 "	21 1/2"	29 1/2"	29"
P9	16 7/8"	26"	30 3/8"	10 1/4"	5 1/2"	19 1/2"	26 1/2"	42"	17 1/8"	26 1/4"	9 "	21 1/2"	33"	28 7/8"

* Minimum extensions when mounted in a window.
** Minimum widths achieved using one side curtain assembly as opposed to both in a standard installation.
NOTE: S,M and L sleeves may be installed in window with no side kits if properly installed.

† Sleeve P1 does not have In-wall hole dimensions, as these units are fixed chassis and should not be installed In-wall.

Sleeve Dimensions Drawing



COOLING SIZING GUIDE

Area to be conditioned in sq. ft.	Approximate Cooling Btu Required
100 - 150	5000
150 - 250	6000
250 - 300	7000
300 - 350	8000
350 - 400	9000
400 - 450	10000
450 - 550	12000
550 - 700	14000
700 - 1000	18000
1000 - 1200	21000
1200 - 1400	23000
1400 - 1500	24000
1500 - 2000	30000
2000 - 2500	34000

Based on normal room insulation, average number of sun exposed windows and two person occupancy.

1. If heavily shaded, **reduce** cooling Btus required by 10%
2. If very sunny, **increase** cooling Btus required by 10%
3. Add 500 Btus per person **over 2 people**
4. Add 4,000 Btus if the area is a **kitchen**

CIRCUIT RATING/ BREAKER/POWER CORD

Model	Circuit Rating Breaker or T-D Fuse	Plug Face (NEMA#)	Power Cord Length (ft.)	Wall Outlet Appearance
All SQ MODELS. EQO8N11D. SS08N10C, SS10N10C, SS12N10C and SS14N10C. YS10N10C. SM14N10.	125V - 15A	5- 15P	6	
SS12N30C. SM14N30 and SM18N30B.	250V - 15A	6 - 15P	6	
SM21N30D. SL24N30C and SL28N30C. ES12N33B and ES14N33. YS12N33C.	250V - 20A	6 - 20P	6	
SL36N30B. EM18N34A and EM21N34. EL24N35 and EL36N35B. YM18N34C and YL24N35C.	250V - 30A	6 - 30P	6	

CIRCUIT RATING/ BREAKER

Model	Circuit Rating Breaker or T-D Fuse	Plug Face (NEMA#)	Power Cord Length (ft.)	Wall Outlet Appearance
CP05G10B	125V - 15A	5 -15P	6 1/2	
CP06G10B, CP08G10B, CP10G10B, CP12G10B and CP15G10B. EP08G11B.	125V - 15A	5- 15P	6	
CP18G30B	250V - 15A	6 - 15P	4 1/2	
CP24G30B. EP12G33B, EP18G33B and EP24G33B.	250V - 20A	6 - 20P	4	

HAZARDOUS LOCATION ROOM A/C

FRIEDRICH



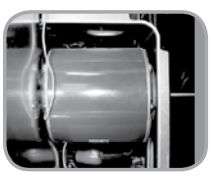
Hazardgard meets T4 temperature classification

- Unit surface temperatures will not rise above 135° C/275° F.
  NOTE: 50/60Hz model listed as T4A for surface temperatures to 120° C/248° F.
- Operates at low ambient conditions without freezing at outdoor ambient temperatures as low as 7° C/45° F.
- Tolerates higher outdoor temperatures up to 55° C /130° F.

Specifically designed to cool living quarters, storage areas and other enclosures situated in hazardous locations; where specific volatile flammable liquids or gases are handled or used within enclosed containers or systems.

Features

- Permanent split capacitor motor
- Hermetically sealed reciprocating compressor is cooled during the refrigeration cycle, which allows the unit to tolerate higher outdoor temperatures up to 130˚ F (55°C)
- Environmentally sealed on/off switch and gold plated contacts in thermostat for corrosion resistance
- Solid-state control relays for compressor and fan operation
- Hot gas bypass allows the air conditioner to operate at low ambient conditions without freezing at outdoor temperatures as low as 45° F (7°C)
- Larger, commercial grade, enclosed fan motor with hermetically sealed overload for arc-free operation. Totally enclosed to assure efficient operation under adverse electrical conditions
- Unit utilizes field supplied, direct-wired circuit
- 22-gauge, G60 steel air conditioner cabinet is powder coated for corrosion protection and to withstand years of hard use
- High density EPS foam insulation for thermal resistance and sound control
- Heavy duty, honeycomb matrix packaging resists damage during shipment and is environmentally friendly



Coils coated for corrosion resistance

MODEL SH24N20

ElectroFin® 5-stage, immersion ecoat process on 100% of metallic surfaces on the outdoor coil provides outstanding corrosion resistance protection in coastal or corrosive environments

ELECTROFIN BENEFITS:

- Excellent adhesion characteristics
- Less than 1% thermal degradation
- Outstanding chemical resistance
- Passed 6048 hrs.ASTM B-117 Salt Spray

5-STAGE **ecoat**
Corrosion Protection



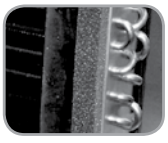
ELECTROFIN MEETS THE FOLLOWING:

- MIL-C-46168 Chemical Agent Resistance *-DS2, HCl Gas*
- CID A-A-52474A (GSA)
- MIL-STD 810F, Method 509.4 (Sand and Dust)
- MIL-P-53084 (ME)-TACOM Approval
- MIL-DTL-12468 Decontamination Agent (STB)
- DPG (Douglas Proving Grounds) Soil & Water Exposure Tests
- GM9540P-97 Accelerated Corrosion Test (120 cycles)
- ASTM B117-G85 Modified Salt Spray (Fog) Testing-2,000 hours
- ASTM B117 Salt Spray (tested by ARL for Lockheed Martin)

MODELS SH15M30A, SH20M30B, SH20N50

Diamonblue Advanced Corrosion Protection® on the outdoor coil protects the coil against deterioration and extends the life of the unit especially in coastal or corrosive environments.

DIAMONBLUE
Advanced Corrosion Protection®



HAZARDOUS LOCATION ROOM A/C

FRIEDRICH

SPECIFICATIONS

Model	Cooling Capacity Btu/Hr.	Electrical Characteristics: Volts Rated	Cooling Amps	Cooling Watts	Circuit Rating Breaker or T - D Fuse Volts - Amps	Energy Efficiency Ratio EER	Moisture Removal Pints/ Hr	Air Circulation CFM	Refrigerant	LIST
	60 HERTZ									
SH15M30A	14500/14000	230/208	6.9/7.5	1495/1443	250V-15	9.7/9.7	4.0	375	R-410A	8,204.00
SH20M30B	19000/19000	230/208	8.5/9.4	1965/1970	250V-15 (230V) / 250V-20 (208V)	9.7/9.6	5.5	375	R-410A	9,509.00
SH24N20	24000/23700	230/208	12.6/13.5	2727/2788	250V-20	8.8/8.5	8.0/7.5	385	R-410A	10,593.00
	50 HERTZ									
SH20M50A	19500/19100	240/220	9.8/10.3	2167/2156	250V-20	9.0/9.0	5.6/5.5	425	R-410A	
SH24N20	21000/20500	240/220	15.0/13.2	2600/2412	250V-20	8.1/8.5	7.0/7.0	360	R-410A	

INSTALLATION INFORMATION

Model	Dimensions Inches: Height	Width	Depth with Front (A)	Depth J Box to Louvers (B)	Minimum Extension Into Room	Minimum Extension Outside	Window Width Inches: Min.	Max.	In-Wall Installation Finished Hole Inches: Height	Width	Max. Depth (C)	Weight Lbs.: Net	Shipping
SH15M30A	15 15/16"	25 15/16"	27 3/8"	6"	3 1/16"	16 15/16"	27 7/8"	42"	16 3/16"	26 3/16"	6"	140	167
SH20M30B	17 15/16"	25 15/16"	27 3/8"	6"	3 1/16"	16 15/16"	27 7/8"	42"	18 3/16"	26 3/16"	6"	166	170
SH20M50A	17 15/16"	25 15/16"	27 3/8"	6"	3 1/16"	16 15/16"	27 7/8"	42"	18 3/16"	26 3/16"	6"	171	175
SH24N20	17 15/16"	25 15/16"	27 3/8"	6"	3 1/16"	16 15/16"	27 7/8"	42"	18 3/16"	26 3/16"	6"	180	185

Due to continuing engineering research and technology, specifications are supbject to change wihtout notice.

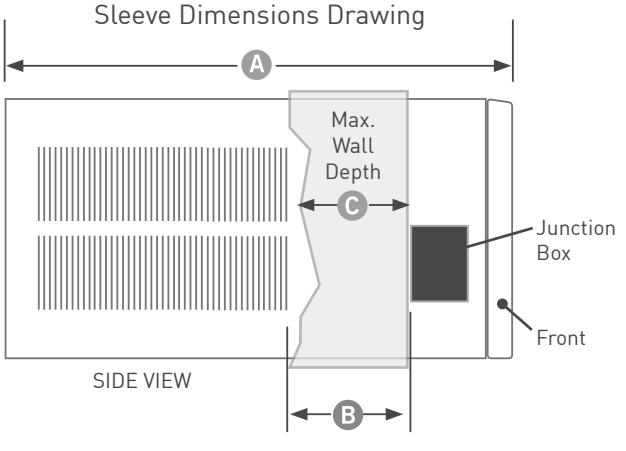
U.S. MAXIMUM outdoor ambient operating temperature is 130ºF. (55ºC) MAXIMUM TEMPERATURE RATING FOR CLASS 1, DIVISION 2, GROUPS A, B, C, D.

Capacity and efficiency values at each climate conditions are available upon request.

NOTE: Hazardgard unit must be hard-wired.

Manufactured under Design Patent DES 368, 306 decorative front; Utility Patent 5, 662, 058.

Sleeve Dimensions Drawing



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LISTED

THRU-THE-WALL ROOM A/C

FRIEDRICH

NEW WallMaster®

COMMERCIAL GRADE

A perfect fit in Friedrich and Fedders A & B 27" sleeves

FITS SLEEVES
16 3/4" HIGH X 27" WIDE





Select MODE, FAN SPEED, MONEY SAVER®, adjust TEMPERATURE and set the TIMER.

Comfort & Convenience

- New design makes controls more accessible
- Remote control
- 24-hour timer
- Smart Fan auto-adjusts fan speed to maintain desired temperature
- Check filter reminder
- 3-speed fan
- Auto restart
- Electronic defrost control
- Individually adjustable air louvers
- Washable, antimicrobial filter

Energy Management

- Money Saver® setting cycles the fan with the compressor
- ENERGY STAR® qualified models
- R-410A refrigerant

Durability & Quality

- Rotary compressor provides quiet, dependable performance
- Premium aluminum exterior grille
- Dense blower insulation blocks outdoor noise
- Rifled copper tubing
- Impact resistant front cover
- High tech fins with sine wave lanced louvers increase energy efficiency by increasing surface area for heat exchange

Installation Features

- Mounts flush with the exterior wall for a neat appearance
- Ideal for thicker wall installations, where side fins don't fit
- Firm grip handles on the chassis for easy installation and removal from wall sleeve
- Adjustable louvers direct the air flow where you need it
- A direct replacement for 27" sleeves including Fedders A and B*. Sleeve measures 27" W x 16 3/4" H

Safety & Security

- EntryGard™ anti-intrusion protection secures chassis to sleeve to deter 'kick-in' intrusion
- Power cord current leakage protected
- Insect barrier

Accessories

- AG architectural grille for use with WSE sleeve
- Baffle adapter kit for use with deep sleeve installations
- Drain kit for condensate disposal
- Internal drain kit for new construction applications where condensate drain system is built-in

WSE SLEEVE ships with inside and outside weather panel and standard grille

ADJUSTABLE LOUVERS



FITS EXISTING FEDDERS SLEEVES.

Sleeve Dimensions	Friedrich WSE Sleeve	Fedders A Sleeve	Fedders B Sleeve
Height (inches)	16 3/4	16 3/4	16 3/4
Width (inches)	27	27	27
Depth (inches)	16 3/4	16 3/4	19 3/4

Chassis requires WSE sleeve (sold and shipped separately)

*Installation in Fedders B sleeve requires a baffle adapter kit-BAK.

THRU-THE-WALL ROOM A/C

FRIEDRICH

SPECIFICATIONS

★ ENERGY STAR® models

	Model	Cooling Btu	Heating Btu	Volts Rated	Cooling Amps	Cooling Watts	Heating Watts	Heating Amps	EER	CEER	Estimated Yearly Energy Cost	COP	Moisture Removal Pints per Hr.	CFM	Net Wt Lbs	Ship Wt Lbs	LIST
	Cooling Only																
★	WS08D10A	8000	—	115	6.3	748	—	—	10.7	10.6	$67	—	1.8	250	93	97	**2,103.00**
	WS10D10A	9700	—	115	8.0	990	—	—	9.7	9.7	$89	—	2.4	260	103	107	
★	WS10D30A	10000/9900	—	230/208	4.4/4.6	935/925	—	—	10.7/10.7	10.6/10.6	$84	—	2.7	260	101	105	**2,198.00**
	WS12D10A	12000	—	115	10.8	1224	—	—	9.8	9.7	$110	—	—	295	112	116	**2,450.00**
	WS12D30A	12000/11700	—	230/208	5.5/5.8	1224/1194	—	—	9.8/9.8	9.7/9.7	$110	—	—	290	109	113	**2,537.00**
	WS15D30A	14500/14000	—	230/208	7.0/7.6	1559/1505	—	—	9.3/9.3	9.3/9.3	$140	—	4.8	290	119	123	**2,649.00**
	Cooling with Heat Pump																
	WY12D33A	11300/11000	8900/8700	230/208	5.5/5.6	1215/1183	1119/1082	5.0/5.3	9.3/9.3	9.3/9.3	$109	2.3/2.3	3.4	275	111	115	**2,922.00**
	Cooling with Electric Heat																
	WE10D33	10000/9800	11000/9100	230/208	4.5/4.9	1020/1000	3550/2950	16.0/14.7	9.8/9.8	9.7/9.7	$92	—	1.5	260	104	108	**2,307.00**
	WE12D33	12000/11700	11000/9100	230/208	5.5/5.8	1224/1194	3550/2950	16.0/14.7	9.8/9.8	9.7/9.7	$110	—	3.5	290	107	111	**2,645.00**
	WE15D33A	14500/14000	11000/9100	230/208	7.0/7.6	1559/1505	3550/2950	16.0/14.7	9.3/9.3	9.3/9.3	$140	—	4.8	290	119	123	**2,784.00**

Heat Pump heating information **(shown in grey)** indicates heat pump heating performance. Electric Heat heating information **(shown in grey)** indicates electric heat strip performance. For Heat Pump electric heating performance refer to corresponding Electric Heat model.

HEATING PERFORMANCE: Change-over from heat pump operation to resistance operation on models indicated is automatic at a preset outside ambient temperature of approximately 35°F.

Calculate the heat loss of the space to be heated. As long as the heat loss does not exceed the resistance heating capacity rating of the unit, the heating performance will be satisfactory.

Note: all models will produce condensate. If condensate disposal is desired, an optional drain kit is available.

DEFROST CONTROL: Initiated at 30°F (outdoor coil temperature) and terminated at 43°F (outdoor coil temperature). During defrost, the compressor stops and the electric heat starts, then operates with the fan to maintain indoor comfort. Below 43°F, the unit remains in electric heat mode.

DEFROST DRAIN: Drain automatically opens at approximately 50°F to prevent condensate from freezing inside drain pan.

PLUG FACE/CIRCUIT RATING

WallMaster® Model Number	Circuit Rating Breaker or T-D Fuse	Plug Face (NEMA#)	Power Cord Length (ft.)	Wall Outlet Appearance
WS08D10A, WS10D10A and WS12D10A.	125V - 15A	5 - 15P	6	
WS10D30A, WS12D30A and WS15D30A.	250V - 15A	6 - 15P	6	
WE10D33, WE12D33 and WE15D33A. WY12D33A.	250V - 20A	6 - 20P	6	

Model	Carton Dimensions Inches Height	Width	Depth
WallMaster®			
WSE Sleeve	18"	27 1/4"	18"
Chassis	19 3/8"	30 5/8"	27 1/2"

Power cords are located on front left of WallMaster models.

Due to continuing research in new energy-saving technology, specifications are subject to change without notice.

As an ENERGY STAR® partner, Friedrich Air Conditioning Co. has determined that the selected ENERGY STAR® models meet the ENERGY STAR® guidelines for energy efficiency.

The consumer, through the AHAM Room Air Conditioner Certification Program, can be certain that the AHAM Certification Seal accurately states the unit's cooling and heating capacity rating, the amperes and the energy efficiency ratio.

EER is the unit's Energy Efficiency Ratio; CEER is the unit's Combined Energy Efficiency Ratio.

Your operating costs will depend on your utility rates and use. The estimated operating cost is based on a electricity cost of $ .12 per kWh. For more information, visit www.ftc.gov/energy.

THRU-THE-WALL ROOM A/C

FRIEDRICH

UNI-FIT®

UNIVERSAL FIT THRU-THE-WALL FOR EASY REPLACEMENT IN EXISTING 24 1/2″, 26” OR 27” SLEEVES.

Residential grade quality for installation in new construction, retrofits and remodels.

Uni-Fit®
8000-13000 Btu
Up to 9.6 EER

Uni-Fit®
Electric Heat
COOLING
8000-11500 Btu
Up to 9.4 EER
ELECTRIC HEAT
3850-11200 Btu



UNI-FIT® FEATURES

Comfort & Convenience

- 6-way air flow control
- Remote control
- 24-hour programmable timer
- 3-speed fan
- Auto restart
- Defrost control

Energy Management and Compliance

- Money Saver® setting saves money by conserving energy
- Five Energy Star models
- R32, R-410A refrigerant

Durability & Quality

- Rotary compressors provide quiet, dependable performance
- Seacoast protection for corrosion resistance in harsh environments

Installation and Maintenance Features

- Universal fit trim ring
- Sleeve designed to fit a standard 26" opening and sleeves as small as 24 ½"

Accessories

- USc sleeve ships with expanded aluminum grille
- Replacement grille ships with US/UE chassis for use in existing sleeves when a grille is needed

Health and IAQ

- Washable antimicrobial filter
- Stale air exhaust



Select MODE, FAN SPEED, adjust TEMPERATURE and set the TIMER.

Uni-Fit® installs in many existing sleeves.

Sleeve Dimensions	Friedrich USC Sleeve	Amana	Carrier (51S Series)	Fedders/ Emerson/ Friedrich WSD	Emer-son/ Fedders	GE/ Hot-point	Whirlpool	White-Westinghouse/ Frigidaire/ Carrier (52F Series)
Height (inches)	15 1/2	15 5/8	16 7/8	16 3/4	15 3/4	15 5/8	16 1/2	15 1/4
Width (inches)	25 7/8	26	25 3/4	27	26 3/4	26	25 7/8	25 1/2
Depth (inches)	16 3/4	16 7/8	18 5/8	16 3/4 or 19 3/4	15	16 7/8	17 1/8 or 23	16, 17 1/2 or 22

NOTE: Chassis requires US sleeve for new installations (sold and shipped separately)

ENERGY STAR

RECYCLABLE PACKAGING

R-410A
OZONE FRIENDLY REFRIGERANT

THRU-THE-WALL ROOM A/C

FRIEDRICH

SPECIFICATIONS

Preliminary

★ ENERGY STAR® models

	Model	Cooling Btu	Heating Btu	Volts Rated	Cooling Amps	Cooling Watts	Heating Amps	Heating Watts	EER	CEER	Estimated Yearly Energy Cost	Moisture Removal Pints/Hr	Refrigerant	CFM	Sleeve	Net Weight Lbs	Ship Weight Lbs	LIST
	UNI-FIT®																	
	Cool Only																	
★	US08D10C	8000	-	115	7.0	750	-	-	10.7	10.6	$68	2.2	R32	260	USC	73	79	**1,496.00**
★	US10D10C	9800	-	115	8.5	910	-	-	10.8	10.6	$82	3.2	R32	260	USC	78	84	**1,626.00**
★	US12D10C	11500	-	115	10.2	1090	-	-	10.6	10.5	$99	3.8	R32	290	USC	80	87	**1,656.00**
★	US10D30C	10000/9800	-	230/208	4.3/4.6	930/910	-	-	TBD	10.6/10.6	$84	3.2	R32	285	USC	78	86	**1,843.00**
★	US12D30C	11500/11200	-	230/208	5.0/5.4	1090/1060	-	-	TBD	10.5/10.5	$99	3.8	R32	290	USC	80	87	**1,873.00**
	US14D30B*	13000/12600	-	230/208	7.0/7.5	1530/1430	-	-	8.5/8.5	*	$138	4.0	R410A	310	USC	87	94	
	Cool with Electric Heat																	
	UE08D11C	8000	3850	115	7.4	810	10.7	1230	9.8	9.7	$73	2.2	R410A	260	USC	73	79	
	UE10D33C	10000/9800	11200/9200	230/208	4.7/5.1	1020/1000	15.3/14.0	3500/2900	9.8/9.8	9.7/9.7	$92	3.2	R410A	285	USC	78	84	
	UE12D33C	11200/11000	11200/9200	230/208	5.2/5.6	1140/1112	15.3/14.0	3500/2900	9.8/9.8	9.7/9.7	$103	3.8	R410A	290	USC	80	87	

* Limited availability.

Due to continuing research in new energy-saving technology, specifications are subject to change without notice.

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The consumer, through the AHAM Room Air Conditioner Certification Program, can be certain that the AHAM Certification Seal accurately states the unit's cooling and heating capacity rating, the amperes and the energy efficiency ratio.

EER is the unit's Energy Efficiency Ratio; CEER is the unit's Combined Energy Efficiency Ratio.

Your operating costs will depend on your utility rates and use. The estimated operating cost is based on a electricity cost of $ .12 per kWh.
For more information, visit www.ftc.gov/energy.

PLUG FACE/CIRCUIT RATING

Uni-Fit® Model Number	Circuit Rating Breaker or T-D Fuse	Plug Face (NEMA#)	Power Cord Length (ft.)	Wall Outlet Appearance
US08D10C, UE08D11C US10D10C, US12D10C	125V - 15A	5 - 15P	6	
US10D30C, US12D30C, US14D30B	250V - 15A	6 - 15P	6	
UE10D33C, UE12D33C	250V - 20A	6 - 20P	6	

Power cords are located on front right of Uni-Fit models.

Model	Carton Dimensions Inches Height	Width	Depth
Uni-Fit®			
USC Sleeve	17 7/8"	28"	19 1/4"
US Chassis	17 1/4"	27 3/4"	22 1/4"
UE Chassis	17 1/4"	27 3/4"	22 1/4"

THRU-THE-WALL ROOM A/C

Optional Accessories



Standard Grille
Premium, stamped steel grille with powder coat paint. Ships with WSE sleeve. Galvanized steel inner and outer weather panels also ship with sleeve.

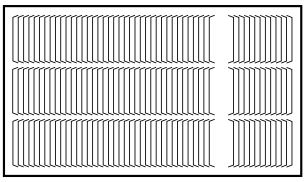
WallMaster® WSE Sleeve Exterior Grilles



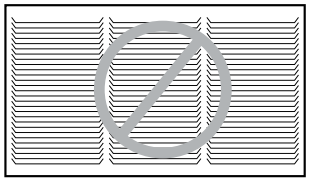
Optional Architectural Grille- AG
Premium brushed aluminum grille.

IMPORTANT:
Operating the air conditioner with incorrect rear grille or without Baffle Adapter Kit (on 19 3/4" deep sleeve) will recirculate discharge air and cause compressor overload to trip.

CORRECT Vertical Louvers



INCORRECT Horizontal Louvers



Installation Accessories

DK / Drain Kit
Installed at the back of the unit and allows for attachment to condensate disposal system, if necessary or desired.



IDK / Internal Drain Kit
New construction applications where a condensate drain system has been built into the wall interior.



BAK / Baffle Adapter Kit
Necessary when installing in a sleeve deeper than 16 3/4" deep, such as Fedders B sleeve (19 3/4" deep).



CHASSIS DIMENSIONS

	Height	Width	Depth	Height of Front	Width of Front	Depth with Front	Minimum Extension Into Room with Front
Chassis	15 3/4"	26 1/2"	21"	17 1/4"	27 1/2"	23 1/4"	7 1/2"

WSE SLEEVE DIMENSIONS

Model	Height	Width	Depth	Depth with Front	Minimum Extension Outside	Thru-the-wall Finished Hole Height	Thru-the-wall Finished Hole Width	Thru-the-wall Finished Hole Max. Depth	LIST
WSE Sleeve	16 3/4"	27"	16 3/4"	24 1/4"	9/16"	17 1/4"	27 1/4"	15 5/16"	399.00

Uni-Fit® USC Sleeve Exterior Grilles



STANDARD GRILLE
Ships with USC sleeve
Expanded aluminum grille designed for use with USC sleeve.



REPLACEMENT GRILLE
Ships with US/UE chassis. Black plastic for use on existing sleeves without any grille.



ARCHITECTURAL GRILLE-UXAA
Optional brushed aluminum grille.

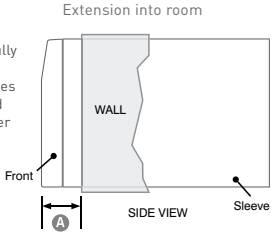
IMPORTANT:
When installing into an existing sleeve, consult Installation Section of your Installation/Operation Manual to determine whether or not the grille needs to be replaced and/or a baffle adapter (included with chassis) should be used.

SLEEVE/CHASSIS DIMENSIONS

Model	Height	Width	Depth	Depth with Front	Minimum Extension Into Room	Minimum Extension Outside	Thru-the-wall Finished Hole Height	Thru-the-wall Finished Hole Width	Thru-the-wall Finished Hole Max. Depth	LIST
Uni-Fit®										
USC Sleeve	15 1/2"	25 7/8"	16 3/4"	20 1/2"	–	1/2"	15 3/4"	26 1/8"	16 1/4"	412.00

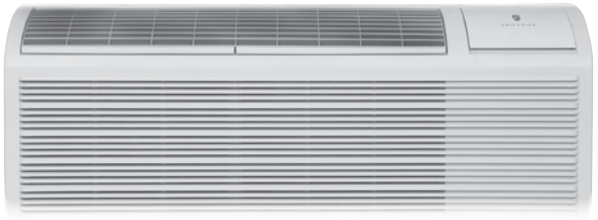
IMPORTANT:
US chassis w/front fully installed into USC sleeve extends into the room 3 3/8". UE chassis w/front fully installed into USC sleeve extends into the room 2 7/8". 1" gap on sides and 1/2" gap at top can be covered by two-piece trim ring that fits over the chassis front.

Ⓐ Front extension into room
US= 3 3/8"
UE= 2 7/8"



PACKAGE TERMINAL AIR CONDITIONERS

FRIEDRICH



NEW DESIGN FOR HIGER ENERGY EFFICIENCY

ULTRA QUIET PERFORMANCE / EXCLUSIVE 3 SPEED FAN / UNIVERSAL HEATER

NEW TWO MOTOR DESIGN

With separate indoor and outdoor motors, the indoor motor can run at slower speeds which reduces sound levels indoors.

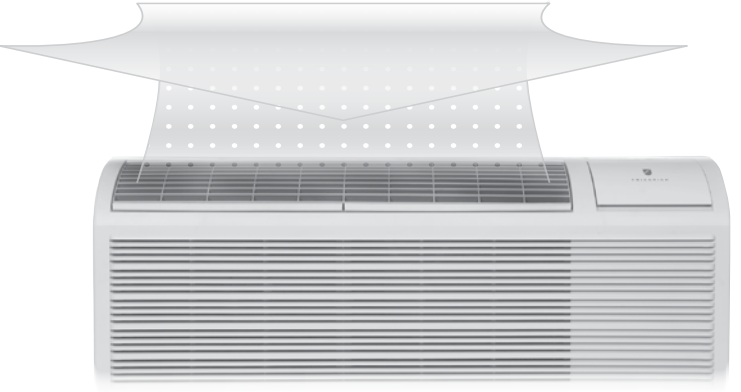
NEW TANGENTIAL BLOWER WHEEL

Tangential blower wheel has nearly 5x the surface area of a typical fan used on other PTACS. The result is more uniform airflow over a wider path for faster, more even air distribution throughout the room and improved sound levels.

Air is blown over the entire length of the tangential wheel into the room in a uniform laminar airflow.



TANGENTIAL BLOWER WHEEL PROVIDES UNIFORM LAMINAR AIRFLOW OVER A WIDE PATH FOR FASTER, MORE EVEN AIR DISTRIBUTION THROUGHOUT THE ROOM WITH IMPROVED SOUND LEVELS.



UNIQUE 3 SPEED FAN

Friedrich is the only major PTAC brand with 3 fan speeds in cooling and heating mode.

Soft start/stop fan delay feature reduces transitional noise that is usually associated with compressor start-up.



DIGITAL CONTROLS WITH UNIQUE 3 SPEED FAN

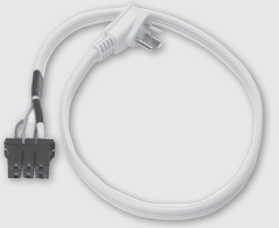
UNIVERSAL HEATER / POWER CORD

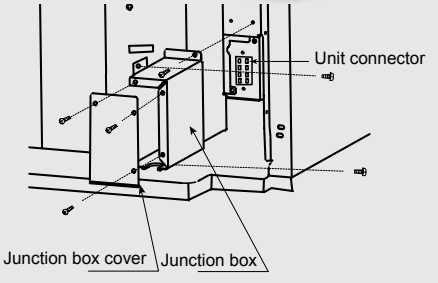
All PTAC units ship complete with the standard power cord for that model (7K,9K and 12K = 3.0 kW and 15K = 5.0 kW). If you want to adjust the heater size on any PTAC unit simply unplug the attached power cord and connect the desired size. It is important to ensure that all wiring and building connections are sized properly for the power cord as well.

Universal heater allows installers to change the heat output of the PTAC by changing the power cord, simplifying ordering and installation.

For distributors, this means stocking one PTAC model and the 2 optional cords in place of 3 separate PTACs.

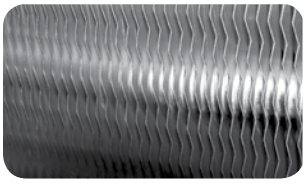
POWER CORD IS AS EASY TO CONNECT AS A PHONE JACK





PACKAGE TERMINAL AIR CONDITIONERS

FRIEDRICH



DIAMONBLUE ADVANCED CORROSION PROTECTION

Treatment protects the outdoor coil against deterioration and extends the life of the unit especially in harsh coastal environments.

Room Comfort Features

Constant room comfort monitoring

"Instant Heat" heat pump mode quickly heats a room to the desired temperature for increased comfort

Even heat monitoring checks room temperature and automatically adds heat boost if necessary

Quiet, efficient rotary compressor mounted with vibration isolators to keep the compressor running smoothly and quietly.

The digital control panel will automatically run the fan to briefly sample the room temperature every nine minutes to ensure desired conditions are maintained

Durability Features

Durable front panel with break proof control door and design

Room freeze protection- heat initiated if temperature falls to 40°F in an unoccupied room, raising temperature to 46°F

Tamper-resistant grille

Dual motors for quiet operation

Durable, powder coat paint finish

Indoor coil frost sensor protects the compressor to lengthen the life of the unit.

Random compressor restart protects electrical systems from overload when power is restored

2 YR. WARRANTY PARTS AND LABOR

5 YR. LIMITED WARRANTY

See warranty documentation for full details.

Energy Management Features

New line has improved energy efficiency ratings for increased energy savings

Owners and operators will appreciate the flexibility to set separate heat and cool range limits

Desk control ready allowing hotel owners to control units from a central location

Electronic defrost control ensures more run time in the efficient heat pump mode

Installation Features

Universal heaters with heat capacities determined by the power cord used with the unit; achieve up to 64 PTAC SKUs with 16 units by changing the power cord size

Indoor Air Quality

Fresh air damper control to bring in fresh outside air when desired

Washable, antimicrobial air filter

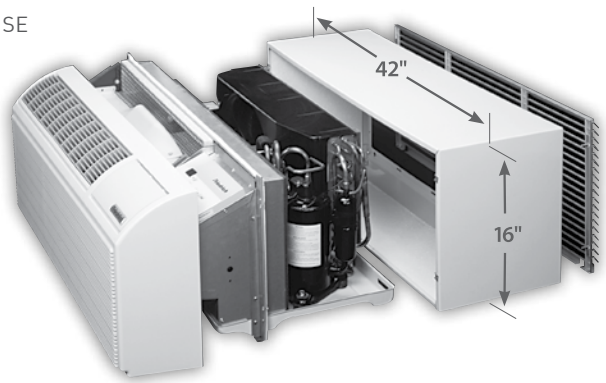
Maintenance Features

Service error code memory storage facilitates improved unit diagnostics.

Emergency heat override ensures heat mode operation even in the unlikely event of compressor failure

Maintenance friendly design means easy access to components for cleaning and repairs including lift-out air filters

FITS OTHER PTAC SLEEVES WITHOUT THE ADDED EXPENSE OF A BAFFLE KIT.



RECEPTACLES AND FUSE TYPES						
Voltage	230V			265V		
Amps	15	20	30	15	20	30
Heater Size	2.5 kW	3.5 kW	5.0 kW	2.5 kW	3.5 kW	5.0 kW
Receptacles						
NEMA# Receptacle	6-15R	6-20R	6-30R	7-15R	7-20R	7-30R
NEMA# Plug	6-15P	6-20P	6-30P	7-15P	7-20P	7-30P

IMPORTANT NOTE: SLEEVES ARE SOLD AND SHIPPED SEPARATELY TO ACCOMMODATE NEW CONSTRUCTION AND REPLACEMENT REQUIREMENTS.

PACKAGE TERMINAL AIR CONDITIONERS

SPECIFICATIONS

FRIEDRICH

PTAC Electric Heat models

	PDE07K		PDE09K		PDE12K		PDE15K	
PERFORMANCE DATA:								
Cooling Btu	7200/7000		9400/9200		11800/11600		14500/14200	
Cooling Watts	550/535		775/760		1015/1000		1390/1365	
Energy Efficiency Ratio, EER	13.0/13.0		12.1/12.1		11.6/11.6		10.4/10.4	
Moisture Removal (pints/hr)	1.7		2.1		2.7		3.1	
Sensible Heat Ratio	0.86		0.85		0.75		0.67	
ELECTRICAL DATA:								
Voltage (1 PHASE, 60 Hz)	230/208		230/208		230/208		230/208	
Volt Range	253-187		253-187		253-187		253-187	
Current (Amps)	2.7/2.9		3.7/3.9		4.9/5.1		6.2/6.7	
Power factor	0.97		0.97		0.97		0.97	
Compressor LRA	13.0		19.5		21.5		28.9	
Compressor RLA	2.5		3.5		4.7		5.9	
Outdoor Fan Motor, HP	0.080		0.080		0.086		0.086	
AIRFLOW DATA:								
Indoor CFM, HIGH	345/315		355/325		400/390		400/390	
Indoor CFM, LOW	270/255		300/275		325/310		325/310	
Vent CFM	75		75		75		75	
PHYSICAL DATA:								
Sleeve Dimensions (H x W x D)	16" x 42" x 13 3/4" (all models)							
Dimensions with Front (H x W x D)	16"x 42"x 21 1/2" (all models)							
Cut Out Dimensions (H x W x D)	16 1/4"x 42 1/4" (all models)							
Net Weight (lbs.)	106		115		119		121	
Shipping Weight (lbs.)	126		135		139		140	
R-410A CHARGE (oz)	23		24		36		36	
Dimensions with Packaging (inches)	17 7/8" x 45" x 25 1/4" (all models)							
LIST	**2,064.00**		**2,094.00**		**2,216.00**		**2,458.00**	

PTAC Heat Pump models

	PDH07K		PDH09K		PDH12K		PDH15K	
PERFORMANCE DATA:								
Cooling Btu	7200/7000		9400/9200		11800/11600		14500/14200	
Cooling Watts	550/535		775/760		1015/1000		1390/1365	
Energy Efficienct Ratio, EER	13.0/13.0		12.1/12.1		11.6/11.6		10.4/10.4	
Reverse Heating Btu	6000/5800		8300/8100		10600/10400		13300/13000	
Heating Watts	485/470		695/675		910/895		1255/1225	
COP	3.6/3.6		3.5/3.5		3.4/3.4		3.1/3.1	
Moisture Removal (pints/hr)	1.7		2.1		2.7		3.1	
SENSIBLE HEAT RATIO	0.86		0.85		0.75		0.67	
ELECTRICAL DATA:								
Voltage(1 PHASE, 60 Hz)	230/208		230/208		230/208		230/208	
Volt Range	253-187		253-187		253-187		253-187	
Current (Amps)	2.7/2.9		3.7/3.9		4.9/5.1		6.2/6.7	
Reverse Heat. Amps	2.4/2.6		3.4/3.2		4.2/4.7		6.2/6.7	
Power Factor	0.97		0.97		0.97		0.97	
Compressor LRA	13.0		19.5		21.5		28.9	
Compressor RLA	2.5		3.5		4.7		5.9	
Outdoor Fan Motor, HP	0.080		0.080		0.086		0.086	
AIRFLOW DATA:								
Indoor CFM, HIGH	345/315		355/325		400/390		400/390	
Indoor CFM, LOW	270/255		300/275		325/310		325/310	
VENT CFM	75		75		75		75	
PHYSICAL DATA:								
Sleeve Dimensions (H x W x D)	16" x 42" x 13 3/4" (all models)							
Dimensions with Front (H x W x D)	16"x 42"x 21 1/2" (all models)							
Cut Out Dimensions (H x W x D)	16 1/4"x 42 1/4" (all models)							
Net Weight (lbs.)	113		119		122		124	
Shipping Weight (lbs.)	133		139		141		144	
R-410A CHARGE (oz)	34		34		36		39	
Dimensions with Packaging (inches)	17 7/8" x 45" x 25 1/4" (all models)							
LIST	**2,211.00**		**2,246.00**		**2,363.00**		**2,610.00**	

Due to continuing research in new energy-saving technology, specifications are subject to change without notice.
Warranty limited to installations in the United States, Puerto Rico, Mexico and Canada only.
See warranty documentation for full details.

DDC CERTIFIED LAB PERFORMANCE TESTED ULCDTP

c UL us LISTED ROOM AIR CONDITIONERS 7839

AHRI CERTIFIED

AHRI CERTIFIED

PACKAGE TERMINAL AIR CONDITIONERS

OPTIONAL ACCESSORIES

WALL SLEEVE - PDXWSA

Galvanized steel is prepared in a state-of-the-art, multistep process for stronger paint adhesion, then powder coated with a polyester finish and cured in an oven for exceptional durability. The wall sleeve is insulated for thermal efficiency and noise reduction. 16" x 42" x 13 ¾"



LIST 290.50

STANDARD GRILLE - PXGA

Standard, stamped, anodized aluminum to resist chalking and oxidation.



LIST 117.10

DEEP WALL SLEEVE

PDXWS EXT

One piece extended wall sleeve for walls 13 ¼" -25 1/2" deep are available by special order



LIST -

DIGITAL REMOTE THERMOSTATS

RT6 Single stage cool, single stage heat for PDE models or single stage cool, dual stage heat for PDH model thermostat features high/low fan speed switch.

WRT1 Wireless, single stage, wall-mounted digital thermostat with two fan speeds. Features backlit display and multiple confguration modes.



RT6

LIST 234.20



WRT1

LIST 460.00

REMOTE THERMOSTAT ESCUTCHEON KIT

PDXRTA

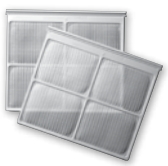
Kit contains ten escutcheons that can be placed over the factory control buttons when a remote wall mounted thermostat is used. The escutcheon directs the user to the wall thermostat for operation and retains the LED window to display error codes and diagnostic information.



LIST 14.70

PXFTA

10 pack of antimicrobial air filters



LIST 18.20

FRIEDRICHLINK® ENERGY MANAGEMENT THERMOSTATS

EMRT1 825.00
Wired thermostat with occupancy sensor.
EMWRT1 825.00
Wireless thermostat with occupancy sensor.
EMOCT 4,358.00
Online connection kit.
EMRAF 338.00
Remote access fee.



EMRT1, EMWRT1



EMOCT

CONDUIT KIT WITH JUNCTION BOX

PXCJA

Hard wire conduit kit with junction box for 208/230V and 265V units (subbase not required). Kit includes a means of quick disconnect for easy removal of the chassis.
*Required for 265V installations.



LIST 112.70

SLEEVE EXTENSION RETROFIT KIT

PXSE

2 ¼" sleeve extension attached to the room side of the sleeve to allow for the installation of a PD-series Friedrich PTAC in a 11 ½" deep T-series sleeve.



LIST 177.80

ARCHITECTURAL GRILLES

Architectural grilles that consist of heavy gauge 6063-T5 aluminum alloy

PXAA	Clear extruded aluminum.	251.50
PXSC	Available in custom colors.	312.00



PXAA

DECORATIVE SUBBASE (black)

PXSBA

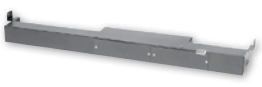
Provides unit support for walls less than six inches thick. Includes leveling legs, side filler panels and mounting brackets for electrical accessories. Accepts circuit breaker, power disconnect switch and conduit kit.



LIST 190.80

ELECTRICAL SUBBASE

Provides unit support for walls less than six inches thick. Includes leveling legs, side fller panels, mounting brackets, a plug-in receptacle and field-wiring access. The subbase also includes electrical knockouts for a power disconnect switch or circuit breaker.
(Please contact your local branch for more details)



CONDENSATE DRAIN KIT

PXDR10

Attaches to the bottom of the wall sleeve for internal draining of condensate or to the rear wall sleeve flange for external draining. Recommended for all units to remove excess condensate. Packaged in quantities of ten.



LIST 36.90

LATERAL DUCT ADAPTER

PDXDAA

Attaches to the Friedrich PTAC/PTHP unit to direct up to 35% of the total airfow to a second room. it includes duct plenum, front grille, 47" duct xtension, duct discharge grille, duct end cap and all necessary mounting hardware.

LIST 963.00

LATERAL DUCT EXTENSION

PDXDEA

Additional 3.5" H x 7" W x 47" L plenum for use with the LATERAL DUCT ADAPTER.



PDXDAA and PDXDEA ship together

POWER CORDS

PART	DESCRIPTION	LIST
PXPC23015A	LCDI 230V 15A Cord - 2.5 kW	112.70
PXPC23020A	LCDI 230V 20A Cord - 3 kW	112.70
PXPC23030	LCDI 230V 30A Cord - 5.0 kW	105.10
PXPC26515A	Non-LCDI 265V 15A Cord - 2.5 kW	108.40



SINGLE PACKAGE VERTICAL A/C & H/P

FRIEDRICH

Vert-I-Pak®
A simply better way to heat & cool multiple rooms.

Ideal for extended stay properties, suites, assisted living facilities, student housing and commercial spaces

COMMERCIAL GRADE



Condition multiple rooms

A single VERT-I-PAK unit may be ducted for flexible zone cooling in multiple rooms.

Quieter than exposed cooling options

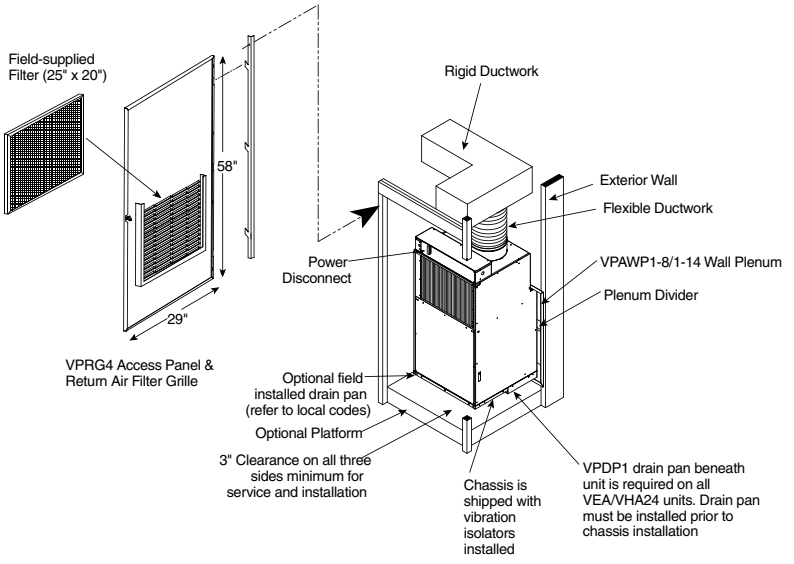
Because the VERT-I-PAK installs in a typical mechanical closet, units are quieter than other in-room air conditioning options. Even quieter operating sound levels may be achieved by insulating the closet.

Premium features and advantages

- Easy to install
- Higher efficiencies
- Quieter operation
- Certified by AHRI
- Diamonblue Advanced Corrosion Protection® standard on the coil

Typical Vert-I-Pak® installation.

VERT-I-PAK®



Optional accessories



ARCHITECTURAL LOUVER

VPAL2 and VPSC2

Extruded aluminum grille that attaches to the outdoor section of the wall plenum. Takes in fresh air and returns condensed air. VPSC2 can be ordered in custom colors

DIMENSIONS:
25 9/16" W x 31 1/16" H

Part #	LIST
VPAL2	425.00
VPSC2	538.00



RETURN AIR GRILLE/ACCESS PANEl

VPRG4: Hinged panel allows access to unit and return air flter. A feld-supplied flter (25" x 20") should be mounted on the inside grille. Panel can be mounted with return air openings high or low on the doc for optimum sound attenuation.

LIST 637.00

DIMENSIONS: 29" W x 58" H
CUTOUT DIMENSIONS: 27" W x 55 3/4" H



WALL PLENUM

VPAWP1-8, VPAWP1-14

Two-part sleeve that telescopes in and out. Sits inside the exterior wall penetration.
VPAWP1-8 telescopes from 5 1/2"–8"
VPAWP1-14 telescopes from 8"–14"
DIMENSIONS: 24 1/8" W x 30 3/8" H
CUTOUT DIMENSIONS:
24 5/8" W x 30 7/8" H

Part #	LIST
VPAWP1-8	490.00
VPAWP1-14	581.00



FIRST COMPANY SLEEVE ADAPTER

VPASA1: Single piece, welded adapter allows retroft into existing First Company SPXR-series single package vertical unit wall sleeve and louver.

LIST 702.00



SINGLE STAGE THERMOSTAT

RT6: Wired, single stage, wall-mounted digital thermostat with two fan speeds and backlight.

LIST 255.80



WRT1: Wireless, single stage, wall-mounted digital thermostat with two fan speeds and backlight.

LIST 460.00



ENERGY MANAGEMENT THERMOSTATS

EMRT1: Wired thermostat with occupancy sensor.

LIST 825.00

EMWRT1: Wireless thermostat with occupancy sensor.

LIST 825.00



DRAIN PAN

VPDP1: For VEA/VHA24 models. May be installed prior to chassis for easy installation/removal.

LIST 164.80

SINGLE PACKAGE VERTICAL A/C & H/P

FRIEDRICH

SPECIFICATIONS

MODEL	VEA09K	VEA12K	VEA18K	VEA24K	VHA09K	VHA12K	VHA18K	VHA24K
COOLING DATA								
COOLING BTU	9100/8900	12200/11900	17000/16500	23000/22700	9050/8900	12000/11700	17000/16800	23000/22800
POWER (W)	849/815	1154/1135	1889/1833	2421/2389	855/845	1186/1155	1886/1846	2527/2505
EER	10.7/10.7	10.6/10.6	9.0/9.0	9.5/9.5	10.7/10.7	10.3/10.3	9.1/9.1	9.1/9.1
SENSIBLE HEAT RATIO	0.74	0.74	0.70	0.70	0.74	0.74	0.70	0.70
HEATER SIZE	2.5/3.4/5.0	2.5/3.4/5.0	2.5/3.4/5.0	2.5/3.4/5.0/7.5/10.0	2.5/3.4/5.0	2.5/3.4/5.0	2.5/3.4/5.0	2.5/3.4/5.0/7.5/10.0
HEAT PUMP DATA								
HEATING BTU	—	—	—	—	8600/8400	11000/10800	16000/15000	20000/20000
COP @ 47F	—	—	—	—	3.0/3.0	3.0/3.0	3.0/3.0	3.0/3.0
HEATING POWER (W)	—	—	—	—	801/799	1055/1035	1560/1540	1953/1953
HEATING CURRENT (A)	—	—	—	—	3.5/3.9	4.5/4.7	7.5/8.2	8.5/9.4
ELECTRICAL DATA								
VOLTAGE (1 PHASE, 60 HZ)	230/208	230/208	230/208	230/208	230/208	230/208	230/208	230/208
VOLT RANGE	253-197	253-197	253-197	253-197	253-197	253-197	253-197	253-197
COOLING CURRENT (A)	3.8/4.1	5.1/5.3	8.1/8.6	10.0/10.4	3.8/3.9	4.5/4.7	8.2/8.6	10.6/10.9
AMPS L.R	21.0	29.5	42.0	46.0	21.0	30.0	42.0	46.0
AMPS F.L.	3.5	4.7	7.8	9.5	3.5	4.8	7.8	9.5
INDOOR MOTOR (HP)	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
INDOOR MOTOR (A)	1.2	1.2	1.2	1.94	1.2	1.2	1.2	1.94
OUTDOOR MOTOR (HP)	—	—	—	1/4	—	—	—	1/4
OUTDOOR MOTOR (A)	—	—	—	0.85	—	—	—	0.85
PHYSICAL								
DIMENSIONS (W X D X H)	23"X23"X32"	23"X23"X32"	23"X23"X32"	23"X23"X47"	23"X23"X32"	23"X23"X32"	23"X23"X32"	23"X23"X47"
NET WEIGHT (LBS)	114	124	144	167	114	125	144	167
SHIPPING WEIGHT (LBS)	125	135	155	220	125	136	155	220
TEST SETTING	LOW	LOW	HIGH	LOW	LOW	LOW	HIGH	LOW
R410A CHARGE (OZ)	41.5	45	48.1	65	38	39.5	48	65
AIRFLOW DATA								

INDOOR CFM*	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
.10" ESP	405	450	420	450	400	480	610	700	420	450	420	450	400	480	610	700
.15" ESP	375	420	405	425	375	465	585	670	405	425	405	425	375	465	585	670
.20" ESP	345	385	385	400	350	450	560	640	385	400	385	400	350	450	560	640
.25" ESP	325	365	355	375	330	390	535	610	355	375	355	375	330	390	535	610
.30" ESP	305	340	320	350	310	330	510	580	320	350	320	350	310	330	510	580
VENT CFM	60		60		60		60		60		60		60		60	
LIST	**3,701.00**		**3,883.00**		**4,441.00**		**6,276.00**		**4,367.00**		**5,116.00**		**6,751.00**		**7,988.00**	

NOTES:

COOLING STANDARDS: 95°F DB/75°F WB OUTDOOR, 80°F DB/67°F WB INDOOR
HEATING STANDARDS: 47°F DB/43°F WB OUTDOOR, 70°F DB/60°F WB INDOOR
NORMAL VALUE WET COIL @ .1" ESP.
RATED CFM AT LOW SPEED: VEA09/VHA09….325 VHA12/VEA12….390
VEA18/VHA18….400 VEA24/VHA24….610

DUE TO CONTINUING RESEARCH IN NEW ENERGY-SAVING TECHNOLOGY, SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

ULCDTP

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX13SA

Cooling Capacity : 17,000 - 57,000 BTU/h

Energy-Efficient
Split System Air Conditioner
Up to 14 SEER & 11.5 EER



■ *Standard Features*

- Single-speed PSC condenser fan motor
- Energy-efficient scroll compressor
- High-density foam compressor sound blanket
- Advanced Copeland® CoreSense™ technology
- Factory-installed filter drier
- Copper tube / enhanced aluminum fin coil
- Sweat connection service valves with easy access to gauge ports
- Contactor with lug connection
- AHRI Certified; ETL Listed

■ *Cabinet Features*

- Heavy-gauge, galvanized-steel cabinet with grille-style sound control top
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

6 YEAR UNIT REPLACEMENT LIMITED WARRANTY* 12 YEAR PARTS LIMITED WARRANTY* ETL LISTED Intertek AHRI CERTIFIED ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 6-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DS13SA SPECIFICATION

	DX13SA 0181A*	DX13SA 0241A*	DX13SA 0301A*	DX13SA 0361A*	DX13SA 0421A*	DX13SA 0481A*	DX13SA 0601A*	DX13SA 0611A*
CAPACITIES								
Nominal Cooling (BTU/h)	18,000	24,000	30,000	36,000	42,000	48,000	60,000	60,000
Decibels	71	71	72	74	74	74	77	72
COMPRESSOR								
RLA	9.0	13.5	12.8	14.1	17.9	19.9	25.0	26.4
LRA	48	58.3	64	77	112	109	134	134
CONDENSER FAN MOTOR								
Horsepower	1/8	1/8	1/8	1/4	1/4	1/4	1/4	1/4
FLA	0.7	0.7	0.7	1.2	1.3	1.3	1.3	1.3
REFRIGERATION SYSTEM								
Refrigerant Line Size								
Liquid Line Size ("O.D.)	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction Line Size ("O.D.)	¾"	¾"	¾"	⅞"	1⅛"	1⅛"	1⅛"	1⅛"
Refrigerant Connection Size								
Liquid Valve Size ("O.D.)	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction Valve Size ("O.D.) [4] [5]	¾"	¾"	¾"	¾" [4]	⅞" [5]	⅞" [5]	⅞" [5]	⅞" [5]
Valve Type	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge (oz.)	69	60	60	62	80	91	94	111
Shipped with Orifice Size (in.)	0.051	0.057	0.061	0.070	0.076	0.080	0.086	0.086
ELECTRICAL DATA								
Voltage-Phase (60 Hz)	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1
Minimum Circuit Ampacity[2]	12	17.6	16.7	18.8	23.7	26.2	32.6	34.3
Max. Overcurrent Protection[3]	20	30	25	30	40	45	50	60
Min / Max Volts	197/253	197/253	197/253	197/253	197/253	197/253	197/253	197/253
Electrical Conduit Size	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"
Equipment Weight (lbs)	102	115	115	118	171	175	184	211
Ship Weight (lbs)	117	128	132	135	189	193	202	233

[1] Line sizes denoted for 25' line sets, tested and rated in accordance with AHRI Standard 210/240. For other line-set lengths or sizes, refer to the installation & Operating instructions and/or the long line-set guidelines.

[2] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[3] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

[4] Installer will need to supply ¾" to ⅞" adapters for suction line connections.

[5] Installer will need to supply ⅞" to 1⅛" adapters for suction line connections.

NOTES

- Always check the S&R plate for electrical data on the unit being installed.
- Unit is charged with refrigerant for 15' of ⅜" liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX13SN

COOLING CAPACITY: 17,000 - 57,000 BTU/H

ENERGY-EFFICIENT
SPLIT SYSTEM AIR CONDITIONER
UP TO 14 SEER / 11.5 EER



■ *Standard Features*

- Energy-efficient compressor
- Single-speed PSC condenser fan motor
- Factory-installed filter drier
- Copper tube/aluminum fin coil
- Service valves with sweat connections and easy-access gauge ports
- AHRI Certified; ETL Listed

■ *Cabinet Features*

- Heavy-gauge galvanized-steel cabinet with louvered sound control top
- Steel louver coil guard
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

12 YEAR PARTS LIMITED WARRANTY

C ETL LISTED US Intertek

AHRI CERTIFIED

ISO 9001

ISO 14001 CERTIFIED

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX13SN SPECIFICATION

	DX13SN 0181A*	DX13SN 0241A*	DX13SN 0241B*	DX13SN 0301A*	DX13SN 0361A*	DX13SN 0421A*	DX13SN 0481A*	DX13SN 0601A*	DX13SN 0611A*
CAPACITIES									
Nominal Cooling (BTU/h)	18,000	24,000	23,000	28,400	33,600	40,000	46,000	57,000	56,500
Decibels	75	71	75	73	74	75	76	77	77
COMPRESSOR									
RLA	9.0	13.5	7.7	12.8	14.1	17.9	19.9	25.0	26.4
LRA	48	58.3	37	64	77	112	109	134	134
CONDENSER FAN MOTOR									
Horsepower	1/8	1/8	1/8	1/8	1/4	1/4	1/4	1/4	1/4
FLA	0.7	0.7	0.65	0.65	1.2	1.2	1.2	1.2	1.3
REFRIGERATION SYSTEM									
Refrigerant Line Size									
Liquid Line Size ("O.D.)	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction Line Size ("O.D.)	¾"	¾"	¾"	¾"	⅞"	1⅛"	1⅛"	1⅛"	1⅛"
Refrigerant Connection Size									
Liquid Valve Size ("O.D.)	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction Valve Size ("O.D.) [4] [5]	¾"	¾"	¾"	¾"	¾" [4]	⅞" [5]	⅞" [5]	⅞" [5]	⅞" [5]
Valve Type	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge (oz.)	69	64	60	60	62	80	91	94	111
Shipped with Orifice Size (in.)	0.051	0.055	0.055	0.061	0.070	0.076	0.080	0.086	0.086
ELECTRICAL DATA									
Voltage/ Phase (60 Hz)	208-230/ 1	208-230/ 1	208-230/ 1	208-230/ 1	208-230/ 1	208-230/ 1	208-230/ 1	208-230/ 1	208-230/ 1
Minimum Circuit Ampacity [2]	12	17.6	10.3	16.7	18.8	23.6	26.1	32.5	34.3
Max. Overcurrent Protection [3]	20 amps	30 amps	15 amps	25 amps	30 amps	40 amps	45 amps	50 amps	60 amps
Min / Max Volts	197/253	197/253	197/253	197/253	197/253	197/253	197/253	197/253	197/253
Electrical Conduit Size	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"
SHIP WEIGHT (LBS)	117	120	120	132	135	189	193	202	233

[1] Line sizes denoted for 25' line sets, tested and rated in accordance with AHRI Standard 210/240. For other line-set lengths or sizes, refer to the installation & Operating instructions and/or the long line-set guidelines.

[2] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[3] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

[4] Installer will need to supply ¾" to ⅞" adapters for suction line connections.

[5] Installer will need to supply ⅞" to 1⅛" adapters for suction line connections.

NOTES

- Always check the S&R plate for electrical data on the unit being installed.
- Unit is charged with refrigerant for 15' of ⅜" liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX14SA

COOLING CAPACITY : 18,000 - 60,000 BTU/H

ENERGY-EFFICIENT
SPLIT SYSTEM AIR CONDITIONER
UP TO 15 SEER & 12.5 EER



■ *Standard Features*

- Energy-efficient scroll compressor
- High-density foam compressor sound blanket
- Advanced Copeland® CoreSense™ technology
- Single-Speed PSC condenser fan motor
- Factory-installed filter drier
- Copper tube / enhanced aluminum fin coil
- Sweat connection service valves with easy access to gauge ports
- Contactor with lug connection
- AHRI Certified; ETL Listed

■ *Cabinet Features*

- Heavy-gauge, galvanized-steel cabinet with grille-style sound control top design
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

6 YEAR UNIT REPLACEMENT LIMITED WARRANTY* 12 YEAR PARTS LIMITED WARRANTY*

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 6-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX14SA SPECIFICATION

DX14SN

COOLING CAPACITY: 18,000 - 60,000 BTU/H

ENERGY-EFFICIENT
SPLIT SYSTEM AIR CONDITIONER
UP TO 15 SEER AND 12.2 EER



■ *Standard Features*

- Energy-efficient compressor
- Single-speed PSC condenser fan motor
- Factory-installed filter drier
- Copper tube/aluminum fin coil
- Service valves with sweat connections and easy-access gauge ports
- AHRI Certified; ETL Listed

■ *Cabinet Features*

- Heavy-gauge galvanized-steel cabinet with louvered sound control top
- Steel louver coil guard
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX14SA

COOLING CAPACITY : 18,000 - 60,000 BTU/H

ENERGY-EFFICIENT
SPLIT SYSTEM AIR CONDITIONER
UP TO 15 SEER & 12.5 EER



■ *Standard Features*

- Energy-efficient scroll compressor
- High-density foam compressor sound blanket
- Advanced Copeland® CoreSense™ technology
- Single-Speed PSC condenser fan motor
- Factory-installed filter drier
- Copper tube / enhanced aluminum fin coil
- Sweat connection service valves with easy access to gauge ports
- Contactor with lug connection
- AHRI Certified; ETL Listed

■ *Cabinet Features*

- Heavy-gauge, galvanized-steel cabinet with grille-style sound control top design
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

12 YEAR PARTS LIMITED WARRANTY

C ETL LISTED US Intertek

AHRI CERTIFIED

ISO 9001

ISO 14001 CERTIFIED

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX14SN SPECIFICATION

	DX14SN 0181A*	DX14SN 0181B*	DX14SN 0191A*	DX14SN 0241A*	DX14SN 0241B*	DX14SN 0251B*	DX14SN 0301A*
CAPACITIES							
Nominal Cooling (BTU/h)	18,000	18,000	18,000	24,000	24,000	24,000	30,000
SEER / EER	14 / 12	14 / 12	14 / 12.2	14 / 12	14 / 12	14 / 12.2	14 / 12
Decibels	71	72	71	71	74	71	72
COMPRESSOR							
RLA	9.0	6.0	9.0	10.9	7.7	13.5	12.8
LRA	48	37.5	47.5	62.9	38	58.3	64
CONDENSER FAN MOTOR							
Horsepower	1/8	1/8	1/8	1/12	1/8	1/8	1/6
FLA	0.7	0.7	0.7	0.6	0.7	0.7	0.95
REFRIGERATION SYSTEM							
Refrigerant Line Size [1]							
Liquid Line Size ("O.D.)	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction Line Size ("O.D.)	¾"	¾"	¾"	¾"	¾"	¾"	¾"
Refrigerant Connection Size							
Liquid Valve Size ("O.D.)	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction Valve Size ("O.D.) [4 5]	¾"	¾"	¾"	¾"	¾"	¾"	¾"
Valve Type	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge (oz.)	68	75	68	70	72	75	80
Shipped with Orifice Size (in.)	0.052	0.051	0.053	0.057	0.057	0.057	0.065
ELECTRICAL DATA							
Voltage-Phase (60 Hz)	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1
Minimum Circuit Ampacity [2]	12	8.2	12	14.2	10.3	17.6	17.0
Max. Overcurrent Protection [3]	20 amps	15 amps	20 amps	25 amps	15 amps	30 amps	25 amps
Min / Max Volts	197/253	197/253	197/253	197/253	197/253	197/253	197/253
Electrical Conduit Size	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"
EQUIPMENT WEIGHT (LBS)	131	126	131	131	126	136	162
SHIP WEIGHT (LBS)	146	141	146	146	141	153	180

[1] Line sizes denoted for 25' line sets, tested and rated in accordance with AHRI Standard 210/240. For other line-set lengths or sizes, refer to the installation & operating instructions and/or the long line-set guidelines.

[2] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[3] Must use time-delay fuses or HACR-type circuit breakers of the SNme size as noted.

[4] Installer will need to supply ¾" to ⅞" adapters for suction line connections.

[5] Installer will need to supply ⅞" to 1⅛" adapters for suction line connections.

NOTES

- Always check the S&R plate for electrical data on the unit being installed.
- Unit is charged with refrigerant for 15' of ⅜" liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX16SA

Cooling Capacity: 17,000 - 57,000 BTU/h

High-Efficiency
Split System Air Conditioner
Up to 16 SEER / 1½ to 5 Tons



■ *Standard Features*

- High-efficiency Copeland® scroll compressor
- High-density foam compressor sound blanket
- Advanced Copeland® CoreSense™ Technology
- Single-speed PSC condenser fan motor
- Factory-installed filter drier
- Copper tube / enhanced aluminum fin coil
- Sweat connection service valves with easy access to gauge ports
- AHRI Certified; ETL Listed

■ *Cabinet Features*

- Heavy-gauge galvanized steel cabinet with grille-style sound control top
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Rust-resistant coated screws
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

ASK ABOUT ENERGY STAR

Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR® criteria. Ask your contractor for details or visit www.energystar.gov.

6 YEAR UNIT REPLACEMENT LIMITED WARRANTY*

12 YEAR PARTS LIMITED WARRANTY*

Intertek

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 6-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX16SA SPECIFICATION

	DX16SA 0181A*	DX16SA 0241A*	DX16SA 0301A*	DX16SA 0311A*	DX16SA 0361A*	DX16SA 0371A*	DX16SA 0421A*	DX16SA 0481A*	DX16SA 0601A*	DX16SA 0611A*
CAPACITIES										
Nominal Cooling (BTU/h)	18,000	23,600	29,000	30,000	34,800	36,000	42,000	45,500	54,000	57,000
Decibels	71.5	71.5	71.5	71.5	71.5	73	73	73	73	73
COMPRESSOR										
RLA	9.0	13.5	12.8	12.8	14.1	15.4	17.9	17.9	21.4	25
LRA	46	58.3	64	64	77	83.9	112	112	135	134
CONDENSER FAN MOTOR										
Horsepower	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/4	1/3	1/4
FLA	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.30	2.80	1.30
REFRIGERATION SYSTEM										
Refrigerant Line Size										
Liquid Line Size ("O.D.)	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction Line Size ("O.D.)	¾"	¾"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"
Refrigerant Connection Size										
Liquid Valve Size ("O.D.)	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction Valve Size ("O.D.)	¾"	¾"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"
Valve Type	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge (oz.)	78	70	78	94	94	93	110	121	237	125
ELECTRICAL DATA										
Voltage / Phase (60 Hz)	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1
Minimum Circuit Ampacity [2]	12.2	17.8	17.0	17.0	18.6	20.2	23.3	23.7	28.3	32.6
Max. Overcurrent Protection [3]	20	30	25	25	30	35	40	40	50	50
Min / Max Volts	197/253	197/253	197/253	197/253	197/253	197/253	197/253	197/253	197/253	197/253
Electrical Conduit Size	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"
EQUIPMENT WEIGHT (LBS)	145	142	149	161	162	182	206	219	279	291
SHIP WEIGHT (LBS)	163	160	167	179	180	204	228	241	301	314
ENERGY STAR® CERTIFIED ^										NO

^ ENERGY STAR NOTES

- Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR criteria. Ask your contractor for details or visit www.energystar.gov.
- The www.energystar.gov website provides up-to-date system combinations certified to meet ENERGY STAR requirements. See Page 24 for all ENERGY STAR certified combinations as of this document's revision date.

[1] Tested and rated in accordance with AHRI Standard 210/240

[2] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[3] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

NOTES

- Always check the S&R plate for electrical data on the unit being installed.
- Installer will need to supply ⅞" to 1⅛" adapters for suction line connections.
- Unit is charged with refrigerant for 15' of ⅜" liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.
- Installation of these units requires the specified TXV Kit to be installed on the indoor coil.
  THE SPECIFIED TXV IS DETERMINED BY THE OUTDOOR UNIT NOT THE INDOOR COIL.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX16TC

High-Efficiency, ComfortNet™-Compatible, Split System Air Conditioner Up to 17 SEER



Standard Features

- Two-Stage Copeland® Ultra-Tech scroll compressor
- High-density foam compressor sound blanket
- ComfortNet™ Communications System compatible
- Advanced Copeland® CoreSense™ technology
- High-efficiency PSC or ECM condenser fan motor
- In communicating mode, two low-voltage wires to outdoor unit required
- Diagnostic indicator lights and fault code storage
- Color-coded terminal strip
- Factory-installed filter drier
- Coil and ambient temperature sensors
- Sweat connection service valves with easy access to gauge ports
- AHRI Certified; ETL Listed

ENERGY STAR

Cabinet Features

- Heavy-gauge galvanized-steel cabinet with grille-style sound control top design
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

12 YEAR UNIT REPLACEMENT LIMITED WARRANTY

12 YEAR PARTS LIMITED WARRANTY

ComfortNet CONTROL SYSTEM

C ETL LISTED US Intertek

AHRI CERTIFIED

ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX16TC SPECIFICATION

	DX16TC 0241C*	DX16TC 0361C*	DX16TC 0481C*	DX16TC 0601C*
COOLING CAPACITY				
Nominal Cooling (BTU/h)	24,000	36,000	48,000	60,000
Decibels	71/70	71/70	72/71	74/70
COMPRESSOR				
RLA	10.0	14.8	20.4	22.9
LRA	62.9	84.2	122.1	147.2
CONDENSER FAN MOTOR				
Horsepower (RPM)	1/6	1/6	1/6	1/3
FLA	1.1	1.2	1.2	2.8
REFRIGERATION SYSTEM				
Refrigerant Line Size				
Liquid Line Size ("O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Line Size ("O.D.)	¾"	⅞"	1⅛"	1⅛"
Refrigerant Connection Size				
Liquid Valve Size ("O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Valve Size ("O.D.)	¾"	¾"	⅞"	⅞"
Valve Connection Type	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge (oz.)	92	114	177	191
ELECTRICAL DATA				
Voltage-Phase-Hz	208/230-1	208/230-1-60	208/230-1-60	208/230-1-60
Minimum Circuit Ampacity [2]	13.6	19.7	26.7	31.4
Max. Overcurrent Protection [3]	20	30	45	50
Min / Max Volts	197/253	197/253	197/253	197/253
Power Supply	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"
EQUIPMENT WEIGHT (LBS)	180	201	263	304
SHIP WEIGHT (LBS)	197	223	285	326
ENERGY STAR® CERTIFIED				

^ ENERGY STAR NOTES

- Proper sizing and installation of equipment is critical to achieving optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR criteria. Ask your contractor for details or visit www.energystar.gov.
- The www.energystar.gov website provides up-to-date system combinations certified to meet ENERGY STAR requirements. See Pages 20 for all ENERGY STAR certified combinations as of this document's revision date.

[1] Tested and rated in accordance with AHRI Standard 210/240

[2] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[3] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

NOTES

- Always check the S&R plate for electrical data on the unit being installed.
- Installer will need to supply ⅞" to 1⅛" adapters for suction line connections.
- Unit is charged with refrigerant for 15' of ⅜" liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.
- Installation of these units requires the specified TXV Kit to be installed on the indoor coil. THE SPECIFIED TXV IS DETERMINED BY THE OUTDOOR UNIT NOT THE INDOOR COIL.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX18TC

Cooling Capacity: 24,000 - 60,000 BTU/h

High-Efficiency, ComfortNet™-Compatible, Split System Air Conditioner Up to 19 SEER



■ *Standard Features*

- Two-Stage Copeland® Ultra-Tech scroll compressor
- High-density foam compressor sound blanket
- ComfortNet™ Communications System compatible
- Advanced Copeland® CoreSense™ technology
- In communicating mode, only two low-voltage wires to outdoor unit required
- Diagnostic indicator lights and fault code storage
- Color-coded terminal strip
- Quiet ECM outdoor fan motor
- Fully charged for 15' of tubing length
- Factory-installed filter drier
- Coil and ambient temperature sensors
- Sweat connection service valves with easy access to gauge ports
- AHRI Certified; ETL Listed

ASK ABOUT ENERGY STAR

Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR® criteria. Ask your contractor for details or visit www.energystar.gov.

■ *Cabinet Features*

- Heavy-gauge galvanized-steel cabinet with grille-style sound control top design
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

12 YEAR UNIT REPLACEMENT LIMITED WARRANTY

12 YEAR PARTS LIMITED WARRANTY

ComfortNet CONTROL SYSTEM

C ETL LISTED US Intertek

AHRI CERTIFIED

ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX18TC SPECIFICATION

	DX18TC 0241B*	DX18TC 0361B*	DX18TC 0481B*	DX18TC 0601B*
COOLING CAPACITY				
Nominal Cooling (BTU/h)	24,000	36,000	48,000	60,000
Decibels	71/68	71/69	74/69	74/70
COMPRESSOR				
RLA	10.0	14.8	20.4	22.9
LRA	62.9	84.2	122.1	147.2
CONDENSER FAN MOTOR				
Horsepower (RPM)	⅓	⅓	⅓	⅓
FLA	2.80	2.80	2.80	2.80
REFRIGERATION SYSTEM				
Refrigerant Line Size				
Liquid Line Size (“O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Line Size (“O.D.)	¾"	⅞"	1⅛"	1⅛"
Refrigerant Connection Size				
Liquid Valve Size (“O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Valve Size (“O.D.)	¾"	¾"	⅞"	⅞"
Valve Connection Type	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge (oz.)	135	133	204	191
Expansion Device	TXV	TXV	TXV	TXV
Superheat at Service Valve	7-9°F	7-9°F	7-9°F	7-9°F
Subcooling at Service Valve	5-7°F	5-7°F	5-7°F	5-7°F
ELECTRICAL DATA				
Voltage-Phase-Hz	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60
Minimum Circuit Ampacity [1]	15.3	21.3	28.3	31.4
Max. Overcurrent Protection [2]	25	35	45	50
Min / Max Volts	197 / 253	197 / 253	197 / 253	197 / 253
Electrical Conduit Size	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"
EQUIPMENT WEIGHT (LBS)	214	216	276	304
SHIP WEIGHT (LBS)	236	238	298	326
ENERGY STAR® CERTIFIED ^	Most Efficient 2018 ENERGY STAR www.energystar.gov	Most Efficient 2018 ENERGY STAR www.energystar.gov	Most Efficient 2018 ENERGY STAR www.energystar.gov	ENERGY STAR

^ ENERGY STAR NOTES

- Products that are recognized as the Most Efficient of ENERGY STAR® in 2018 prevent greenhouse gas emissions by meeting rigorous energy efficiency performance levels set by the U.S. Environmental Protection Agency.
- Proper sizing and installation of equipment is critical to achieving optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR criteria. Ask your contractor for details or visit www.energystar.gov.
- The www.energystar.gov website provides up-to-date system combinations certified to meet ENERGY STAR requirements. See Page 20 for all ENERGY STAR certified combinations as of this document’s revision date.

[1] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[2] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

NOTES

- Always check the S&R plate for electrical data on the unit being installed.
- Installer will need to supply ¾” to 1⅛” adapters for suction line connections.
- Unit is charged with refrigerant for 15’ of ⅜” liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.
- Installation of these units that require a TXV Kit to be installed on the indoor coil.
- PLEASE NOTE: the specified TXV is determined by the outdoor unit, not the indoor coil.

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX20VC

UP TO 23 SEER
2 TO 5 TONS

HIGH-EFFICIENCY, COMFORTNET™-COMPATIBLE, VARIABLE-SPEED, INVERTER DRIVE SPLIT SYSTEM AIR CONDITIONER



Standard Features

- Daikin variable-speed swing and scroll compressors
- High-density foam compressor sound blanket
- *ComfortNet™* Communications System compatible
- Daikin control algorithmic logic
- In communicating mode, only two low-voltage wires to outdoor unit required
- Diagnostic indicator lights, seven-segment LED display, and fault code storage
- Daikin Inside intelligence for diagnostics
- Field-selectable boost mode increases compressor speed during unusually high loads
- Quiet ECM outdoor fan motor
- Field-installed bi-flow filter drier
- Coil and ambient temperature sensors
- Suction pressure transducer
- Sweat connection service valves with easy access to gauge ports
- AHRI Certified; ETL Listed

ASK ABOUT ENERGY STAR

Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR® criteria. Ask your contractor for details or visit www.energystar.gov.

Cabinet Features

- Heavy-gauge galvanized-steel cabinet with grille-style sound control top design
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited

DAIKIN RESIDENTIAL AIR CONDITIONERS

DAIKIN

DX20VC SPECIFICATION

	DX20VC 0241B*	DX20VC 0361B*	DX20VC 0481B*	DX20VC 0601B*
Cooling Capacity				
Max. Cooling (BTU/h)	23,600	34,600	45,500	53,000
Compressor				
Type	Swing	Swing	Swing	Scroll
RLA	12.70	18.10	27.60	28.60
Condenser Fan Motor				
Horsepower (HP)	½ HP	½ HP	½ HP	½ HP
FLA	2.5	2.5	2.5	2.5
Refrigeration System				
Refrigerant Line Size				
Liquid Line Size ("O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Line Size ("O.D.)	¾"	⅞"	1⅛"	1⅛"
Refrigerant Connection Size				
Liquid Valve Size ("O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Valve Size ("O.D.)	¾"	⅞"	⅞"	⅞"
Valve Connection Type	Front-Seated	Front-Seated	Ball Valve	Ball Valve
Refrigerant Charge (oz.)	152	154	246	246
Superheat at Service Valve	7-9°F	7-9°F	7-9°F	7-9°F
Subcooling at Service Valve	7-9°F	7-9°F	7-9°F	7-9°F
Electrical Data				
Voltage-Phase (60 Hz)	208/230-1	208/230-1	208/230-1	208/230-1
Minimum Circuit Ampacity [1]	15.2	20.6	30.1	31.1
Max. Overcurrent Protection [2]	20	25	35	35
Min / Max Volts	197/253	197/253	197/253	197/253
Electrical Conduit Size	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"
Equipment Weight (lbs)	210	221	321	321
Ship Weight (lbs)	241	253	353	353
ENERGY STAR® Certified ^	Most Efficient 2019 ENERGY STAR www.energystar.gov	Most Efficient 2019 ENERGY STAR www.energystar.gov	Most Efficient 2019 ENERGY STAR www.energystar.gov	Most Efficient 2019 ENERGY STAR www.energystar.gov

^ Energy Star Notes

- Products that are recognized as the Most Efficient of ENERGY STAR® in 2019 prevent greenhouse gas emissions by meeting rigorous energy efficiency performance levels set by the U.S. Environmental Protection Agency.
- Proper sizing and installation of equipment is critical to achieving optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR criteria. Ask your contractor for details or visit www.energystar.gov.
- The www.energystar.gov website provides up-to-date system combinations certified to meet ENERGY STAR requirements. See Page 23 for all ENERGY STAR certified combinations as of this document's revision date.

** Inverter/Controller limited to less than 1 Amp

[1] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[2] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

Notes

- Always check the S&R plate for electrical data on the unit being installed.
- Installer will need to supply ⅞" to 1⅛" adapters for suction line connections.
- Unit is charged with refrigerant for 15' of ⅜" liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ14SA

Cooling Capacity: 18,000 - 60,000 BTU/h
Heating Capacity: 18,000 - 60,000 BTU/h

Energy-Efficient
Split System Heat Pump
Up to 15 SEER & 9.0 HSPF



Standard Features

- Energy-efficient scroll compressor
- High-density foam compressor sound blanket
- Time-delay technology to ensure quiet reliable defrost
- Factory-installed bi-flow liquid line filter drier
- Factory-installed suction line accumulator
- Factory-installed compressor crankcase heater
- Factory-installed high capacity muffler
- Single-speed condenser fan motor
- Copper tube/enhanced aluminum fin coil
- High- and low-pressure switches
- AHRI Certified; ETL Listed

Cabinet Features

- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- Service valves with sweat connections and easy access to gauge ports
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

ENERGY STAR® and the ENERGY STAR mark are registered trademarks owned by the U.S. Environmental Protection Agency. ENERGY STAR products are third-party certified by an EPA-recognized Certification Body. Products that earn the ENERGY STAR prevent greenhouse gas emissions by meeting strict energy efficiency guidelines set by the U.S. Environmental Protection Agency.

This product meets ENERGY STAR requirements when appropriate coil components are used. Ask your contractor for details or visit www.energystar.gov.

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 6-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ14SA SPECIFICATION

	DZ14SA 0181K*	DZ14SA 0241K*	DZ14SA 0301K*	DZ14SA 0361K*	DZ14SA 0421K*	DZ14SA 0481K*	DZ14SA 0491K*	DZ14SA 0601K*
NOMINAL CAPACITIES								
Cooling (BTU/h)	18,000	24,000	30,000	36,000	42,000	48,000	48,000	60,000
Heating (BTU/h)	18,000	24,000	30,000	36,000	42,000	48,000	48,000	60,000
SEER / EER	14/11.5	14/11.5	14/11.5	14/11.5	14/11.5	14/11.5	14/11.5	14/11.5
Decibels	71	71	73	73	74	74	75	75
COMPRESSOR								
RLA	9.0	10.9	13.5	15.4	16.7	18.5	19.9	26.4
LRA	47.5	62.9	72.5	83.9	109.0	124.0	109.0	134.0
Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
CONDENSER FAN MOTOR								
Horsepower	1/6	1/6	1/6	1/6	1/6	1/4	1/4	1/4
FLA	0.95	0.95	0.95	0.95	1.1	1.3	1.5	1.3
REFRIGERATION SYSTEM								
Refrigerant Line Size[1]								
Liquid Line Size ("O.D.)	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction Line Size ("O.D.)	¾"	¾"	¾"	⅞"	1⅛"	1⅛"	1⅛"	1⅛"
Refrigerant Connection Size								
Liquid Valve Size ("O.D.)	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction Valve Size ("O.D.)	¾"	¾"	¾"	¾"	⅞"	⅞"	⅞"	⅞"
Valve Connection Type	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge (oz.)	108	108	108	115	153	157	192	205
ELECTRICAL DATA								
Volts/Phase (60 Hz)	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1
Minimum Circuit Ampacity [2]	12.2	14.6	17.8	20.2	22.0	24.4	26.4	34.3
Max. Overcurrent Protection [3]	20	25	30	35	35	40	45	60
Min / Max Volts	197 / 253	197 / 253	197 / 253	197 / 253	197 / 253	197 / 253	197 / 253	197 / 253
Electrical Conduit Size	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"
EQUIPMENT WEIGHT (LBS)	143	143	171	173	191	226	273	277
SHIP WEIGHT (LBS)	154	154	182	184	207	237	288	292
ENERGY STAR® CERTIFIED	NO				NO	NO	NO	NO

[1] Tested and rated in accordance with AHRI Standard 210/240

[2] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[3] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

NOTES

- Always check the S&R plate for electrical data on the unit being installed.
- Installer will need to supply ⅞" to 1⅛" adapters for suction line connections.
- Unit is charged with refrigerant for 15' of ⅜" liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.
- Installation of these units may require the specified TXV Kit to be installed on the indoor coil.
  THE SPECIFIED TXV IS DETERMINED BY THE OUTDOOR UNIT NOT THE INDOOR COIL.

ENERGY STAR NOTE

This product meets ENERGY STAR requirements when appropriate coil components are used. Ask your contractor for details or visit www.energystar.gov. The www.energystar.gov website provides up-to-date system combinations certified to meet ENERGY STAR requirements. See Page 24 for all ENERGY STAR certified combinations as of this document's revision date.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ14SN

Cooling Capacity: 18,000 - 60,000 BTU/h
Heating Capacity: 18,000 - 60,000 BTU/h

Energy-Efficient
Split System Heat Pump
Up to 15 SEER & 9.0 HSPF



■ *Standard Features*

- Energy-efficient compressor
- Time-delay technology to ensure quiet reliable defrost
- Factory-installed bi-flow liquid line filter drier
- Factory-installed suction line accumulator
- Factory-installed compressor crankcase heater
- Factory-installed high-capacity muffler
- Single-speed condenser fan motor
- Copper tube/enhanced aluminum fin coil
- High- and low-pressure switches
- Service valves with sweat connections and easy access to gauge ports
- AHRI Certified; ETL Listed

■ *Cabinet Features*

- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Heavy-gauge galvanized steel cabinet with louvered sound control top
- Steel louver coil guard
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

12 YEAR PARTS LIMITED WARRANTY

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration is not required in California or Quebec.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ14SN SPECIFICATION

	DZ14SN 0181A*	DZ14SN 0241A*	DZ14SN 0301A*	DZ14SN 0361A*	DZ14SN 0421A*	DZ14SN 0481A*	DZ14SN 0491A*	DZ14SN 0601A*
NOMINAL CAPACITIES								
Cooling (BTU/h)	18,000	24,000	30,000	36,000	42,000	48,000	48,000	60,000
Heating (BTU/h)	18,000	24,000	30,000	36,000	42,000	48,000	48,000	60,000
SEER / EER	14/11.5	14/11.5	14/11.5	14/11.5	14/11.5	14/11.5	14/11.5	14/11.5
Decibels	72	72	74	74	75	75	76	76
COMPRESSOR								
RLA	9.0	10.9	13.5	15.4	16.7	18.5	19.9	26.4
LRA	47.5	62.9	72.5	83.9	109.0	124.0	109.0	134.0
Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
CONDENSER FAN MOTOR								
Horsepower	1/6	1/6	1/6	1/6	1/6	1/4	1/6	1/4
FLA	0.95	0.95	0.95	0.95	1.1	1.3	1.1	1.3
REFRIGERATION SYSTEM								
Refrigerant Line Size[1]								
Liquid Line Size ("O.D.)	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction Line Size ("O.D.)	¾"	¾"	¾"	⅞"	1⅛"	1⅛"	1⅛"	1⅛"
Refrigerant Connection Size								
Liquid Valve Size ("O.D.)	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction Valve Size ("O.D.)	¾"	¾"	¾"	¾"	⅞"	¾"	⅞"	⅞"
Valve Connection Type	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge (oz.)	108	108	108	115	153	157	192	205
ELECTRICAL DATA								
Volts/Phase (60 Hz)	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1	208-230/1
Minimum Circuit Ampacity [2]	12.2	14.6	17.8	20.2	22.0	24.4	26.0	34.3
Max. Overcurrent Protection [3]	20	25	30	35	35	40	45	60
Min / Max Volts	197 / 253	197 / 253	197 / 253	197 / 253	197 / 253	197 / 253	197 / 253	197 / 253
Electrical Conduit Size	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"
EQUIPMENT WEIGHT (LBS)	143	143	171	173	191	226	273	277
SHIP WEIGHT (LBS)	154	154	182	184	207	237	288	292

[1] Tested and rated in accordance with ARI Standard 210/240

[2] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[3] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

NOTES

- Always check the S&R plate for electrical data on the unit being installed.
- Installer will need to supply ⅞" to 1⅛" adapters for suction line connections.
- Unit is charged with refrigerant for 15' of ⅜" liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.
- Installation of these units may require the specified TXV Kit to be installed on the indoor coil.
  THE SPECIFIED TXV IS DETERMINED BY THE OUTDOOR UNIT NOT THE INDOOR COIL.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ16SA

Cooling Capacity: 23,000 to 57,000 BTU/h
Heating Capacity: 22,600 to 57,000 BTU/h

Split-System Heat Pump
Up to 16 SEER & 9.5 HSPF



Standard Features

- High-efficiency Copeland® scroll compressor
- Advanced Copeland® CoreSense™ technology
- High density foam compressor sound blanket
- Time-delay technology to ensure quiet reliable defrost
- Factory-installed bi-flow liquid line filter drier
- Factory-installed suction line accumulator
- Factory-installed compressor crank case heater
- Factory-installed high capacity muffler
- High- and low-pressure switches
- Service valves with sweat connections and easy access to gauge ports
- Copper tube/enhanced aluminum fin coil
- Fully charged for 15' of tubing length
- AHRI Certified; ETL Listed

Cabinet Features

- Grille-style sound control top design
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Rust-resistant screws
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

ASK ABOUT ENERGY STAR

Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR® criteria. Ask your contractor for details or visit www.energystar.gov.

6 YEAR UNIT REPLACEMENT LIMITED WARRANTY*

12 YEAR PARTS LIMITED WARRANTY*

Intertek

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 6-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ16SA SPECIFICATION

	DZ16SA 0181B*	DZ16SA 0241B*	DZ16SA 0301B*	DZ16SA 0361B*	DZ16SA 0421B*	DZ16SA 0481B*	DZ16SA 0601B*
NOMINAL CAPACITIES							
Cooling (BTU/h)	18,000	24,000	30,000	36,000	42,000	48,000	60,000
Heating (BTU/h)	18,000	24,000	30,000	36,000	42,000	48,000	60,000
SEER / EER	16/13	16/13	16/13	16/13	16/13	16/13	16/12.5
Decibels	71	74	74	72	72	73	75
COMPRESSOR							
RLA	9.0	10.9	13.4	14.1	16.7	19.9	28.8
LRA	47.5	62.9	72.5	72.2	109.0	109.0	152.9
Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
CONDENSER FAN MOTOR							
Horsepower	1/6	1/6	1/6	1/4	1/4	1/4	1/6
FLA	0.95	1.1	1.1	1.3	1.2	1.3	1.0
REFRIGERATION SYSTEM							
Refrigerant Line Size[1]							
Liquid Line Size (“O.D.)	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
Suction Line Size (“O.D.)	3/4"	3/4"	3/4"	7/8"	1 1/8"	1 1/8"	1 1/8"
Refrigerant Connection Size							
Liquid Valve Size (“O.D.)	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
Suction Valve Size (“O.D.)	3/4"	3/4"	7/8”	7/8"	7/8”	7/8"	7/8"
Valve Connection Type	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge (oz.)	140	150	160	175	180	231	291
ELECTRICAL DATA							
Volts/Phase (60 Hz)	208/230	208/230	208/230	208/230	208/230	208/230	208/230
Minimum Circuit Ampacity [2]	12.2	14.7	18.0	18.9	22.1	26.2	37
Max. Overcurrent Protection [3]	20	25	30	30	35	45	60
Min / Max Volts	197/253	197/253	197/253	197/253	197/253	197/253	197/253
Electrical Conduit Size	1/2" or 3/4"	1/2" or 3/4"	1/2" or 3/4"	1/2" or 3/4"	1/2" or 3/4"	1/2" or 3/4"	1/2" or 3/4"
UNIT WEIGHTS							
Equipment Weight (lbs)	174	180	186	220	226	250	306
Shipping Weight (lbs)	189	200	206	240	237	270	326
ENERGY STAR® CERTIFIED [4]	ENERGY STAR	ENERGY STAR	ENERGY STAR	ENERGY STAR	ENERGY STAR	ENERGY STAR	NO

[1] Tested and rated in accordance with AHRI Standard 210/240.

[2] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes.

[3] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

[4] Proper sizing and installation of equipment is critical to achieving optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR criteria. Ask your contractor for details or visit www.energystar.gov.
The www.energystar.gov website provides up-to-date system combinations certified to meet ENERGY STAR requirements.
See Page 21 for all ENERGY STAR certified combinations as of this document’s revision date.

NOTES

- Always check the S&R plate for electrical data on the unit being installed.
- Installer will need to supply ⅞” to 1⅛” adapters for suction line connections.
- Unit is charged with refrigerant for 15’ of ⅜” liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.
- Installation of these units requires the specified TXV Kit to be installed on the indoor coil. THE SPECIFIED TXV IS DETERMINED BY THE OUTDOOR UNIT NOT THE INDOOR COIL.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ16TC

Cooling Capacity: 23,000 - 57,000 BTU/h
Heating Capacity: 23,000 - 57,000 BTU/h

High-Efficiency,
ComfortNet-Compatible,
Split System heat Pump
Up to 17 SEER & Up to 9.7 HSPF



■ *Standard Features*

- Two-Stage Copeland® UltraTech scroll compressor
- High-density foam compressor sound blanket
- ComfortNet™ Communications System compatible
- Advanced Copeland CoreSense™ Technology
- Efficient ECM condenser fan motor on 5-ton model
- Simple low-voltage wiring to outdoor unit in communicating mode
- Diagnostic indicator lights and storage of six fault codes
- Color-coded terminal strip for non-communicating set-up
- High- and low-pressure switches
- Time-delay technology to ensure quiet, reliable defrost
- Factory-installed bi-flow liquid-line filter drier
- Factory-installed suction-line accumulator
- Factory-installed compressor crankcase heater
- Factory-installed high-capacity muffler
- Factory-installed coil and ambient temperature sensors
- Sweat connection service valves with easy access to gauge ports
- AHRI Certified; ETL Listed

■ *Cabinet Features*

- Grille-style sound control top design
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR® criteria. Ask your contractor for details or visit www.energystar.gov.

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ16TC SPECIFICATION

	DZ16TC 0241C*	DZ16TC 0361C*	DZ16TC 0481C*	DZ16TC 0601C*
Capacities and Ratings				
Nominal Cooling (BTU/h)	24,000	36,000	48,000	60,000
Nominal Heating (BTU/h)	24,000	36,000	48,000	60,000
Decibels	73	73	75	75
Compressor				
RLA	10.0	14.8	20.4	22.9
LRA	62.9	84.2	122.1	147.2
Condenser Fan Motor				
Horsepower	1/5	1/5	1/5	1/3
FLA	1.0	1.0	1.0	2.8
Refrigeration System				
Refrigerant Line Size				
Liquid Line Size (“O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Line Size (“O.D.)	¾"	⅞"	1⅛"	1⅛"
Refrigerant Connection Size				
Liquid Valve Size (“O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Valve Size (“O.D.)	¾"	⅞"	⅞"	⅞"
Valve Connection Type	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge (oz.)	176	170	244	288
Electrical Data				
Volts -Phase (60 Hz)	208/230-1	208/230-1	208/230-1	208/230-1
Minimum Circuit Ampacity [2]	13.5	19.5	26.5	31.4
Max. Overcurrent Protection [3]	20	30	45	50
Min / Max Volts	197/253	197/253	197/253	197/253
Power Supply Conduit Size	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"
Equipment Weight (lbs)	215	240	291	313
Ship Weight (lbs)	240	266	316	339
ENERGY STAR Certified ^				

[1] Tested and rated in accordance with AHRI Standard 210/240

[2] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[3] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

Notes

- Always check the rating plate for electrical data on the unit being installed.
- Installer will need to supply ⅞” to 1⅛” adapters for suction line connections.
- Unit is charged with refrigerant for 15’ of ⅜” liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.
- Installation of these units requires the specified TXV Kit to be installed on the indoor coil.
  THE SPECIFIED TXV IS DETERMINED BY THE OUTDOOR UNIT, NOT THE INDOOR COIL.

^ ENERGY STAR Notes

- Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR® criteria. Ask your contractor for details or visit www.energystar.gov.
- The www.energystar.gov website provides up-to-date system combinations certified to meet ENERGY STAR requirements. See Page 22 for all ENERGY STAR-certified combinations as of this document’s revision date.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ18TC

Cooling Capacity: 23,000 - 56,500 BTU/h
Heating Capacity: 22,600 - 59,500 BTU/h

High-Efficiency, ComfortNet™-Compatible, Split System Heat Pump Up to 19 SEER & 10 HSPF



■ *Standard Features*

- Two-Stage Copeland® UltraTech scroll compressor
- High-density foam compressor sound blanket
- ComfortNet™ Communications System compatible
- Advanced Copeland CoreSense™ Technology
- Efficient, two-speed ECM condenser fan motor
- Simple low-voltage wiring to outdoor unit in communicating mode
- Diagnostic indicator lights and storage of six fault codes
- Color-coded terminal strip for non-communicating set-up
- High- and low-pressure switches
- Time-delay technology with short-cycle protection to ensure quiet, reliable defrost
- Factory-installed bi-flow liquid-line filter drier
- Factory-installed suction-line accumulator
- Factory-installed compressor crankcase heater
- Factory-installed high-capacity muffler
- Factory-installed coil and ambient temperature sensors
- AHRI Certified; ETL Listed

■ *Cabinet Features*

- Grille-style sound control top design
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Single panel access to controls with space provided for field-installed accessories
- Sweat connection service valves with easy access to gauge ports
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

ASK ABOUT ENERGY STAR

Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR® criteria. Ask your contractor for details or visit www.energystar.gov.

12 YEAR UNIT REPLACEMENT LIMITED WARRANTY* 12 YEAR PARTS LIMITED WARRANTY*

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ18TC SPECIFICATION

	DZ18TC 0241C*	DZ18TC 0361C*	DZ18TC 0481C*	DZ18TC 0601C*
Capacities and Ratings				
Nominal Cooling (BTU/h)	23,800	34,800	49,500	56,500
Nominal Heating (BTU/h)	23,000	35,000	51,000	59,500
Decibels	68	72	75	75
Compressor				
RLA	10.0	14.8	20.4	22.9
LRA	62.9	84.22	122.1	147.2
Condenser Fan Motor				
Horsepower	⅓	⅓	⅓	⅓
FLA	2.8	2.8	2.8	2.8
Refrigeration System				
Refrigerant Line Size				
Liquid Line Size (“O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Line Size (“O.D.)	⅞"	⅞"	1⅛"	1⅛"
Refrigerant Connection Size				
Liquid Valve Size (“O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Valve Size (“O.D.)	⅞"	⅞"	1⅛"	1⅛"
Valve Connection Type	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge (oz.)	187	219	308	288
Expansion Device	TXV	TXV	TXV	TXV
Superheat at Service Valve	7-9°F	7-9°F	7-9°F	7-9°F
Subcooling at Service Valve				
High Stage	8-10°F	8-10°F	8-10°F	8-10°F
Low Stage	5-7°F	5-7°F	5-7°F	5-7°F
Electrical Data				
Volts-Phase (60 Hz)	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60
Minimum Circuit Ampacity [2]	15.3	21.3	28.3	31.4
Max. Overcurrent Protection [3]	25	35	45	50
Min / Max Volts	197 / 253	197 / 253	197 / 253	197 / 253
Electrical Conduit Size	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"
Equipment Weight (lbs)	230	260	316	319
Ship Weight (lbs)	250	280	336	339
ENERGY STAR® Certified ^	Most Efficient 2019 ENERGY STAR www.energystar.gov	Most Efficient 2019 ENERGY STAR www.energystar.gov	ENERGY STAR	ENERGY STAR

[1] Tested and rated in accordance with AHRI Standard 210/240

[2] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[3] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

Notes

- Always check the rating plate for electrical data on the unit being installed.
- Installer will need to supply ⅞” to 1⅛” adapters for suction line connections.
- Unit is charged with refrigerant for 15’ of ⅜” liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.
- Installation of these units requires the specified TXV Kit to be installed on the indoor coil. THE SPECIFIED TXV IS DETERMINED BY THE OUTDOOR UNIT, NOT THE INDOOR COIL.

^ ENERGY STAR Notes

- Products that are recognized as the Most Efficient of ENERGY STAR® in 2019 prevent greenhouse gas emissions by meeting rigorous energy efficiency performance levels set by the U.S. Environmental Protection Agency.
- Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR® criteria. Ask your contractor for details or visit www.energystar.gov.
- The www.energystar.gov website provides up-to-date system combinations certified to meet ENERGY STAR requirements. See Page 22 for all ENERGY STAR-certified combinations as of this document’s revision date.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ18VC

Cooling Capacity: 22,400 - 53,000 BTU/h
Heating Capacity: 22,200 - 53,500 BTU/h

High-Efficiency, ComfortNet™-Compatible, Split System Heat Pump Up to 19 SEER & 10.0 HSPF



■ *Standard Features*

- Daikin variable-speed swing compressor
- High-density foam compressor sound blanket
- ***ComfortNet™*** Communications System compatible
- Daikin control algorithmic logic
- In communicating mode, only two low-voltage wires to outdoor unit required
- Diagnostic indicator lights, seven-segment LED display, and fault code storage
- Daikin Inside intelligence for diagnostics
- Three-speed quiet condenser fan motor
- Superheat automatic EEV control
- Field-selectable boost mode increases compressor speed during unusually high loads
- Coil and ambient temperature sensors
- Suction pressure transducer
- AHRI Certified; ETL Listed

■ *Cabinet Features*

- Grille-style sound control top design
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Heavy-gauge galvanized-steel cabinet
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- Sweat connection service valves with easy access to gauge ports
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (ABK-20 anchor bracket kits available.)

12 YEAR UNIT REPLACEMENT LIMITED WARRANTY* 12 YEAR PARTS LIMITED WARRANTY* Intertek AHRI CERTIFIED ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ18VC SPECIFICATION

	DZ18VC 0241A*	DZ18VC 0361A*	DZ18VC 0481A*	DZ18VC 0601A*
Capacities and Ratings				
Max. Cooling (BTU/h)	22,400	33,600	45,000	53,000
Max. Heating (BTU/h)	22,200	32,800	44,500	53,500
Compressor				
Type	Swing	Swing	Swing	Swing
RLA	12.7	19.8	27.6	31.10
Condenser Fan Motor				
Horsepower	1/7	1/7	1/8	1/4
FLA	1.0	1.0	1.0	1.8
Refrigeration System				
Refrigerant Line Size				
Liquid Line Size (“O.D.)	⅜"	⅜"	⅜"	3/8"
Suction Line Size (“O.D.)	¾"	⅞"	1⅛"	1⅛”
Refrigerant Connection Size				
Liquid Valve Size (“O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Valve Size (“O.D.)	¾"	⅞"	⅞"	⅞"
Valve Connection Type	Front-seated	Front-seated	Front-seated	Front-seated
Refrigerant Charge (oz.)	139	139	160	237
Superheat at Service Valve	Auto-control	Auto-control	Auto-control	Auto-control
Subcooling at Service Valve	11±1°F	14±1°F	9±1°F°F	10±1°F
Electrical Data				
Volts-Phase (60 Hz)	208-230/ 1	208-230/ 1	208-230/ 1	208-230/1/60Hz
Minimum Circuit Ampacity [2]	13.6	20.7	28.6	32.9
Max. Overcurrent Protection [3]	15	25	30	35
Min / Max Volts	197/253	197/253	197/253	197/253
Electrical Conduit Size	½" or ¾"	½” or ¾”	½” or ¾”	½” or ¾”
Equipment Weight (lbs)	172	172	220	270
Ship Weight (lbs)	201	201	247	297

[1] Tested and rated in accordance with AHRI Standard 210/240

[2] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[3] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

Notes

- Always check the S&R plate for electrical data on the unit being installed.
- Installer will need to supply ⅞” to 1⅛” adapters for suction line connections.
- Unit is charged with refrigerant for 15’ of ⅜” liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ20VC

Cooling Capacity: 23,800 - 52,500 BTU/h
Heating Capacity: 23,800 - 52,000 BTU/h

High-Efficiency, ComfortNet™-Compatible, Split System Heat Pump Up to 21 SEER



Standard Features

- Daikin variable-speed swing and scroll compressors
- High-density foam compressor sound blanket
- ***ComfortNet™*** Communications System compatible
- Daikin control algorithmic logic
- In communicating mode, only two low-voltage wires to outdoor unit required
- Diagnostic indicator lights, seven-segment LED display, and fault code storage
- Daikin Inside intelligence for diagnostics
- Field-selectable boost mode increases compressor speed during unusually high loads
- Quiet ECM outdoor fan motor
- Fully charged for 15' of tubing length
- Field-installed bi-flow filter drier
- Coil and ambient temperature sensors
- Suction pressure transducer
- Sweat connection service valves with easy access to gauge ports
- AHRI Certified; ETL Listed

Cabinet Features

- Grille-style sound control top design
- Custom Nickel Gray powder-paint finish
- 500-hour salt-spray tested
- Wire fan discharge grille
- Steel louver coil guard
- Heavy-gauge galvanized-steel cabinet
- Top and side maintenance access
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

ASK ABOUT ENERGY STAR

Proper sizing and installation of equipment is critical to achieving optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR® criteria. Ask your contractor for details or visit www.energystar.gov.

12 YEAR UNIT REPLACEMENT LIMITED WARRANTY * 12 YEAR PARTS LIMITED WARRANTY *

Intertek

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL HEAT PUMPS

DAIKIN

DZ20VC SPECIFICATION

	DZ20VC 0241B*	DZ20VC 0361B*	DZ20VC 0481B*	DZ20VC 0601B*
Capacities and Ratings				
Max Cooling (BTU/h)	23,800	35,400	46,500	52,500
Max Heating (BTU/h)	23,800	35,000	46,000	52,000
Compressor				
Type	Swing	Swing	Swing	Scroll
RLA	12.70	27.30	27.30	28.60
Condenser Fan Motor				
Horsepower	1/2	1/2	1/2	1/2
FLA	2.5	2.5	2.5	2.5
Refrigeration System				
Refrigerant Line Size				
Liquid Line Size (“O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Line Size (“O.D.)	¾"	⅞"	1⅛"	1⅛"
Refrigerant Connection Size				
Liquid Valve Size (“O.D.)	⅜"	⅜"	⅜"	⅜"
Suction Valve Size (“O.D.)	¾"	⅞"	⅞"	⅞"
Valve Connection Type	Ball Valve	Ball Valve	Ball Valve	Ball Valve
Refrigerant Charge (oz.)	165	272	272	242
Superheat at Service Valve	7-9°F	7-9°F	7-9°F	7-9°F
Subcooling at Service Valve	7-9°F	7-9°F	7-9°F	7-9°F
Electrical Data				
Volts-Phase (60 Hz)	208-230/1	208-230/1	208-230/1	208-230/1
Minimum Circuit Ampacity [2]	15.2	29.8	29.8	31.1
Max. Overcurrent Protection [3]	20	30	30	35
Min / Max Volts	197/253	197/253	197/253	197/253
Electrical Conduit Size	½" or ¾"	½" or ¾"	½" or ¾"	½" or ¾"
Equipment Weight (lbs)	217	291	291	333
Ship Weight (lbs)	243	318	318	360
ENERGY STAR® Certified	Most Efficient 2019	Most Efficient 2019	Most Efficient 2019	Most Efficient 2019

Energy Star Notes

- Products that are recognized as the Most Efficient of ENERGY STAR® in 2018 prevent greenhouse gas emissions by meeting rigorous energy efficiency performance levels set by the U.S. Environmental Protection Agency.
- Proper sizing and installation of equipment is critical to achieving optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR criteria. Ask your contractor for details or visit www.energystar.gov.
- The www.energystar.gov website provides up-to-date system combinations certified to meet ENERGY STAR requirements. See Page 26 for all ENERGY STAR certified combinations as of this document’s revision date.

[1] Tested and rated in accordance with ANSI/AHRI Standard 210/240

[2] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes

[3] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

Notes

- Always check the S&R plate for electrical data on the unit being installed.
- Installer will need to supply ⅞” to 1⅛” adapters for suction line connections.
- Unit is charged with refrigerant for 15’ of ⅜” liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure.

DAIKIN RESIDENTIAL FURNACES

DAIKIN

DM96VC



TWO-STAGE, VARIABLE-SPEED
ECM GAS FURNACE
UP TO 96% AFUE
HEATING INPUT: 40,000–120,000 BTU/H

Standard Features

- *ComfortNet™* communicating system compatible
- Heavy-duty stainless-steel tubular heat exchanger
- Stainless-steel secondary heat exchanger
- Two-stage gas valve provides quiet, economical heating
- Durable Silicon Nitride igniter
- Quiet two-speed induced draft blower
- Utilizes ComfortNet™ communicating, two-stage or single-stage thermostats
- Self-diagnostic control board with constant memory fault code history output to a dual 7-segment display
- Color-coded low-voltage terminals with provisions for electronic air cleaner and humidifier
- Efficient and quiet variable-speed airflow system gently ramps up or down according to heating or cooling demand
- Multiple continuous fan speed options offer quiet air circulation
- Auto-Comfort and enhanced dehumidification modes available
- All models comply with California 40 ng/J Low NOx emissions standard
- For installation in California's South Coast Air Quality Management District (SCAQMD) only: This furnace does not meet the SCAQMD Rule 1111 14 ng/J NOx emission limit, and thus is subject to a mitigation fee of up to $450. This furnace is not eligible for the SCAQMD Clean Air Furnace Rebate Program: www.CleanAirFurnaceRebate.com.
- AHRI Certified; ETL Listed

Cabinet Features

- Designed for multi-position installation — upflow, horizontal left or right
- Certified for direct vent (2-pipe) or non-direct vent (1-pipe)
- Easy-to-install top venting with optional side venting
- Convenient left or right connection for gas and electrical service
- Cabinet air leakage (QLeak) ≤ 2%
- Heavy-gauge steel cabinet with durable finish
- Fully insulated heat exchanger and blower section
- Airtight solid bottom or side return with easy-cut tabs for effortless removal in bottom air-inlet applications

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the Lifetime Heat Exchanger LimitedWarranty (good for as long as you own your home), the 12-Year Unit Replacement Limited Warranty and the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL FURNACES

DAIKIN

DM96VC SPECIFICATION

	DM96VC 0403BNA	DM96VC 0603BNA	DM96VC 0803BNA	DM96VC 0804CNA	DM96VC 1005CNA	DM96VC 1005DNA	DM96VC 1205DNA
HEATING DATA							
High Fire Input[1]	40,000	60,000	80,000	80,000	100,000	100,000	120,000
High Fire Output[1]	38,400	57,600	76,800	76,800	96,000	96,000	115,200
Low-Fire Steady-State Input[1]	28,000	42,000	56,000	56,000	70,000	70,000	84,000
Low-Fire Steady-State Output[1]	26,880	40,320	53,760	53,760	67,200	67,200	80,640
AFUE[2]	96	96	96	96	96	96	96
Temperature Rise Range (°F)	20 - 50	35 - 65	35 - 65	25 - 55	35 - 65	30 - 60	35 - 65
Vent Diameter[3]	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"
NO. OF BURNERS	2	3	4	4	5	5	6
CIRCULATOR BLOWER							
Available AC @ 0.5" ESP	1.5 - 3	1.5 - 3	1.5 - 3	1.5 - 4	2 - 5	2 - 5	2 - 5
Size (D x W)	10" x 8"	11" x 8"	11" x 8"	11" x 10"	11" x 10"	11" x 11"	11" x 11"
Horsepower @ 1075 RPM	½	1	½	¾	1	1	1
Speed	VS ECM	VS ECM	VS ECM	VS ECM	VS ECM	VS ECM	VS ECM
ELECTRICAL DATA							
Min. Circuit Ampacity[4]	7.8	7.8	7.8	10.6	14.4	14.4	14.4
Max. Overcurrent Device (amps)[5]	15	15	15	15	20	20	20
SHIPPING WEIGHT (LBS)	114	117	120	141	143	153	156

1 Natural Gas BTU/h

2 DOE AFUE based upon Isolated Combustion System (ICS)

3 Installer must supply one or two PVC pipes: one for combustion air (optional) and one for the flue outlet (required). Vent pipe must be either 2" or 3" in diameter, depending upon furnace input, number of elbows, length of run and installation (1 or 2 pipes). The optional Combustion Air Pipe is dependent on installation/code requirements and must be 2" or 3" diameter PVC.

4 Minimum Circuit Ampacity = (1.25 x Circulator Blower Amps) + ID Blower amps. Wire size should be determined in accordance with National Electrical Codes. Extensive wire runs will require larger wire sizes.

5 Maximum Overcurrent Protection Device refers to maximum recommended fuse or circuit breaker size. May use fuses or HACR-type circuit breakers of the same size as noted.

NOTES

- All furnaces are manufactured for use on 115 VAC, 60 Hz, single-phase electrical supply.
- Gas Service Connection ½" FPT
- Important: Size fuses and wires properly and make electrical connections in accordance with the National Electrical Code and/or all existing local codes.
- For bottom return: Failure to unfold flanges may reduce airflow by up to 18%. This could result in performance and noise issues.
- For servicing or cleaning, a 24" front clearance is required. Unit connections (electrical, flue and drain) may necessitate greater clearances than the minimum clearances listed above. In all cases, accessibility clearance must take precedence over clearances from the enclosure where accessibility clearances are greater.

DAIKIN RESIDENTIAL FURNACES

DAIKIN

DM97MC / DC97MC



MODULATING, VARIABLE-SPEED
ECM GAS FURNACE
UP TO 98% AFUE

Heating Input: 60,000–120,000 BTU/h

ComfortNet™ CONTROL SYSTEM

Most Efficient 2019
ENERGY STAR www.energystar.gov

ENERGY STAR® and the ENERGY STAR mark are registered trademarks owned by the U.S. Environmental Protection Agency. ENERGY STAR products are third-party certified by an EPA-recognized Certification Body. Products that are recognized as the Most Efficient of ENERGY STAR in 2019 prevent greenhouse gas emissions by meeting rigorous energy efficiency performance levels set by the U.S.Environmental Protection Agency.

Standard Features

- *ComfortNet™* communicating system compatible
- Heavy-duty stainless-steel tubular heat exchanger
- Stainless-steel secondary heat exchanger
- Self-calibrating modulating gas valve auto-configure for each installation
- Durable Silicon Nitride igniter
- Quiet variable-speed induced draft blower
- Utilizes ComfortNet™ communicating, two-stage or single-stage thermostats
- Self-diagnostic control board with constant memory fault code history output to a dual 7-segment display
- Color-coded low-voltage terminals with provisions for electronic air cleaner and humidifier
- Efficient and quiet variable-speed airflow system gently ramps up or down according to heating or cooling demand
- Multiple continuous fan speed options offer quiet air circulation
- Auto-Comfort and enhanced dehumidification modes available
- All models comply with California 40 ng/J Low NOx emissions standard
- For installation in California's South Coast Air Quality Management District (SCAQMD) only: This furnace does not meet the SCAQMD Rule 1111 14 ng/J NOx emission limit, and thus is subject to a mitigation fee of up to $450. This furnace is not eligible for the SCAQMD Clean Air Furnace Rebate Program: www.CleanAirFurnaceRebate.com.

Cabinet Features

- Designed for multi-position installation — DM97MC: upflow, horizontal left or right DC97MC: downflow, horizontal left or right
- Certified for direct vent (2-pipe) or non-direct vent (1-pipe)
- Easy-to-install top venting with optional side venting
- Convenient left or right connection for gas and electrical service
- Cabinet air leakage (Q_{Leak}) ≤ 2%
- Heavy-gauge steel cabinet with durable finish
- Fully insulated heat exchanger and blower section
- Airtight solid bottom or side return with easy-cut tabs for effortless removal in bottom air-inlet applications

* LIFETIME HEAT EXCHANGER LIMITED WARRANTY
* 12 YEAR UNIT REPLACEMENT LIMITED WARRANTY
* 12 YEAR PARTS LIMITED WARRANTY

C ETL LISTED US Intertek

AHRI CERTIFIED

ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the Lifetime Heat Exchanger Limited Warranty (good for as long as you own your home), the 12-Year Unit Replacement Limited Warranty and the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL FURNACES

DAIKIN

DM97MC / DC97MC SPECIFICATION

	DM97MC 0603BNA	DM97MC 0803BNA	DM97MC 0804CNA	DM97MC 1005CNA	DM97MC 1205DNA	DC97MC 0603BNA	DC97MC 0803BNA	DC97MC 0804CNA	DC97MC 1005CNA
HEATING DATA									
High Fire Input[1]	60,000	80,000	80,000	100,000	120,000	60,000	80,000	80,000	100,000
High Fire Output[1]	58,800	77,600	78,400	97,000	116,400	58,200	77,600	77,600	97,000
Low-Fire Steady-State Input[1]	30,000	40,000	40,000	50,000	60,000	30,000	40,000	40,000	50,000
Low-Fire Steady-State Output[1]	29,400	38,800	39,200	48,500	58,200	29,100	38,800	38,800	48,500
AFUE[2]	98	97	98	97	97	97	97	97	97
Temperature Rise Range (°F)	25 - 55	30 - 60	25 - 55	35 - 65	35 - 65	35 - 65	35 - 65	35 - 65	35 - 65
Vent Diameter[3]	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"
No. of Burners	3	4	4	5	6	3	4	4	5
CIRCULATOR BLOWER									
Available AC @ 0.5" ESP	1.5 - 3	1.5 - 3	1.5 - 4	2 - 5	2 - 5	1.5 - 3	1.5 - 3	1.5 - 4	2 - 5
Size (D x W)	11" x 8"	11" x 8"	11" x 10"	11" x 10"	11" x 11"	11" x 8"	11" x 8"	11" x 10"	11" x 10"
Horsepower @ 1075 RPM	½	½	¾	1	1	½	½	¾	1
Speed	VS ECM	VS ECM	VS ECM	VS ECM	VS ECM	VS ECM	VS ECM	VS ECM	VS ECM
FILTER SIZE (IN²)									
Permanent	739	766	862	862	1,035	517	690	690	862
Disposable	370	383	431	431	517	259	345	345	431
ELECTRICAL DATA									
Min. Circuit Ampacity[4]	8.8	8.8	11.6	15.4	15.4	8.8	8.8	11.6	15.4
Max. Overcurrent Device (amps)[5]	15	15	15	20	20	15	15	15	20
SHIPPING WEIGHT (LBS)	118	121	142	144	157	117	122	144	146

1 Natural Gas BTU/h

2 DOE AFUE based upon Isolated Combustion System (ICS)

3 Installer must supply one or two PVC pipes: one for combustion air (optional) and one for the flue outlet (required). Vent pipe must be either 2" or 3" in diameter, depending upon furnace input, number of elbows, length of run and installation (1 or 2 pipes). The optional Combustion Air Pipe is dependent on installation/code requirements and must be 2" or 3" diameter PVC.

4 Minimum Circuit Ampacity = (1.25 x Circulator Blower Amps) + ID Blower amps. Wire size should be determined in accordance with National Electrical Codes. Extensive wire runs will require larger wire sizes.

5 Maximum Overcurrent Protection Device refers to maximum recommended fuse or circuit breaker size. May use fuses or HACR-type circuit breakers of the same size as noted.

NOTES

- All furnaces are manufactured for use on 115 VAC, 60 Hz, single-phase electrical supply.
- Gas Service Connection ½" FPT
- Important: Size fuses and wires properly and make electrical connections in accordance with the National Electrical Code and/or all existing local codes.
- For bottom return: Failure to unfold flanges may reduce airflow by up to 18%. This could result in performance and noise issues.
- For servicing or cleaning, a 24" front clearance is required. Unit connections (electrical, flue and drain) may necessitate greater clearances than the minimum clearances listed above. In all cases, accessibility clearance must take precedence over clearances from the enclosure where accessibility clearances are greater.

DAIKIN RESIDENTIAL FURNACES

DAIKIN

DC96VC



ComfortNet™-Compatible
Two-Stage, Variable-Speed
ECM-based Gas Furnace
Up to 96% AFUE
Heating Input: 40,000–120,000 BTU/h

Standard Features

- *ComfortNet™* communicating system compatible
- Heavy-duty stainless-steel tubular heat exchanger
- Stainless-steel secondary heat exchanger
- Two-stage gas valve provides quiet, economical heating
- Durable Silicon Nitride igniter
- Quiet two-speed induced draft blower
- Utilizes ComfortNet™ communicating, two-stage or single-stage thermostats
- Self-diagnostic control board with constant memory fault code history output to a dual 7-segment display
- Color-coded low-voltage terminals with provisions for electronic air cleaner and humidifier
- Efficient and quiet variable-speed airflow system gently ramps up or down according to heating or cooling demand
- Multiple continuous fan speed options offer quiet air circulation
- Auto-Comfort and enhanced dehumidification modes available
- All models comply with California 40 ng/J Low NOx emissions standard
- For installation in California's South Coast Air Quality Management District (SCAQMD) only: This furnace does not meet the SCAQMD Rule 1111 14 ng/J NOx emission limit, and thus is subject to a mitigation fee of up to $450. This furnace is not eligible for the SCAQMD Clean Air Furnace Rebate Program: www.CleanAirFurnaceRebate.com.

Cabinet Features

- Designed for multi-position installation —downflow, horizontal left or right
- Certified for direct vent (2-pipe) or non-direct vent (1-pipe)
- Convenient left or right connection for gas and electrical service
- Cabinet air leakage (Q_{Leak}) ≤ 2%
- Heavy-gauge steel cabinet with durable finish
- Fully insulated heat exchanger and blower section
- Airtight solid bottom or side return with easy-cut tabs for effortless removal in bottom air-inlet applications

*Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the Lifetime Heat Exchanger Limited Warranty (good for as long as you own your home), the 12-Year Unit Replacement Limited Warranty and the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL FURNACES

DAIKIN

DC96VC SPECIFICATION

	DC96VC 0403BNA	DC96VC 0603BNA	DC96VC 0804CNA	DC96VC 1005CNA	DC96VC 1205DNA
Heating Data					
High Fire Input[1]	40,000	60,000	80,000	100,000	120,000
High Fire Output[1]	38,400	57,600	76,800	96,000	115,200
Low-Fire Steady-State Input[1]	28,000	42,000	56,000	70,000	84,000
Low-Fire Steady-State Output[1]	26,880	40,320	53,760	67,200	80,640
AFUE[2]	96	96	96	96	96
Temperature Rise Range (°F)	20 - 50	35 - 65	25 - 55	45 - 75	35 - 65
Vent Diameter[3]	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"
No. of Burners	2	3	4	5	6
Circulator Blower					
Available AC @ 0.5" ESP	1.5 - 3	1.5 - 3	1.5 - 4	2 - 5	2 - 5
Size (D x W)	10" x 8"	11" x 8"	11" x 10"	11" x 10"	11" x 11"
Horsepower @ 1075 RPM	½	½	¾	1	1
Speed	VS ECM	VS ECM	VS ECM	VS ECM	VS ECM
Electrical Data					
Min. Circuit Ampacity[4]	7.8	7.8	10.6	14.4	14.4
Max. Overcurrent Device (amps)[5]	15	15	15	20	20
Shipping Weight (lbs)	116	119	143	145	158

[1] Natural Gas BTU/h

[2] DOE AFUE based upon Isolated Combustion System (ICS)

[3] Installer must supply one or two PVC pipes: one for combustion air (optional) and one for the flue outlet (required). Vent pipe must be either 2" or 3" in diameter, depending upon furnace input, number of elbows, length of run and installation (1 or 2 pipes). The optional Combustion Air Pipe is dependent on installation/code requirements and must be 2" or 3"diameter PVC.

[4] Minimum Circuit Ampacity = (1.25 x Circulator Blower Amps) + ID Blower amps. Wire size should be determined in accordance with National Electrical Codes. Extensive wire runs will require larger wire sizes.

[5] Maximum Overcurrent Protection Device refers to maximum recommended fuse or circuit breaker size. May use fuses or HACR-type circuit breakers of the same size as noted.

NOTES

- All furnaces are manufactured for use on 115 VAC, 60 Hz, single-phase electrical supply.
- Gas Service Connection ½" FPT
- Important: Size fuses and wires properly and make electrical connections in accordance with the National Electrical Code and/or all existing local codes.
- For bottom return: Failure to unfold flanges may reduce airflow by up to 18%. This could result in performance and noise issues.
- For servicing or cleaning, a 24" front clearance is required. Unit connections (electrical, flue and drain) may necessitate greater clearances than the minimum clearances listed above. In all cases, accessibility clearance must take precedence over clearances from the enclosure where accessibility clearances are greater.

DAIKIN RESIDENTIAL FURNACES

DAIKIN

DC96VE

HEATING INPUT: 40,000 - 100,000 BTU/H

TWO-STAGE, MULTI-SPEED
ECM GAS FURNACE
UP TO 96% AFUE



ENERGY STAR

■ *Standard Features*

- Energy-efficient multi-speed ECM blower motor
- Heavy-duty stainless-steel tubular heat exchanger
- Stainless-steel secondary heat exchanger
- Two-stage gas valve provides quiet, economical heating
- Durable Silicon Nitride igniter
- Quiet two-speed induced draft blower
- Self-diagnostic control board with constant memory fault code history output to a LED
- Color-coded low-voltage terminals with provisions for electronic air cleaner and humidifier
- Low continuous fan speed options offer quiet air circulation
- All models comply with California 40 ng/J Low NOx emissions standard
- For installation in California's South Coast Air Quality Management District (SCAQMD) only: This furnace does not meet the SCAQMD Rule 1111 14 ng/J NOx emission limit, and thus is subject to a mitigation fee of up to $450. This furnace is not eligible for the SCAQMD Clean Air Furnace Rebate Program: www.CleanAirFurnaceRebate.com.
- AHRI Certified; ETL Listed

■ *Cabinet Features*

- Designed for multi-position installation — counter flow, horizontal left or right
- Certified for direct vent (2-pipe) or non-direct vent (1-pipe)
- Easy-to-install top venting with optional side venting
- Convenient left or right connection for gas and electrical service
- Cabinet air leakage (Q_{Leak}) ≤ 2%
- Heavy-gauge steel cabinet with durable finish
- Fully insulated heat exchanger and blower section
- Airtight solid bottom or side return with easy-cut tabs for effortless removal in bottom air-inlet applications

LIFETIME HEAT EXCHANGER LIMITED WARRANTY* | 6 YEAR UNIT REPLACEMENT LIMITED WARRANTY* | 12 YEAR PARTS LIMITED WARRANTY*

Intertek

AHRI CERTIFIED

ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the Lifetime Heat Exchanger Limited Warranty (good for as long as you own your home), the 6-Year Unit Replacement Limited Warranty and the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL FURNACES

DAIKIN

DC96VE SPECIFICATION

	DC96VE 0403BNA	DC96VE 0603BNA	DC96VE 0803BNA	DC96VE 1005CNA
HEATING DATA				
High Fire Input[1]	40,000	60,000	80,000	100,000
High Fire Output[1]	38,400	57,600	76,800	96,000
Low-Fire Steady-State Input[1]	28,000	42,000	56,000	70,000
Low-Fire Steady-State Output[1]	26,880	40,320	53,760	67,200
AFUE[2]	96	96	96	96
Temperature Rise Range (°F)	25 - 55	25 - 55	40 - 70	35 - 65
Vent Diameter[3]	2" - 3"	2" - 3"	2" - 3"	2" - 3"
No. of Burners	2	3	4	5
CIRCULATOR BLOWER				
Available AC @ 0.5" ESP	1.5 - 3	1.5 - 3	1.5 - 3	4 - 5
Size (D x W)	10" x 8"	11" x 8"	11" x 8"	11" x 10"
Horsepower @ 1075 RPM	1/2	1/2	1/2	1
No. of speeds	5	5	5	5
ELECTRICAL DATA				
Min. Circuit Ampacity[4]	8	8	8	13.3
Max. Overcurrent Device (amps)[5]	15	15	15	15
SHIPPING WEIGHT (LBS)	112	115	118	140

[1] Natural Gas BTU/h; for altitudes 0-4500'' above sea level, reduce input rating by 4% for each 1000' above 4500' altitude.

[2] DOE AFUE based upon Isolated Combustion System (ICS)

[3] Vent and combustion air diameters may vary depending upon vent length. Refer to the latest editions of the National Fuel Gas Code NFPA 54/ANSI Z223.1 (in the USA) and the Canada National Standard of Canada, CAN/CSA B149.1 and CAN/CSA B142.2 (in Canada).

[4] Minimum Circuit Ampacity = (1.25 x Circulator Blower Amps) + ID Blower amps. Wire size should be determined in accordance with National Electrical Codes. Extensive wire runs will require larger wire sizes.

[5] Maximum Overcurrent Protection Device refers to maximum recommended fuse or circuit breaker size. May use fuses or HACR-type circuit breakers of the same size as noted.

NOTES

- All furnaces are manufactured for use on 115 VAC, 60 Hz, single-phase electrical supply.
- Gas Service Connection ½" FPT
- Important: Size fuses and wires properly and make electrical connections in accordance with the National Electrical Code and/or all existing local codes.

DAIKIN RESIDENTIAL FURNACES

DAIKIN

DM96SE / DC96SE



SINGLE-STAGE
MULTI-SPEED GAS FURNACE
UP TO 96% AFUE
HEATING INPUT: 40,000 –120,000 BTU/H

Standard Features

- Heavy-duty stainless-steel tubular heat exchanger
- Stainless-steel secondary heat exchanger
- Single-stage gas valve
- Durable Silicon Nitride igniter
- Multi-speed blower motor
- Self-diagnostic control board with constant memory fault code history output to a LED
- California Low NOx emissions models available
- Can no longer be installed in SCAQMD on or after October 1, 2019. This statement does not apply to any ultra-low NOx furnaces such as DMSE96-U and DM80SE-U, or packaged products (gas or dual-fuel)
- AHRI Certified; ETL Listed

Cabinet Features

- Designed for multi-position installation — DM96SE: upflow, horizontal left or right DC96SE: downflow, horizontal left or right
- Certified for direct vent (2-pipe) or non-direct vent (1-pipe)
- Easy-to-install top venting with optional side venting
- Convenient left or right connection for gas and electrical service
- Cabinet air leakage (Q_{Leak}) ≤ 2%
- Heavy-gauge steel cabinet with durable finish
- Fully insulated heat exchanger and blower section
- Airtight solid bottom or side return with easy-cut tabs for effortless removal in bottom air-inlet applications

LIFETIME HEAT EXCHANGER LIMITED WARRANTY* | 6 YEAR UNIT REPLACEMENT LIMITED WARRANTY* | 12 YEAR PARTS LIMITED WARRANTY*

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AHRI CERTIFIED | ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the Lifetime Heat Exchanger Limited Warranty (good for as long as you own your home), the 6-Year Unit Replacement Limited Warranty and the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Québec.

DAIKIN RESIDENTIAL FURNACES

DAIKIN

DM96SE / DC96SE SPECIFICATION

	DM96SE 0403AN	DM96SE 0603BN	DM96SE 0803BN	DM96SE 0804CN	DM96SE 0805CN	DM96SE 1005CN	DM96SE 1205DN
HEATING DATA							
High Fire Input[1]	40,000	60,000	80,000	80,000	80,000	100,000	120,000
High Fire Output[1]	38,440	57,660	76,880	76,880	76,880	96,100	115,320
AFUE[2]	96	96	96	96	96	96	96
Temperature Rise Range (°F)	25-55	35-65	35-65	25-55	25-55	30-60	35-65
Vent Diameter[3]	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	3"
NO. OF BURNERS	2	3	4	4	4	5	6
CIRCULATOR BLOWER							
Available AC @ 0.5" ESP	1.5 - 3	1.5 - 3	1.5 - 3	1.5 - 4	3 - 5	3 - 5	3 - 5
Size (D x W)	11" x 6"	11" x 8"	11" x 8"	11" x 10"	11" x 10"	11" x 10"	11" x 11"
Horsepower @ 1075 RPM	½	½	½	¾	1	1	1
No. of Speeds	5	5	5	5	5	5	5
ELECTRICAL DATA							
Min. Circuit Ampacity[4]	10.3	10.3	10.3	14.1	16.93	16.93	16.93
Max. Overcurrent Device (amps)[5]	15	15	15	15	20	20	20
SHIPPING WEIGHT (LBS)	113	116	118	141	142	144	156

[1] Natural Gas BTU/h; for altitudes 0-4500' above sea level, reduce input rating by 4% for each 1000' above 4500' altitude.

[2] DOE AFUE based upon Isolated Combustion System (ICS)

[3] Vent and combustion air diameters may vary depending upon vent length. Refer to the latest editions of the National Fuel Gas Code NFPA 54/ANSI Z223.1 (in the USA) and the Canada National Standard of Canada, CAN/CSA B149.1 and CAN/CSA B142.2 (in Canada).

[4] Minimum Circuit Ampacity = (1.25 x Circulator Blower Amps) + ID Blower amps.
Wire size should be determined in accordance with National Electrical Codes. Extensive wire runs will require larger wire sizes.

[5] Maximum Overcurrent Protection Device refers to maximum recommended fuse or circuit breaker size.
May use fuses or HACR-type circuit breakers of the same size as noted.

NOTES

- All furnaces are manufactured for use on 115 VAC, 60 Hz, single-phase electrical supply.
- Gas Service Connection ½" FPT
- Important: Size fuses and wires properly and make electrical connections in accordance with the National Electrical Code and/or all existing local codes.
- For bottom return: Failure to unfold flanges may reduce airflow by up to 18%. This could result in performance and noise issues.

DAIKIN RESIDENTIAL FURNACES

DAIKIN

DM96VE

HEATING INPUT: 30,000–120,000 BTU/H

TWO-STAGE, MULTI-SPEED
ECM GAS FURNACE
UP TO 96% AFUE



ENERGY STAR

■ *Standard Features*

- Energy-efficient multi-speed ECM blower motor
- Heavy-duty stainless-steel tubular heat exchanger
- Stainless-steel secondary heat exchanger
- Two-stage gas valve provides quiet, economical heating
- Durable Silicon Nitride igniter
- Quiet two-speed induced draft blower
- Self-diagnostic control board with constant memory fault code history output to a LED
- Color-coded low-voltage terminals with provisions for electronic air cleaner and humidifier
- Low continuous fan speed options offer quiet air circulation
- All models comply with California 40 ng/J Low NOx emissions standard
- For installation in California's South Coast Air Quality Management District (SCAQMD) only: This furnace does not meet the SCAQMD Rule 1111 14 ng/J NOx emission limit, and thus is subject to a mitigation fee of up to $450. This furnace is not eligible for the SCAQMD Clean Air Furnace Rebate Program: www.CleanAirFurnaceRebate.com.
- AHRI Certified; ETL Listed

■ *Cabinet Features*

- Designed for multi-position installation — upflow, horizontal left or right
- Certified for direct vent (2-pipe) or non-direct vent (1-pipe)
- Easy-to-install top venting with optional side venting
- Convenient left or right connection for gas and electrical service
- Cabinet air leakage (Q_{Leak}) ≤ 2%
- Heavy-gauge steel cabinet with durable finish
- Fully insulated heat exchanger and blower section
- Airtight solid bottom or side return with easy-cut tabs for effortless removal in bottom air-inlet applications

LIFETIME HEAT EXCHANGER LIMITED WARRANTY*

6 YEAR UNIT REPLACEMENT LIMITED WARRANTY*

12 YEAR PARTS LIMITED WARRANTY*

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Intertek

AHRI CERTIFIED

ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the Lifetime Heat Exchanger Limited Warranty (good for as long as you own your home), the 6-Year Unit Replacement Limited Warranty and the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN RESIDENTIAL FURNACES

DAIKIN

DM96VE SPECIFICATION

	DM96VE 0303ANA	DM96VE 0403ANA	DM96VE 0603ANA	DM96VE 0603BNB	DM96VE 0803BNA	DM96VE 0804CNA	DM96VE 1004CNA	DM96VE 1005CNA	DM96VE 1205DNA
HEATING DATA									
High Fire Input[1]	30,000	40,000	60,000	60,000	80,000	80,000	100,000	100,000	120,000
High Fire Output[1]	28,800	38,400	57,600	57,600	76,800	76,800	96,000	96,000	115,200
Low-Fire Steady-State Input[1]	21,000	28,000	42,000	42,000	56,000	56,000	70,000	70,000	84,000
Low-Fire Steady-State Output[1]	20,160	26,880	40,320	40,320	53,760	53,760	67,200	67,200	80,640
AFUE[2]	96	96	96	96	96	96	96	96	96
Temperature Rise Range (°F)	20 - 50	20 - 50	30 - 60	35 - 65	35 - 65	25 - 55	35 - 65	35 - 65	35 - 65
Vent Diameter[3]	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"
No. of Burners	2	2	3	3	4	4	5	5	6
CIRCULATOR BLOWER									
Available AC @ 0.5" ESP	1.5 - 3	1.5 - 3	1.5 - 3	1.5 - 3	1.5 - 3	2.5 - 4	1.5 - 4	3 - 5	3 - 5
Size (D x W)	11" x 6"	11" x 6"	11" x 6"	11" x 8"	11" x 8"	11" x 10"	11" x 10"	11" x 10"	11" x 11"
Horsepower @ 1075 RPM	1/2	1/2	1/2	1/2	1/2	3/4	1	1	1
No. of speeds	5	5	5	5	5	5	5	5	5
ELECTRICAL DATA									
Min. Circuit Ampacity[4]	8.6	8.6	8.6	8	8	11.6	13.3	13.3	13.3
Max. Overcurrent (amps)[5]	15	15	15	512	15	15	15	15	15
SHIPPING WEIGHT (LBS)	106	106	110	256	118	123	140	140	154

[1] Natural Gas BTU/h

[2] DOE AFUE based upon Isolated Combustion System (ICS)

[3] Installer must supply one or two PVC pipes: one for combustion air (optional) and one for the flue outlet (required). Vent pipe must be either 2" or 3" in diameter, depending upon furnace input, number of elbows, length of run and installation (1 or 2 pipes). The optional Combustion Air Pipe is dependent on installation/code requirements and must be 2" or 3" diameter PVC.

[4] Minimum Circuit Ampacity = (1.25 x Circulator Blower Amps) + ID Blower amps. Wire size should be determined in accordance with National Electrical Codes. Extensive wire runs will require larger wire sizes.

[5] Maximum Overcurrent Protection Device refers to maximum recommended fuse or circuit breaker size. May use fuses or HACR-type circuit breakers of the same size as noted.

NOTES

- All furnaces are manufactured for use on 115 VAC, 60 Hz, single-phase electrical supply.
- Gas Service Connection ½" FPT
- Important: Size fuses and wires properly and make electrical connections in accordance with the National Electrical Code and/or all existing local codes.
- For bottom return: Failure to unfold flanges may reduce airflow by up to 18%. This could result in performance and noise issues.
- For servicing or cleaning, a 24" front clearance is required. Unit connections (electrical, flue and drain) may necessitate greater clearances than the minimum clearances listed above. In all cases, accessibility clearance must take precedence over clearances from the enclosure where accessibility clearances are greater.

DAIKIN AIR HANDLERS

DAIKIN

ACNF Series

Ceiling-Mounted Air Handlers
1½ to 2½ Tons



Features

- Check flowrater for heat pump and cooling-only applications
- All-Aluminum tube/aluminum fin coil
- Direct-drive, resilient-mount, multi-speed motor
- Sequence-controlled and rust-resistant nickel chromium heating elements of 5, 6, 8 and 10 kW
- High-efficiency evaporator coil
- Quiet operation
- Models with EEM motors: ACNF25 & ACNF31
- Models with PSC motors: ACNF18, ACNF24, & ACNF30
- Available with and without heat
- AHRI Certified; ETL Listed
- Primary/secondary drain connection in a high-temperature plastic drain pan
- Suitable for free-return installation (non-ducted return air)
- Galvanized-steel construction
- Factory-installed pull-type disconnect
- Easy service access

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 10-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration is not required in California or Québec.

DAIKIN AIR HANDLERS

DAIKIN

ACNF18/ ACNF24 SERIES SPECIFICATION

	ACNF18 001	ACNF18 051	ACNF18 061	ACNF18 081	ACNF24 001	ACNF24 051	ACNF24 061	ACNF24 081
PERFORMANCE RATINGS								
Cooling (BTU/h)	18,000	18,000	18,000	18,000	24,000	24,000	24,000	24,000
Piston Size[2]	0.051	0.051	0.051	0.051	0.057	0.057	0.057	0.057
BLOWER								
Diameter	5.75	5.75	5.75	5.75	6.31	6.31	6.31	6.31
Width	6.75	6.75	6.75	6.75	8.25	8.25	8.25	8.25
Coil Drain Connect FPT	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
BLOWER MOTOR								
FLA	0.72	0.72	0.72	0.72	1.34	1.34	1.34	1.34
HP	1/8	1/8	1/8	1/8	1/4	1/4	1/4	1/4
REFRIGERANT LINE CONNECTION SIZE								
Liquid	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
ELECTRICAL DATA								
Voltage	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
Min Circuit Ampacity @ 230V	0.9	27	33.5	40.6	1.68	27.8	34.3	41.3
Min Circuit Ampacity @ 208V	0.9	23.5	29.2	35.3	1.68	24.3	29.9	36.1
Max. Overcurrent Device @ 230V	15	30	35	45	15	30	35	45
Max. Overcurrent Device @ 208V	15	25	30	40	15	25	30	40
Minimum Voltage VAC	197	197	197	197	197	197	197	197
Maximum Voltage VAC	253	253	253	253	253	253	253	253
ELECTRIC HEAT								
kW @ 230 Volts	0.0	4.8	6.0	7.3	0.0	4.8	6.0	7.3
BTU/h @ 230 Volts	0	16,400	20,500	24,900	0	16,400	20,500	24,900
SHIP WEIGHT (LBS)	59	59	59	59	69	69	69	69

[1] CFM @.3 static [2]Shipped with Coil

NOTES

- For a properly matched system and piston sizing information, refer to Amana piston kit chart of the corresponding Amana® outdoor unit.
- When the room thermostat calls for second stage heat, the first stage (heat pump) operation must be locked out. When matching the "AC" unit that has electric heat with a heat pump, order "HEAT PUMP SHUT OFF KIT HPSK-01." The ACXX-00 units do not require this kit.

DAIKIN AIR HANDLERS

DAIKIN

ACNF24/ ACNF30 SERIES SPECIFICATION

	ACNF24 101	ACNF25 0016	ACNF25 0516	ACNF25 0616	ACNF25 0816	ACNF25 1016	ACNF30 001	ACNF30 051
Performance Ratings								
Cooling (BTU/h)	24,000	24,000	24,000	24,000	24,000	24,000	30,000	30,000
Piston Size[2]	0.057	0.055	0.055	0.055	0.055	0.055	0.061	0.061
Blower								
Diameter	6.31	6.31	6.31	6.31	6.31	6.31	6.75	6.75
Width	8.25	8.25	8.25	8.25	8.25	8.25	8.25	8.25
Coil Drain Connect FPT	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
Blower Motor								
FLA	1.34	2	2	2	2	2	1.34	1.34
HP	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Refrigerant Line Connection Size								
Liquid	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
Electrical Data								
Voltage	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
Min Circuit Ampacity @ 230V	54.9	2.5	28.6	35.1	42.2	55.8	1.68	27.8
Min Circuit Ampacity @ 208V	47.8	2.5	26.1	32.0	38.4	50.7	1.68	24.3
Max. Overcurrent Device @ 230V	60	15	30	40	45	60	15	30
Max. Overcurrent Device @ 208V	50	15	30	35	40	60	15	25
Minimum Voltage VAC	197	197	197	197	197	197	197	197
Maximum Voltage VAC	253	253	253	253	253	253	253	253
Electric Heat								
kW @ 230 Volts	9.8	0.0	4.8	6.0	7.3	9.8	0.0	4.8
BTU/h @ 230 Volts	33,500	0	16,400	20,500	24,900	33,500	0	16,400
Ship Weight (lbs)	69	69	69	69	69	69	79	79

[1] CFM @ .2 static

Note: When the room thermostat calls for second stage heat, the first stage (heat pump) operation must be locked out. When matching the "AC" unit that has electric heat with a heat pump, order "HEAT PUMP SHUT OFF KIT HPSK-01." The ACXX-00 units do not require this kit.

DAIKIN AIR HANDLERS

DAIKIN

ACNF30/ ACNF31 SERIES SPECIFICATION

	ACNF30 061	ACNF30 081	ACNF30 101	ACNF31 0016	ACNF31 0516	ACNF31 0616	ACNF31 0816	ACNF31 1016
Performance Ratings								
Cooling (BTU/h)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
Piston Size[2]	0.061	0.061	0.061	0.059	0.059	0.059	0.059	0.059
Blower								
Diameter	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75
Width	8.25	8.25	8.25	8.25	8.25	8.25	8.25	8.25
Coil Drain Connect FPT	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
Blower Motor								
FLA	1.34	1.34	1.34	2	2	2	2	2
HP	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Refrigerant Line Connection Size								
Liquid	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
Electrical Data								
Voltage	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
Min Circuit Ampacity @ 230V	34.3	41.3	54.9	2.5	28.6	35.1	42.2	55.8
Min Circuit Ampacity @ 208V	29.9	36.1	47.8	2.5	26.1	32.0	38.4	50.7
Max. Overcurrent Device @ 230V	35	45	60	15	30	40	45	60
Max. Overcurrent Device @ 208V	30	40	50	15	30	35	40	60
Minimum Voltage VAC	197	197	197	197	197	197	197	197
Maximum Voltage VAC	253	253	253	253	253	253	253	253
Electric Heat								
kW @ 230 Volts	6.0	7.3	9.8	0.0	4.8	6.0	7.3	9.8
BTU/h @ 230 Volts	20,500	24,900	33,500	0	16,400	20,500	24,900	33,500
Ship Weight (lbs)	79	79	79	79	79	79	79	79

[1] CFM @ .2 static

Note: When the room thermostat calls for second stage heat, the first stage (heat pump) operation must be locked out. When matching the "AC" unit that has electric heat with a heat pump, order "HEAT PUMP SHUT OFF KIT HPSK-01." The ACXX-00 units do not require this kit.

DAIKIN AIR HANDLERS

DAIKIN

ARUF Series

Multi-Position
Multi-Speed Air Handler
with PSC Motor
2 to 5 Tons



Product Features

- Check flowrator for cooling and heat pump applications
- Direct drive, multi-speed PSC blower motor
- All-aluminum evaporator coil
- Coil mounting track for quick repositioning
- Cabinet air leakage less than 2.0% at 1.0 inch H_2O when tested in accordance with ASHRAE standard 193
- Cabinet air leakage less than 1.4% at 0.5 inch H_2O when tested in accordance with ASHRAE standard 193
- 3 kW – 25 kW electric heater kits
- Horizontal or vertical configuration capabilities
- AHRI certified; ETL listed
- Rigid SmartFrame™ cabinet
- 21" depth for easier attic access
- DecaBDE-free thermoplastic drain pan with secondary drain connections
- Screw-less sides and back helps to reduce condensation when installed in humid locations
- Foil-faced insulation covers the internal casing to reduce cabinet condensation
- Galvanized, leather grain-embossed finish
- Glue-less cabinet insulation retention
- Tool-less filter access

12 YEAR PARTS LIMITED WARRANTY

ALL ALUMINUM COIL

AHRI CERTIFIED

C ETL LISTED US Intertek

ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration is not required in California or Quebec.

DAIKIN AIR HANDLERS

DAIKIN

ARUF SERIES SPECIFICATION

	ARUF 25B14*	ARUF 29B14*	ARUF 31B14*	ARUF 37C14*	ARUF 43C14*	ARUF 49C14*	ARUF 37D14*	ARUF 43D14*	ARUF 47D14*	ARUF 49D14*	ARUF 61D14*
NOMINAL RATINGS											
Cooling (Btu/h)	24,000	25,000	30,000	36,000	42,000	48,000	36,000	42,000	43,000	48,000	60,000
Piston Size	0.051	0.057	0.065	0.072	0.076	0.080	0.072	0.076	0.076	0.080	0.080
BLOWER											
Diameter	9½"	9½"	9½"	10⅝"	10⅝"	10⅝"	10⅝"	10⅝"	10⅝"	10⅝"	$11^{15}/_{16}$"
Width	6"	6"	6"	8"	8"	10⅝"	10⅝"	10⅝"	10⅝"	10⅝"	10⅝"
COIL CONNECTIONS											
Liquid	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction	¾"	¾"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"
Coil Drain Connect (FPT)	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
ELECTRICAL DATA											
Voltage	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
Min Circuit Ampacity	2.4/2.4	2.4/2.4	2.4/2.4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	6/6
Max. Overcurrent Device (Amps)	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15
Minimum VAC	197	197	197	197	197	197	197	197	197	197	197
Maximum VAC	253	253	253	253	253	253	253	253	253	253	253
Blower Motor											
Full Load Amps (FLA)	1.9	1.9	1.9	3.0	3.0	3.1	3.0	3.5	3.5	3.5	4.6
Horsepower (HP)	⅓	⅓	⅓	⅓	⅓	½	⅓	½	½	½	¾
SHIP WEIGHT (LBS.)	100	100	110	130	130	135	140	145	150	145	155

Note: For a properly matched system and piston sizing information, refer to Amana piston kit chart of the corresponding Amana® outdoor unit.
Minimum Circuit Ampacity (MCA) and Maximum Overcurrent Protection (MOP) for blower without supplemental heat installed.
Refer to unit nameplate and/or Heat Kit Data for specification with approved accessory heaters installed.

DAIKIN AIR HANDLERS

DAIKIN

ASPT Series



Multi-Position, Multi-Speed, ECM-Based Air Handler with Internal TXV 1½ to 5 Tons

Product Features

- Internal factory-installed thermal expansion valves for cooling and heat pump applications
- Direct drive, multi-speed ECM blower motor
- All-aluminum evaporator coil
- Coil mounting track for quick repositioning
- Optimized for use with R-410A refrigerant
- Cabinet air leakage less than 2.0% at 1.0 inch H_2O when tested in accordance with ASHRAE standard 193
- Cabinet air leakage less than 1.4% at 0.5 inch H_2O when tested in accordance with ASHRAE standard 193
- 3 kW – 25 kW electric heater kits
- AHRI certified; ETL listed
- Rigid SmartFrame™ cabinet
- Horizontal or vertical configuration capabilities
- 21" depth for easier attic access
- DecaBDE-free thermoplastic drain pan with secondary drain connections
- Screw-less sides and back helps to reduce condensation when installed in humid locations
- Foil-faced insulation covers the internal casing to reduce cabinet condensation
- Galvanized, leather grain-embossed finish
- Glue-less cabinet insulation retention
- Tool-less filter access

12 YEAR PARTS LIMITED WARRANTY* ALL ALUMINUM COIL AHRI CERTIFIED c ETL us Intertek ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebe

DAIKIN AIR HANDLERS

DAIKIN

ASPT SERIES SPECIFICATION

	ASPT 25B14*	ASPT 29B14*	ASPT 33C14*	ASPT 35B14*	ASPT 37B14*	ASPT 37C14*	ASPT 39C14*	ASPT 47C14*	ASPT 47D14*	ASPT 49C14*	ASPT 49D14*	ASPT 59C14*	ASPT 61D14*
Nominal Ratings													
Cooling (Btu/h)	24,000	24,000	24,000	28,000	30,000	36,000	36,000	42,000	42,000	48,000	48,000	60,000	60,000
Blower													
Diameter	9½"	9½"	10⅝"	9½"	9½"	10⅝"	10⅝"	10⅝"	10⅝"	10⅝"	11 15/16"	10⅝"	11 15/16"
Width	6"	6"	8"	6"	6"	8"	8"	10⅝"	10⅝"	8"	10⅝"	10⅝"	10⅝"
Coil Connections													
Liquid	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction	¾"	⅞"	⅞"	¾"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"
Coil Drain Connect (FPT)	¾"	¾"	¾"	¾"	¾"	¾"	¾	¾"	¾"	¾"	¾"	¾"	¾"
Electrical Data													
Voltage	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
Minimum Circuit Ampacity	5.8 / 5.8	5.8 / 5.8	4.9 / 4.9	5.6 / 5.6	5.6 / 5.6	5.6 / 5.6	4.9 / 4.9	4.9 / 4.9	5.6 / 5.6	7.1 / 7.1	8.6 / 8.6	7.9 / 7.9	8.6 / 8.6
Max. Overcurrent Device (Amps)	15 / 15	15 / 15	15 / 15	15/15	15 / 15	15 / 15	15 / 15	15 / 15	15 / 15	15 / 15	15 / 15	15/15	15 / 15
Minimum VAC	197	197	197	197	197	197	197	197	197	197	197	197	197
Maximum VAC	253	253	253	253	253	253	253	253	253	253	253	253	253
Blower Motor													
Full Load Amps (FLA)	4.6	4.6	3.9	4.5	4.5	4.5	3.9	3.9	4.5	5.7	6.9	6.3	6.9
Horsepower (HP)	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	1	1	1
Ship Weight (Lbs.)	116	129	118	129	129	144	118	144	155	125	167	144	167

*Airflow rate @.3 static

Note: Assumes dry coil; SCFM correction for wet coil = 4% (208V / 240V)

DAIKIN AIR HANDLERS

DAIKIN

AWUF, AWUT Series

Wall-Mount Air Handler
1 to 3 Tons



Product Features

- AWUF Models: Equipped with a Check Flowrator
  AWUT Models: Equipped wit a fully adjustable TXV
- Direct-drive, multi-speed motors allows air volume variation for heating/cooling
  - Multi-speed ECM: AWUF19, 25, 31, 32, 37, AWUT31, 32, 37
  - Multi-speed PSC motor: AWUF18, 24, 30, 36
- Sequence-controlled, rust-resistant nickel chromium heating elements of 3, 5, 8, and 10 kW
- Aluminum tubing coils on all models
- Cabinet air leakage less than 2.0% at 1.0 inch H_2O when tested in accordance with ASHRAE standard 193
- Cabinet air leakage less than 1.4% at 0.5 inch H_2O when tested in accordance with ASHRAE standard 193
- Factory-installed pull-type disconnect
- Thermoplastic drain pan with bottom primary and secondary drain connections
- Built-in filter rack (filter included)
- Large chassis (2½- and 3-ton units) – front return only
- Small chassis (1½- and 2-ton units) – front or bottom return
- Wall-hanging bracket provided
- AHRI Certified; ETL Listed

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration is not required in California or Quebec.

DAIKIN AIR HANDLERS

DAIKIN

AWUF SERIES SPECIFICATION

	AWUF 180316B	AWUF 180516B	AWUF 180816B	AWUF 190316B	AWUF 190516B	AWUF 190816B	AWUF 240316B	AWUF 240516B	AWUF 240816B	AWUF 241016B
NOMINAL RATINGS										
Cooling (BTU/h)	18,000	18,000	12,000 or 18000	12,000 or 18000	12,000 (not recommended) or 18000	18,000	24,000	24,000	24,000	24,000
Electric Heat (kW)	3	5	8	3	5	8	3	5	8	10
BLOWER										
Diameter (in.)	9	9	9	10	10	10	10	10	10	10
Width (in.)	6	6	6	6	6	6	6	6	6	6
COIL CONNECTIONS										
Liquid	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction	⅝"	⅝"	⅝"	⅝"	⅝"	⅝"	⅝"	⅝"	⅝"	⅝"
Coil Drain Connection (FPT)	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
ELECTRICAL DATA										
Voltage	230/208	230/208	230/208	230/208	230/208	230/208	230/208	230/208	230/208	230/208
Minimum Circuit Ampacity (230V)	17	26.6	39.6	18.9	28	41.3	17	26.6	39.6	52.7
Minimum Circuit Ampacity (208V)	15.2	23	35	17	24.9	36	15.2	23	35	46
Max. Overcurrent Device (240V)	20	30	40	20	30	45	20	30	40	60
Max. Overcurrent Device (208V)	20	25	35	20	25	40	20	25	35	50
Minimum VAC	197	197	197	197	197	197	197	197	197	197
Maximum VAC	253	253	253	253	253	253	253	253	253	253
BLOWER MOTOR										
Full Load Amps (FLA)	1.3	1.3	1.3	2.6	2.6	2.6	1.3	1.3	1.3	1.3
Horsepower (HP)	1/5	1/5	1/5	1/3	1/3	1/3	1/5	1/5	1/5	1/5
SHIP WEIGHT (LBS)	84	84	84	84	84	84	84	84	84	84

DAIKIN AIR HANDLERS

DAIKIN

AWUF SERIES SPECIFICATION

	AWUF 250316A	AWUF 250516A	AWUF 250816A	AWUF 251016A	AWUF 300516B	AWUF 300816B	AWUF 301016B	AWUF 310516A*	AWUF 310816A*
NOMINAL RATINGS									
Cooling (BTU/h)	24,000	24,000	24,000	24,000	30,000	30,000	30,000	30,000	30,000
Electric Heat (kW)	3	5	8	10	5	8	10	5	8
BLOWER									
Diameter (in.)	10	10	10	10	9	9	9	10	10
Width (in.)	6	6	6	6	8	8	8	8	8
COIL CONNECTIONS									
Liquid	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction	⅝"	⅝"	⅝"	⅝"	¾"	¾"	¾"	¾"	¾"
Coil Drain Connection (FPT)	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
ELECTRICAL DATA									
Voltage	230/208	230/208	230/208	230/208	230/208	230/208	230/208	230/208	230/208
Minimum Circuit Ampacity (230V)	18.9	28	41.3	54	27.0	40.0	53.0	29.9	43
Minimum Circuit Ampacity (208V)	17	24.9	36	47.5	23.6	34.9	46.2	27	37.8
Max. Overcurrent Device (240V)	20	30	45	60	30	40	60	30	45
Max. Overcurrent Device (208V)	20	25	40	50	25	35	50	30	40
Minimum VAC	197	197	197	197	197	197	197	197	197
Maximum VAC	253	253	253	253	253	253	253	253	253
BLOWER MOTOR									
Full Load Amps (FLA)	2.6	2.6	2.6	2.6	1.58	1.58	1.58	3.9	3.9
Horsepower (HP)	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/2
SHIP WEIGHT (LBS)	84	84	84	84	109	109	109	109	109

DAIKIN AIR HANDLERS

DAIKIN

AWUF SERIES SPECIFICATION

	AWUF 321016A*	AWUF 360516B	AWUF 360816B	AWUF 361016B	AWUF 370516B	AWUF 370816B	AWUF 371016B
NOMINAL RATINGS							
Cooling (BTU/h)	30,000	36,000	36,000	36,000	36,000	36,000	36,000
Electric Heat (kW)	10	5	8	10	5	8	10
BLOWER							
Diameter (in.)	10	9	9	9	10	10	10
Width (in.)	8	8	8	8	8	8	8
COIL CONNECTIONS							
Liquid	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction	¾"	¾"	¾"	¾"	¾"	¾"	¾"
Coil Drain Connection (FPT)	¾"	¾"	¾"	¾"	¾"	¾"	¾"
ELECTRICAL DATA							
Voltage	230/208	230/208	230/208	230/208	230/208	230/208	230/208
Minimum Circuit Ampacity (230V)	56	27.0	40.0	53.0	29.9	43	56
Minimum Circuit Ampacity (208V)	49.1	23.6	34.9	46.2	27	37.8	49.1
Max. Overcurrent Device (240V)	60	30	40	60	30	45	60
Max. Overcurrent Device (208V)	50	25	35	50	30	40	50
Minimum VAC	197	197	197	197	197	197	197
Maximum VAC	253	253	253	253	253	253	253
BLOWER MOTOR							
Full Load Amps (FLA)	3.9	1.58	1.58	1.58	3.9	3.9	3.9
Horsepower (HP)	1/2	1/3	1/3	1/3	1/2	1/2	1/2
SHIP WEIGHT (LBS)	109	96	96	96	96	96	96

DAIKIN AIR HANDLERS

DAIKIN

AWUT SERIES SPECIFICATION

	AWUT 310514A*	AWUT 310814A*	AWUT 321014A*	AWUT 370516A	AWUT 370816A	AWUT 371016A
NOMINAL RATINGS						
Cooling (BTU/h)	30,000	30,000	30,000	36,000	36,000	36,000
Electric Heat (kW)	5	8	10	5	8	10
BLOWER						
Diameter (in.)	10	10	10	10	10	10
Width (in.)	8	8	8	8	8	8
COIL CONNECTIONS						
Liquid	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction	¾"	¾"	¾"	¾"	¾"	¾"
Coil Drain Connection (FPT)	¾"	¾"	¾"	¾"	¾"	¾"
ELECTRICAL DATA						
Voltage	230/208	230/208	230/208	230/208	230/208	230/208
Minimum Circuit Ampacity (230V)	30.1	43	56	29.9	43	56
Minimum Circuit Ampacity (208V)	27	38.1	49.4	27	37.9	49.1
Max. Overcurrent Device (240V)	35	45	60	30	45	60
Max. Overcurrent Device (208V)	30	40	50	30	40	50
Minimum VAC	197	197	197	197	197	197
Maximum VAC	253	253	253	253	253	253
BLOWER MOTOR						
Full Load Amps (FLA)	4.1	4.1	4.1	3.9	3.9	3.9
Horsepower (HP)	1/2	1/2	1/2	1/2	1/2	1/2
SHIP WEIGHT (LBS)	109	109	109	96	96	96

DAIKIN AIR HANDLERS

DAIKIN

DVPEC

Multi-Position, Variable-Speed Air Handler



- *Comfortnet™ Compatible*
- *ECM-based*
- *Internal EEV, Inverter-tuned*
- *2 to 5 Tons*

■ *Product Features*

- Electronic Expansion Valve (EEV) for cooling and heat pump applications.
- Variable-speed ECM blower motor
- ComfortNet™ Communicating System compatible
- Provides constant CFM over a wide range of static pressure conditions independent of duct system
- CFM indicator
- Thermostat provides adjustable low CFM for efficient fan-only operation
- All-aluminum evaporator coil
- Fault recall of six most recent faults
- Improved humidity and comfort control
- AHRI certified; ETL listed
- Cabinet air leakage less than 2.0% at 1.0 inch H_2O when tested in accordance with ASHRAE standard 193
- Cabinet air leakage less than 1.4% at 0.5 inch H_2O when tested in accordance with ASHRAE standard 193
- 3 kW – 25 kW electric heater kits
- Horizontal or vertical configuration capabilities
- 21" depth for easier attic access
- DecaBDE-free thermoplastic drain pan with secondary drain connections
- Screw-less sides and back helps to reduce condensation when installed in humid locations
- Foil-faced insulation covers the internal casing to reduce cabinet condensation
- Galvanized, leather grain-embossed finish
- Glue-less cabinet insulation retention
- Tool-less filter access

12 YEAR PARTS LIMITED WARRANTY* ComfortNet CONTROL SYSTEM ALL ALUMINUM COIL C ETL LISTED US Intertek AHRI CERTIFIED ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN AIR HANDLERS

DAIKIN

DVPEC SERIES SPECIFICATION

	DV25PEC B14A*	DV37PEC C14A*	DV59PEC D14A*	DV61PEC D14A*
NOMINAL RATINGS				
Cooling (BTU/h)	24,000	36,000	48,000	60,000
BLOWER				
Diameter	10⅝"	10⅝"	11⅝"	11⅝"
Width	6”	10⅝"	10⅝"	10⅝"
COIL CONNECTIONS				
Liquid	⅜"	⅜"	⅜"	⅜"
Suction	¾”	⅞"	⅞"	⅞"
Coil Drain Connection (FPT)	¾"	¾”	¾”	¾”
ELECTRICAL DATA				
Voltage	208/240	208/240	208/240	208/240
Min Circuit Ampacity	4.9/4.9	6.5/6.5	8.6/8.6	8.6/8.6
Max. Overcurrent Device (Amps)	15/15	15/15	15/15	15/15
Minimum VAC	197	197	197	197
Maximum VAC	253	253	253	253
BLOWER MOTOR				
Full Load Amps (FLA)	3.9	5.2	6.9	6.9
Horsepower (HP)	½	¾	1	1
SHIP WEIGHT (LBS.)	115	140	150	167

NOTE: Minimum Circuit Ampacity (MCA) and Maximum Overcurrent Protection (MOP) for blower without supplemental heat installed. Refer to unit nameplate and/or Heat Kit Data for specification with approved accessory heaters installed.

DAIKIN AIR HANDLERS

DAIKIN

DVPTC

Multi-Position, Variable-Speed, ECM-Based Air Handler with Internal TXV ComfortNet™ Compatible 2 to 5 Tons



■ *Product Features*

- Internal factory-installed thermal expansion valves for cooling and heat pump applications
- Variable-speed ECM blower motor
- ComfortNet™ Communicating System compatible
- Auto configuration of the airflow and tonnage in communicating mode
- All-aluminum evaporator coil
- Provides constant CFM over a wide range of static pressure conditions independent of duct system
- CFM indicator
- Fault recall of six most recent faults
- Provides adjustable low CFM for efficient fan-only operation
- Improved humidity and comfort control
- Built-in compatibility with multi-stage heat pump and cooling applications
- AHRI certified; ETL listed
- Cabinet air leakage less than 2.0% at 1.0 inch H_2O when tested in accordance with ASHRAE standard 193
- Cabinet air leakage less than 1.4% at 0.5 inch H_2O when tested in accordance with ASHRAE standard 193
- 3 kW – 25 kW electric heater kits
- Horizontal or vertical configuration capabilities
- 21” depth for easier attic access
- DecaBDE-free thermoplastic drain pan with secondary drain connections
- Screw-less sides and back helps to reduce condensation when installed in humid locations
- Foil-faced insulation covers the internal casing to reduce cabinet condensation
- Galvanized, leather grain-embossed finish
- Glue-less cabinet insulation retention
- Tool-less filter access

12 YEAR PARTS LIMITED WARRANTY* ComfortNet ALL ALUMINUM COIL C ETL LISTED US Intertek AHRI CERTIFIED ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN AIR HANDLERS

DAIKIN

DVPTC SERIES SPECIFICATION

	DV24 PTCB14**	DV25 PTCB14A*	DV29 PTCB14A*	DV30 PTCC14**	DV31 PTCC14A*	DV33 PTCC14*	DV35 PTCB14	DV36 PTCC14**	DV37 PTCB14A*	DV37 PTCC14A*	DV37 PTCD14A*	DV39 PTCC14*
NOMINAL RATINGS												
Cooling (BTU/h)	24,000	24,000	30,000	30,000	30,000	24,000	28,000	36,000	36,000	36,000	36,000	36,000
CFM (High range)	1100/600	1085/650	1085/610	1200/600	1315/870	1090/685	1020/685	1600/700	1085/610	1315/870	1375/865	1315/965
BLOWER												
Diameter	9½"	9½"	9½"	10⅝"	10⅝"	10⅝"	9½"	10⅝"	9½"	10⅝"	10⅝"	10⅝"
Width	6"	6"	6"	8"	8"	8"	6"	10⅝"	6"	8"	10⅝"	8"
Coil Drain Connection FPT	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
SERVICE VALVE												
Liquid	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction	¾"	¾"	⅞"	⅞"	⅞"	⅞"	¾"	⅞"	⅞"	⅞"	⅞"	⅞"
ELECTRICAL DATA												
Voltage	208/240	208/240	208/240	208/240	208/240	208 / 240	208/240	208/240	208/240	208/240	208/240	208 / 240
Electric Heat Capacity (kW)	3, 5, 6, 8, 10	3, 5, 6, 8, 10, 15	3, 5, 6, 8, 10, 15	3, 5, 6, 8, 10	5, 6, 8, 10, 15, 19	3, 5, 6, 8, 10, 15	3, 5, 6, 8, 10,15	5, 6, 8, 10, 15, 19, 20F	3, 5, 6, 8, 10, 15	5, 6, 8, 10, 15, 19	5, 6, 8, 10, 15, 20	5, 6, 8, 10, 15, 19
Min Circuit Ampacity	4.9/4.9	4.9/4.9	6.5/6.5	4.9/4.9	6.5/6.5	4.9/4.9	4.9/4.9	6.5/6.5	6.5/6.5	6.5/6.5	6.5/6.5	6.5/6.5
Max. Overcurrent Device (amps)	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15
Minimum VAC	197	197	197	197	197	197	197	197	197	197	197	197
Maximum VAC	253	253	253	253	253	253	253	253	253	253	253	253
BLOWER MOTOR												
FLA	3.9	3.9	5.2	3.9	5.2	3.9	3.9	5.2	5.2	5.2	5.2	5.2
HP	½	½	¾	½	¾	½	½	¾	¾	¾	¾	¾
SHIP WEIGHT (LBS)	100	116	129	118	144	118	116	118	129	144	155	118

Note: Minimum Circuit Ampacity (MCA) and Maximum Overcurrent Protection (MOP) for blower without supplemental heat installed.
Refer to unit nameplate and/or Heat Kit Data for specification with approved accessory heaters installed

	DV42 PTCD14**	DV48 PTCC14**	DV48 PTCD14**	DV49 PTCC14*	DV49 PTCD14A*	DV59 PTCC14A*	DV59 PTCD14A*	DV60 PTCD14**	DV61 PTCD14A*
NOMINAL RATINGS									
Cooling (BTU/h)	42,000	42,000	48,000	48,000	42,000	48,000	48,000	60,000	60,000
CFM (High range)	1700/800	1660/700	1800/1350	1420/1040	1530/1195	1595/875	1990/1445	2000/1600	2025/1630
BLOWER									
Diameter	10⅝"	10⅝"	10⅝"	10⅝"	10⅝"	10⅝"	11 15/16"	11⅝"	11 15/16"
Width	10⅝"	10⅝"	10⅝"	8"	10⅝"	8"	10⅝"	10⅝"	10⅝"
Coil Drain Connection FPT	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
SERVICE VALVE									
Liquid	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"
Suction	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"	⅞"
ELECTRICAL DATA									
Voltage	208/240	208/240	208/240	208 / 240	208/240	208/240	208/240	208/240	208/240
Electric Heat Capacity (kW)	5, 6, 8, 10, 15, 20	5, 6, 8, 10, 15, 19, 20F	5, 6, 8, 10, 15, 20, 25	5, 6, 8, 10, 15, 19	5, 6, 8, 10, 15	5,6,8,10, 15,19	5, 6, 8, 10, 15, 20	5, 6, 8, 10, 15, 20, 25	5, 6, 8, 10, 15, 20,25
Min Circuit Ampacity	6.5/6.5	6.5/6.5	6.5/6.5	6.5/6.5	6.5/6.5	8.6/8.6	8.6/8.6	8.6/8.6	8.6/8.6
Max. Overcurrent Device (amps)	15/15	15/15	15/15	15 / 15	15/15	15/15	15/15	15/15	15/15
Minimum VAC	197	197	197	197	197	197	197	197	197
Maximum VAC	253	253	253	253	253	253	253	253	253
BLOWER MOTOR									
FLA	5.2	5.2	5.2	5.2	5.2	6.9	6.9	6.9	6.9
HP	¾	¾	¾	¾	¾	1	1	1	1
SHIP WEIGHT (LBS)	155	125	167	125	167	144	155	167	167

Note: Minimum Circuit Ampacity (MCA) and Maximum Overcurrent Protection (MOP) for blower without supplemental heat installed.
Refer to unit nameplate and/or Heat Kit Data for specification with approved accessory heaters installed

DAIKIN AIR HANDLERS

DAIKIN

MBVC

Multi-Position, Variable-Speed ECM-Based, Modular Blower
ComfortNet™ Compatible



Product Features

- Variable-speed ECM blower motor
- ComfortNet™ Communicating System compatible
- Advanced configuration of the airflow and tonnage in communicating mode
- Provides constant CFM over a wide range of static pressure conditions independent of duct system
- CFM indicator
- Fault recall of six most recent faults
- Provides adjustable low CFM for efficient fan-only operation
- Improved humidity and comfort control
- Built-in compatibility with multi-stage heat pump and cooling applications
- 3 kW – 21 kW electric heat kits
- Blower section usable as electric heater
- Horizontal or vertical configuration capabilities
- 21" depth for easier attic access
- Foil-faced insulation covers the internal casing to reduce cabinet condensation
- Galvanized, leather grain-embossed finish
- Cabinet air leakage less than 2% at 1.0 inch H_20 when tested in accordance with ASHRE standard 193
- Cabinet air leakage less than 1.4% at 0.5 inch H_20 when tested in accordance with ASHRE standard 193
- AHRI certified; ETL listed

Model	MBVC1200AA-1	MBVC1600AA-1	MBVC2000AA-1
Blower			
Diameter	10"	10"	11"
Width	8"	8"	10"
Electrical Data			
Voltage	208 / 230	208 / 230	208 / 230
Min Circuit Ampacity	4.9	6.5	6.5
Max. Overcurrent Device (Amps)	15	15	15
Blower Motor			
Horsepower (HP)	½	¾	¾
Ship Weight (Lbs.)	67	80	86

- Minimum Circuit Ampacity (MCA) and Maximum Overcurrent Protection (MOP) for blower without supplemental heat installed. Refer to unit nameplate for these specifications with approved accessory heaters installed.

12 YEAR PARTS LIMITED WARRANTY* ComfortNet ALL ALUMINUM COIL

AHRI CERTIFIED ETL LISTED Intertek ISO 9001

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 10-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration is not required in California or Quebec.

DAIKIN INDOOR COILS

INDOOR COILS DAIKIN



CAPEA / CAPE
Cased with EEV



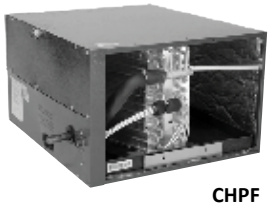
CAUF
Uncased



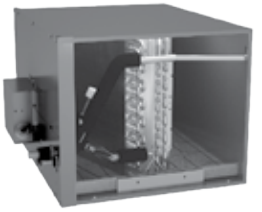
CAPF
Cased



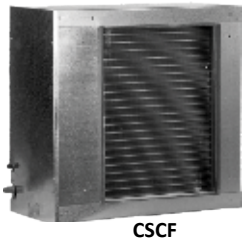
CAPFA
Cased



CHPF
Horizontal "A"



CHPE
Horizontal "A" with EEV



CSCF
Horizontal Slab



CAPT
Cased with Internal TXV



Note: Do not use these coils on oil furnaces or any applications where the temperature on the drain pan may exceed 300° F. If these coils are applied with an oil furnace or another application where high temperatures threaten or jeopardize the durability of the drain pan, you must replace the factory-installed drain pan with a high-temperature drain pan. High-temperature drain pan kits are available as field-installed accessories.

CAUF, CAPF, CAPT, CHPF, CAPEA, CAPE, CHPE AND CSCF

CASED, PAINTED UPFLOW/DOWNFLOW, UNCASED UPFLOW/DOWNFLOW, HORIZONTAL "A", AND HORIZONTAL SLAB

Standard Features

- All-Aluminum evaporator coil
- Optimized for use with R-410A refrigerant
- Some models suitable for use with R-410A or R-22 refrigerant
- Electronic expansion valve (EEV) models feature
  - Compatible with Daikin *One* ecosystem communicating equipment
  - Cooling and heat pump applications
  - Fault recall of six most recent faults
- CAPT models feature factory-installed thermal expansion valves for cooling and heat pump applications
- Check flowrator for cooling and heat pump applications
- CAPE, CAPEA and CHPE models feature factory-installed electronic expansion valve for precise refrigerant control
- Vertical and horizontal models available
- 21" depth for easier attic access
- CAPFA/CAPEA models include a single front access panel
- Foil-faced insulation covers the internal casing to reduce cabinet condensation
- Galvanized, leather grain-embossed finish
- Rust resistant, thermoplastic drain pans featuring a low water-retention design
- DecaBDE-free thermoplastic drain pan with secondary drain connections
- UV-resistant drain pan
- AHRI certified; ETL listed

12 YEAR PARTS LIMITED WARRANTY

Intertek

* Complete warranty details available from your local dealer or at www.daikincomfort.com. To receive the 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration is not required in California or Québec.

DAIKIN FIT

DAIKIN

DESIGNED TO FIT COMFORT, SPACE-SAVING, AND EFFICIENCY REQUIREMENTS WITH EASE.



The Daikin *Fit* system is a side discharge, smart HVAC system that won't compromise on comfort and connects to ducted solutions traditional to the unitary market. In a market saturated with expensive high-tiered inverters, the system provides a premium mid-efficiency inverter at an affordable rate. The low profile of the outdoor unit offers solutions when a traditional cube style cannot.

Features and Benefits

- Up to **18 SEER**
- **Compact –** The trunk style outdoor unit is perfect when installation space is limited
- **Inverter (variable-speed) Compressor –** Ideal indoor comfort and efficiency
- **Low dBa** – Reclaim outdoor space
- **Quiet-mode** – Provides enhanced acoustical comfort
- **Blue Fin Coat** – Long condenser coil life and reliability
- **Swing Compressor** – Quiet and dependable
- **Side panel access** – Ease of service
- **Lightweight** – Easier to handle and install (compared to traditional cube style systems)

THE DAIKIN FIT IS BACKED BY A 12-YEAR PARTS LIMITED WARRANTY* AND A 12-YEAR UNIT REPLACEMENT LIMITED WARRANTY*

* Complete warranty details available from your local dealer/contractor or at www.daikincomfort.com. To receive the 12-Year Unit Replacement Limited Warranty and 12-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Additional requirements for annual maintenance are required for the Unit Replacement Limited Warranty. Online registration and some of the additional requirements are not required in California or Quebec.

DAIKIN FIT - **OUTDOOR UNIT**							
Model Name	DX17VSS 181AA	DX17VSS 241AA	DX17VSS 301AA	DX17VSS 361AA	DX17VSS 421AA	DX17VSS 481AA	DX17VSS 601AA
Cooling Capacity							
Max. Cooling (BTU/h)	17,100	22,800	28,400	34,200	40,000	45,500	54,000
Compressor							
Type	Swing	Swing	Swing	Swing	Swing	Swing	Swing
RLA	10.5	15.2	20.0	20.0	25.0	25.0	26.0
Condenser Fan Motor							
Horsepower (HP)	3/16	3/16	3/16	3/16	¼	¼	¼
FLA	2.18	2.18	2.70	2.70	2.50	2.50	2.50
Refrigeration System							
Refrigerant Line Size1							
Liquid Line Size ("O.D.)	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
Suction Line Size ("O.D.)	¾"	¾"	7/8"	7/8"	1 1/8"	1 1/8"	1 1/8"
Refrigerant Connection Size							
Liquid Valve Size ("O.D.)	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
Suction Valve Size ("O.D.)	¾"	¾"	7/8"	7/8"	7/8"	7/8"	7/8"
Valve Connection Type	Front-Seated	Front-Seated	Front-Seated	Front-Seated	Front-Seated	Front-Seated	Front-Seated
Refrigerant Charge (oz.)	76	76	79	85	116	116	139
Superheat at Service Valve	EEV	EEV	EEV	EEV	EEV	EEV	EEV
Subcooling at Service Valve	10±1°F	12±1°F	10±1°F	10±1°F	8±1°F	9±1°F	8±1°F
Electrical Data							
Voltage-Phase (60 Hz)	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1
Minimum Circuit Ampacity [1]	12.7	17.4	22.7	22.7	34.0	34.0	35.5
Max. Overcurrent Protection [2]	15	20	25	25	35	35	40
Min / Max Volts	197/253	197/253	197/253	197/253	197/253	197/253	197/253
Electrical Conduit Size	½"	½"	½"	½"	½"	½"	½"
Equipment Weight (lbs)	112	112	121	128	168	168	181
Ship Weight (lbs)	130	130	139	146	183	183	196

** Inverter/Controller limited to less than 1 Amp

[1] Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes [2] Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

Notes:

Always check the S&R plate for electrical data on the unit being installed. Unit is charged with refrigerant for 15' of 3/8" liquid line. System charge must be adjusted per Installation Instructions Final Charge Procedure

RESIDENTIAL AIR CONDITIONERS

AIREASE



4SCU20LX

AIREASE™

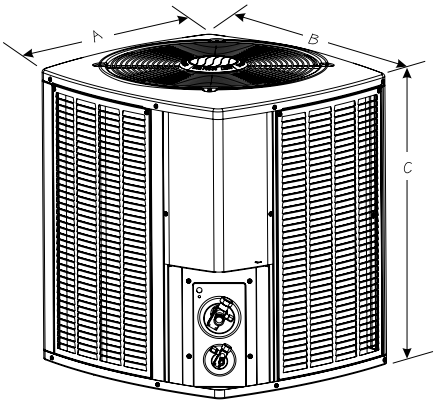
UP TO 20 SEER
VARIABLE CAPACITY AIR CONDITIONER

COMPRESSOR

- Inverter-driven Scroll Compressor for true variable capacity operation, precision environmental control, and exceptional energy savings
- R410A refrigerant
- Heavy-duty compressor sound blanket for quiet operation
- Internally protected against high temperature motor overload conditions

COMPONENTS

- 45-degree offset gauge ports for easy service
- Service valves positioned for quick installation and service
- Variable speed condenser fan motor
- Swept wing fan blade for quiet operation
- Factory installed crankcase heater
- Factory installed high and low pressure switches
- Thread-on pressure switches for simple, quick service
- Fan orifice for smoother airflow and sound level reduction
- Specialized sensors monitor ambient, liquid line, and coil temperatures for precision system control
- Charged for 15 feet of line set
- Requires Comfort Sync™ thermostat and a Comfort Sync™ enabled matching indoor unit



WARRANTY

- 10 year limited warranty on compressor
- 10 year limited warranty on all parts, extended warranty available

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. Lifetime limited heat exchanger warranty applies to registered equipment only (Standard 20 years with no online registration). See full warranty at www.alliedair.com for terms, conditions and exclusions.*

ENERGY STAR

AHRI CERTIFIED™ www.ahridirectory.org Unitary Small AC AHRI Standard 210/240

Intertek

AHRI CERTIFIED™ www.ahridirectory.org Unitary Small AC AHRI Standard 210/240

PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device (amps)	Compressor		Outdoor Fan Motor			Dimensions (inch)			Sound Rating (dBA) low	Sound Rating (dBA) high	Weight (lbs)	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A- Width	B- Depth	C- Height				
4SCU20LX124P-1	208-230/60/1	197-253	19.1	30	13.0	13	2.8	1/3	VAR. SPD.	37.75	37.75	37.75	65	69	243	
4SCU20LX136P-1	208-230/60/1	197-253	20.6	30	14.2	13	2.8	1/3	VAR. SPD.	37.75	37.75	37.75	67	72	245	
4SCU20LX148P-1	208-230/60/1	197-253	29.1	50	21.0	20	2.8	1/3	VAR. SPD.	37.75	37.75	43.75	68	71	287	
4SCU20LX160P-1	208-230/60/1	197-253	29.3	50	21.2	20	2.8	1/3	VAR. SPD.	37.75	37.75	43.75	69	72	321	

Note: Weights listed are unit weights with packaging

RESIDENTIAL AIR CONDITIONERS

AIREASE



4SCU16LS

AIREASE™

16 SEER SPLIT SYSTEM
TWO-STAGE AIR CONDITIONER

COMPRESSOR

- High-efficiency 2 stage Copeland UltraTech™ scroll compressor
- R410a refrigerant
- Heavy-duty compressor sound blanket for quiet operation
- Internally protected against high temperature motor overload conditions

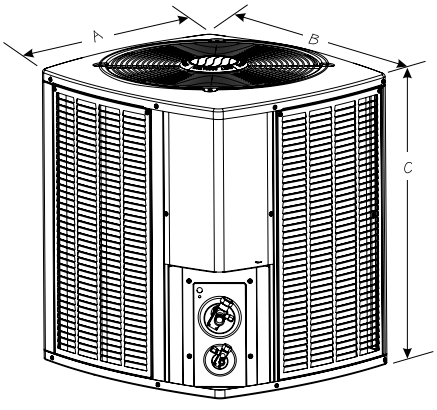
COMPONENTS

- Communicating capable control board works with “Comfort Sync” thermostat (or conventional thermostat)
- Self diagnostics control board for quick trouble shooting; saves up to 10 fault codes regardless of power interrupt
- Factory installed high and low pressure switches
- Thread-on type pressure switches with valve core for quick service
- Service valves mounted for easy brazing and service
- Factory installed crankcase heater
- Factory installed TXV for excellent refrigeration control
- Fan orifice for sound reduction and efficient performance
- Charged for 15 feet of line set
- Can be matched with Comfort Sync™ enabled or conventional indoor unit

WARRANTY

- 10 year limited warranty on compressor
- 10 year limited warranty on all parts, extended warranty available

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. Lifetime limited heat exchanger warranty applies to registered equipment only (Standard 20 years with no online registration). See full warranty at www.alliedair.com for terms, conditions and exclusions.*



PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device (amps)	Compressor		Outdoor Fan Motor			Dimensions (inch)			Sound Rating (dBA)	Weight (lbs)	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A-Width	B-Depth	C-Height			
4SCU16LS124P-3	208-230/60/1	197-253	15.7	25	11.7	58	1.0	1/6	825	29.25	31.25	43.75	74	212	
4SCU16LS136P-3	208-230/60/1	197-253	20.2	35	15.3	83	1.1	1/6	825	29.25	31.25	29.75	74	245	
4SCU16LS148P-3	208-230/60/1	197-253	28.2	45	21.2	104	1.1	1/6	825	29.25	31.25	37.75	76	287	
4SCU16LS160P-3	208-230/60/1	197-253	35.6	60	27.1	153	1.7	1/4	825	35.75	37.75	43.75	76	332	

Note: Weights listed are unit weights with packaging

RESIDENTIAL AIR CONDITIONERS

AIREASE



4SCU16LE

AIREASE™

16 SEER SPLIT SYSTEM AIR CONDITIONER

COMPRESSOR

- High-efficiency scroll compressor
- R410a refrigerant
- Grommet-mounted compressor for quiet operation
- Internally protected against high temperature motor overload conditions
- Heavy-duty compressor sound blanket for quiet operation

COMPONENTS

- 45-degree offset gauge ports for easy service
- Factory installed high and low pressure switches
- Thread-on pressure switches with Schrader core for simple, quick replacement
- Filter drier shipped loose for installation flexibility
- Fan orifice for smoother airflow and sound level reduction

WARRANTY

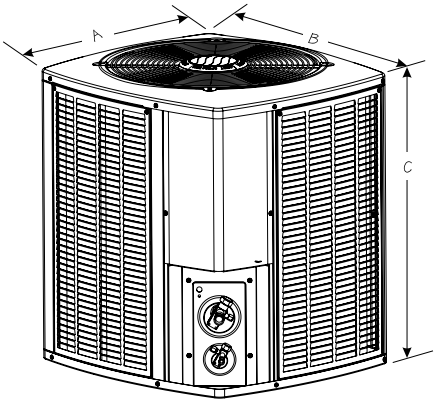
- 10 year limited warranty on compressor
- 10 year limited warranty on all parts, extended warranty available

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. Lifetime limited heat exchanger warranty applies to registered equipment only (Standard 20 years with no online registration). See full warranty at www.alliedair.com for terms, conditions and exclusions.*

AHRI CERTIFIED™ www.ahridirectory.org Unitary Small AC AHRI Standard 210/240 Certification applies only when the complete system is listed with AHRI.

C ETL LISTED US Intertek

AHRI CERTIFIED™ www.ahridirectory.org Unitary Small AC AHRI Standard 210/240 Certification applies only when the complete system is listed with AHRI. C



PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device (amps)	Compressor		Outdoor Fan Motor			Dimensions (inch)			Refrig. Charge (oz.)	Sound Rating (dBA)	Weight (lbs)	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A-Width	B-Depth	C-Height				
4SCU16LE118P-50	208-230/60/1	197-253	11.9	20	9	48	0.7	1/10	1075	24.75	26.75	29.75	77	70	155	
4SCU16LE124P-50	208-230/60/1	197-253	14.6	25	10.9	52	1	1/6	825	29.38	31.25	29.75	86	77	171	
4SCU20LX148P-50	208-230/60/1	197-253	17	25	12.8	63	1	1/6	825	29.38	31.25	37.75	100	75	187	
4SCU16LE136P-50	208-230/60/1	197-253	18	30	13.6	79	1	1/6	825	29.38	31.25	37.75	102	78	205	
4SCU16LE142P-50	208-230/60/1	197-253	19.3	40	14.7	75	1	1/4	825	29.38	31.25	33.75	160	74	227	
4SCU16LE141P-50	208-230/60/1	197-253	23.4	35	17.9	112	1	1/4	825	29.38	31.25	37.75	161	77	234	
4SCU16LE147P-50	208-230/60/1	197-253	22.9	45	16.9	94	1.8	1/3	825	29.38	31.25	37.75	179	79	272	
4SCU16LE148P-50	208-230/60/1	197-253	24.2	45	18	94	1.7	1/4	825	29.38	31.25	33.75	174	76	255	
4SCU16LE159P-50	208-230/60/1	197-253	28.8	50	20.8	127	2.8	1/3	V Spd	35.75	37.75	37.75	178	77	284	
4SCU16LE160P-50	208-230/60/1	197-253	29.6	60	22.2	128	1.8	1/3	825	35.75	37.75	37.75	192	78	284	

Note: Weights listed are unit weights with packaging
+ Factory charged for 15 feet of line set. Adjust per installation instructions.

AIREASE



4SCU13LE

AIREASE™

13 SEER SPLIT SYSTEM AIR CONDITIONING

COMPRESSOR

- High-efficiency scroll compressor
- R410a refrigerant
- Grommet-mounted compressor for quiet operation
- Internally protected against high temperature motor overload conditions
- Heavy-duty compressor sound blanket for quiet operation

COMPONENTS

- Filter drier shipped loose for installation flexibility
- Service valves positioned for quick installation and easy service
- Indoor coil orifice shipped with outdoor unit for optimum efficiency and capacity
- Charged for 15 ft. of line set
- Trade available components
- Factory installed high and low pressure switches
- Sealed contactor with lugs

WARRANTY

- 10 year limited warranty on compressor
- 10 year limited warranty on all parts, extended warranty available

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. Lifetime limited heat exchanger warranty applies to registered equipment only (Standard 20 years with no online registration). See full warranty at www.alliedair.com for terms, conditions and exclusions.*

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C ETL LISTED US Intertek

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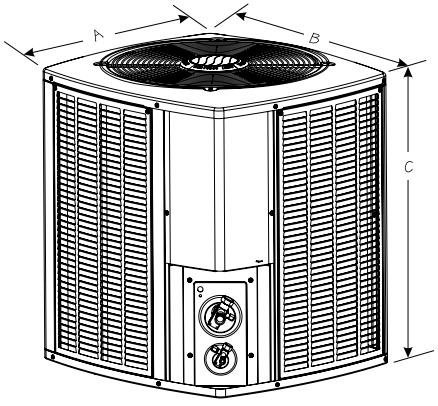

AIR CONDITIONING 347-506

PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device (amps)	Compressor		Outdoor Fan Motor			Dimensions (inch)			Sound Rating (dBA)	Weight (lbs)	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A-Width	B-Depth	C-Height			
4SCU13LE118P-5	208-230/60/1	197-253	10.9	15	8.1	39	0.7	1/10	1010	24.75	26.75	25.75	72	140	
4SCU13LE124P-5	208-230/60/1	197-253	14.1	20	10.7	53	0.7	1/10	1010	24.75	26.75	25.75	72	137	
4SCU13LE130P-5	208-230/60/1	197-253	15.6	25	11.6	59	1.1	1/5	1090	24.75	26.75	29.75	74	149	
4SCU13LE136P-5	208-230/60/1	197-253	20.1	35	15.2	70	1.1	1/5	1090	24.75	26.75	29.75	74	157	
4SCU13LE142P-5	208-230/60/1	197-253	28.1	45	21.1	90	1.7	1/4	825	29.38	31.25	29.75	76	201	
4SCU13LE148P-5	208-230/60/1	197-253	31.9	50	24.1	100	1.7	1/4	825	29.38	31.25	33.75	77	204	
4SCU13LE160P-5	208-230/60/1	197-253	29.4	50	22.1	125	1.7	1/4	830	29.38	31.25	29.75	78	231	

Note: Weights listed are unit weights with packaging
+ Factory charged for 15 feet of line set. Adjust per installation instructions.

RESIDENTIAL AIR CONDITIONERS

DUCANE



4AC13L

13 SEER SPLIT SYSTEM AIR CONDITIONER

Ducane™
AIR CONDITIONING AND HEATING

FEATURES

- R410a Refrigerant
- High-quality condenser coil with copper tubing and enhanced louvered fin for maximum heat transfer capacity
- Top discharge with fan orifice to direct hot air away from living area and shrubbery
- All units factory run tested
- Available with louvered panel or wire guard coil protection
- Easy access to electrical panels
- Corner mounted service valves for easy hook-up and service
- Liquid line filter drier shipped loose
- Charged for 15 feet of interconnecting tubing
- All units are ETL and ETLC approved and AHRI certified

WARRANTY

- 10 year limited warranty on compressor
- 10 year limited warranty on all parts, extended warranty available*

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. See full warranty at www.alliedair.com for terms, conditions and exclusions.*

PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device† (amps)	Compressor		Fan Motor			Dimensions (inch)			Sound Rating (dBA)	Weight (lbs) Louvered	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A-Width	B-Depth	C-Height			
4AC13L18P-10	208-230/60/1	197-253	10.9	15	8.1	39	0.7	1/10	1010	24.25	24.25	25	74	136	
4AC13L24P-10	208-230/60/1	197-253	14.1	20	10.7	53	0.7	1/10	1010	24.25	24.25	25	74	137	
4AC13L30P-10	208-230/60/1	197-253	15.6	25	11.6	59	1.1	1/5	1090	24.25	24.25	29	74	147	
4AC13L36P-10	208-230/60/1	197-253	20.1	35	15.2	70	1.1	1/5	1090	24.25	24.25	29	74	149	
4AC13L42P-10	208-230/60/1	197-253	28.1	45	21.1	90	1.7	1/4	825	28.25	28.25	29	79	194	
4AC13L48P-10	208-230/60/1	197-253	31.9	50	24.1	100	1.7	1/4	825	28.25	28.25	33	79	192	
4AC13L60P-10	208-230/60/1	197-253	29.4	60	22.1	120	1.7	1/4	825	28.25	28.25	29	80	205	

† Overcurrent protection device

DUCANE



4AC16L

SPLIT SYSTEM AIR CONDITIONER UP TO 16 SEER

Ducane™ AIR CONDITIONING AND HEATING

COMPRESSOR

- High-efficiency scroll compressor
- R410A refrigerant
- Internally protected against high temperature motor overload conditions
- Heavy-duty compressor sound blanket for quiet operation (optional accessory)

COMPONENTS

- Factory installed high pressure switch
- Thread-on pressure switches with Schrader core for simple, quick replacement
- Filter drier shipped loose for installation flexibility
- Fan orifice for smoother airflow and sound level reduction
- Charged for 15 feet of line set

COILS

- Omniguard™ total corrosion protection technology designed coil
- Enhanced tube-and-fin coil design featuring MHT™ Technology
- Lanced fins for maximum heat transfer
- Every coil factory tested for leakproof construction
- Raised coil prevents debris from impeding airflow

WARRANTY

- 10 year limited warranty on compressor
- 10 year limited warranty on all parts, extended warranty available*

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. See full warranty at www.alliedair.com for terms, conditions and exclusions.*

PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device (amps)	Compressor		Fan Motor			Dimensions (inch)			Sound Rating (dBA)	Weight (lbs)	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A-Width	B-Depth	C-Height			
4AC16L18P-50	208-230/60/1	197-253	11.9	20	9	48	0.7	1/10	1075	24.25	24.25	29	73	134	
4AC16L24P-50	208-230/60/1	197-253	14.6	25	10.9	59	1	1/6	825	28.25	28.25	37	76	154	
4AC16L30P-50	208-230/60/1	197-253	17	25	12.8	68	1	1/6	825	28.25	28.25	37	76	169	
4AC16L36P-50	208-230/60/1	197-253	18	30	13.6	79	1	1/6	825	28.25	28.25	37	76	181	
4AC16L41P-50	208-230/60/1	197-253	19.3	30	14.7	75	1	1/6	825	28.25	28.25	37	74	192	
4AC16L42P-50	208-230/60/1	197-253	23.4	40	17.9	112	1	1/6	825	28.25	28.25	37	76	211	
4AC16L47P-50	208-230/60/1	197-253	21.9	35	16.1	106	1.8	1/3	825	32.25	32.25	43	80	231	
4AC16L48P-50	208-230/60/1	197-253	24.2	40	18	117	1.7	1/4	825	28.25	28.25	37	78	218	
4AC16L59P-50	208-230/60/1	197-253	28.2	45	20.8	127	2.8	1/3	V Spd	32.25	32.25	43	77	253	
4AC16L60P-50	208-230/60/1	197-253	29.6	50	22.2	128	1.8	1/3	825	32.25	32.25	43	80	226	

DUCANE



4AC16LT

16 SEER SPLIT SYSTEM AIR CONDITIONER

Ducane™ AIR CONDITIONING AND HEATING

COMPRESSOR

- High-efficiency 2 stage Copeland UltraTechTM scroll compressor
- R410A refrigerant
- Internally protected against high temperature motor overload conditions
- Heavy-duty compressor sound blanket for quiet operation (optional accessory)

COMPONENTS

- Service valves positioned for quick installation and easy service
- Thread-on pressure switches with Schrader core for simple, quick replacement
- Comfort Alert 2™ diagnostics is factory installed
- Trade available components
- Factory installed crank case heater
- Charged for 15 ft. of line set

COILS

- Enhanced aluminum fins and copper tubing for higher efficency and capacity
- Raised coil prevents debris from collecting in bottom of coil and causing loss of airflow

WARRANTY

- 10 year limited warranty on compressor
- 10 year limited warranty on all parts, extended warranty available*

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. See full warranty at www.alliedair.com for terms, conditions and exclusions.*

PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device (amps)	Compressor		Fan Motor			Dimensions (inch)			Sound Rating (dBA)	Weight (lbs)	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A-Width	B-Depth	C-Height			
4AC16LT24P	230/60/1	197-253	13.9	11.4	9	52.0	1.1	1/5	1075	26.75	24.25	29.75	74	200	
4AC16LT36P	230/60/1	197-253	21.9	19.0	10.9	82.0	1.1	1/6	825	31.25	29.375	29.75	74	230	
4AC16LT48P	230/60/1	197-253	28.1	24.0	12.8	96.0	1.1	1/6	825	31.25	29.375	37.75	76	262	
4AC16LT60P	230/60/1	197-253	33.8	26.0	13.6	118.0	1.7	1/4	825	31.25	29.375	43.75	76	310	

AIREASE



4SHP20LX

AIREASE™

UP TO 20 SEER
VARIABLE CAPACITY HEAT PUMP

COMPRESSOR

- Inverter-driven Scroll Compressor for true variable capacity operation, precision environmental control, and exceptional energy savings
- R410A refrigerant
- Heavy-duty compressor sound blanket for quiet operation
- Internally protected against high temperature motor overload conditions

COMPONENTS

- 45-degree offset gauge ports for easy service
- Service valves positioned for quick installation and service
- Variable speed condenser fan motor
- Swept wing fan blade for quiet operation
- Factory installed crankcase heater
- Factory installed TXV for excellent refrigeration control
- Factory installed high and low pressure switches
- Thread-on pressure switches for simple, quick service
- Fan orifice for smoother airflow and sound level reduction
- Specialized sensors monitor ambient, liquid line, and coil temperatures for precision system control
- Charged for 15 feet of line set
- Discharge muffler for quiet operation
- Demand defrost for increased energy efficiency
- Quiet Shift™ capable to reduce noise during defrost
- Requires Comfort Sync™ thermostat and a Comfort Sync enabled matching indoor unit

ENERGY STAR

AHRI CERTIFIED™ www.ahridirectory.org Unitary Small AC AHRI Standard 210/240 Certification applies only when the complete system is listed with AHRI.

ETL LISTED c US Intertek

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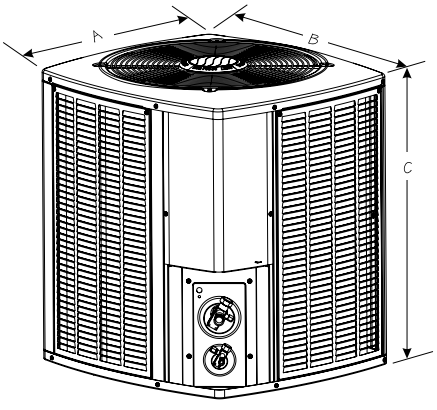
WARRANTY

- 10 year limited warranty on compressor
- 10 year limited warranty on all parts, extended warranty available

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. Lifetime limited heat exchanger warranty applies to registered equipment only (Standard 20 years with no online registration). See full warranty at www.alliedair.com for terms, conditions and exclusions.*



PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device (amps)	Compressor		Outdoor Fan Motor			Dimensions (inch)			Sound Rating (dBA) low	Sound Rating (dBA) high	Weight (lbs)	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A-Width	B-Depth	C-Height				
4SHP20LX124P-1	208-230/60/1	197-253	19.1	30	13.0	13	2.8	1/3	VAR. SPD.	37.75	35.75	37.75	65	67	243	
4SHP20LX136P-1	208-230/60/1	197-253	20.8	35	14.4	13	2.8	1/3	VAR. SPD.	37.75	35.75	37.75	67	70	245	
4SHP20LX148P-1	208-230/60/1	197-253	29.3	50	21.2	20	2.8	1/3	VAR. SPD.	37.75	35.75	43.75	68	70	287	
4SHP20LX160P-1	208-230/60/1	197-253	34.9	60	25.7	20	2.8	1/3	VAR. SPD.	37.75	35.75	43.75	69	71	321	

Note: Weights listed are unit weights with packaging

RESIDENTIAL HEAT PUMPS

AIREASE



4SHP16LS

AIREASE™

16 SEER SPLIT
TWO STAGE HEAT PUMP

COMPRESSOR

- High-efficiency 2 stage Copeland Ultra Tech™ scroll compressor
- R410a refrigerant
- Grommet mounted compressor for quiet operation
- Heavy-duty compressor sound blanket for quiet operation
- Internally and externally protected against overload conditions

COMPONENTS

- Full metal louvered panels remove for easy coil cleaning and service
- Bi-directional filter drier for long-lasting durability and system protection
- Discharge muffler for quiet operation
- Factory installed crank case heater
- Factory installed high and low pressure switch
- Advanced design defrost system featuring a smart logic for power consumption savings
- Service valves positioned for quick installation and easy service
- Trade available components
- Quiet Shift™ capable for sound control during defrost
- Communicating features
- Thermostat flexibility: works with the Comfort Sync T-Stat (when matched with communicating indoor unit) or a conventional 24V T-Stat
- Self diagnostics saves last 10 fault codes regardless of power interruption

WARRANTY

- 10 year limited warranty on compressor
- 10 year limited warranty on all parts, extended warranty available

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. Lifetime limited heat exchanger warranty applies to registered equipment only (Standard 20 years with no online registration). See full warranty at www.alliedair.com for terms, conditions and exclusions.*

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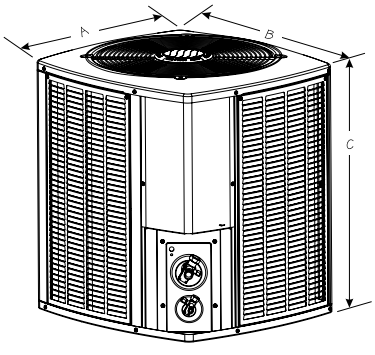


PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device (amps)	Compressor		Fan Motor			Dimensions (inch)			Refrig. Charge (oz.)	Sound Rating (dBA)	Weight (lbs)	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A-Width	B-Depth	C-Height				
4SHP16LS124P-2	208-230/60/1	197-253	13.5	20	11.4	52	0.7	1/10	1075	24-3/4	26-3/4	33-3/4	146	73	207	
4SHP16LS136P-2	208-230/60/1	197-253	22.5	35	19.0	82	1.7	1/4	825	29-1/4	31-1/4	43-3/4	192	77	268	
4SHP16LS148P-2	208-230/60/1	197-253	28.2	45	24.0	96	1.8	1/3	825	35-3/4	37-3/4	37-3/4	236	75	288	
4SHP16LS160P-2	208-230/60/1	197-253	35.1	60	26.0	118	2.8	1/3	ECM	35-3/4	37-3/4	43-3/4	244	74	313	

Note: Weights listed are unit weights with packaging
+ Factory charged for 15 feet of line set. Adjust per installation instructions.

AIREASE



4SHP15LE

15 SEER SPLIT HEAT PUMP SYSTEM
UP TO 16 SEER & 9.0 HSPF

AIREASE™

COMPRESSOR

- High-efficiency scroll compressor
- R410a refrigerant
- Grommet-mounted compressor for quiet operation
- Protected against high temperature motor overload conditions
- Heavy-duty compressor sound blanket for quiet operation

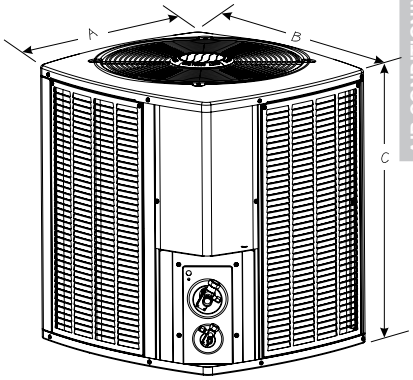
COMPONENTS

- Factory installed crankcase heater (on select models)
- Factory installed high and low pressure switches
- Thread-on pressure switches with Schrader core for simple, quick replacement
- Filter drier shipped loose for installation flexibility
- Fan orifice for smoother airflow and sound level reduction
- Charged for 15 feet of line set
- Discharge muffler for quiet operation
- Quiet Shift™ capable to reduce noise during defrost
- Sealed Contactor with lugs

WARRANTY

- 10 year limited warranty on compressor
- 5 year limited warranty on all parts, extended warranty available

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. Lifetime limited heat exchanger warranty applies to registered equipment only (Standard 20 years with no online registration). See full warranty at www.alliedair.com for terms, conditions and exclusions.*



PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device (amps)	Compressor		Fan Motor			Dimensions (inch)			Sound Rating (dBA)	Weight (lbs)	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A-Width	B-Depth	C-Height			
4SHP15LE118P-50	208-230/60/1	197-253	12.3	20	9.0	48	1.1	1/6	825	29.25	31.25	43.75	74	207	
4SHP15LE124P-50	208-230/60/1	197-253	17.9	30	13.4	58	1.1	1/6	825	29.25	31.25	43.75	74	208	
4SHP15LE130P-50	208-230/60/1	197-253	17.1	25	12.8	64	1.1	1/6	825	29.25	31.25	43.75	73	205	
4SHP15LE136P-50	208-230/60/1	197-253	18.7	30	14.1	77	1.1	1/6	825	29.25	31.25	37.75	77	224	
4SHP15LE142P-50	208-230/60/1	197-253	24.2	40	17.9	112	1.8	1/3	825	35.75	37.75	37.75	77	290	
4SHP15LE148P-50	208-230/60/1	197-253	29.0	50	21.8	117	1.8	1/3	825	35.75	37.75	37.75	79	293	
4SHP15LE160P-50	208-230/60/1	197-253	29.4	50	22.1	125	1.8	1/3	825	35.75	37.75	43.75	77	336	

Note: Weights listed are unit weights with packaging
+ Factory charged for 15 feet of line set. Adjust per installation instructions.

RESIDENTIAL HEAT PUMPS

DUCANE



4HP15L

HIGH EFFICIENCY SPLIT SYSTEM HEAT PUMP UP TO 16 SEER & 9.0 HSPF

COMPRESSOR

- High-efficiency scroll compressor
- R410A refrigerant
- Grommet mounted compressor for quiet operation
- Internally protected against high temperature motor overload conditions
- Heavy-duty compressor sound blanket for quiet operation (optional accessory)

COMPONENTS

- Factory installed high and low pressure switches
- Thread-on pressure switches with Schrader core for simple, quick replacement
- Factory installed filter drier
- Fan orifice for smoother airflow and sound level reduction
- Charged for 15 feet of line set

COILS

- Omniguard™ total corrosion protection technology designed coil
- Enhanced tube-and-fin coil design featuring MHT™ Technology
- Lanced fins for maximum heat transfer
- Factory tested for leakproof construction

WARRANTY

- 10 year limited warranty on compressor
- 5 year limited warranty on all parts, extended warranty available*

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. See full warranty at www.alliedair.com for terms, conditions and exclusions.*

PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device (amps)	Compressor		Fan Motor			Dimensions (inch)			Sound Rating (dBA)	Weight (lbs)	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A- Width	B- Depth	C- Height			
4HP15L18P-50	208-230/60/1	197-253	12.3	20	9.0	48	1.1	1/5	825	28.25	28.25	43.25	76	182	
4HP15L24P-50	208-230/60/1	197-253	17.9	30	13.4	58	1.1	1/6	825	28.25	28.25	43.25	76	184	
4HP15L30P-50	208-230/60/1	197-253	17.1	25	12.8	64	1.1	1/6	825	28.25	28.25	43.25	76	183	
4HP15L36P-50	208-230/60/1	197-253	18.7	30	14.1	77	1.1	1/4	825	28.25	28.25	37.25	76	199	
4HP15L42P-50	208-230/60/1	197-253	25.8	45	19.2	123.9	1.8	1/6	825	32.25	32.25	37.25	79	249	
4HP15L48P-50	208-230/60/1	197-253	26.2	45	19.6	130	1.8	1/4	825	32.25	32.25	37.25	80	252	
4HP15L60P-50	208-230/60/1	197-253	29.6	50	22.2	127.9	1.8	1/4	825	32.25	32.25	43.25	80	270	

DUCANE



4HP16L

HIGH EFFICIENCY SPLIT SYSTEM HEAT PUMP UP TO 16 SEER & 9.5 HSPF

COMPRESSOR

- High-efficiency scroll compressor
- R410A refrigerant
- Grommet mounted compressor for quiet operation
- Internally protected against high temperature motor overload conditions
- Heavy-duty compressor sound blanket for quiet operation (optional accessory)

COMPONENTS

- Factory installed high and low pressure switches
- Thread-on pressure switches with Schrader core for simple, quick replacement
- Factory installed filter drier
- Fan orifice for smoother airflow and sound level reduction
- Charged for 15 feet of line set

COILS

- Omniguard™ total corrosion protection technology designed coil
- Enhanced tube-and-fin coil design featuring MHT™ Technology
- Lanced fins for maximum heat transfer
- Factory tested for leakproof construction

WARRANTY

- 10 year limited warranty on compressor
- 5 year limited warranty on all parts, extended warranty available*

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. See full warranty at www.alliedair.com for terms, conditions and exclusions.*

PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device (amps)	Compressor		Fan Motor			Dimensions (inch)			Sound Rating (dBA)	Weight (lbs)	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A-Width	B-Depth	C-Height			
HP16L18P-50	208-230/60/1	197-253	10.6	20	7.7	48	1.0	1/6	825	28.25	28.25	43	76	180	
4HP15L24P-50	208-230/60/1	197-253	13.6	20	10.1	52	1.0	1/6	825	28.25	28.25	33	76	188	
4HP15L30P-50	208-230/60/1	197-253	16.4	25	12.3	63	1.0	1/6	825	28.25	28.25	33	76	188	
4HP15L36P-50	208-230/60/1	197-253	20.9	35	14.7	75	1.1	1/3	820	32.25	32.25	33	76	214	
4HP15L42P-50	208-230/60/1	197-253	25	40	17.9	112.3	2.6	1/3	820	32.25	32.25	43	79	263	
4HP15L48P-50	208-230/60/1	197-253	25.8	40	18.5	124	2.6	1/3	820	32.25	32.25	43	80	263	
4HP15L60P-50	208-230/60/1	197-253	30.4	50	22.2	127.9	2.6	1/3	820	32.25	32.25	43	80	268	

DUCANE



4HP16LT

16 SEER SPLIT SYSTEM
TWO STAGE HEAT PUMP

Ducane™
AIR CONDITIONING AND HEATING

COMPRESSOR

- High-efficiency 2 stage Copeland Ultra Tech™ scroll compressor
- R410A refrigerant
- Grommet mounted compressor for quiet operation
- Internally protected against high temperature motor overload conditions
- Externally protected agains high load and loss of charge conditions
- Sound cover for quiet operation

COMPONENTS

- Bi-directional solid core filter drier for long-lasting durability and system protection
- Discharge muffler for quiet operation
- Factory installed crankcase heater
- Demand defrost system for power consumption savings
- Charged for 15 feet of line set
- Fan orifice for increased efficiency and quiet operation

COILS

- Enhanced aluminum fins and copper tubing for high efficiency and capacity
- Raised coil prevents debris from collecting in bottom of coil and causing loss of airflow

WARRANTY

- 10 year limited warranty on compressor
- 10 year limited warranty on all parts, extended warranty available*

**Warranty provides for a total of 10 years of limited warranty coverage (Standard 5-year limited parts warranty plus an additional 5-year limited extended parts warranty). Warranty must be registered online within 60 days of installation to qualify for 10-year coverage. Unregistered equipment defaults to 5-year coverage. See full warranty at www.alliedair.com for terms, conditions and exclusions.*

PHYSICAL AND ELECTRICAL DATA

Model	Voltage/Hz/ Phase	Voltage Range	Min. Circuit Amp	Max. Over Current Device (amps)	Compressor		Fan Motor			Dimensions (inch)			Sound Rating (dBA)	Weight (lbs)	LIST
					Rated Load (amps)	Locked Rotor (amps)	Rated Load (amps)	Rated HP	Nom. RPM	A- Width	B- Depth	C- Height			
4HP16LT24P-3	208-230/60/1	197-253	15.3	25	11.7	58	0.7	1/10	1075	24-3/4	26-3/4	33-3/4	73	207	
4HP16LT36P-3	208-230/60/1	197-253	20.8	35	15.3	83	1.7	1/4	825	29-3/8	31-1/4	37-3/4	75	253	
4HP16LT48P-3	208-230/60/1	197-253	16.4	45	21.2	104	1.8	1/3	825	35-3/4	37-3/4	37-3/4	75	288	
4HP16LT60P-3	208-230/60/1	197-253	36.7	60	27.1	153	2.8	1/3	ECM	35-3/4	37-3/4	43-3/4	77	313	

AIREASE



A97MV

AIREASE™

MODULATING
VARIABLE SPEED GAS FURNACE

CONFIGURATIONS

- Upflow / Horizontal
- Downflow

HEAT EXCHANGER DESIGN

- 409 stainless steel primary heat exchanger with crimped non-welded construction
- AL29-4C stainless steel secondary heat exchanger

AIR DELIVERY SYSTEM

- ECM variable speed blower motor
- Easily removable slide out blower designexchanger

WARRANTY

- 10 year limited parts warranty / lifetime heat exchanger warranty available. See limited warranty document for details.

VENTING

- Category 4 direct vent appliance (2 pipe only)

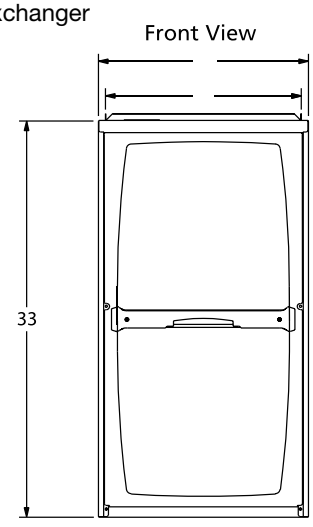
INSTALLATION FEATURES

- Left or right utility connections
- Zero step horizontal conversion
- Removable floor base for bottom return air

ENERGY STAR

DESIGN CERTIFIED

AHRI CERTIFIED™ www.ahridirectory.org



PHYSICAL AND ELECTRICAL DATA

	Model	Input (Btuh)	Output * (Btuh)	AFUE (ICS)	Volts-Hertz-Phase	Dimensions (inch)			LIST
						Width	Depth	Height	
UPFLOW / HORIZONTAL	A97USMV070B12S	66,000	64,000	97.0%	120-60-1	17-1/2	28-1/2	33	
	A97USMV090C12S	88,000	85,000	97.0%	120-60-1	21	28-1/2	33	
	A97USMV090C16S	88,000	85,000	97.0%	120-60-1	21	28-1/2	33	
	A97USMV090C20S	88,000	85,000	97.0%	120-60-1	21	28-1/2	33	
	A97USMV110C20S	110,000	106,000	97.0%	120-60-1	21	28-1/2	33	
	A97USMV135D20S	132,000	127,000	97.0%	120-60-1	24-1/2	28-1/2	33	
DOWNFLOW	A97DSMV070B12S	66,000	64,000	97.0%	120-60-1	17-1/2	28-1/2	33	
	A97DSMV090C16S	88,000	85,000	97.0%	120-60-1	21	28-1/2	33	
	A97DSMV090C20S	88,000	85,000	97.0%	120-60-1	21	28-1/2	33	
	A97DSMV110C20S	110,000	107,000	97.0%	120-60-1	21	28-1/2	33	

Note: For vent length and clearances to combustibles, please reference installation instructions.

RESIDENTIAL FURNACES

AIREASE



A962V

AIREASE™

TWO STAGE VARIABLE SPEED GAS FURNACE

CONFIGURATIONS

- Upflow / Horizontal
- Downflow

HEAT EXCHANGER DESIGN

- 409 stainless steel primary heat exchanger with crimped non-welded construction
- AL29-4C stainless steel secondary heat exchanger

AIR DELIVERY SYSTEM

- ECM Variable speed blower motor
- Easily removable slide out blower design

WARRANTY

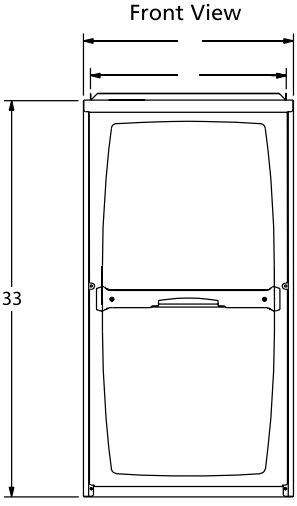
- 10 year limited parts warranty / lifetime heat exchanger warranty available. See limited warranty document for details.

VENTING

- Vent materials for Canadian applications must comply with ULC 5636
- Certified for direct vent (2-pipe) and in-direct (1-pipe) applications.

INSTALLATION FEATURES

- Left and right utility connections
- Removable floor base for bottom return air
- All models comply with California's South Coast Air Quality Management district Low NOx requirements
- Zero step horizontal conversion



PHYSICAL AND ELECTRICAL DATA

	Model	1st Stage		2nd Stage		AFUE (ICS)	Volts-Hertz-Phase	Dimensions (inch)			LIST
		Input (Btuh)	Output* (Btuh)	Input (Btuh)	Output* (Btuh)			Width	Depth	Height	
UPFLOW / HORIZONTAL	A96US2V045B12S	29,000	28,000	44,000	42,000	96.0	120-60-1	17-1/2	28-1/2	33	
	A96US2V070B12S	43,000	41,000	66,000	62,000	96.0	120-60-1	17-1/2	28-1/2	33	
	A96US2V090C12S	57,000	55,000	88,000	84,000	96.0	120-60-1	21	28-1/2	33	
	A96US2V090C16S	57,000	55,000	88,000	85,000	96.0	120-60-1	21	28-1/2	33	
	A96US2V090C20S	57,000	55,000	88,000	85,000	96.0	120-60-1	21	28-1/2	33	
	A96US2V110C16S	72,000	70,000	110,000	105,000	96.0	120-60-1	21	28-1/2	33	
	A96US2V110C20S	72,000	70,000	110,000	106,000	96.0	120-60-1	21	28-1/2	33	
	A96US2V135D20S	88,000	84,000	132,000	126,000	96.0	120-60-1	24-1/2	28-1/2	33	
DOWNFLOW	A96DS2V045B12S	29,000	28,000	44,000	43,000	96.0	120-60-1	17-1/2	28-1/2	33	
	A96DS2V070B16S	43,000	42,000	66,000	64,000	96.0	120-60-1	17-1/2	28-1/2	33	
	A96DS2V090C20S	57,000	56,000	85,000	85,000	96.0	120-60-1	21	28-1/2	33	
	A96DS2V110C20S	72,000	70,000	110,000	106,000	96.0	120-60-1	21	28-1/2	33	

Note: For vent length and clearances to combustibles, please reference installation instructions.
** Outputs shown are High Fire, 100% rate, Low Fire is 67% of shown output.*

AIREASE



A962E

AIREASE™

TWO STAGE HIGH EFFICIENCY CONSTANT TORQUE GAS FURNACE

CONFIGURATIONS

- Upflow / Horizontal • Downflow

HEAT EXCHANGER DESIGN

- 409 stainless steel primary heat exchanger with crimped non-welded construction
- AL29-4C stainless steel secondary heat exchanger

BURNERS

- Aluminized steel in shot burners for smooth ignition
- Isolated burner enclosure for quiet operation

AIR DELIVERY SYSTEM

- Constant torque ECM
- Efficient blower motor
- Easily removable slide-out blower design
- Dynamically balanced blower wheel with resilient motor mounts for smooth and quiet operation

WARRANTY

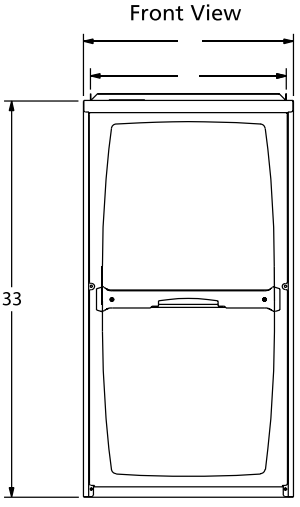
- 10 year limited parts warranty / lifetime heat exchanger warranty available. See limited warranty document for details.

VENTING

- 2-speed induced draft motor with stainless steel shaft, steel ball bearings, and fan cooled for long life
- Vent materials for Canadian applications must comply with ULC S636
- Certified for direct vent and indirect vent (1 and 2 pipe) applications

INSTALLATION FEATURES

- Left or right utility connections
- Zero step horizontal conversion
- Removable floor base (upflow/horizontal units) for bottom return air
- All models comply with California's South Coast Air Quality Management district Low NOx requirements



PHYSICAL AND ELECTRICAL DATA

	Model	1st Stage		2nd Stage		AFUE (ICS)	Volts-Hertz-Phase	Dimensions (inch)			LIST
		Input (Btuh)	Output* (Btuh)	Input (Btuh)	Output* (Btuh)			Width	Depth	Height	
UPFLOW / HORIZONTAL	A96UH2E030B08S	20,000	19,000	30,000	29,000	96.0	120-60-1	17-1/2	28-1/2	33	
	A96UH2E045B12S	29,000	28,000	44,000	42,000	96.0	120-60-1	17-1/2	28-1/2	33	
	A96UH2E070B12S	43,000	41,000	66,000	62,000	96.0	120-60-1	17-1/2	28-1/2	33	
	A96UH2E090C16S	57,000	55,000	88,000	85,000	96.0	120-60-1	21	28-1/2	33	
	A96UH2E110C20S	72,000	70,000	110,000	105,000	96.0	120-60-1	21	28-1/2	33	
DOWNFLOW	A96DF2E045B12S	29,000	28,000	44,000	43,000	96.0	120-60-1	17-1/2	28-1/2	33	
	A96DF2E070B16S	43,000	42,000	66,000	64,000	96.0	120-60-1	17-1/2	28-1/2	33	
	A96DF2E090C16S	57,000	56,000	88,000	85,000	96.0	120-60-1	21	28-1/2	33	
	A96DF2E110C20S	72,000	70,000	110,000	106,000	96.0	120-60-1	21	28-1/2	33	

Note: For vent length and clearances to combustibles, please reference installation instructions.

RESIDENTIAL FURNACES

AIREASE

A951E

AIREASE™

SINGLE STAGE HIGH EFFICIENCY CONSTANT TORQUE GAS FURNACE



CONFIGURATIONS

- Upflow / Horizontal • Downflow

HEAT EXCHANGER DESIGN

- 409 stainless steel primary heat exchanger with crimped non-welded construction
- AL29-4C stainless steel secondary heat exchanger

AIR DELIVERY SYSTEM

- Multi-speed high efficiency (constant torque) blower motor
- Easily removable slide out blower design
- Enhanced cooling SEER ratings when applied with properly matched cooling equipment.

BURNERS

- Aluminized steel in shot burners for smooth ignition

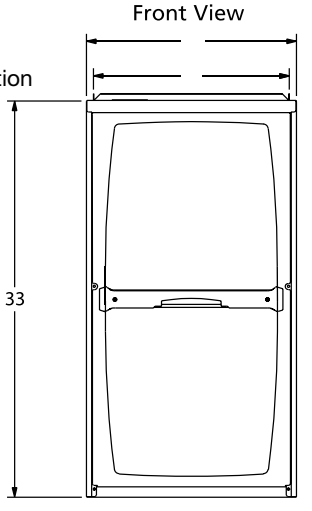
VENTING

- Designed certified for direct (2-pipe) and non direct (1-pipe) applications
- Easily vented with PVC pipe

INSTALLATION FEATURES

- Left or right utility connections
- Zero step horizontal conversion
- Removable floor base (upflow/horizontal units) for bottom return air
- All models comply with California's South Coast Air Quality Management district Low NOx requirements

Front View



WARRANTY

- 10 year limited parts warranty / lifetime heat exchanger warranty available. See limited warranty document for details.

ENERGY STAR

DESIGN CERTIFIED

AHRI CERTIFIED www.ahridirectory.org

AHRI CERTIFIED www.ahridirectory.org

PHYSICAL AND ELECTRICAL DATA

	Model	Input (Btuh)	Output * (Btuh)	AFUE (ICS)	Volts-Hertz-Phase	Dimensions (inch)			LIST
						Width	Depth	Height	
UPFLOW / HORIZONTAL	A95UH1E030B08S	30,000	28,000	95.0%	120-60-1	17-1/2	28-1/2	33	
	A95UH1E045B12S	44,000	42,000	95.0%	120-60-1	17-1/2	28-1/2	33	
	A95UH1E070B12S	64,000	64,000	95.0%	120-60-1	17-1/2	28-1/2	33	
	A95UH1E090C16S	88,000	85,000	95.0%	120-60-1	21	28-1/2	33	
	A95UH1E110C20S	110,000	106,000	95.0%	120-60-1	21	28-1/2	33	
	A95UH1E135D20S	132,000	128,000	95.0%	120-60-1	24-1/2	28-1/2	33	
DOWNFLOW	A95DF1E045B12S	44,000	42,000	95.0%	120-60-1	17-1/2	28-1/2	33	
	A95DF1E070B16S	66,000	64,000	95.0%	120-60-1	17-1/2	28-1/2	33	
	A95DF1E090C16S	88,000	85,000	95.0%	120-60-1	21	28-1/2	33	
	A95DF1E110C20S	110,000	106,000	95.0%	120-60-1	21	28-1/2	33	

Note: For vent length and clearances to combustibles, please reference installation instructions.

DUCANE



96G1E

SINGLE STAGE
CONSTANT TORQUE MOTOR

CONFIGURATIONS

- Upflow / Horizontal
- Downflow

HEAT EXCHANGER DESIGN

- Aluminized steel primary heat exchanger with crimped nonwelded construction
- AL29-4C stainless steel secondary heat exchanger

AIR DELIVERY SYSTEM

- Multi-speed high efficiency (constant torque) blower motor
- Easily removable slide out blower design
- Enhanced cooling SEER ratings when applied with properly matched cooling equipment.

WARRANTY

- 10 year limited parts warranty / lifetime heat exchanger warranty available. See limited warranty document for details.

VENTING

- Designed certified for direct (2-pipe) and non direct (1-pipe) applications
- Easily vented with PVC pipe

INSTALLATION FEATURES

- Left and right utility connections
- Design certified for direct and non-direct vent applications
- Zero step horizontal conversion
- Removable floor base (upflow / horizontal units) for bottom return air
- Complies with California's South Coast Air Quality Management district Low NOx requirements

PHYSICAL AND ELECTRICAL DATA

	Model	Input (Btuh)	Output (Btuh)	AFUE (ICS)	Nominal Cooling Capacity	Gas Inlet (in.)	Volts/Hz/ Phase	Max. Time Delay Breaker or Fuse	Nominal Full Load Amps	Trans (VA)	Approx Shipping Weight (lbs)
Upflow / Horizontal	96G1UH030BE08	30,000	28,000	96%	2 Ton	1/2	120-60-1	15	6.8	40	129
	96G1UH045BE12	44,000	42,000	96%	3 Ton	1/2	120-60-1	15	6.8	40	129
	96G1UH070BE12	66,000	63,000	96%	3 Ton	1/2	120-60-1	15	6.8	40	134
	96G1UH090CE16	88,000	85,000	96%	4 Ton	1/2	120-60-1	15	8.4	40	158
	96G1UH110CE20	110000	106000	96%	5 Ton	1/2	120-60-1	15	10.9	40	170
Downflow	96G1DF045BE12	44,000	42,000	96%	3 Ton	1/2	120-60-1	15	6.8	40	131
	96G1DF070BE16	66,000	63,000	96%	4 Ton	1/2	120-60-1	15	8.4	40	144
	96G1DF090CE16	88,000	85,000	96%	4 Ton	1/2	120-60-1	15	8.4	40	160

Note: For vent length and clearances to combustibles, please reference installation instructions.

DUCANE



96G2V

TWO STAGE VARIABLE SPEED GAS FURNACE

Ducane™ AIR CONDITIONING AND HEATING

CONFIGURATIONS

- Upflow / Horizontal
- Downflow

HEAT EXCHANGER DESIGN

- Aluminized steel primary heat exchanger with crimped nonwelded construction
- AL29-4C stainless steel secondary heat exchanger
- Non-welded crimped S-curve primary heat exchanger design for maximum durability

AIR DELIVERY SYSTEM

- Efficient ECM variable speed blower motor
- Motor features "soft start" and "soft stop" for quiet operation
- Active and passive dehumidification feature
- Easily removable slide-out blower design

VENTING

- 2-speed induced draft motor with stainless steel shaft, steel ball bearings, and fan cooled for long life
- Vent materials for Canadian applications must comply with ULC S636
- Certified for direct vent (2-pipe) or non-direct (1-pipe) applications

INSTALLATION FEATURES

- Left or right gas and electric entry
- Design certified for direct and non-direct vent applications
- Zero step horizontal conversion
- Removable floor base (upflow / horizontal units) for bottom return air
- All models comply with California's South Coast Air Quality Management district Low NOx requirements

WARRANTY

- 10 year limited parts warranty / lifetime heat exchanger warranty available. See limited warranty document for details.

ENERGY STAR

DESIGN CERTIFIED

AHRI CERTIFIED www.ahridirectory.org

AHRI CERTIFIED www.ahridirectory.org

PHYSICAL AND ELECTRICAL DATA

	MODEL	1ST STAGE		2ND STAGE		AFUE (ICUS)	NOM. COOLING CAPACITY (TONS)	GAS INLET (IN.)	VOLTS/ HZ/ PHASE	MIN. TIME DELAY BREAKER OR FUSE	NOMINAL F.L.A.	TRANS. (V.A.)	APPROX. WEIGHT (LBS.)
		INPUT (BTUH)	OUTPUT (BTUH)	INPUT (BTUH)	OUTPUT (BTUH)								
UPFLOW/HORIZONTAL	96G2UH045BV12	29,000	28,000	44,000	42,000	96.0	3	1/2	120-60-1	15	7.7	40	130
	96G2UH070BV12	43,000	41,000	66,000	62,000	96.0	3	1/2	120-60-1	15	7.7	40	138
	96G2UH090CV12	57,000	55,000	88,000	84,000	96.0	3	1/2	120-60-1	15	7.7	40	154
	96G2UH090CV20	57,000	55,000	88,000	85,000	96.0	5	1/2	120-60-1	20	12.8	40	166
	96G2UH110CV20	72,000	70,000	110,000	105,000	96.0	4	1/2	120-60-1	15	12.8	40	173
	96G2UH135DV20	88,000	84,000	132,000	126,000	96.0	5	1/2	120-60-1	20	12.8	40	188
DOWNFLOW	96G2DF070BV16	43,000	42,000	66,000	64,000	96.0	4	1/2	120-60-1	15	10.1	40	136
	96G2DF090CV20	57,000	56,000	88,000	85,000	96.0	5	1/2	120-60-1	20	12.8	40	164
	96G2DF110CV20	72,000	70,000	110,000	106,000	96.0	5	1/2	120-60-1	20	12.8	40	176

Note: For vent length and clearances to combustibles, please reference installation instructions.

PACKAGE ROOFTOP UNITS

ALLIED COMMERCIAL

E-SERIES™

LGH
GAS/ELECTRIC

- 3- to 50-ton cooling capacity
- Up to 17 SEER, 16.0 IEER
- Up to 81% AFUE

LCH
ELECTRIC/ELECTRIC

- 3- to 50-ton cooling capacity
- Up to 17 SEER, 16.0 IEER

LGH/LCH
HIGH EFFICIENCY

- 3- to 20-ton cooling capacity
- Up to 23.5 SEER, 22.0 IEER and 15.0 EER



FEATURES

- ENERGY STAR® qualified
- Exceeds ASHRAE 90.1-2010 minimum standards by more than 38%
- Single-Zone VAV (Variable Air Volume) supply fan technology[2]
  - Up to 61% power savings over comparable units
  - 29% better moisture removal for humidity control
- Eco-Last™ Coil System uses up to 52% less refrigerant, is up to 59% lighter and has up to 20% fewer brazed joints than regular rooftop coils[3]
- Patented dehumidification system
- Intelli-Guide™ unit controller verifies service, operation, required setup and configuration with precision
- Unique WireRight™ system helps ensure the most accurate setup and the least service time
- Helps buildings qualify for the most LEED® points

WARRANTIES[1]

- 1-year limited warranty on covered components
- 3-year limited warranty on Eco-Last Coil System
- 3-year limited warranty on Intelli-Guide unit controller
- 5-year limited warranty on compressor
- 10-year limited warranty on aluminized gas heat exchanger
- 15-year limited warranty on stainless steel gas heat exchanger

[1] See warranty certificate for complete details.
[2] At 55% airflow when compared to full load
[3] Excludes heat pump models

PACKAGE ROOFTOP UNITS

ALLIED COMMERCIAL

K-SERIES™

KGA/KGB
GAS/ELECTRIC

- 2- to 25-ton cooling capacity
- Up to 14 SEER and 16 IEER
- Up to 81% AFUE

KCA/KCB
ELECTRIC/ELECTRIC

- 2- to 25-ton cooling capacity
- Up to 14 SEER and 14.5 IEER

KHA/KHB
HEAT PUMP

- 2- to 20-ton cooling capacity
- Up to 16 SEER and 14.8 IEER
- Up to 8.5 HSPF

KDB
DUEL FUEL HEAT PUMP HI EFFICIENCY

- 2- to 10-ton cooling capacity
- Up to 16.5 SEER and 14.8 IEER
- Up to 8.5 HSPF



FEATURES

- Single-Zone VAV (Variable Air Volume) supply fan technology[2]
  - Up to 61% power savings over comparable units
  - 29% better moisture removal for humidity control when compared to systems with conventional supply fan motors
- Eco-Last™ Coil System uses up to 52% less refrigerant, is up to 59% lighter and has up to 20% fewer brazed joints than regular rooftop coils[3]
- Isolated compressor for quieter operation and easier service
- Easy-to-reach gas compartment for quick, simplified diagnostics and serviceability
- Unique WireRight™ system helps ensure the most accurate setup and the least service time
- More than 100 fieldselectable options ensure fast and easy installation

WARRANTIES[1]

- 1-year limited parts warranty
- 3-year limited warranty on Eco-Last Coil System
- 5-year limited compressor warranty
- 10-year limited aluminized steel heat exchanger warranty on KGA/KGB unit
- 15-year limited stainless steel heat exchanger warranty on KGA/KGB unit

[1] See warranty certificate for complete details.
[2] At 55% airflow when compared to full load
[3] Excludes heat pump models

PACKAGE ROOFTOP UNITS

ALLIED COMMERCIAL

Z-SERIES™

ZGA/ZGB
GAS/ELECTRIC

- 3- to 12.5-ton cooling capacity
- Up to 14 SEER and 15 IEER
- Up to 81% AFUE

ZCA/ZCB
ELECTRIC/ELECTRIC

- 3- to 12.5-ton cooling capacity
- Up to 14 SEER and 15 IEER

ZHA/ZHB
HEAT PUMP

- 3- to 10-ton heating /cooling capacity
- Up to 14.0 SEER and 12.5 IEER
- Up to 8.0 HSPF



FEATURES

- Matches the most popular footprint in the commercial industry, eliminating the need for an adapter curb in many replacement jobs
- Eco-Last Coil System uses up to 52% less refrigerant, is up to 59% lighter, and has up to 20% fewer brazed joints than regular rooftop unit coils[3]
- High-pressure switch guards the compressor from extreme operating conditions
- Optional Single-Zone VAV and BACnet (7.5- to 12.5-ton models)
- Proven scroll compressor helps long-term operation
- Up to 18% lighter than other like units[4]
- Isolated burner compartment provides better protection from moisture, reducing the risk of corrosion and rust

WARRANTIES[1]

- 1-year limited parts warranty
- 3-year limited warranty on Eco-Last
- 5-year limited compressor warranty
- 10-year limited aluminized steel heat exchanger warranty

[1] See warranty certificate for complete details.
[2] At 55% airflow when compared to full load
[3] Excludes heat pump models
[4] Comparison is based on a 5-ton gas/electric model versus other 5-ton gas/electric models.

SPLIT SYSTEM UNITS

ALLIED COMMERCIAL

T-SERIES™

ELS
CONDENSING UNIT

- 6-, 7.5-, 10-, 12.5-, 15- and 20-nominal tons
- Up to 12.0 EER

ELA
AIR HANDLER

- 6-, 7.5-, 10-, 12.5-, 15- and 20-nominal tons

ELP
HEAT PUMP

- 7.5- and 10-nominal tons
- Up to 12.0 EER



FEATURES

- Proven scroll compressors for smooth operation
- Easy-access panels for convenient maintenance and service
- Dual refrigeration circuits (in 10–20-toncapacity units)
- Single-Zone VAV (Variable Air Volume) supply fan technology[5]
  - Up to 61% power savings over comparable units
  - 29% better moisture removal for humidity control when compared to systems with conventional supply fan motors

WARRANTIES[1]

- 1-year limited parts warranty
- 5-year limited compressor warranty

[1] See warranty certificate for complete details.
[2] At 55% airflow when compared to full load
[3] Excludes heat pump models
[4] Comparison is based on a 5-ton gas/electric model versus other 5-ton gas/electric models.
[5] Available on 7.5– to 20-ton split system units

LIGHT COMMERCIAL SPLIT SYSTEMS

ALLIED COMMERCIAL

SMALL SPLITS

4SCU13
AIR CONDITIONER

- Available in 3, 4 and 5 ton capacities

4SHP13
HEAT PUMP

- Available in 4 and 5 ton capacities

ACBX32
AIR HANDLER

- Available in 3, 4 and 5 ton capacities

TSA
CONDENSERS

- T-series small condensers
- 14 SEER
- 3, 4 and 5 ton capacities

TPA
HEAT PUMPS

- T-series small heat pumps
- 14 SEER
- 3, 4 and 5 ton capacities

CBA27UHE
AIR HANDLERS

- Available in 3, 3.5, 4 and 5 ton capacities



FEATURES

- Efficiency ratings up to 11.0 EER and 7.7 HSPF
- A variety of accessories such as compressor sound covers and TXV kits
- All serviceable brass fittings
- Lanced fins and rifled tubing provide exceptional heat transfer and low air resistance for high-efficiency operation
- Quiet Shift™ Technology allows the heat pump to enter defrost mode without excessive noise
- Proven scroll compressor helps long-term operation
- Corner-mounted service ports make brazing easier
- Two-screw panel removal for quicker access and cleaning

WARRANTIES[1]

- 1-year limited parts warranty
- 5-year limited compressor warranty

[1] *See warranty certificate for complete details.*

ELECTRIC FURNACE
STELPRO

ELECTRIC FURNACE
MODULATING WITH ELECTRONIC CONTROLS - SFE SERIES

NEW

THE FURNACE... REINVENTED

At last, ˚STELPRO has designed an electric furnace that meets all your expectations. THE FURNACE is the only one on the market that comes equipped with a built-in temperature sensor, making installation much easier. You can say goodbye to undesirable variances in temperature thanks to its state-of-the-art electronic controls! This one of a kind furnace has everything going for it: easy installation and incomparable ease of use, a compact size along with many other outstanding features. You will see for yourself, THE FURNACE from ˚STELPRO has no equal!

THE FURNACE



5 YEAR WARRANTY

BUILT-IN TEMPERATURE SENSOR

REDUCED SIZE
PRE-DRILLED PANELS SIMPLIFIES INSTALLATION AND CONNECTION

UPDATED ELECTRONIC CONTROLS
ECO MODE FOR INCREASED SAVINGS

AVAILABLE WITH A 120 V MOTOR (UP TO 27 KW)
1 HP MOTOR ALSO AVAILABLE (STARTING FROM 20 KW)

ACCESSORIES

PRODUCT	DESCRIPTION
FSB2	ADAPTER
SCOND	NEUTRAL TERMINAL FOR THIRD CONDUCTOR

FINISH
powdercoated (textured charcoal)

MANUFACTURING
- robust galvanized steel cabinet
- adjustable dampers (better control over static pressure, airflow, ΔT and noise)
- compartmentalized door providing easy access to all components
- disposable 20 in. x 20 in. air filter (included)
- 1 type of relay for all functions

ELEMENTS
modulating elements for increased comfort and separately framed allowing for quick and easy replacement

MOTOR
totally enclosed, permanently lubricated motor

CONTROL
- easy-to-use modes
- Continuous ventilation button (low or high speed)
- Continuous heating button (min or max)
- simplified connection system
- mechanical relays allowing for easy and low-cost maintenance

INSTALLATION
- three possible installation positions: upflow, downflow or horizontal
- installation directly against a wall (“zero inch” clearance)
- possible installation with 3 conductors

ELECTRIC FURNACE

STELPRO

SFE Series

TECHNICAL SPECIFICATIONS

PRODUCT	POWER AND VOLTAGE		MOTOR		AMPERAGE	POWER	WEIGHT	
CODE	KILOWATTS	VOLTS	SPEED	VOLTS	AMPERES	HP	KG	LB
STANDARD MODELS								
SFE1021	10/7.5	240/208	4	240/208	44/38	1/3	45	100
SFE1521	15/11.2	240/208	4	240/208	65/56	1/3	45	100
SFE1821	17.5/13.2	240/208	4	240/208	75/66	1/3	45	100
SFE2021	20/15	240/208	4	240/208	85/74	1/3	45	100
SFE2321	22.5/16.9	240/208	4	240/208	96/84	1/3	45	100
SFE2721	27.5/20.7	240/208	3	240/208	119/104	1	48	105
SFE3021	30/22.5	240/208	3	240/208	130/113	1	48	105
OPTIONAL MODELS								
SFE1021120	10/7.5	240/208	4	120	46/40	1/3	45	100
SFE1521120	15/11.2	240/208	4	120	67/58	1/3	45	100
SFE1821120	17.5/13.2	240/208	4	120	77/68	1/3	45	100
SFE2021120	20/15	240/208	4	120	87/76	1/3	45	100
SFE20211HP	20/15	240/208	3	240/208	88/77	1	48	105
SFE20211HP120	20/15	240/208	3	120	95/84	1	48	105
SFE2321120	22.5/16.9	240/208	4	120	98/86	1/3	45	100
SFE23211HP	22.5/16.9	240/208	3	240/208	99/87	1	48	105
SFE23211HP120	22.5/16.9	240/208	3	120	106/94	1	48	105
SFE2721120	27.5/20.7	240/208	3	120	126/111	1	48	105

SPEEDS AND DAMPERS

UNIT	ESP	DAMPER 1	DAMPER 2	L		ML		MH		H			
KW	IWC	DEGREES	DEGREES	CFM	ΔT (°F)	CFM	ΔT (°F)	CFM	ΔT (°F)	CFM	ΔT (°F)	KW (MIN)	KW (MAX)
10 KW TO 22.5 KW - 1/3 HP MOTOR													
10	0.2	15	15	810	39	900*	35*	930	34	960	33	2.5	2.5
15	0.2	45	45	862	55	1000*	48*	1130	42	1200	39	2.5	5
17.5	0.2	45	45	862	64	1000*	55*	1130	48	1200	46	2.5	5
20	0.2	60	45	900	70	1030	61	1150*	55*	1240	51	2.5	5
22.5	0.2	60	45	900	78	1030	69	1150*	62*	1240	57	2.5	5
10	0.5	15	15	685	46	750*	42*	790	40	850	37	2.5	2.5
15	0.5	45	45	790	60	890*	53*	990	48	1030	46	2.5	5
17.5	0.5	45	45	790	70	890*	62*	990	56	1030	54	2.5	5
20	0.5	60	45	815	78	910	70	1000*	63*	1050	60	2.5	5
22.5	0.5	60	45	815	87	910	79	1000*	71*	1050	67	2.5	5

UNIT	ESP	DAMPER 1	DAMPER 2	L		M		H			
KW	IWC	DEGREES	DEGREES	CFM	ΔT (°F)	CFM	ΔT (°F)	CFM	ΔT (°F)	KW (MIN)	KW (MAX)
20 KW TO 30 KW - 1 HP MOTOR											
20	0.2	60	45	1620	39	1820*	35*	2030	31	2.5	5
22.5	0.2	60	45	1620	44	1820*	39*	2030	35	2.5	5
27.5	0.2	60	45	1600	54	1790*	48*	2000	43	2.5	7.5
30	0.2	60	45	1600	59	1790*	53*	2000	48	5	10
20	0.5	60	45	1540	41	1700*	37*	1915	33	2.5	5
22.5	0.5	60	45	1540	46	1700*	42*	1915	37	2.5	5
27.5	0.5	60	45	1500	58	1660*	51*	1875	46	2.5	7.5
30	0.5	60	45	1500	63	1660*	57*	1875	51	5	10
20	0.75	60	45	1475	43	1625*	39*	1775	36	2.5	5
22.5	0.75	60	45	1475	48	1625*	44*	1775	40	2.5	5
27.5	0.75	60	45	1440	60	1600*	54*	1740	50	2.5	7.5
30	0.75	60	45	1440	66	1600*	60*	1740	55	5	10

L = low; ML = medium/low; M = medium; MH = medium/high; H = high
Speeds and dampers are factory adjusted.
* recommended (factory pre-cabled)

= CONTINUOUS HEATING

ELECTRIC FURNACE
STELPRO

ELECTRIC FURNACE
MODULATING WITH ELECTRONIC CONTROLS - SFECM SERIES

NEW

THE ALL-INCLUSIVE FURNACE

°STELPRO introduces a new standard in the electric furnace arena - THE FURNACE. Equipped with an ECM motor, THE FURNACE guarantees greater efficiency and constant airflow. On top of greater savings due to the use of the continuous ventilation mode, this motor makes the most of the humidifier and filtration systems. With THE FURNACE, you have access to top of the line controls for greater temperature management and a much simpler airflow adjustment. There you have it - the all-inclusive package: a quiet motor, compact size, built-in temperature sensor, easy installation and unparalleled ease of use. An electric furnace? You've never seen anything like THE FURNACE!



5 YEAR WARRANTY

THE FURNACE

ECM MOTOR
GUARANTEES SAVINGS, CONSTANT AIRFLOW AND GREATER EFFICIENCY

BUILT-IN TEMPERATURE SENSOR

REDUCED SIZE
PRE-DRILLED PANELS SIMPLIFIES INSTALLATION AND CONNECTION

UPDATED ELECTRONIC CONTROLS
ECO MODE FOR INCREASED SAVINGS

AVAILABLE WITH A 120 V MOTOR (UP TO 27 KW)
1 HP MOTOR ALSO AVAILABLE (STARTING FROM 20 KW)

ACCESSORIES

PRODUCT	DESCRIPTION
FSB2	ADAPTER
SCOND	NEUTRAL TERMINAL FOR THIRD CONDUCTOR

FINISH
powdercoated (textured charcoal)

MANUFACTURING
- robust galvanized steel cabinet
- compartmentalized door providing easy access to all components
- disposable 20 in. x 20 in. air filter (included)
- compatibility mechanism for an auxiliary unit (included)
- 1 type of relay for all functions

ELEMENTS
modulating elements for increased comfort and separately framed allowing for quick and easy replacement

MOTOR
ECM (electronically commutated motor)

CONTROL
- easy-to-use modes
- Continuous ventilation button (low or high speed)
- Continuous heating button (min or max)
- simplified connection system
- mechanical relays allowing for easy and low-cost maintenance

INSTALLATION
- three possible installation positions: upflow, downflow or horizontal
- installation directly against a wall ("zero inch" clearance)
- possible installation with 3 conductors

ELECTRIC FURNACE

STELPRO

SFECM Series

TECHNICAL SPECIFICATIONS

PRODUCT	POWER AND VOLTAGE		MOTOR		AMPERAGE	POWER	WEIGHT	
CODE	KILOWATTS	VOLTS	SPEED	VOLTS	AMPERES	HP	KG	LB
STANDARD MODELS								
SFECM1021	10/7.5	240/208	MULTI	240/208	44/38	1/2	45	100
SFECM1521	15/11.2	240/208	MULTI	240/208	65/56	1/2	45	100
SFECM1821	17.5/13.2	240/208	MULTI	240/208	75/66	1/2	45	100
SFECM2021	20/15	240/208	MULTI	240/208	85/74	1/2	45	100
SFECM2321	22.5/16.9	240/208	MULTI	240/208	96/84	1/2	45	100
SFECM2721	27.5/20.7	240/208	MULTI	240/208	119/104	1	48	105
SFECM3021	30/22.5	240/208	MULTI	240/208	130/113	1	48	105
OPTIONAL MODELS								
SFECM1021120	10/7.5	240/208	MULTI	120	46/40	1/2	45	100
SFECM1521120	15/11.2	240/208	MULTI	120	67/58	1/2	45	100
SFECM1821120	17.5/13.2	240/208	MULTI	120	77/68	1/2	45	100
SFECM2021120	20/15	240/208	MULTI	120	87/76	1/2	45	100
SFECM20211HP	20/15	240/208	MULTI	240/208	88/77	1	48	105
SFECM20211HP120	20/15	240/208	MULTI	120	95/84	1	48	105
SFECM2321120	22.5/16.9	240/208	MULTI	120	98/86	1/2	45	100
SFECM23211HP	22.5/16.9	240/208	MULTI	240/208	99/87	1	48	105
SFECM23211HP120	22.5/16.9	240/208	MULTI	120	106/94	1	48	105
SFECM2721120	27.5/20.7	240/208	MULTI	120	126/111	1	48	105

AIRFLOW SETTINGS

The SFECM furnace is equipped with an efficient ECM motor that can maintain constant airflow regardless of the static pressure variation in the ducts. It also ensures an easy setting of the airflows related to each operation mode of the furnace blower. The blower has four adjustments.

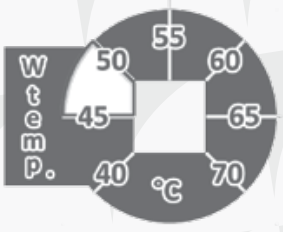
A potentiometer allowing to adjust the airflow corresponds to each of these four modes. The potentiometers are located on the furnace control card. The adjustment scales vary from one model to the other according to the capacity of the unit.

The airflows can be adjusted while the furnace is running. To adjust airflows, you must set the potentiometers to the desired values.

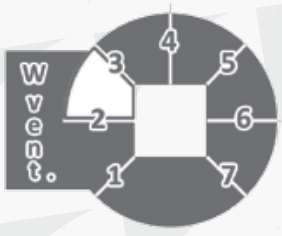
AIRFLOW SETTINGS EXAMPLE - SFECM2021

SETTING	CONTINUOUS VENTILATION		W VENTILATION		Y VENTILATION
	LOW	HIGH	W1	W2	
1	300	700	450	1150	800
2	366	766	615	1315	908
3	433	833	785	1450	1016
4	500	900	950	1450	1125
5	566	966	1115	1450	1234
6	633	1033	1285	1450	1342
7	700	1100	1450	1450	1450

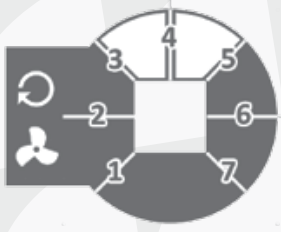
Recommended



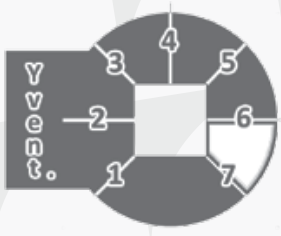
HEATING TEMPERATURE



HEATING VENTILATION



CONTINUOUS VENTILATION



Y VENTILATION

UNIT HEATERS

ALLIED COMMERCIAL

STANDARD AND COMPACT

LF25
STANDARD AND COMPACT





COMPACT COMBUSTION HEATER FEATURES

- Ideal for hard-to-heat applications where excessive dust, dirt or humidity or negative pressure is a concern
- Durable tubular heat exchanger
- Heating capacities from 30,000–105,000 Btuh
- Up to 85% thermal efficiency
- Compact cabinet design
- Hinged door allows easy access to components
- Sidewall venting eliminates roof penetrations
- Self-diagnostic board with LED display improves troubleshooting efficiency and accuracy

STANDARD UNIT HEATERS FEATURES

- Ideal for a wide range of residential and commercial applications
- Heating capacities from 30,000–400,000 Btuh
- Up to 85% thermal efficiency
- Optional stainless steel heat exchanger (for 125,000–400,000 Btuh) is available for longer product life
- Sidewall venting eliminates roof penetrations
- Self-diagnostic board with LED display improves troubleshooting efficiency and accuracy

WARRANTIES[1]

- 1-year limited warranty on covered components
- 10-year limited aluminized heat exchanger warranty
- 15-year limited stainless steel heat exchanger warranty

[1] *See warranty certificate for complete details.*

UNIT HEATERS

ADP

FSA Series



FEATURES:

- Residential – low profile units.
- Great for garages & shops.
- Sidewall venting eliminates roof penetrations.
- Wiring junction box is located inside of unit.
- 1” clearance from ceiling for easy installation.
- Heating capacities from 30,000 – 75,000 BTUH.
- Up to 81% thermal efficiency.
- Self-diagnostic board with LED display improves troubleshooting.
- Power exhaust system allows horizontal venting to 25 ft.
- Tubular heat exchangers made of aluminized steel.
- Aluminized steel in shot burners provide efficient trouble free operation.
- Direct drive propeller fans are dynamically balanced for quiet and smooth operation

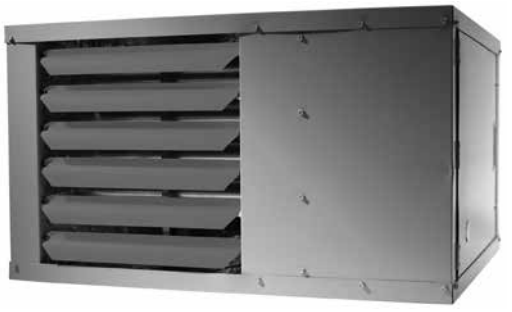
	Model	FSA* -30 [1]	FSA* -45 [1]	FSA* -60	FSA* -75
Gas Heating Performance	Heating Capacity Input (BTUH)	30,000	45,000	60,000	75,000
	Heating Output (BTUH)	24,300	36,500	48,000	60,000
	Steady State Efficiency	81.0%	81.0%	80.0%	80.0%
	Temp Rise (deg F)	42	45	55	60
Connections	Flue Size Round (in)	3 [2]	3 [2]	4 [3]	4 [3]
	Gas Piping Size (in, NPT)	1/2	1/2	1/2	1/2
Fan Data	Num of Fans	1	1	1	1
	Diameter (in)	10	10	14	14
	Num of Blades	4	4	3	3
	Motor Output (hp)	1/20	1/20	1/10	1/10
	Motor Full Load Amps	1.7	1.7	4.1	4.1
	Motor RPMs	1650	1650	1050	1050
	Air Volume (CFM)	535	750	830	950
Physical Data	Overall Dimensions H x W x D (in)	12 x 25 x 24	12 x 25 x 24	17 x 25 x 25	17 x 25 x 25
	Ship Weight (lbs)	45	50	87	91

* N = Natural gas; P = LP gas
[1] Sold in pallet quantities of four(4) per model. No mix or match of models.
[2] 2-1/8 x 3 in. (54 x 76 mm) diameter adaptor is furnished with unit for flue connection
[3] 2 x 4 in. (51 x 102 mm) diameter adaptor is furnished with unit for flue connection.
Note: All models have aluminized steel heat exchanger; all models are 115 V, 60 Hz, 1 phase.

UNIT HEATERS

ADP

FOA Series



FEATURES:

- Perfect for light commercial and greenhouse applications.
- Introduces clean combustible outside air when required.
- Wiring junction box is located outside of unit.
- Ideal for hard-to-heat applications where excessive dust, dirt, humidity, or negative pressure is a concern.
- Heating capacities from 45,000 – 300,000 BTUH.
- Up to 82% thermal efficiency.
- Compact cabinet design on 45,000 – 75,000 BTUH models.
- Hinged door allows easy access to components.
- Sidewall venting eliminates roof penetrations.
- Self-diagnostic board with LED display improves troubleshooting efficiency and accuracy.
- Tubular heat exchangers made of aluminized steel.
- Power exhaust system allows horizontal venting to 25 ft.
- Direct drive propeller fans are dynamically balanced for quiet and smooth operation.

	Model	FOA* -45	FOA* -100	FOA* -125	FOA* -150 [1]	FOA* -250 [1]	FOA* -300 [1]
Gas Heating Performance	Heating Capacity Input (BTUH)	45,000	100,000	125,000	150,000	240,000	300,000
	Output Natural Gas (BTUH)	36,200	81,000	101,500	120,000	194,400	240,000
	Output LPG / Propane (BTUH)	36,200	82,700	101,500	121,500	196,800	243,000
	Thermal Efficiency -- Natural Gas	81%	82%	81%	80%	81%	80%
	Thermal Efficiency -- LPG / Propane	81%	81%	81%	81%	82%	81%
	Temp Rise (deg F)	45	31	39	38	35	43
Connections	Flue Size Round (in)	3	5	5	5	5	6
	Combustion Air Size Round (in)	3	4	4	4	4	4
	Gas Piping Size (in, NPT)	1/2	1/2	1/2	1/2	3/4	3/4
Fan Data [2]	Number of Fans	1	1	1	1	2	2
	Diameter (in)	10	16	16	18	16	16
	Number of Blades	5	4	4	4	4	4
	Motor Output (hp)	1/20	1/8	1/8	1/8	1/8	1/8
	Motor Full Load Amps	1.7	2.7	2.7	2.7	2.7	2.7
	Motor RPMs	1650	1075	1075	1075	1075	1075
	Air Vol. (CFM)	750	2435	2435	2955	5215	5215
Physical Data	Overall Dimensions H x W x D (in)	12 x 26 x 24	21 x 36-1/2 x 39-5/8	21 x 36-1/2 x 39-5/8	27 x 36-1/2 x 39-5/8	39 x 36-1/2 x 39-5/8	39 x 36-1/2 x 39-5/8
	Ship Weight (lbs)	84	188	204	261	307	323

* N = Natural gas; P = LP gas
[1] Models not approved for residential applications.
[2] Fan motor type: SP for models 45; PSC for models 100, 125, 150, 250, 300
Note: All models are 115 V, 60 Hz, 1 phase.

UNIT HEATERS

ADP

SEP Series



FEATURES:

- Heating capacities from 100,000 – 400,000 BTUH.
- Up to 80.5% thermal efficiency.
- Stainless steel heat exchanger is available for longer product life.
- Heat exchangers are laboratory life-cycle tested.
- Tubular heat exchangers made of aluminized steel or stainless steel.
- Aluminized steel in shot burners provide efficient trouble free operation.
- Sidewall venting eliminates roof penetrations.
- Wiring junction box is located outside of unit.
- Safe direct spark ignition.
- No standing pilot light.
- Self-diagnostic board with LED display improves troubleshooting efficiency and accuracy.
- 3/8 x 16 rivet nuts are located on the top of cabinet for suspending unit using threaded rod.
- Power exhaust system with a sealed flue collector allows conventional vertical or horizontal venting to 35 ft (depends on unit size).

	Model	SEP -100#-&	SEP -115#-&	SEP -145#-&	SEP -175#-&	SEP -200#-&	SEP -230#-&	SEP -250#-&	SEP -300#-&	SEP -345#-&	SEP -400#-&
Gas Heating Performance	Heating Capacity Input (BTUH)	100,000	115,000	145,000	172,500	195,000	230,000	250,000	300,000	345,000	390,000
	Output Natural Gas (BTUH)	80,500	92,000	116,000	138,000	156,000	184,000	201,250	241,500	276,000	312,000
	Output LPG/Propane (BTUH)	82,000	92,000	115,000	138,000	156,000	184,000	205,000	246,000	281,200	312,000
	Steady State Efficiency -- Natural Gas	80.5%	80.0%	80.0%	80.0%	80.0%	80.0%	80.5%	80.5%	80.0%	80.0%
	Steady State Efficiency -- LPG / Propane	82.0%	80.0%	80.0%	80.0%	80.0%	80.0%	82.0%	82.0%	81.5%	80.0%
Connections	Flue Size Round (in)	4 [1]	4 [1]	4 [1]	5 [2]	5 [2]	5 [2]	5 [2]	5 [2]	6 [3]	6 [3]
	Gas Piping Size (in, NPT)	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4	3/4	3/4
Fan Data	Number of Fans	1	1	1	1	1	2	2	2	2	2
	Diameter (in)	16	16	16	16	16	16	16	16	16	16
	Number of Blades	4	4	4	4	4	4	4	4	4	5
	Motor Output (hp)	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8
	Motor Full Load Amps	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	Motor RPMs	1075	1075	1075	1075	1075	1075	1075	1075	1075	1075
	Air Volume (CFM)	1900	1900	1900	2200	2200	4400	4400	4400	4400	4400
Physical Data	Overall Dimensions H x W x D (in)	32-3/16 x 20-3/16 x 39-3/16	32-3/16 x 20-3/16 x 39-3/16	32-3/16 x 20-3/16 x 39-3/16	32-3/16 x 23-1/8 x 39-3/16	32-3/16 x 23-1/8 x 40	32-3/16 x 41-1/8 x 40	32-3/16 x 41-1/8 x 40	32-3/16 x 41-1/8 x 40	32-3/16 x 41-1/8 x 41-1/8	32-3/16 x 41-1/8 x 41-1/8
	Ship Weight (lbs)	150	150	165	185	185	275	275	280	310	315

[1] 2-1/8 x 4 in. (54 x 102 mm) diameter adaptor is furnished with unit for flue connection.
[2] 2-1/4 x 2-3/4 in. (57 x 70 mm) rectangular to 5 in. (127 mm) round adaptor is furnished with unit for flue connection.
[3] 2-1/4 x 2-3/4 in. (57 x 70 mm) rectangular to 6 in. (152 mm) round adaptor is furnished with unit for flue connection.
A = Aluminized steel heat exchanger; S = Stainless steel heat exchanger; All models are 115 volts, 60 Hz, 1 phase.

& N = Natural Gas; P = LP Gas
Note: SEP unit heaters are not approved for residential applications.

UNIT HEATERS

REZNOR

UDAP Power Vented, Low Static Axial Fan Unit Heaters for Residential and Commercial/Industrial Use

Size		UDAP 30	UDAP 45	UDAP 60	UDAP 75	UDAP 100	UDAP 125	UDAP 150
Input Heating Capacity	BTUH	30,000	45,000	60,000	75,000	105,000	120,000	150,000
	kw/H	8.8	13.2	17.6	22.0	30.8	35.2	43.9
Output Heating Capacity[A]	BTUH	24,600	37,350	49,800	62,250	87,150	99,600	124,500
	kw/H	7.2	11.0	14.6	18.3	25.6	29.2	36.4
Gas Connection (inches)[B]	Natural	1/2	1/2	1/2	1/2	1/2	1/2	1/2
	Propane	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Vent Connection Size (in. diam.)[c]		4	4	4	4	4	4	5
Control Amps (24 volt)		1.0	1.0	1.0	1.0	1.0	1.0	1.0
Full Load Amps (115 volt)		1.9	2.4	2.4	3.3	3.9	5.1	3.8
Max. Over Current Protection (115V)[D]		15	15	15	15	15	15	15
Air Volume CFM		456	629	769	961	1345	1537	1921
Approximate Net Weight (lbs)		54	59	67	72	96	101	172
LIST								

Size		UDAP 175	UDAP 200	UDAP 225	UDAP 250	UDAP 300	UDAP 350	UDAP 400
Input Heating Capacity	BTUH	175,000	200,000	225,000	250,000	300,000	350,000	400,000
	kw/H	51.2	58.6	65.9	73.2	87.8	102.5	117.1
Output Heating Capacity[A]	BTUH	145,250	166,000	186,750	207,500	249,000	290,500	332,000
	kw/H	42.5	48.6	54.7	60.8	72.9	85.1	97.2
Gas Connection (inches)[B]	Natural	1/2	1/2	3/4	3/4	3/4	3/4	3/4
	Propane	1/2	1/2	3/4	3/4	3/4	3/4	3/4
Vent Connection Size (in. diam.)[c]		5	5	5	5	6	6	6
Control Amps (24 volt)		1.0	1.0	1.0	1.0	1.0	1.0	1.0
Full Load Amps (115 volt)		3.8	4.6	7.5	7.5	11.0	11.0	11.0
Max. Over Current Protection (115V)[D]		15	15	15	15	20	20	20
Air Volume CFM		2242	2562	2882	3202	3843	4483	5123
Approximate Net Weight (lbs)		187	187	203	215	269	294	306
LIST								

[A] CSA ratings for altitudes to 2000 ft.
[B] Size shown is for gas connection to a single-stage gas valve, not supply line size.
[C] Smaller and/or larger vent pipe diameters may be permissible; refer to the Venting Installation Manual for Power Vented Units.
[D] MOPD=2.25 x (largest motor FLA) + smallest motor FLA. Answer is rounded to the nearest commercially available circuit breaker.

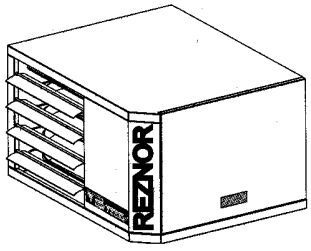
*** Parts Available**

UNIT HEATERS

REZNOR

UDAS Separated Combustion, Low Static Unit Heaters for Residential and Commercial/Industrial Use

- Sizes 30-125 certified for residential heating application
- Sizes 30-400 certified for commercial/industrial heating application
- 82-83% Thermal efficient ~ TOP in it's class!
- 50-60°F Rise range
- New T-CORE2® design titanium stabilized aluminized steel heat exchanger (patent pending)
- New T-CORE2® single burner combustion system including a one-piece burner assembly (patent pending)
- 115/1/60 Supply voltage
- 115 Volt open fan motor with internal overload protection
- Transformer for 24-volt controls
- Integrated circuit board with diagnostic indicator lights
- Multi-try direct ignition with 100% lockout
- Fan relay (included on the circuit board)
- Natural or propane single-stage gas valve (field adjustable for operation to 9000 ft. elevation)



CGA 2.6b ANSI Z83.8b

CSA International Requirement 10.96 U.S. - Sizes 30-125

- Vibration/noise isolated fan and venter motors ~ designed for low noise operation
- 2-pt and 4-pt suspension ~ standard on all sizes
- External terminal strip for 24-volt wiring
- External gas connection
- Full fan guard ~ engineered for safety
- Improved cabinet design with less visible hardware and a NEW Reznor appearance

Size		UDAS100	UDAS125	UDAS150
Input Heating Capacity	BTUH	105,000	120,000	150,000
	kw/H	30.8	35.2	43.9
Output Heating Capacity[A]	BTUH	87,150	99,600	124,500
	kw/H	25.6	29.2	36.4
Gas Connection (inches)[B]	Natural	1/2	1/2	1/2
	Propane	1/2	1/2	1/2
Vent Connection Size (in. diam.)[C]		4	4	5
Combustion Air Inlet (in. diam.)[C]		4	4	6
Control Amps (24 volt)		1.0	1.0	1.0
Full Load Amps (115 volt)		3.9	5.1	3.8
Max. Over Current Protection (115V)[D]		15	15	15
Air Volume CFM		1345	1537	1921
Approximate Net Weight (lbs)		97	102	173
LIST				

[A] CSA ratings for altitudes to 2000 ft.
[B] Size shown is for gas connection to a single-stage gas valve, not supply line size.
[C] Smaller and/or larger vent and combustion air pipe diameters may be permissible; refer to the Venting Installation Manual for Separated Combustion Units.
[D] MOPD=2.25 x (largest motor FLA) + smallest motor FLA. Answer is rounded to the nearest commercially available circuit breaker.

* Parts Available

Options: 2-stage natural or propane gas valve / gas conversion kit
One of the following kits must be used in order to make the above units operational:
Horizontal or Vertical Combustion Air/Vent Kit (CC2 or CC6)

RADIANT HEATERS

INFRASAVE

Model	Capacity (BTU/HR) Sea Level to 4500 ft.	Available Tube Lengths 20'	30'	40'	50'	60'	70'
ITB-200	200,000				4,745.00		
ITB-175	175,000				4,745.00	5,108.00	5,472.00
ITB-155	155,000			3,773.00	4,373.00		
ITB-130	130,000		3,360.00	3,697.00	4,297.00		
ITB-110	110,000		3,360.00	3,697.00	4,297.00		
ITB-80	80,000	3,020.00	3,360.00	3,697.00			
ITB-60	60,000	3,020.00	3,360.00				
Heater Length		21'-4"	31'-4"	41'-4"	51'-4"	61'-4"	71'-4"
Weight (lbs)		90	120	150	180	210	240



DOUBLE TUBE

Model	Capacity (BTU/HR) Sea Level to 4500 ft.	Available Tube Lengths 10'	15'	20'	30'
ITBU-200	200,000				5,479.00
ITBU-175	175,000				
ITBU-155	155,000			4,162.00	5,082.00
ITBU-130	130,000			4,085.00	
ITBU-110	110,000			4,085.00	
ITBU-80	80,000				
ITBU-60	60,000	3,381.00			
Heater Length		12'-8"		22'-8"	32'-8"
Weight (lbs)		90		120	150



P40-R Garage Small Shop Heater

P40-R is the garage small shop heater approved for residential use.

Features

- Compact unit overall length 10’
- 4” aluminized tube – single bend tube
- Complete with 110V plug on burner box
- Easy to open and service Premier burner box
- Indicator lights
- Completely assembled, lift and hang right out of the box

- Accessories included in box
- 24v Thermostat
- Thermostat wire
- Hanging chain and hooks
- Gas flex connector
- 80%+ efficiency
- 3 Year warranty

Part #	LIST
P40-R	3,414.00

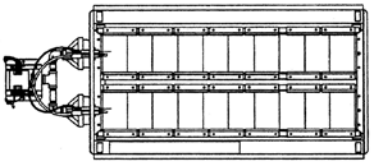


RADIANT HEATERS

INFRASAVE

IL SERIES HIGH INTENSITY (LUMINOUS) HEATERS

Model	Capacity (BTU)	LIST
IL-37-N	37,000	1,287.00
IL-50-N	50,000	1,535.00
IL-75-N	75,000	1,794.00
IL-100-NG	100,000	1,932.00
IL-150-N	150,000	3,324.00
IL-200-N	200,000	3,647.00



IQ SERIES Dimension and Specifications

MODEL	CAPACITY (BTU/HR.)	Available tube lengths						
	SEA LEVEL TO 4500	10'	20'	30'	40'	50'	60'	70'
IQ-200	200,000					✓	✓	✓
IQ-175	175,000					✓	✓	✓
IQ-155	155,000				✓	✓	✓	
IQ-130	130,000			✓	✓	✓		
IQ-110	110,000			✓	✓	✓		
IQ-80	80,000		✓	✓	✓			
IQ-60	60,000		✓	✓				
IQ-45	45,000	✓	✓					
Heater length		11'8"	21'4"	31'	40'8"	50'4"	60'	69'8"
Weight (LBS.)		100	150	200	240	315	360	430

De-rate heater 4% for each additional 1000ft of elevation, tube length must conform to firing rate

Optional Accessories

Part #	Description	LIST
JA-0528-XX	4" Horizontal Flue Vent Terminal (Wall)	63.30
JS-0532-VC	Fresh Air Intake Wall Cap	46.10
JA-0514-XX	4" x 4" x 6" Vent Tee	385.00
JS-0508-JZ	90° Elbow Kit with Reflector Cap (Combine two 90° kits to create 180° elbow)	471.00
JM-0150-XX	TruTemp Infrared Setback Thermostat	403.00
JL-0798-JC	Hanging Chain (Box of 50 ft)	149.70

Consult your local branch for these other infrasave optional accessories:
- Line Voltage & 24V Thermostat and Controls
- Flexible Gas Connectors & Type 1 Hoses
- Side Reflector Extensions

Infrared Electric Heater

Revolutionary short-wave infrared technology provides instant comfort heat as soon as it is switched on.

Features

- Weather-proof aluminum heater for indoor & outdoor applications.
- 92% radiant efficiency - Power range from1.5 to 6 kW.
- Polished aluminum reflector and quarz lamps
- Stainless Steel wire guards



Part #	Application	Voltage	Power(Watts)	Dimensions(WxHxD)	Weight (lbs.)	LIST
IE-1524-12	Indoor/ Outdoor	120	1,500	12.2"x5.7"x3.75"	5.7	969.00

ADP ONE PIECE MULTI-POSITION HYDRONIC AIR HANDLERS

Healthy Solutions®
Premier Products









Series	F Series	B Series	MX Series	S Series
DESCRIPTION	Compact Air Handlers	Hydronic Air Handlers	Compact Modular Blowers	Compact Wall Mount Air Handlers
WARRANTY				
Extended Warranty Available	✓	✓	✓	✓
COIL FEATURES				
Aluminum Coil	✓			✓
Copper Coil	✓	✓		✓
Microban® Antimicrobial Pan	✓			
UV Resistant Pan	✓	✓		
APPLICATION				
Vertical Upflow	✓	✓	✓	✓
Vertical Downflow	✓*		✓	
Horizontal Right/Left	✓	✓	✓	
Air Return	✓ Bottom	✓ Bottom/ Side°	✓ Bottom	✓ Front
MOTOR				
Variable Speed ECM		✓		
Five-Speed ECM	✓			✓
Three-Speed	✓	✓	✓	✓
HEAT OPTIONS				
Electric	✓*	✓*	*	✓*
Hot Water		✓*	✓	
No Heat	✓	✓	✓	

Made in the USA
from US and imported parts

✓ Available factory installed

* Available field installed kit

° Side return available in 12-36 MBTUH only

Please contact your local branch for more information and pricing

HEATING COILS

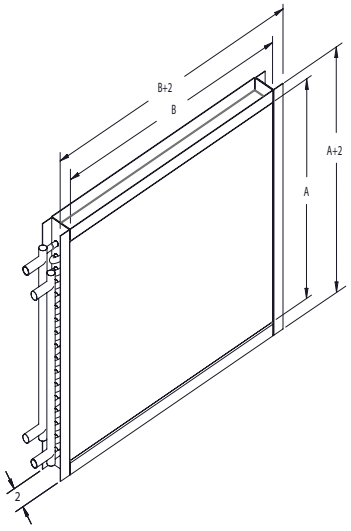
MADOK

3/8" Heating Coils

ALL CONNECTIONS ARE 3/4" SWEAT CONNECTIONS

ALL DIMENSIONS ARE IN INCHES

MODEL	A	B
MHC-24	12	16
MHC-36	14	20
MHC-48	16	22
MHC-60	18	24
MHC-90	20	30



Heating Coil Capacities

Based on 65°F entering air temperature

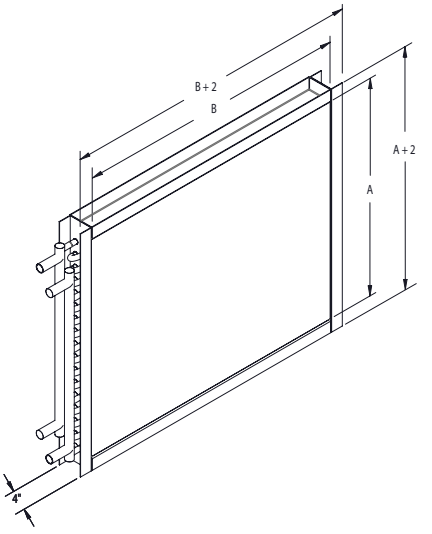
Model MHC-24		Water Flow Rate – 2 U.S. gpm / Water Pressure Drop – 0.3 ft.wg				**24 MBH**
Air Flow (cfm)	450	525	600	675	750	
SP – in.wg	0.05	0.07	0.09	0.10	0.12	
Entering Water Temperature	**Heating Capacity (MBH)**					
180°F	20.1	23.3	25.1	26.7	27.9	
160°F	17.5	19.0	20.4	21.7	22.7	
140°F	13.5	14.6	15.7	16.6	17.4	
Model MHC-36		Water Flow Rate – 3 U.S. gpm / Water Pressure Drop – 0.6 ft.wg				**36 MBH**
Air Flow (cfm)	700	800	900	1000	1100	
SP – in.wg	0.06	0.08	0.09	0.11	0.13	
Entering Water Temperature	**Heating Capacity (MBH)**					
180°F	33.2	35.8	38.2	40.4	42.2	
160°F	27.2	29.3	31.3	33.1	34.6	
140°F	21.1	22.8	24.2	25.6	26.7	
Model MHC-48		Water Flow Rate – 4 U.S. gpm / Water Pressure Drop – 0.9 ft.wg				**48 MBH**
Air Flow (cfm)	1000	1100	1200	1300	1400	
SP – in.wg	0.07	0.09	0.10	0.11	0.13	
Entering Water Temperature	**Heating Capacity (MBH)**					
180°F	45.7	48.3	50.8	52.8	54.6	
160°F	37.5	39.6	41.6	43.2	44.8	
140°F	29.1	30.7	32.3	33.5	34.6	
Model MHC-60		Water Flow Rate – 5 U.S. gpm / Water Pressure Drop – 1.2 ft.wg				**60 MBH**
Air Flow (cfm)	1300	1400	1500	1600	1700	
SP – in.wg	0.08	0.09	0.10	0.11	0.13	
Entering Water Temperature	**Heating Capacity (MBH)**					
180°F	58.6	61.2	63.6	65.6	67.5	
160°F	48.1	50.2	52.2	53.8	55.4	
140°F	37.4	39.0	40.5	41.7	42.9	
Model MHC-90		Water Flow Rate – 7.5 U.S. gpm / Water Pressure Drop – 2.6 ft.wg				**90 MBH**
Air Flow (cfm)	2000	2100	2200	2300	2400	
SP – in.wg	0.10	0.10	0.11	0.12	0.13	
Entering Water Temperature	**Heating Capacity (MBH)**					
180°F	90.0	91.4	93.5	95.6	97.7	
160°F	73.1	75.1	76.9	78.6	80.2	
140°F	57.0	58.5	59.9	61.1	62.4	

Please contact your local branch for more information and pricing

COOLING COILS

MADOK

3/8" Cooling Coils



ALL DIMENSIONS ARE IN INCHES

MODEL	A	B	CONN. SIZE
MCC-24	14	20	3/4
MCC-36	16	26	3/4
MCC-48	20	28	1
MCC-60	24	28	1
MCC-90	28	36	1 1/4

Cooling Coil Capacities

Based on 80°F db/67°F wb Entering Air Temperature

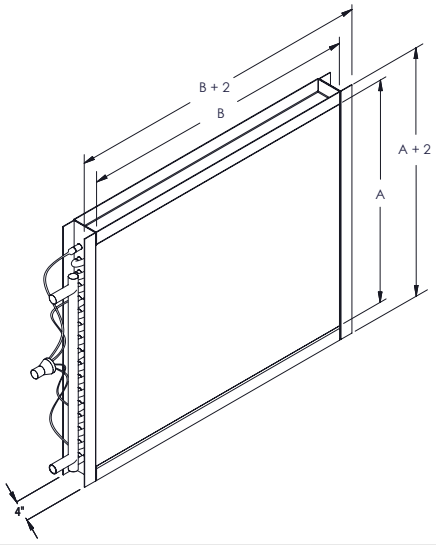
Model MCC-24		Water Flow Rate – 5 U.S. gpm / Water Pressure Drop – 2.7 ft.wg				**2 Ton**
Air Flow (cfm) SP – in.wg	650 0.15	725 0.18	800 0.21	875 0.24	950 0.28	
Entering Water Temperature	**Cooling Capacity (MBH)**					
42°F	22.5	23.7	24.8	25.9	26.9	
45°F	20.3	21.4	22.4	23.4	24.3	
48°F	18.0	19.0	19.9	20.9	21.8	
Model MCC-36		Water Flow Rate – 7 U.S. gpm / Water Pressure Drop – 4.7 ft.wg				**3 Ton**
Air Flow (cfm) SP – in.wg	1000 0.16	1100 0.19	1200 0.21	1300 0.24	1400 0.27	
Entering Water Temperature	**Cooling Capacity (MBH)**					
42°F	35.2	36.9	38.4	39.9	41.4	
45°F	31.6	33.1	34.6	36.0	37.3	
48°F	28.0	29.4	30.7	32.0	33.2	
Model MCC-48		Water Flow Rate – 10 U.S. gpm / Water Pressure Drop – 5.3 ft.wg				**4 Ton**
Air Flow (cfm) SP – in.wg	1400 0.17	1500 0.19	1600 0.21	1700 0.23	1800 0.25	
Entering Water Temperature	**Cooling Capacity (MBH)**					
42°F	49.9	51.6	53.3	54.8	56.4	
45°F	44.8	46.3	47.8	49.3	50.7	
48°F	39.6	41.0	42.4	43.8	45.1	
Model MCC-60		Water Flow Rate – 12 U.S. gpm / Water Pressure Drop – 5.0 ft.wg				**5 Ton**
Air Flow (cfm) SP – in.wg	1800 0.19	1900 0.21	2000 0.23	2100 0.24	2200 0.26	
Entering Water Temperature	**Cooling Capacity (MBH)**					
42°F	61.9	63.6	65.2	66.8	68.3	
45°F	55.5	57.0	58.6	60.0	61.5	
48°F	49.2	50.6	52.0	53.3	54.6	
Model MCC-90		Water Flow Rate – 18 U.S. gpm / Water Pressure Drop – 9.6 ft.wg				**7½ Ton**
Air Flow (cfm) SP – in.wg	2700 0.19	2850 0.21	3000 0.23	3150 0.24	3300 0.26	
Entering Water Temperature	**Cooling Capacity (MBH)**					
42°F	96.5	99.2	101.8	104.4	106.8	
45°F	86.4	88.8	91.1	93.5	95.8	
48°F	76.2	78.4	80.6	82.8	84.8	

Please contact your local branch for more information and pricing

EVAPORATOR COILS

MADOK

3/8" DX (Evaporator) Coils



ALL DIMENSIONS ARE IN INCHES

MODEL	A	B	LIQUID CONN.	SUCTION CONN.
MDX-24	12	20	5/8	5/8
MDX-36	16	22	5/8	7/8
MDX-48	18	26	5/8	7/8
MDX-60	20	29	5/8	7/8
MDX-90	24	36	7/8	1 1/8
MDX-120	28	42	1 1/8	1 1/8

DX (Evaporator) Coil Capacities

Based on 80°F db/67°F wb Entering Air Temperature

Model MDX-24		Saturated Evaporating Temperature - 45°F				**2 Ton**
Air Flow (cfm)	650	725	800	875	950	
SP – in.wg	0.19	0.22	0.26	0.30	0.35	
Refrigerant	**Cooling Capacity (MBH)**					
R-22	21.3	22.9	24.5	25.7	26.9	
R-410a	22.4	24.2	25.9	27.3	28.6	
Model MDX-36		Saturated Evaporating Temperature - 45°F				**3 Ton**
Air Flow (cfm)	1000	1100	1200	1300	1400	
SP – in.wg	0.20	0.24	0.27	0.31	0.35	
Refrigerant	**Cooling Capacity (MBH)**					
R-22	32.5	34.6	36.4	37.9	39.4	
R-410a	34.3	36.6	38.7	40.5	42.1	
Model MDX-48		Saturated Evaporating Temperature - 45°F				**4 Ton**
Air Flow (cfm)	1400	1500	1600	1700	1800	
SP – in.wg	0.22	0.25	0.27	0.30	0.33	
Refrigerant	**Cooling Capacity (MBH)**					
R-22	44.6	46.7	48.8	50.4	52.0	
R-410a	46.9	49.3	51.6	53.3	55.0	
Model MDX-60		Saturated Evaporating Temperature - 45°F				**5 Ton**
Air Flow (cfm)	1800	1900	2000	2100	2200	
SP – in.wg	0.23	0.26	0.28	0.30	0.32	
Refrigerant	**Cooling Capacity (MBH)**					
R-22	56.4	58.5	60.5	62.2	63.9	
R-410a	59.3	61.6	63.8	65.7	67.4	
Model MDX-90		Saturated Evaporating Temperature - 45°F				**7½ Ton**
Air Flow (cfm)	2700	2850	3000	3150	3300	
SP – in.wg	0.24	0.26	0.28	0.30	0.33	
Refrigerant	**Cooling Capacity (MBH)**					
R-22	83.7	86.4	88.7	90.9	92.9	
R-410a	90.0	93.2	95.9	98.5	100.9	
Model MDX-120		Saturated Evaporating Temperature - 45°F				**10 Ton**
Air Flow (cfm)	3600	3800	4000	4200	4400	
SP – in.wg	0.23	0.25	0.27	0.29	0.32	
Refrigerant	**Cooling Capacity (MBH)**					
R-22	115.3	119.3	123.3	126.2	129.4	
R-410a	121.2	125.8	130.2	133.6	137.1	

Please contact your local branch for more information and pricing

LINE SETS

Minisplit Refrigerant Linesets

- Both lines insulated



Part #	Length	Liquid x Suction	LIST
MS-406-15-3/8W	15'	1/4 x 3/8	136.70
MS-406-20-3/8W	20'	1/4 x 3/8	194.10
MS-406-25-3/8W	25'	1/4 x 3/8	185.80
MS-406-50-3/8W	50'	1/4 x 3/8	327.00
MS-408-15-3/8W	15'	1/4 x 1/2	143.50
MS-408-20-3/8W	20'	1/4 x 1/2	203.30
MS-408-25-3/8W	25'	1/4 x 1/2	193.40
MS-408-50-3/8W	50'	1/4 x 1/2	337.00
MS-410-15-3/8W	15'	1/4 x 5/8	154.30
MS-410-25-3/8W	25'	1/4 x 5/8	203.80
MS-410-50-3/8W	50'	1/4 x 5/8	356.00
MS-610-25-3/8W	25'	3/8 x 5/8	223.70
MS-610-50-3/8W	50'	3/8 x 5/8	384.00

Plain End Line Sets

- Liquid Line - Non insulated
- Suction Line - insulated



Part #	Length	Liquid x Suction	LIST
610-25-3/8W	25'	3/8 x 5/8	198.40
610-30-3/8W	30'	3/8 x 5/8	229.20
610-50-3/8W	50'	3/8 x 5/8	348.00
612-25-3/8W	25'	3/8 x 3/4	225.50
612-30-3/8W	30'	3/8 x 3/4	261.70
612-40-3/8W	40'	3/8 x 3/4	341.00
612-50-3/8W	50'	3/8 x 3/4	403.00
614-25-3/8W	25'	3/8 x 7/8	292.40
614-30-3/8W	30'	3/8 x 7/8	339.00
614-40-3/8W	40'	3/8 x 7/8	442.00
614-50-3/8W	50'	3/8 x 7/8	522.00

EZ-Pull Linesets

- UL 723, ASTM E84 (25/50), flame and spread index
- All polythylene insulated line sets sold in North America do not meet UL 94VBT
- "Rugged" exterior allows for easier installation of the line set

Part #	Length	Liquid x Suction	LIST
EZP-406-15-1/2W	15'	1/4 x 3/8	135.70
EZP-406-20-1/2W	20'	1/4 x 3/8	162.30
EZP-406-25-1/2W	25'	1/4 x 3/8	184.70
EZP-406-50-1/2W	50'	1/4 x 3/8	322.00
EZP-408-15-1/2W	15'	1/4 x 1/2	142.40
EZP-408-20-1/2W	20'	1/4 x 1/2	169.80

**** EZ-Pull Linsets Also Available in Black for All Sizes***



Part #	Length	Liquid x Suction	LIST
EZP-408-25-1/2W	25'	1/4 x 1/2	193.00
EZP-408-50-1/2W	50'	1/4 x 1/2	335.00
EZP-410-15-1/2W	15'	1/4 x 5/8	
EZP-410-20-1/2W	20'	1/4 x 5/8	
EZP-410-25-1/2W	25'	1/4 x 5/8	205.40
EZP-410-50-1/2W	50'	1/4 x 5/8	354.00
EZP-610-25-1/2W	25'	3/8 x 5/8	221.80

NOTE: Pricing Subject To Change

WALL THIMBLES

Thermo-Thimbles

The pro way to run A/C line sets, electrical and thermostat wires through walls! Add a professional look to through-the-wall installations!



FEATURES:

- Creates a permanent, air-tight seal through walls.
- Temporary plug keeps out air, insects and other pests.
- No ugly holes to patch.
- For new construction or retrofit.
- Flange pre-marked for nails or screws.
- No snagged line sets.

Part #	Description	LIST
44002	Round Thimble Kit, 2-7/8" dia. up to 12" wall	36.20
44005	Round Thimble Kit, 4-7/8" dia. up to 12" wall	49.40

TUBING COVER

FORTRESS





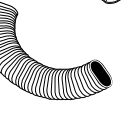













MODEL	SIZE	DESCRIPTION	L	W	H	LIST
LD-92-W	3-1/2	Ducting	96”	3-5/8”	2-5/8”	74.60
LD-122-W	4-1/2	Ducting	96”	4-5/8”	3-1/4”	96.90
LJ-92-W	3-1/2	Coupler	2-5/8”	3-7/8”	2-3/4”	14.10
LJ-122-W	4-1/2	Coupler	2-5/8”	4-7/8”	3-1/2”	14.50
LW-92-W	3-1/2	Wall Inlet	9”	4-3/8”	3-1/ 8”	29.20
LW-122-W	4-1/2	Wall Inlet	9-3/4”	5-3/8”	4”	37.90
LP-92-W	3-1/2	Soffit Inlet	3-1/2”	6”	4-7/8”	33.50
LP-122-W	4-1/2	Soffit Inlet	3-1/2”	7”	5-1/2”	43.60
LEN-92-W	3-1/2	End Fitting	4-1/4”	3-7/8”	2-3/4”	15.90
LEN-122-W	4-1/2	End Fitting	4-1/4”	4-7/8”	3-1/2”	20.70
LK-92-W	3-1/2	90° Flat Ell	5-3/4”	5-3/4”	2-3/4”	29.30
LK-122-W	4-1/2	90° Flat Ell	6-1/2”	6-1/2”	3-1/2”	38.20
LKF-92-W	3-1/2	45° Flat Ell	4-7/8”	4-7/8”	2-3/4”	35.50
LKF-122-W	4-1/2	45° Flat Ell	6-1/2”	6-1/2”	3-1/2”	46.20
LCI-92-W	3-1/2	90° Inside Vertical Ell	5-1/4”	5-1/4”	2-3/4”	39.90
LCI-122-W	4-1/2	90° Inside Vertical Ell	5-1/4”	5-1/4”	3-1/2”	52.00
LCO-92-W	3-1/2	90° Outside Vertical Ell	4-1/2”	4-1/2”	2-3/4”	39.90
LCO-122-W	4-1/2	90° Outside Vertical Ell	5-1/4”	5-1/4”	3-1/2”	52.00
LCFI-92-W	3-1/2	45° Inside Vertical Ell	4-3/4”	3-7/8”	2-3/4”	39.90
LCFI-122-W	4-1/2	45° Inside Vertical Ell	6-1/4”	4-7/8”	3-1/2”	52.00
LCFO-92-W	3-1/2	45° Outside Vertical Ell	4-5/8”	3-7/8”	2-3/4”	39.90
LCFO-122-W	4-1/2	45° Outside Vertical Ell	5-1/4”	4-7/8”	3-1/2”	52.00
LT-92-W	3-1/2	Tee	7-3/4”	5-3/4”	2-3/4”	52.80
LT-122-W	4-1/2	Tee	7-3/4”	6-1/2”	3-1/2”	68.80
LDR-12292-W	3-1/2 -4-1/2	Reducer	3”	4-7/8”	3-7/8”	29.20
LKS-92-W	3-1/2	90° Sweep Ell	13”	13”	2-3/4”	37.00
LKS-122-W	4-1/2	90° Sweep Ell	14”	14”	3-1/2”	48.30
LF-92-W	3-1/2	Flexible Ell	40”	3-1/2”	2-1/2”	63.00
LF-122-W	4-1/2	Flexible Ell	40”	4-1/2”	3-1/4”	81.90
LFJ-92-W	3-1/2	Flexible Adaptor	3-1/8”	3-7/8”	2-3/4”	21.70
LFJ-122-W	4-1/2	Flexible Adaptor	3-1/8”	4-7/8”	3-1/2”	24.30
LWF-92-W	3-1/2	Wall Flange	5”	6”	2-1/8”	30.70
LWF-122-W	4-1/2	Wall Flange	6-1/2”	7-3/4”	2-5/8”	39.90

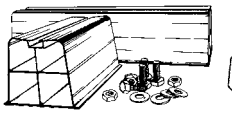
Colours also available in Ivory, Brown and Grey - Special Order.

A/C ACCESSORIES

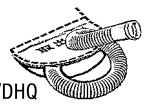
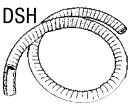
FORTRESS

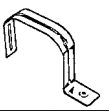
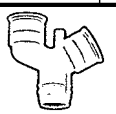
CONDENSER BRACKETS & RISERS

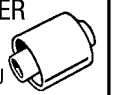
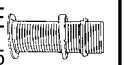
PART	LIST
WALL CONDENSER BRACKET — Available in roof, wall, surface and suspension type brackets, Airtec provides the support to accommodate any style of installation. Heavy Duty steel construction assures strong secure support. Adjustible sliding frames and rubber mounts maximumize versatily to accommodate variations in width/depth of conventional condenser units. All weather protectiive finish assures long service life. **Min/Max mounting width:** 3"- 30" **Min/Max mounting depth:**10.5"- 16" **Overall Dimensions:** WBB300 H-18" W-33.5" D-22" WBB500 H-18" W-33.5" D-24" 	
WBB-300 (Wall Bracket, Weight: 5 Kgs, Max load: 136 Kgs)	170.50
WBB-500 (Wall Bracket, Weight: 6.4 Kgs, Max load: 227 Kgs)	258.50

PART	LIST
PLAROCK IVORY 4' RISERS  END CAP 	
PR351N-I (14' L 308 LB.)	27.30
PR351N-M (18' L 397 LB.)	33.60
PRC-351N (4" Riser End Cap-pair)	22.00

CONDENSATE HOSES & MISC. ACCESSORIES

PART	LIST
DRAIN HOSE  DH/DHQ DSH 	
DH-14 (LITE-164' coil)	193.50
DH-16 (STANDARD-164' coil)	193.50

PART	LIST
SFS SADDLE FOR FLEXIBLE ELL (STAINLESS STEEL) 	
SFS-140	
SFS-100	
SFS-77	16.70
SL-300	2.50
DY VENTED DRAIN WYE 	
DY-16	14.50

PART	LIST
PIPE ADAPTOR DSH-14-16V  COUPLER DSH-14J 	
DSH-14-16V (PIPE ADAPTOR)	16.00
DSH-14J (COUPLER)	5.10
WALL SLEEVE NFP-75  INCLINED WALL SLEEVE FPS-65 	
NFP-75 (3"×5"–7")	24.50

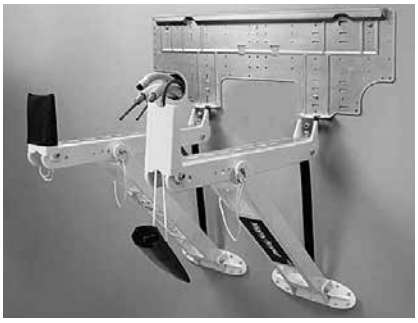
RECTORSEAL

Mighty Bracket™

Clips to the mounting bracket of most mini-split brands in order to hold unit securely in place during installation without damaging walls.

- Allows single person installation
- Simple clip on support
- Does not damage walls.
- Use on all brands of mini-spilts

Part #	Description	LIST
97705	Mini-split support tool	393.00

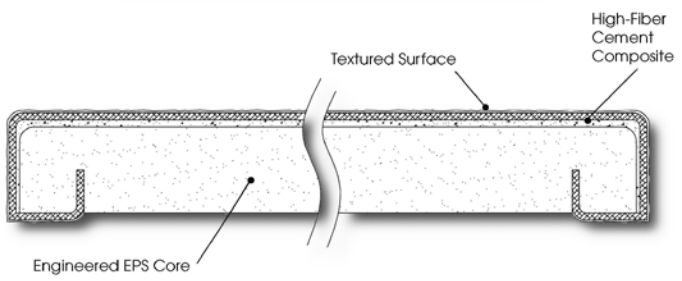


EQUIPMENT PADS

UltraLite® Pads

Strengthened by fiber-cement coating, flexes instead of cracking or breaking. The textured surface prevents unit slide and allows water drainage, while the engineered EPS core prevents warping and provides a solid bottom to resist settling. Unaffected by soil conditions, UV, temperature extremes, and other weather conditions.





Part #	Size	Thickness	Allowable Total Load	LIST
UC1636-3	16” x 36”	3"	754 lbs.	72.80
UC2424-3	24” x 24”	3"	595 lbs.	66.00
UC2436-3	24” x 36”	3"	1071 lbs.	111.90
UC2448-3	24” x 48”	3"	1547 lbs.	123.30
UC3030-3	30” x 30”	3"	1071 lbs.	102.10
UC3036-3	30” x 36	3"	1309 lbs.	179.20
UC3232-3	32” x 32”	3"	1230 lbs.	80.70
UC3237-3	32” x 37	3"	1428 lbs.	153.40
UC3636-3	36” x 36”	3"	1547 lbs.	176.80
UC3642-3	36” x 42”	3"	1704 lbs.	
UC3648-3	36” x 48”	3"	2023 lbs	218.20

AIR CONDITIONER BRACKETS

• For hanging A/C condensers & heat pumps on vertical walls

Part #	Description	Max Load	LIST
SM003	21" A/C bracket (pair)	260	61.60
MB30	30" A/C bracket (pair)	400	62.30
MB36	36" A/C bracket (pair)	375	76.20
MB42	42" A/C bracket (pair)	350	89.40



DUCT HEATERS
THERMOLEC

How to Order:

Contact your nearest Refrigerative Supply office for unit specifications

Duct Dimensions		Capacity*	Control Voltage	Frame	Control Components
Rectangular	Round				
up to 48"W x 24"H	Up to 12" diameter	up to 62KW at 600V / 3PH	24V	**Standard** Slip-in type (SC) supplied unless otherwise specified **Optional** - Flange type (FC) - Round type (RFC) - Protective screens (on any frame type) option S1 or S2	**Standard** - Thermal cut-outs - Magnetic contactors - Control circuit transformer - Supply & control terminals **Optional** - Airflow probing device - option D - Toggle disconnect switch - option X

Standard Dimensions:

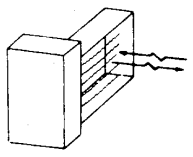


Fig. 5
Horizontal airflow

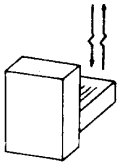


Fig. 6
Vertical airflow

Duct Height	Depths	
	"d"	"D"
9" to 18"	5"	11"
6", 7" & 8"	max. 10"	max. 17"

All RAPIDEL Duct Heaters are suitable for both horizontal and vertical airflow in either direction. This feature makes it unnecessary to plan airflow direction at time of ordering and avoids numerous installation problems.

Exclusive All-Round Applicability:

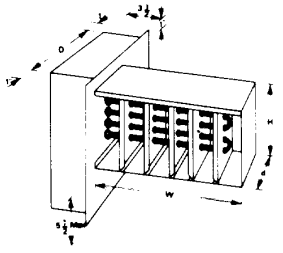


Fig. 3 - Model SC (Standard)
Slip-in type heater

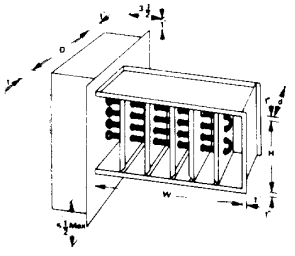
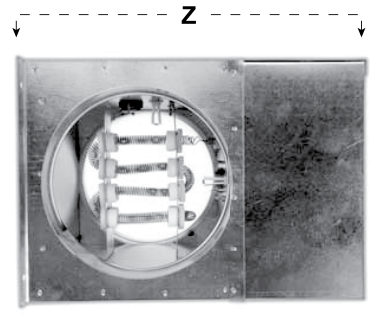
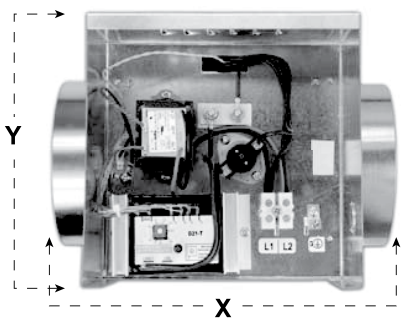


Fig. 4 - Model FC (optional)
Flanged type heater





DIMENSIONS (3 frame sizes available)			
SIZE	X	Y	Z
A	11.5"	8.0"	11.5"
B	11.5"	10.0"	13.5"
C	15.5"	12.0"	15.5"

To specify the model required, follow the example below:

TER-6-2-240

COLLAR SIZE — KILOWATTS — VOLTAGE

AVAILABLE STOCK MODELS:

COLLAR SIZE	KW	**VOLTAGE**/AMPS	Min. CFM	FRAME SIZE
5" or **6**"	**1**	**240V**/4.2A or **208V**/4.8A or **120V**/8.3A	30	A
5" or **6**"	**2**	**240V**/8.3A or **208V**/9.6A or **120V**/16.7A	60	A
8" or **10**"	**3**	**240V**/12.5A or **208V**/14.4A	90	B
8" or **10**"	**4**	**240V**/16.7A or **208V**/19.2A	120	B
8" or **10**"	**5**	**240V**/20.8A or **208V**/24.0A	150	B
8" or **10**"	**6**	**240V**/25.0A	180	B
12"	**6**	**240V**/25.0A	180	C
10" or **12**"	**8**	**240V**/33.3A	240	C
10" or **12**"	**10**	**240V**/41.6A	300	C
10" or **12**"	**12**	**240V**/47.9A (11.5KW)	345	C

Specifications are for standard units.
For other sizes, voltages and capacities, please contact your Thermolec representative.

HOSHIZAKI

Cuber Series

Hoshizaki offers a complete line of cubers producing up to 2400 pounds of ice within a 24-hour period. The AM Cuber features a stainless steel finish and fewer moving parts for longer life. The AM-50 is available with swing style field reversible door andfits conveniently into standard cabinetry and is UL approved for outdoor use. The AM-50BAE-AD is ADA approved height. The KM Cuber Series features an attractive stainless steel exterior finish and a double-sided evaporator with an oval shaped copper refrigerant tubing between two stainless steel plates for the most efficient heat exchange. The exclusive evaporator design freezes the purest water, resulting in crystal clear crescent cubes.

CUBER ICE USAGE GUIDE

Establishment	Approximate Daily Usage
Restaurant	1.5 lbs. ice per seat
Cocktail Lounge	3.0 lbs. ice per seat
Lodging	
Food Service	1.5 lbs. ice per seat
Banquet Service	1.0 lbs. ice per seat
Guest Ice	5.0 lbs. ice per room
Beverage Service	5.0 oz. ice per 7 - 10 oz. cup
Convenience Store	8.0 oz. ice per 12 - 16 oz. cup
Fast Food	10.0 oz. ice per 20 - 32 oz. cup
Salad Bar / Seafood Display	30 lbs. ice per cubic feet



AM-50BAJ(-AD)DS



KM-161BAJ



KM-301BAJ

MODEL	DIMENSIONS (W x D x H)	CONDENSER	PRODUCTION	LIST
SELF-CONTAINED CUBERS WITH BUILT-IN BINS				
AM-50BAJ (-DS)**	14 7/8″ x 22 5/8″ x 33 1/2″	A	55 lbs.	**6,280.00**
AM-50BAJ -AD(-DS)**	14 7/8″ x 22 5/8″ x 31 1/2″	A	55 lbs.	**6,664.00**
KM-81BAJ	17-3/4″ x 24″ x 39″*	A	86 lbs.	**5,703.00**
KM-116BAJ	23-3/4″ x 24″ x 39″*	A	116 lbs.	**6,424.00**
KM-161B_J	23 3/4″ x 28″ x 39″*	A,W	162, 157 lbs.	**7,065.00**
KM-231BAJ	24″ x 28″ x 39″*	A	230 lbs.	**7,642.00**
KM-301B_J	30″ x 28″ x 39″*	A,W	295, 265 lbs.	**8,923.00**

*height includes 6″ legs

** -DS - Full overlay door panel - designed to accommodate custom cabinetry

A = AIR **W = WATER** **R = REMOTE** **1ø = 1 PHASE** **3ø = 3 PHASE**

HOSHIZAKI

Cuber Series



KMD-460MAH



KMS-822MLJ



KML-500_J
B-500SF

MODEL	DIMENSIONS (W x D x H)	CONDENSER	PRODUCTION	LIST
MODULAR CRESCENT CUBERS / DISPENSER APPLICATION				
KMD-410M_H	22 1/4″ x 24 1/8″ x 24″	A, W	415, 440 lbs.	**9,051.00**
KMD-460M_H	30″ x 24 1/4″ x 22 1/8″	A, W	460 lbs.	**9,212.00**
KMD-860M_J	30″ x 24-5/8″ x 28″	A, W, R	855, 940, 967 lbs.	**14,674.00**
SERENITY SERIES CRESCENT CUBERS / DISPENSER APPLICATION				
KMS-822MLJ	22″ x 24 5/8″ x 28″	R	851 lbs.	**13,217.00**
KMS-830MLJ	30” x 16 1/2” x 29”	R	820 lbs.	**13,200.00**
KMS-1122MLJ	22″ x 18″ x 31 1/4″	R / 3ø	1151 lbs.	**13,866.00**
KMS-1402MLJ	30″ x 24″ x 28″	R / 3ø	1501, 1474 lbs.	**14,114.00**
KMS-2000MLJ	30” x 24” x 32 7/8”	R / 3ø	1501, 1901 lbs.	**17,462.00**
LOW-PROFILE CRESCENT CUBERS				
KML-325M_J	30″ x 27 3/8″ x 22″	A, W	333, 345 lbs.	**8,394.00**
KML-500M_J	30″ x 27 3/8″ x 22″	A, W	401, 429 lbs.	**9,708.00**
KML-700M_J	30″ x 27 3/8″ x 26″	A, W, R	575, 632, 636 lbs.	**11,871.00**

A = AIR **W = WATER** **R = REMOTE** **1ø = 1 PHASE** **3ø = 3 PHASE**

HOSHIZAKI

All KM cubers feature the CycleSaver™ design and the EverCheck™ control board. The CycleSaver™ design allows Hoshizaki cubers to produce the same quantity of ice in about half as many cycles as competitive ice machines. Fewer cycles add-up to longer life and less maintenance than competitive units. The EverCheck™ control board sounds an audible alert when the machine is in need of service. This feature assists in diagnosis and minimizes down-time. Additionally, the stainless steel construction of the evaporator means years of trouble-free ice-making. Because it is not affected by caustic water conditions, there is no plating to peel or flake and no plastic to crack. The Hoshizaki icemaking system is the simplest in the industry. It has fewer moving parts and fewer cycles which increases dependability, machine life and energy savings. Hoshizaki Ice Machines and Dispensers also feature H-GUARD Plus Antimicrobial Agent.



KM-340MAJ



KM-650MAJ



KM-1301SRJ



IM-500SAA

everCheck

CycleSaver

H-GUARD PLUS

MODEL	DIMENSIONS (W x D x H)	CONDENSER	PRODUCTION	LIST
MODULAR CRESCENT CUBERS				
KM-340M_J	22″ x 27 3/8″ x 30 5/16″	A, W	387, 386 lbs.	**8,122.00**
KM-520M_J	22″ x 27-3/8″ x 28″	A, W, R	556, 474, 547 lbs.	**9,884.00**
KM-515M_J-P	22″ x 27 3/8″ x 30 5/16″	A, W	527, 462 lbs.	
KM-660M_J	22″ x 27-3/8″ x 28″	A, W, R	665, 669, 646 lbs.	**11,486.00**
KM-901M_J	30″ x 27-3/8″ x 32-1/2”	A, W, R	905, 950, 904 lbs.	**14,867.00**
KM-901MRJ3	30″ x 27-3/8″ x 32-1/2”	R / 3ø	927 lbs.	**15,203.00**
KM-1340M_J	30″ x 27 3/8″ x 41 1/2″	A, W, R	1275, 1323, 1371 lbs.	**19,625.00**
KM-1601MRJ(3)	30″ x 27-3/8″ x 41- 5/8”	R / 1ø, 3ø	1594, 1653 lbs.	**22,893.00**

“-E” models for KM-280M, 500M, 630M, 901M, 1301S with air-cooled condensers available in 220v/50hz
Ice production at 70°F Air / 50°F Water (-P) Exterior fasteners are tamper proof torx pin screws

LOW-PROFILE CRESCENT CUBERS / MARINE APPLICATION				
KM-1400S_H-M(3)	48″ x 27 3/8″ x 27 3/8″	W / 3ø	1370, 1343 lbs.	
STACKABLE CRESCENT CUBERS				
KM-1301S_J	48″ x 27 3/8″ x 27 3/8″	A, W, R	1329, 1318, 1353 lbs.	**19,288.00**
KM-1301S_H-P	48″ x 27 3/8″ x 27 3/8″	A, W	1329, 1290 lbs.	**17,799.00**
KM-1301S_J3	48″ x 27 3/8″ x 27 3/8″	A, W, R / 3ø	1298, 1333, 1339 lbs.	**19,448.00**
KM-1601S_HJ	48″ x 27 3/8″ x 27 3/8″	A, W, R	1462, 1492, 1531 lbs.	
KM-1601S_J3	48″ x 27 3/8″ x 27 3/8″	A, W, R / 3ø	1456, 1555, 1530 lbs.	**22,893.00**
KM-1900S_J	48″ x 27 3/8″ x 36 7/16″	A, W, R	1865, 1880, 1933 lbs.	**24,735.00**
KM-1900S_J-P	48″ x 27 3/8″ x 36 7/16″	A, W	1867, 1876, 1857 lbs.	
KM-1900S_J3	48″ x 27 3/8″ x 36 7/16″	A, W, R / 3ø	1865, 1880, 1933 lbs.	**24,895.00**
KM-2200S_J3	48″ x 27 3/8″ x 36 7/16″	W, R / 3ø	1964, 2115 lbs.	**31,175.00**
KM-2600S_J3	48″ x 27 3/8″ x 36 7/16″	W, R / 3ø	2482, 2617 lbs.	**33,850.00**
HIGH CAPACITY STACKABLE CRESCENT CUBERS				
KMH-2100S_J	36″ x 40″ x 36 7/16″	R	1944 lbs.	**29,525.00**
IM SQUARE CUBER				
IM-500SAB	44″ x 27 5/8″ x 21 3/4″	A	500 lbs.	**13,265.00**

A = AIR **W = WATER** **R = REMOTE** **1ø = 1 PHASE** **3ø = 3 PHASE**

HOSHIZAKI

Flaker Series

Hoshizaki flaked icemakers are designed for dependability. The attractive stainless steel exterior provides long life and easy maintenance. The internal auger design produces the highest quality ice with fewer repairs and less down time. This design also contributes to low power consumption, resulting in an energy efficient unit. The modular flakers feature the CleanCycle24® design, which keeps the evaporator barrel clean by performing a 15 minute flush every hour. The self-contained flakers are designed to flush the system automatically every time the bin control is activated. Most models are also available with our cubelet ice.



C-80BAJ



F-330BAJ



F-450MAJ

MODEL	DIMENSIONS (W x D x H)	CONDENSER	PRODUCTION	LIST
SELF-CONTAINED FLAKERS WITH BUILT-IN BINS				
F-300BAJ	36″ x 24-1/4″ x 39-1/4″ *	A	353 lbs.	**13,665.00**
F-330BAJ	24″ x 26″ x 39″*	A	332 lbs.	**13,024.00**
F-500BAJ	38-1/8″ x 29-1/8″ x 42″	A	536 lbs.	**14,272.00**
*height includes 6″ legs				
MODULAR FLAKERS				
F-450MAJ	22″ x 27 3/8″ x 22″	A	493 lbs.	**11,727.00**
F-801M_J	22″ x 27 3/8″ x 26	A, W	751, 665 lbs.	**14,995.00**
F-1001M_J	22″ x 27 3/8″ x 25 15/16″	A, W, R	970, 890, 930 lbs.	**16,239.00**
F-1001MLJ	22″ x 27 3/8″ x 25 15/16″	Parallel Rack System	(1150 lbs.)	**14,321.00**
F-1501M_J	30″ x 27 3/8″ x 34 7/16″	A, W, R	1543, 1624, 1705 lbs.	**23,485.00**
F-2001MRJ(3)	30″ x 27 3/8″ x 34 7/16″	R / 1ø, 3ø	2073, 2098 lbs.	**31,864.00**
F-2001MLJ	30″ x 27 1/2″ x 34 7/16″	Parallel Rack System	(2280 lbs.)	**29,685.00**
F-2001MWJ	30″ x 27 1/2″ x 34 7/16″	W	2043 lbs.	**32,024.00**
SELF-CONTAINED CUBELET WITH BUILT-IN BINS				
C-80BAJ(-DS)**	14 7/8″ x 22 5/8″ x 33 1/2″	A	80 lbs.	**9,404.00**
C-80BAJ(-AD)**	14 7/8″ x 22 5/8″ x 31 1/2″	A	80 lbs.	**9,420.00**
F-330BAJ-C	24″ x 26″ x 39″*	A	320 lbs.	**13,184.00**

*height includes 6″ legs ** -DS - Full overlay door panel - designed to accommodate custom cabinetry

A= AIR **W = WATER** **R=REMOTE** **1ø = 1 PHASE** **3ø = 3 PHASE**

HOSHIZAKI

Flaker Series



FD-650MAH-C



F-2001MRJ

MODEL	DIMENSIONS (W x D x H)	CONDENSER	PRODUCTION	LIST
MODULAR CUBELET				
F-450MAJ-C	22″ x 27 3/8″ x 22″	A	431 lbs.	**11,999.00**
FD-650M_H-C	22″ x 24″ x 26″	A, W, R	650, 615, 590 lbs.	**13,168.00**
F-801M_J-C	22″ x 27 3/8″ x 25 15/16″	A, W	728, 627 lbs.	**15,828.00**
F-1001M_J-C	22″ x 27 3/8″ x 25 15/16″	A, W, R	860, 790, 840 lbs.	**16,418.00**
FD-1001M_J-C	22″ x 24″ x 26″	A, R	940, 930 lbs.	**17,247.00**
F-1001MLJ-C	30″ x 11″ x 26″	R	830 lbs.	
FS-1022MLJ-C	30” x 16 1/2” x 26”	R	830 lbs.	
F-1501M_J-C	30″ x 27 3/8″ x 34 7/16″	A, W, R	1327, 1376, 1335 lbs.	**23,934.00**
FS-1500MLJ-C	30” x 16 1/2” x 33”	R	1386 lbs.	
F-2001MRJ	30″ x 27 3/8″ x 34 7/16″	R	1335 lbs.	**31,864.00**

A= AIR **W = WATER** **R=REMOTE** **1ø = 1 PHASE** **3ø = 3 PHASE**

Dispensers & Ice Storage Bins



KML-451MAH
DB-200H

The Hoshizaki crescent cube vending dispensers feature a built-in insulated storage bin with a “U”-Shaped design and three dimensional agitation. The shape of the bin and agitation prevents clumping and assists in delivering ice conveniently at the touch of a button. The DB Series cube dispenser accommodates the Hoshizaki KM series crescent cubers and features a child-safety mechanism which disengages the agitator should a foreign object be inserted into the chute. The DKM hotel dispenser is the only one-piece design available to the market and is 35% quieter than other hotel dispensers. The DCM Series dispenses both cubelet ice and water. The easy to chew, dry cubelet ice is produced and stored in a sanitary built-instorage bin. The DCM Opti-Serve™ Series offers a hands-free operation, eliminating the possibility of cross-contamination.

Hoshizaki Ice Machines and Dispensers also feature H-GUARD Plus Antimicrobial Agent. H-GUARD PLUS

MODEL	DIMENSIONS (W x D x H)	PRODUCTION	APPLICATION CAPACITY	LIST
DB, DCM, DKM and DM SERIES DISPENSERS				
DB-130H	22″ x 30″ x 53″*	-	130 lbs.	**9,067.00**
DB-200H	30″ x 30″ x 53″*	-	200 lbs.	**10,413.00**
DKM-500B_J	30″ x 28″ x 77″*	A - 466, W - 455 lbs.	200 lbs.	**20,778.00**
DM-200B	30″ x 28″ x 36 1/2″	-	200 lbs.	**10,717.00**

*height includes 6″ legs

Dispensers & Ice Storage Bins



DKM-500BAJ



DCM-270BAH



BD-300SF

MODEL	DIMENSIONS (W x D x H)	CONDENSER	PRODUCTION	LIST
DCM SERIES CUBELET DISPENSERS				
DCM-270BAH	16 9/16″ x 24 3/16″ x 31 7/8″*	A	282 lbs.	**12,640.00**
DCM-300BAH	26″ x 22 1/2″ x 40″	A	321 lbs.	**16,324.00**
DCM-500B_H	26″ x 22 1/2″ x 40″	A, W	618, 567 lbs.	**20,746.00**
DCM-751B_H	34 1/16″ x 28 1/2″ x 48 1/16″	A, W	801, 800 lbs.	**26,978.00**
*height includes 4″ legs				
DCM OPTI-SERVE™ SERIES CUBELET DISPENSERS				
DCM-270BAH-OS	16 9/16″ x 24 1/8″ x 31 11/16″*	A	288 lbs.	**12,800.00**
DCM-300BAH-OS	26″ x 22 1/2″ x 40″	A	321 lbs.	**16,485.00**
DCM-500B_H-OS	26″ x 22 1/2″ x 40″	A, W	618, 567 lbs.	**20,906.00**
DCM-751B_H-OS	34 1/16″ x 28 1/2″ x 48 1/16″	A, W	801, 800 lbs.	**27,138.00**
*height includes 4″ legs				

Hoshizaki ice storage bins are available with stainless steel or vinyl clad exterior for easy cleaning and long lasting attractive appearance. The sturdy construction and non-corrosive bin liner provides safe, sanitary storage of ice for side-by-side or stacked installations. Foamed-in-place polyurethane insulation in all bin walls, and bottoms, provide dependable ice storage. H-GUARD Plus Antimicrobial Agent adds extra protection to the scoop. H-GUARD PLUS

PF, SF and SS SERIES BINS				
B-250PF	30″ x 32 1/2″ x 33 3/8″	P	250 lbs.	**2,884.00**
B-300_F / BD-300_F	22″ x 32 1/2″ x 46″	P, S	300 lbs.	**3,060.00**
B-500_F / BD-500_F	30″ x 32 1/2″ x 46″	P, S	500 lbs.	**3,412.00**
B-700_F	44″ x 32 1/2″ x 46″	P, S	700 lbs.	**4,373.00**
B-800_F	48″ x 32 1/2″ x 46″	P, S	800 lbs.	**4,710.00**
B-900_F	52″ x 32 1/2″ x 46″	P, S	900 lbs.	**5,030.00**
B-1150SS	48″ x 41″ x 60″	S	1150 lbs.	**10,045.00**
B-1300SS	48″ x 41″ x 66″	S	1275 lbs.	**10,381.00**
B-1500SS	60″ x 41″ x 62″	S	1500 lbs.	**11,534.00**
B-1650SS	60″ x 41″ x 66″	S	1605 lbs.	**11,935.00**

*depth includes door assembly **P = POLYVINYL** **S = STAINLESS STEEL**

HOSHIZAKI

Commercial Series



R1A-FG



R2A-FG



HR24B

Hoshizaki's Commercial Series offers superior features: advanced refrigeration systems, unique doors and wall thickness, ease of install and the best warranty in the industry – Hoshizaki delivers proven benefits!

MODEL	DESCRIPTION	DIMENSIONS (W x D x H)	STORAGE CAPACITY	LIST
REFRIGERATORS and FREEZERS				
R1A-FS(L)*	1-Section Refrigerator	27 1/2" x 34" x 79 1/2"*	20.9 ft³	**7,891.92**
R1A-HS(L)	1-Section Refrigerator w/Half height Doors	27 1/2" x 34" x 79 1/2"*	20.8 ft³	**9,416.76**
R1A-FG	1-Section Refrigerator w/Full height Glass Door	27 1/2" x 34 3/4" x 79 3/4"*	20.9 ft³	**9,800.88**
R2A-FS	2-Section Refrigerator	55" x 34" x 79 1/2"*	47.2 ft³	**10,510.92**
R2A-HS	2-Section Refrigerator w/Half height Doors	55" x 34" x 79 1/2"*	47.0 ft³	**12,757.44**
R2A-FG	2-Section Refrigerator w/Full height Glass Doors	55" x 34" x 79 1/2"*	47.2 ft³	**13,444.20**
R3A-FS	3-Section Refrigerator	83" x 34" x 79 1/2"*	68.1 ft³	**18,321.36**
R3A-HS	3-Section Refrigerator w/Half height Doors	83" x 34" x 79 1/2"*	67.8 ft³	**20,928.72**
R3A-FG	3-Section Refrigerator w/Full height Glass Doors	83" x 34 3/4" x 79 3/4"*	68.1 ft³	**25,968.84**
F1A-FS(L)	1-Section Freezer w/Half height Doors	27 1/2" x 34" x 79 1/2"*	20.9 ft³	**9,859.08**
F1A-HS(L)	1-Section Freezer w/Full height Glass Doors	27 1/2" x 34" x 79 1/2"*	20.8 ft³	**11,220.96**
F1A-FG	1-Section Freezer w/Half height Doors	27 1/2" x 34" x 79 1/2"*	20.9 ft³	**14,515.08**
F2A-FS	2-Section Freezer w/Full height Doors	55" x 34" x 79 1/2"*	47.2 ft³	**13,828.32**
F2A-HS	2-Section Freezer w/Half height Doors	55" x 34" x 79 1/2"*	47.0 ft³	**15,783.84**
F2A-FG	2-Section Freezer w/Full height Glass Doors	55" x 34" x 79 1/2"*	47.2 ft³	**20,521.32**
F3A-FS	3-Section Freezer w/Full height Doors	83" x 34" x 79 1/2"*	68.1 ft³	**20,521.32**
F3A-HS	3-Section Freezer w/Half height Doors	83" x 34" x 79 1/2"*	67.8 ft³	**22,767.84**
(L - Left Hand Hinge)	*height includes 4" casters			
COMPACT UNDERCOUNTER REACH-IN REFRIGERATOR				
HR24B	1-Section Undercounter Refrigerator	23 3/8" x 24 1/2"* x 32 11/16"	4.0 ft³	**3,672.75**
*height includes legs				

HOSHIZAKI

Commercial Series



UR27A-D2



WR48A



SR72A-18

MODEL	DESCRIPTION	DIMENSIONS (W x D x H)	STORAGE CAPACITY	LIST
UNDERCOUNTERS and WORKTOPS				
UR27A-01(-LP)(-D)	1-Section Undercounter Refrigerator	27″ x 30″ x 33 5/8″*†	6.22 ft³	**5,028.48**
UR48A-01(-D)	2-Section Undercounter Refrigerator	48″ x 30″ x 33 5/8″*	12.00 ft³	**7,635.84**
UR60A(-D)	2-Section Undercounter Refrigerator	60″ x 30″ x 33 5/8″*	15.58 ft³	**8,415.72**
UR72A	3-Section Undercounter Refrigerator	72″ x 30″ x 33 5/8″*	18.63 ft³	**8,951.16**
UF27A (-01)(-LP)(-D)	1-Section Undercounter Freezer	27″ x 30″ x 33 5/8″*	6.22 ft³	**5,831.64**
UF48A (-01)(-D)	2-Section Undercounter Freezer	48″ x 30″ x 33 5/8″*	12.00 ft³	**8,148.00**
UF60A (-01)	2-Section Undercounter Freezer	60″ x 30″ x 33 5/8″*	15.38 ft³	**10,150.08**
WR27A (-01)(-D)	1-Section Worktop Refrigerator	27″ x 30″ x 40″**	6.22 ft³	**4,947.00**
WR48A (-01)	2-Section Worktop Refrigerator	48″ x 30″ x 40″**	12.00 ft³	**4,947.00**
WR60A (-01)(-D)	2-Section Worktop Refrigerator	60″ x 30″ x 40″**	15.38 ft³	**8,182.92**
WR72A (-D)	3-Section Worktop Refrigerator	72″ x 30″ x 40″**	18.63 ft³	**9,370.20**
WF27A (-01)(-D)	1-Section Worktop Freezer	27″ x 30″ x 40″**	6.22 ft³	**5,808.36**
WF48A (-01)	2-Section Worktop Freezer	48″ x 30″ x 40″**	12.00 ft³	**9,079.20**
WF60A (-01)	2-Section Worktop Freezer	60″ x 30″ x 40″**	15.38 ft³	**10,545.84**

(-01 - Cylinder Door Lock, Additional Cost) (-LP - Low Profile) (-D - w/Drawers) *height includes 4″ casters **height includes 6″ casters

SANDWICH TOP and MEGA TOP PREP TABLES				
SR27A-8D2 (8 pans)	1-Section Refrigerated Sandwich Top Prep Table	27″ x 30″ x 44 1/4″*	6.22 ft³	**8,427.36**
SR48A-8 (8 pans)	2-Section Refrigerated Sandwich Top Prep Table	48″ x 30″ x 44 1/4″*	11.95 ft³	**7,531.08**
SR48A-12D4 (12 pans)	2-Section Refrigerated Sandwich Top Prep Table	48″ x 30″ x 44 1/4″*	11.95 ft³	**13,490.76**
SR60A-8 (8 pans)	2-Section Refrigerated Sandwich Top Prep Table	60″ x 30″ x 44 1/4″*	15.38 ft³	**9,172.32**
SR60A-12 (12 pans)	2-Section Refrigerated Sandwich Top Prep Table	60″ x 30″ x 44 1/4″*	15.38 ft³	**9,323.64**
SR60A-16 (16 pans)	2-Section Refrigerated Sandwich Top Prep Table	60″ x 30″ x 44 1/4″*	15.38 ft³	**8,834.76**
SR72A-12 (12 pans)	3-Section Refrigerated Sandwich Top Prep Table	72″ x 30″ x 44 1/4″*	19.7 ft³	**10,801.92**
SR72A-16 (16 pans)	3-Section Refrigerated Sandwich Top Prep Table	72″ x 30″ x 44 1/4″*	19.7 ft³	**10,895.04**
SR72A-18 (18 pans)	3-Section Refrigerated Sandwich Top Prep Table	72″ x 30″ x 44 1/4″*	19.7 ft³	**12,454.80**

height includes 6″ casters (-D - w/Drawers)

HOSHIZAKI

Commercial Series



SR27A-12M



SR48A-18MD4



PR67A

MODEL	DESCRIPTION	DIMENSIONS (W x D x H)	STORAGE CAPACITY	LIST
MEGA TOP PREP TABLES / with DRAWERS				
SR27A-12M (12 pans)	1-Section Refrigerated Mega Top Prep Table	27″ x 34″ x 44 1/4″*	6.22 ft³	**6,448.56**
SR48A-12M (12 pans)	2-Section Refrigerated Mega Top Prep Table	48″ x 34″ x 44 1/4″*	11.95 ft³	**9,800.88**
SR48A-18M (18 pans)	2-Section Refrigerated Mega Top Prep Table	48″ x 34″ x 44 1/4″*	11.95 ft³	**9,381.84**
SR60A-12M (12 pans)	2-Section Refrigerated Mega Top Prep Table	60″ x 34″ x 44 1/4″*	15.4 ft³	**10,801.92**
SR60A-18M (18 pans)	2-Section Refrigerated Mega Top Prep Table	60″ x 34″ x 44 1/4″*	15.4 ft³	**10,929.96**
SR60A-24M (24 pans)	2-Section Refrigerated Mega Top Prep Table	60″ x 34″ x 44 1/4″*	15.4 ft³	**10,510.92**
SR72A-18M (18 pans)	3-Section Refrigerated Mega Top Prep Table	72″ x 34″ x 44 1/4″*	19.7 ft³	**12,454.80**
SR72A-24M (24 pans)	3-Section Refrigerated Mega Top Prep Table	72″ x 34″ x 44 1/4″*	19.7 ft³	**12,664.32**
SR72A-30M (30 pans)	3-Section Refrigerated Mega Top Prep Table	72″ x 34″ x 44 1/4″*	19.7 ft³	**12,012.48**
SR72A-12MD2 (12 pans)	3-Section Refrigerated Mega Top Prep Table	72″ x 34″ x 44 1/4″*	19.7 ft³	
SR48A-18MD4 (18 pans)	2-Section Refrigerated Mega Top Prep Table	48″ x 34″ x 44 1/4″*	11.95 ft³	**14,550.00**

height includes 6″ casters Models with DRAWERS

PIZZA PREP TABLE / with DRAWERS				
PR46A	1-Section Refrigerated Pizza Prep Table	46″ x 32 1/4″ x 43 1/2″*	11.0 ft³	**10,545.84**
PR67A	2-Section Refrigerated Pizza Prep Table	67″ x 32 1/4″ x 43 1/2″*	19.9 ft³	**14,608.20**
PR93A	3-Section Refrigerated Pizza Prep Table	93″ x 32 1/4″ x 43 1/2″*	30.1 ft³	**19,531.92**
PR67A-D4*	2-Section Refrigerated Pizza Prep Table	67″ x 32 1/4″ x 43 1/2″*	19.9 ft³	**20,777.40**

height includes 6″ casters Models with DRAWERS

HOSHIZAKI
507-517

Display Cases & Warewashers



HNC-210BA-R-SL

The Hoshizaki HNC refrigerated display case provides an attractive display for many types of food products, including pastries and sushi. The new design features a 10% increase in storage capacity. These units are self-contained with an air-cooled refrigeration system and are easy to install, just plug it into a 115v outlet. The HNC refrigerated cases are NSF Standard 7 and UL approved for use as a service cabinet.

NSF c UL US LISTED

MODEL	DIMENSIONS (W x D x H)	CONDENSER	NET CAPACITY	LIST
DISPLAY CASES				
HNC-120BA-R-SL	47 1/4″ x 13 5/8″ x 11″	A	1.48 ft³	**8,456.00**
HNC-150BA-R-SL	59 1/16″ x 13 5/8″ x 11″	A	2.01 ft³	**9,136.00**
HNC-180BA-R-SL	70 7/8″ x 13 5/8″ x 11″	A	2.54 ft³	**10,216.00**
HNC-210BA-R-SL	82 11/16″ x 13 5/8″ x 11″	A	3.07 ft³	**11,694.00**

A = AIR

Top Kit Matrix

	22" Width KM-350M KM-515/520M KM-650/660M F-450M F-801M F-1001M F-1002M	22" Width KMD-410M† KMS-822M† FD-650M-C† FD-1002M-C† FS-1022M-C	30" Width KM-901M KM-1100M KM-1340M KM-1601M KML Series F-1501M F-2001M	30" Width KMD-460M‡ KMD-530M‡ KMD-860M‡ KMS-1402M KMS-2000M	44" Width 2 KM-350M 2 KM-515/520M 2 KM-650/660M IM-500S 2 F-450M 2 F-801M 2 F-1001M 2 F-1002M	44" Width 2 KMD-410M 2 KMS-822M 2 FD-650M-C 2 FD-1002M-C	48" Width KM-1301S KM-1601S KM-1900S KM-2100S KM-2600S	60" Width 2 KM-901M** 2 KM-1100M 2 KM-1340M 2 KM-1601M 2 KML Series 2 F-1501M 2 F-2001M 2 KMD-860M
22" Width B-300PF/SF DB-130H	NO TOP KIT NEEDED *(DB-130H-KM Only)*	HS-5424 *(DB-130H-KMD Only)*	N/A	N/A	N/A	N/A	N/A	N/A
30" Width B-250PF B-500PF/SF	HS-2033	HS-2033 & HS-2129	NO TOP KIT NEEDED	HS-2129	N/A	N/A	N/A	N/A
44" Width B-700PF/SF	HS-2035	HS-2035 & HS-2130	HS-2034	HS-2130 & HS-2034	NO TOP KIT NEEDED	HS-2130	N/A	N/A
48" Width B-800PF/SF	HS-2035 & HS-2032	HS-2035, HS-2032 & HS-2131	HS-2034 & HS-2032	HS-2131, HS-2034 & HS-2032	HS-2032	HS-2032 & HS-2131	NO TOP KIT NEEDED	N/A
48" Width B-1150SS B-1300SS	UNIVERSAL TOP KIT INCLUDED	N/A	UNIVERSAL TOP KIT INCLUDED	UNIVERSAL TOP KIT INCLUDED HS-2147	HS-5397 *(IM-500 Only)*	N/A	UNIVERSAL TOP KIT INCLUDED	N/A
52" Width B-900PF/SF	HS-2035 & HS-2033	HS-2035 & HS-2033/2132	HS-2035	HS-2132 & HS-2035	HS-2033	HS-2033 & HS-2132	HS-2032	N/A
60" Width B-1500SS B-1650SS	N/A	N/A	UNIVERSAL TOP KIT INCLUDED HS-2111	N/A	UNIVERSAL TOP KIT INCLUDED *(HS-5397 for IM-500)*	N/A	UNIVERSAL TOP KIT INCLUDED	UNIVERSAL TOP KIT INCLUDED
30" Width DB-200H DM-200B	HS-2036 *(KM Units Only)*	N/A	NO TOP KIT NEEDED *(KML Units Only)*	N/A	N/A	N/A	N/A	N/A

† **BD-300PF/SF:** bin fits KMD-410M, KMS-822M, FD-650M-C, & FD-1002M-C without a top kit extension

‡ **BD-500PF/SF:** bin fits KMD-460M, KMD-530M, & KMD-860M without a top kit extension

Any KMS§ FD on bin need Top Kit Extension:

Model Number	For Use With	List
HS-2129	B-500 bins	**449.00**
HS-2130	B-700 bins	
HS-2131	B-800 bins	
HS-2132	B-900 bins	**753.00**
HS-2147	B-1150 & 1300 bins	

§ ***Excludes KMS-830MLH***
BD Bin Applications - See Ice Storage Bins
KMH-2000/2100S - Kloppenberg Bins Only

Model Number	Description	List
HS-2032	4" ABS Top Kit	**336.00**
HS-2033	8" ABS Top Kit	**368.00**
HS-2034	14" ABS Top Kit	**368.00**
HS-2035	22" ABS Top Kit	**401.00**
HS-2036*	(2) 4" ABS Top Kits for DB applications	**336.00**
HS-2111	11.3" x 26.2" Stainless Cover/Separator	
HS-2148	30" x 3.1" Stainless Cover	
HS-2160**	2 KM-901M Stainless Cover/Separator	**1,426.00**
HS-5397	Top Kit for IM-500 on B-1150/1300/1500/1650	

*For DB-200H only

Water Filtration

Model Number	Description	Undercounter KMs	KM Cubers	IM Cubers	Flakers / Cubelet	DCMs
H9320-51 Use E-10 10" Prefilter	Single	AM-50, KM-80 KM-115, KM-160 KM-230, KM-300	KM-350, 515/520 KML-325, 500, 700 KMD-410, 460, 530 KMS-830 DKM-500	IM-200BAB IM-500SAA	All Models	All Models
H9320-52 Use E-20 20" Prefilter	Twin	N/A	KM-660, 901, 1100, 1340, 1601, 1601S, 1900S, 2100S, 2200S KMD-860 KMS-822, 1122, 1401 KMH-2100S	N/A	N/A	N/A
H9320-53 Use E-20 20" Prefilter	Triple	N/A	KM-1301S, 1340 KMS-2600S	N/A	N/A	N/A
H9655-11	Replacement Cartridge (1) One each					

Recommended water filter configurations based on average ice machine usage and regular filter replacement. If your operation has challenging water conditions or higher usage, then it may be necessary to use an additional filter or prefilter.

Water Filters	Description	Height of System (Manifold + Cartridge)	List
H9320-51	Single	18.4" H	**644.00**
H9320-52	Twin	19.11" H	**1,094.00**
H9320-53	Triple	19.15" H	**1,513.00**
H9655-11	Replacement Cartridge each		**257.50**
H9655-06	Replacement Cartridge (6 pk)		**1,223.00**

Prefilters	Description	Height of System (Manifold + Cartridge)	List
9534-26	E-20 Replacement Cartridges (6 pk)		
9534-12	E-10 Replacement Cartridges (12 pk)		
9534-20	E-20 Replacement Cartridges (20 pk)		**27.90**
9534-40	E-10 Replacement Cartridges (40 pk)		**14.70**
9795-80	E-10 Prefilter (10")		**240.50**
9795-90	E-20 Prefilter (20")		**386.00**



Triple Configuration Shown
(Single and Twin Configurations Available)

ICE BAGGER



E-Z BAGGER

Three E-Z steps to bagging ice using the special patented plastic handle ice bag wicket.



MODEL #	Description	LIST
B28-KIT-2	10" W x 13" D x 29" H, Comes with bags and tape dispenser	793.00
BG-10	Ice Bags - 10 lb. 12 x 19 1000 / CS	300.00
BG-8	Ice Bags - 8 lb. 11 x 19 1000 / CS	260.40

Follett Ice Storage and Dispensing Systems

Single Door Ice•Devlce™ Ice Storage and Dispensing Systems (for cube and Chewblet ice only)
Follett's labor-saving elevated bins dispense cube or Chewblet ice out front ice chute, into one of three carts or a bagger attachment. Low-profile (LP) models dispense into a single Totes ice carrier. All have full stainless exteriors and polyethylene liners. Add designator -75, -125, or -ICS125L to model number to select cart.



DEV1010-48-75
(includes SC75 cart with 3 Totes)



DEV1010-48-125
(includes SC125 cart)



DEV1010-48-ICS125L
(includes ICS125L cart)



Low-profile DEV1010-48-LP
(no cart, one Totes ice carrier)



DEV1010-48-BG
(shown with bagger accessory)

Model Number	with SC75 Cart	with SC125 Cart	with Cambro Cart	Max. Bin Cap. lb (kg)	Width in (mm)	Depth* in (mm)	Height** in (mm)
DEV500SG-30	-75	-125	-ICS125L	460 (209)	30 (762)	31 (788)	63.0 (1600)
DEV700SG-30	-75	-125	-ICS125L	680 (308)	30 (762)	31 (788)	78.5 (1993)
DEV860SG-48	-75	-125	-ICS125L	860 (390)	48 (1220)	31 (788)	65.5 (1664)
DEV1010SG-48	-75	-125	-ICS125L	1000 (454)	48 (1220)	31 (788)	74.5 (1893)
DEV1175SG-48	-75	-125	-ICS125L	1185 (538)	48 (1220)	31 (788)	80.5 (2045)
DEV1300SG-48	-75	-125	-ICS125L	1320 (599)	48 (1220)	31 (788)	84.0 (2134)
DEV1160SG-56	-75	-125	-ICS125L	1170 (531)	56 (1423)	31 (788)	74.5 (1893)
DEV1350SG-56	-75	-125	-ICS125L	1360 (617)	56 (1423)	31 (788)	80.5 (2045)
DEV1080SG-60	-75	-125	-ICS125L	1080 (490)	60 (1524)	31 (788)	65.5 (1664)
DEV1325SG-60	-75	-125	-ICS125L	1325 (601)	60 (1524)	31 (788)	74.5 (1893)
DEV1475SG-60	-75	-125	-ICS125L	1490 (676)	60 (1524)	31 (788)	80.5 (2045)
DEV1650SG-60	-75	-125	-ICS125L	1660 (753)	60 (1524)	31 (788)	84.0 (2134)

* Add 8" (204 mm) to depth for door assembly, easily removed for installation access.

** Deduct 14.75" (375 mm) from height for "LP" model configurations.

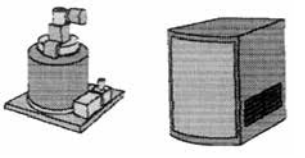
Please Call for Pricing

ICE FLAKERS 1000-6000 lbs

HOWE

Remote Low Side

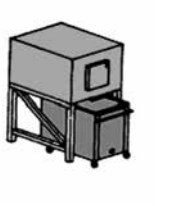
Model #	Dimensions W" x D" x H"	Ice Production/ 24hrs @ ARI 70°/ 90° (lbs)	Electrical	Ship Wt. (lbs)
1000-RLE	20-1/4 x 27 x 30-1/4	1000	208-230V/60/1	140
2000-RLE	30 x 28 x 35-1/2	2000	208-230V/60/1	500
3000-RLE	30 x 28 x 35-1/2	3000	208-230V/60/1	530
4000-RL*	36 x 36 x 44-1/2	4000	208-230V/60/1	700
6000-RL*	40 x 36 x 51-1/2	6000	208-230V/60/1	900



Storage Bin & Cart Systems

Single Cart Systems

Model #	Max. Flake Ice Capacity (lbs)	W (in)	D (in)	H w/legs (in)	Approx. Ship Wt.	Recommended Howe Rapid Freeze Flaker
CP-750	750	30	36	72	700 lbs	1000 RLE
CP-1000	1000	30	48	72	800 lbs	1000 RLE, SCAE, 2000RL(E)



Double Cart Systems

Model #	Max. Flake Ice Capacity (lbs)	W (in)	D (in)	H w/legs (in)	Approx. Ship Wt.	Recommended Howe Rapid Freeze Flaker
CP-1500	1500	60	36	72	855 lbs	2000, 3000RL(E) RC & SCW
CP-2500	2500	60	36	102	1255 lbs	3000RL(E), RC & SCW, 4000RL



Triple Cart Systems

Model #	Max. Flake Ice Capacity (lbs)	W (in)	D (in)	H w/legs (in)	Approx. Ship Wt.	Recommended Howe Rapid Freeze Flaker
CP-1850	1850	90	36	72	985 lbs	4000, 6000 RL
CP-3200	3200	90	36	102	1095 lbs	4000, 6000 RL
CP-4500	4500	90	48	102	1750 lbs	6000 RL, RC & SCW



Upright Storage Bins

Model #	Max. Flake Ice Cap. (lbs)	W (in)	D (in)	H w/legs (in)	Approx. Ship Wt.	Recommended Howe Rapid Freeze Flaker
1000-SS	1000	36	34	70	275 lbs	1000 RLE
1200-SS	1200	48	34	54	325 lbs	1000 RLE, 2000 RLE
1400-SS	1400	48	34	70	325 lbs	1000 RLE, RC, SCW & SCAE, 2000RL(E)
1650-SS	1650	60	34	58	375 lbs	2000 RL(E),RC & SCW,3000 RL(E),RC & SCW
1950-SS	1950	60	34	68	410 lbs	2000 RL(E),RC & SCW,3000 RL(E),RC & SCW
2300-SS	2300	60	48	58	450 lbs	3000 RL(E),RC & SCW,4000 RL,RC & SCW
2700-SS	2700	60	48	70	500 lbs	3000 RL(E),RC & SCW,4000 RL,RC & SCW
3800-SS	3800	72	48	78	575 lbs	6000 RL, RC & SCW
4900-SS	4900	72	48	98	775 lbs	6000 RL, RC & SCW







NU-PLUS FILTERS

NU-CALGON

NU-PLUS "E-Series" by EVERPURE. For Water, Ice and Beverages.



nu-i2000² & nu-i4000²

Reduce water-related ice machine problems caused by dirt, objectionable tastes and odor and by scale build-up. Precoat submicron filtration reduces particles as small as 1/2 micron along with chlorine and other offensive contaminants, and the feed of 6R Micromet® inhibits scale build-up caused by dissolved minerals. NSF Certified under NSF/ANSI Standards 42 and 53.

- Pre-coat filtration with Micro-Pure® II antibacterial protection
- Premier 6R Micromet scale control
- Cyst reduction

Part #	Description	LIST
4621-10	**nu-i2000² Capacity:** 9,000 gallons 750 lbs. for most cubers 1,500 lbs. for most flakers	262.50
4621-11	**nu-i4000² Capacity:** 12,000 gallons 1,000 lbs. for most cubers 2,000 lbs. for most flakers	286.40



nu-MC² & nu-XC²

Reduces chlorine taste and odor and other offensive contaminants that can adversely affect the taste of fountain beverages. Precoat submicron filtration reduces particles as small as 1/2 micron, and it helps retain carbonation in drinks. NSF Certified under NSF/ANSI Standards 42 and 53.

- Pre-coat filtration with Micro-Pure® II antibacterial protection
- Reduces objectionable tastes and odors
- Cyst reduction

Part #	Description	LIST
4621-20	**nu-MC² Capacity:** 9,000 gallons	231.30
4621-21	**nu-XC² Capacity:** 12,000 gallons	288.20



nu-7CB5S

The carbon block filter finely polishes the water allowing for high quality beverage and food applications. It reduces chlorine taste and odor and other offensive contaminants that can adversely affect the taste of water and fountain beverage applications. NSF Certified under NSF/ANSI Standard 42.

- Taste and odor, chlorine reduction
- Scale Control
- Particulate reduction to 5 micron
- Problem solving cartridge for high particulate or low flow water pressure areas

Part #	Description	LIST
4621-30	10,000 gallons Capacity	260.70

WATER ICE FOUNTAIN COFFEE

NU-PLUS "E-Series" QC71 Heads



Part #	Description	LIST
4621-01	**Single Head,** Ideal for all Nu-Plus Series E filters with a built-in shut off, flushing valve and an outlet pressure gauge which is included on the mounting bracket. (3/8 NPT)	580.00
4621-02	**Twin Parallel Head,** A dual filter head that is parallel plumbed for two Nu-Plus E Series filters, either mix or match. Head includes a shut off, flushing valve and outlet pressure gauge on a box bracket design.	1,002.00
4621-03	**Triple Parallel Head,** Triple filter head parallel plumbed for three Nu-Plus Series E filters. With shut off, flushing valve and an outlet pressure gauge contained on a box bracket.	1,423.00
4621-04	**Quad Parallel Head**	2,025.00

CUNO® Replacement Cartridges



Replacement for Cuno® Series 8000 filter cartridges

A carbon block filter that polishes water for high quality beverage and ice, reducing chlorine tastes and odor and other offensive contaminants.

Capacity: 10,000 gallons (37,850 liters).
Flow: 1.5 gpm.

Part #	Description	LIST
4622-10	**Nu-Plus CU-S** Replaces CFS-8112S, CFS-8720S & CFS-8812S	194.60
4622-20	**Nu-Plus CU** Replaces CFS-8112, CFS-8720 & CFS-8812	175.10

NU-PLUS FILTERS

NU-CALGON

NU-PLUS "E-Series" by EVERPURE. For Water, Ice and Beverages.

Prefilter Housings

Part #	Length	LIST
FC-34PR	10"	66.99
4621-42	10"	240.50
9795-80	10"	240.50
4621-44	20"	386.00
9795-90	20"	386.00



Prefilters

Part #	Length	Micron	Description	LIST
AWP117	10"	5	taste/odour	32.30
4621-41	10"	10	dirt and rust	14.70
AP124	10"	50	dirt and rust	16.20
9534-26	20"	10	dirt and rust	27.90
4621-43	20"	10	dirt and rust	27.90



Scale Inhibitors

Part #	Description	LIST
4621-05	Scale Inhibitor Housing	528.00
9798-45	Everpure SR-X Scale Inhibitor Housing	528.00
4621-15	Scale Cartridge IMF-7	163.70
9799-32	Scale Cartridge SS-IMF	163.70
4621-16	Scale Cartridge IMF-10	
9799-02	Scale Cartridge SS-10	200.10



WATER FILTERS

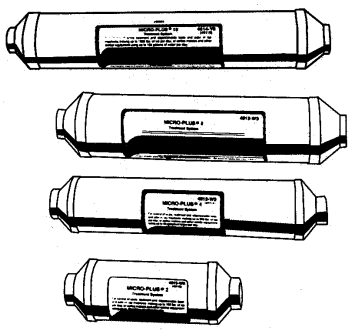
NU-CALGON

A customized or "problem specific" approach to correcting water related problems.

Micro-Plus Filter Plus Feeder

The complete treatment program for commercial ice makers, coffee urns and brewers, beverage makers and other water-using equipment such as humidifiers, steamers and residential refrigerator ice makers. Micro-Plus systems are designed and manufactured to eliminate or control the three primary water-related problems... lime scale, silt and sediment (down to 20 microns), and objectionable tastes and odours. Constructed of NSF approved polypropylene, and tapped on each end with 1/4" FPT.

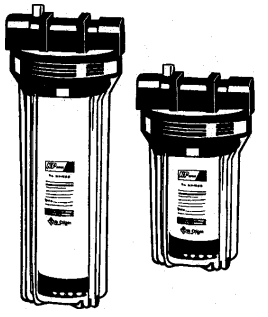
Part #	Treatment Capacities			LIST
	Water gals / day	Icemaker Capacity	Coffee Makers	
4615-W3	12.5	125 lbs. / day	25 lbs. (1250 cups) coffee / wk.	92.80
4612-W3	25	250 lbs. / day	50 lbs. (2500 cups) coffee / wk.	152.00
4613-Y8	50	500 lbs. / day	100 lbs. (5000 cups) coffee / wk.	221.50
4614-Y8	100	1000 lbs. / day	200 lbs. (10000 cups) coffee / wk.	313.00



Housings

The NP Series Housings are constructed of a polypropylene head and a "see through" body made from SAN plastic. The 4704-24 has 3/8" FPT connections while the 4714-24 has 1/2" FPT connections.

Part #	Daily Volume		LIST
	Water	Ice	
4704-24	65 gallons to 100 gallons	600 lbs. to 900 lbs.	179.00
4714-24	135 gallons to 200 gallons	1200 lbs. to 1800 lbs.	226.40



Accessories

Bracket Assemblies

Bracket	Application	LIST
NP2BR	For installing two NP housings in series	114.60
NP3BR	For installing three NP housings in series	154.40



NP3BR Bracket use with (3) 4704-24 Housings and NP24GG Gauge

WATER FILTERS

NU-CALGON

Scale Control Cartridges:

These cartridges contain 6R Micromet, a slowly soluble, food grade polyphosphate that prevents or inhibits scale by keeping the scale-forming minerals in solution. It is NSF-listed and it is USDA-accepted. The 4705-87 Micromet Cartridge contains sufficient 6R Micromet to provide scale control on ice machines making up to 900 lbs. of ice per day. The 4715-87 Micromet cartridge contains double the amount of 6R Micromet and can treat up to 1800 lbs. of ice or 200 gallons of water per day.

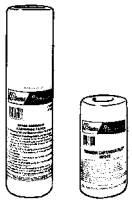
Part #	LIST
4705-87	221.60
4715-87	358.00



Sediment Removal Cartridges:

The NP Series Sediment Cartridges are manufactured by patented blown-microfiber technology to provide a filter with exceptional dirt-holding capability. All the materials meet FDA requirements. The 4702-87 is designed to handle up to 200 gallons of water per day under average conditions. The 4712-87 will handle 400 gallons per day. Both are rated at 20 microns with a very low pressure drop.

Part #	LIST
4702-87	21.00
4712-87	14.70
4621-43	27.90



Taste and Odour Removal Cartridges:

The NP Series Carbon Blocks are manufactured from high-performance activated carbon that simultaneously removes free chlorine, hydrogen sulfide, and other organic chemicals that contribute to taste and odour, while providing the particle removal and dirt holding capacity down to 10 microns. They allow for flow in the radial (outside to inside) direction, resulting in a higher flow rate at a comparably lower pressure drop. The 4701-87 is designed to handle up to 200 gallons of water per day while the 4711-87 can handle up to 400. They are made with FDA approved materials.

Part #	LIST
4701-87	111.50
4711-87	222.50



Scale Control & Taste/Odour Removal Cartridges:

These NP Series Cartridges are highly specialized elements, bringing the capabilities of 6R Micromet and activated carbon together in one element. They provide for the control of scale as well as the removal of objectionable tastes and odours and filtration to 10 microns. The 4706-87 can handle up to 65 gallons of water (600 lbs. of ice) per day, while the 4716-87 can handle 135 gallons (1200 lbs.) per day.

Part #	LIST
4706-87	178.40
4716-87	306.00



Selection Chart:

Daily Volume		Cartridge Selection		
Water	Ice	Scale Control	Taste/Odour Control	Sediment Removal
65 gal	600 lbs	4706-87*	4706-87*	4706-87*
100 gal	900 lbs	4705-87	4701-87	4702-87
135 gal	1200 lbs	4716-87*	4716-87*	4716-87*
200 gal	1800 lbs	4715-87	4701-87	4702-87
300 gal			4711-87	4712-87
400 gal			4711-87	4712-87

* For those special applications requiring scale control as well as taste/odour and sediment removal, where the daily volume is no more than 65 or 135 gallons of water (600 lbs or 1200 lbs of ice) Select the appropriate housing according to the cartridge used

MINI-SPLIT CONDENSATE PUMPS



Little Giant EC-1 Series Condensate Removal Pump

- Improved noise reducing design and reliable solid-state switching technology
- The two piece design allows the reservoir to be placed within the air handler while the pump-controller is located outside the air handler
- 21 dB(A) - Quiet Operation
- Shut Off: 33'
- Easy to install brackets

Part #	Volts	LIST
553500	115	317.00
553501	208 - 230	317.00



EC-1K Series Condensate Removal Pump Kit

A special version of the unique EC-1 mini condensate pump that includes Line Set covers for mounting the pump on the interior wall, next to the indoor ductless mini split air conditioner. Can be installed on either the right- or left-side of the air conditioner.

Part #	Volts	LIST
553510	115	411.00
553511	230	411.00



Little Giant Mini-Split Pump

- Unique design reduces vibration and operating noise
- Quieter starts and stops
- Includes audible alarm
- External mount for easy maintenance

Part #	Volts	LIST
553712	230	359.00

DIVERSITECH



ClearVue™ Mini Condensate Pump

ClearVue™ Mini is the ideal condensate pump for ductless (mini-split) systems. Its compact size helps it fit almost anywhere including inside many wall cassette units and inside line set cover systems. And the whisper quiet operation makes it easy to live with even when the pump is installed near living areas.

Part #	Volts	Lift	LIST
CVMINI	120/240	35 Feet	343.00



Aspen Mini White Condensate Pump

- Surface mounts below evaporator at either end
- Self-priming, automatically operates on water rise
- External mount allows for easy cleaning of filter cartridge
- Capacity: 2.8 GPH @0' and 0.8 GPH @33' head
- Quiet - only 21 db(A)

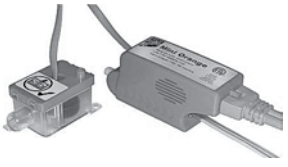
Part #	Volts	LIST
MB-UNI	150/230	411.00



Aspen Lime Mini-Split Pump

- Fits Aspen Slimline 2" Profile
- Mini — 3.7 GPH @ 0' and 0.8 GPH @ 26'
- Self-leveling, self-priming pump
- Automatically operates on water rise
- Quiet operation: Mini — 23 dB(A)

Part #	Volts	LIST
ML-UNI	115/230	495.00



Aspen Orange Mini-Split Condensate Pump

- Fits any mini-split up to 24,000 BtuH
- Installs inside evaporator, remotely above ceiling or inside lineset cover
- 3.7 GPH @ 0' and 0.8 GPH @ 26'
- Self-priming, suction lift to 4 feet
- Automatically operates on water rise
- Equipped with optional alarm
- Quiet operation: 33 dB(A)

Part #	Volts	LIST
MO-UNI	115/230	378.00



Aspen Aqua Mini-Split Condensate Pump

- Fits any mini-split up to 24,000 BtuH
- Ultraslim profile fits inside any evaporator or lineset cover
- 3.7 GPH @ 0' and 0.8 GPH @ 26' head
- Self-priming, suction lift to 4'
- Automatically operates on rise

Part #	Volts	LIST
MA-115/230	115/230	416.00



Condensation Control System

- Prevents the overflow of an evaporator condensation pan
- Interrupts 24VAC thermostat output when water is detected
- Typical applications include package units, vertical coils, split systems, slant coils and water heaters
- Automatically resets after water is removed

Part #	Description	LIST
ICM340	Condensation Control	78.50
ICM345	Overflow Alarm	77.40

TANK-TYPE CONDENSATE REMOVAL PUMPS

LITTLE GIANT

VCMX Series - NXTGen™

- Slimmer Footprint: 4.8" x 10.2" x 6.5" size
- Oil Resistant Tank and Check Valve
- 1/4-Turn Check Valve
- External Overflow Safety Switch
- External Test/Run Lever
- External Tank Anti-Sweat Sleeve
- Multiple Brackets: steel mounting bracket for use on either side of the tank
- 20' Shut-off head (115v Models)
- 6' power cord
- Two-Year Warranty



Part #	Model #	Volts	HP	Cord	GPH @ 1'	LIST
554550	VCMX-20ULST	115	1/30	6'	84	**143.70**
554551	VCMX-20ULST	230	1/30	6'	80	**150.80**

VCC Series

1/3 gallon ABS tank, stainless steel motor shaft, 3/8" OD barbed discharge, 6' power cord and thermal overload protection.

VCMA Series

1/2 gallon ABS tank, stainless steel motor shaft, 3/8" OD barbed discharge, 6' power cord and thermal overload protection.

VCL Series

1 gallon ABS tank, stainless steel motor shaft, 3/8" OD barbed (3/8" OD copper tube discharge on VCL-45 series) discharge, 6' power cord and thermal overload protection.

Legend

V	Vertical
C	Condensate Removal - (VCC Model Compact)
M	Medium Tank
A	Advanced
L	Large Tank
UL	cCSAus
S	Safety Switch
T	Tubing







Part #	Model #	Volts	HP	Cord	GPH @ 1'	LIST
554200	VCC-20ULS	115	1/30	6'	80	**161.90**
554210	VCC-20ULS**	230	1/30	6'	80	**150.60**
554415	VCMA-15ULST	115	1/50	6'	65	**125.50**
554411	VCMA-15ULT	115	1/50	6'	65	**117.40**
553101	VCL-14ULS	115	1/50	6'	200	**261.10**
553201	VCL-24ULS	115	1/18	6'	270	**272.20**
553211	VCL-24ULS	230	1/18	6'	270	**288.40**
553240	VCL-45ULS	115	1/5	6'	450	**626.00**
553245	VCL-45ULS	230	1/5	6'	450	**689.00**

**230V VCCs and VCMAs have 17' shut-off head

ELECTRONIC & IN-PAN CONDENSATE REMOVAL PUMPS

LITTLE GIANT

TP Series:

For single/multi-split ductless wall units, cassettes, ceiling mount, console or fan coils, all units are cCSAus certified.



Part #	Model #	Volts	Max Flow GPM	LIST
553674	TPS	230	2.5	**483.00**
553676	TPR	230	2.5	**599.00**

ABS Series:

New and redesigned, the ABS Series features a reliable Little Giant® Submersible pump fitted with an advanced switch for automatic operation. The new switch has a low profile design with solid state technology. The float switch housing is easily separated for service and cleaning. All units are cCSAus certified.



1-ABS: Designed for in-pan mounting, 1/4" MNPT discharge with On Level - 1.75", Off Level - 1.00", 10' shut-off.

2-ABS: 1/2 gallon tank, 1/4" MNPT discharge, with On Level - 3" Off Level - 2", 11.8' shut-off.

3-ABS: 1 gallon tank with On Level - 4.5" Off Level - 3.5", 1/2" MNPT discharge with check valve for 1/2" OD rigid plastic or copper tubing, 26' shut-off.



Part #	Model #	Volts	HP	Cord	GPH @ 1'	LIST
550521	1-ABS	115	1/150	9'	205	**269.10**
550532	1-ABS	230	1/150	11'	205	**279.30**
551020	2-ABS	115	1/40	9'	300	**374.00**
551320	3-ABS	115	1/12	9'	310	**589.00**

EVAPORATIVE COOLER PUMPS
LITTLE GIANT

Evaporative Cooler Pumps

Designed to circulate water in evaporative cooler equipment. Pumps are rated to operate based on CFM:

CP1 - for coolers between 5000 and 7500 CFM
CP2 - for coolers between 7500 and 15000 CFM
CP3 - for coolers between 15000 and 21000 CFM



Part #	Model #	Volts	HP	Cord	GPH @ 1'	LIST
540005	CP1-115	115/127	1/70	4'	307	**94.60**
540015	CP1-230	230	1/70	4'	307	**105.40**
541005	CP2-115	115	1/50	4'	502	**111.80**
541015	CP2-230	230	1/50	4'	502	**123.50**
542005	CP3-115	115	1/30	4'	563	**164.80**
542015	CP3-230	230	1/30	4'	563	

Accessories: Cooler Pumps

Part #	Description	LIST
599085	FV-2 - Float Valve	**20.20**

Check Valves—Condensates:



Part #	Model #	Description	LIST
599061	CV-2	Check valve for models 1-ABS, 2ABS	**28.90**
599062	CV-4	Check valve for models 3ABS	**77.40**
599063	CV-15/20	Brass check valve for VCC, VCM, VCMA and VCL-14/24	**51.90**
599064	CV-35	Brass check valve for VCL-45ULS	**50.40**
599065	CV-10	Check valve for VCC, VCM, VCMA, VCL-14/24. 1/4" MNPT to 3/8" ID vinyl tubing.	**16.10**

Ice Machine Replacement Pump:

Generic replacements for OEM ice machine pumps.



Part #	Model #	Volts	HP	Cord	GPH @ 2'	LIST
545600	RIM-U (universal)	115/230	1/25	3'	**	**203.10**

Circulator Pump:

Part #	Model #	Volts	HP	Cord	GPH @ 2'	LIST
579200	CMD-100-5B	115	1/25	6'	372	**349.00**

SMALL SUBMERSIBLES



Oil-Filled:

These pumps feature an oil-filled motor housing with a radial lip seal on the motor shaft. They have an exceptional life expectancy because oil serves as a continuous lubricant for all the moving parts and the shaft seal. This non-toxic dielectric oil, often paired with an aluminum, cast iron or plastic housing, also helps dissipate the heat build-up found in a continuous-running pump.



Part #	Model #	Description	HP	Cord	GPH @ 1'	LIST
523086	P-AAA	115 V, 60 Hz	1/160	10'	120	**207.30**
500286	1-AT	115 V, 60 Hz	1/200	10'	170	**211.70**
501086	1-T	115 V, 60 Hz	1/150	10'	205	**255.70**
501020	1-Y	115 V, 60 Hz	1/150	6'	205	**312.00**
526003	NK-1	115 V, 60 Hz	1/150	6'	210	**262.50**
504203	4E-34NR	115 V, 60 Hz	1/12	6'	810	**663.00**
504186	4E-34N	115 V, 60 Hz	1/12	10'	710	**626.00**
500386**	1-42AT	115 V, 60 Hz	1/200	10'	170	**229.40**
502286**	2E-38NT	115 V, 60 Hz	1/40	10'	300	**314.00**
503203**	3E-12NR	115 V, 60 Hz	1/15	6'	670	**554.00**
503186	3E-12NT	115 V, 60 Hz	1/15	10'	500	**479.00**
503603**	3E-34N	115 V, 60 Hz	1/15	10'	670	**479.00**

**= In-line or submersible dual-purpose pumps



Epoxy Encapsulated Pumps:

Epoxy filled pumps are compact in design, energy efficient, and have a corrosion-resistant plastic housing.



Part #	Model #	Description	HP	Cord	GPH @ 1'	LIST
518087**	1-EA-42	115 V, 60 Hz	1/125	10'	170	**228.00**
566608	PE-1F-PW	115 V, 60 Hz	1/125	6'	170	**173.30**

**= In-line or submersible dual-purpose pumps

AQUARIUM PUMPS

Little Giant® Aquarium series magnetic drive pumps are specifically designed for salt water and fresh water aquarium circulation and filtration applications.

Part #	Model #	Description	HP	Cord	GPH @ 1'	LIST
580506	2-MDQ-SC	115 V, 60 Hz	1/30	6'	510	**518.00**
581506	3-MDQ-SC	115 V, 60 Hz	1/15	6'	700	**705.00**
582506	4-MDQ-SC	115 V, 60 Hz	1/10	6'	850	**788.00**
582507	4-MDQX-SC	115 V, 60 Hz	1/10	6'	1325	**792.00**
585514	TE-5.5-MDQ-SC	115/230 V, 50/60 Hz	1/2	N/A	2150 @ 5'	**1,762.00**



MAGNETIC DRIVE PUMPS

LITTLE GIANT

MD Series:

Magnetically driven pumps for mildly corrosive chemicals and solutions. The Little Giant® MD Series features leakproof, seal-less magnetic drives and are designed for in-line, non-submersed use.





Part #	Model #	Description	HP	Cord	GPH @ 1'	LIST
588001	1-AA-MD	115 V, 50/60 Hz	1/200	3'	160	**250.10**
589002	1-MD	115 V, 60 Hz	1/70	6'	180	**386.00**
580002	2-MD	115 V, 50/60 Hz	1/30	6'	510	**473.00**
581002	3-MD	115 V, 60 Hz	1/20	6'	546	**569.00**
582002	4-MD	115 V, 60 Hz	1/12	6'	690	**684.00**
583002	5-MD	115 V, 50/60 Hz	1/8	6'	905	**1,011.00**

MD-SC Series:

Magnetically driven pumps for semi-corrosive chemicals and solutions. The Little Giant® MD-SC series features leakproof, seal-less magnetic drives and are designed for in-line, non-submersed use. These pumps feature polypropylene, ceramic and Nitrile parts.





Part #	Model #	Description	HP	Cord	GPH @ 1'	LIST
580503	2-MD-SC	115 V, 50/60 Hz	1/25	6'	510	**538.00**
581503	3-MD-SC	115 V, 50/60 Hz	1/12	6'	750	**608.00**
581509	3-MDIX-SC	115 V, 60 Hz	1/15	6'	1100	**738.00**
582503	4-MD-SC	115 V, 50/60 Hz	1/10	6'	850	**735.00**
582514	TE-4-MD-SC	230 V, 50/60 Hz	1/10	6'	850	**843.00**
583503	5-MD-SC	115 V, 50/60 Hz	1/8	6'	1050	**1,053.00**
584504	TE-5-MD-SC	115/230 V, 50/60 Hz	1/8	6'	1200	**1,527.00**

MD-HC Series:

Magnetically driven pumps for highly corrosive chemicals and solutions. The Little Giant® MD-HC series features leakproof, seal-less magnetic drives and are designed for in-line, non-submersed use. These pumps feature polyphenylene sulfide, Fluoroelastomer (FKM), carbon and ceramic parts.





Part #	Model #	Description	HP	Cord	GPH @ 1'	LIST
580603	2-MD-HC	115 V, 50/60 Hz	1/30	6'	510	**655.00**
581604	TE-3-MD-HC	115 V, 50/60 Hz	1/25	6'	590	**824.00**
581614	TE-3-MD-HC	230 V, 50/60 Hz	1/20	6'	590	**901.00**
582604	TE-4-MD-HC	115 V, 50/60 Hz	1/10	6'	850	**998.00**
583603	5-MD-HC	115 V, 50/60 Hz	1/8	6'	1050	**1,177.00**
584604	TE-5-MD-HC	115/230 V, 50/60 Hz	1/8	6'	1200	**1,713.00**
587010	TE-7-MD-HC	115/230 V, 50/60 Hz, 1-ph	3/4	—	3180	**2,945.00**

UTILITY PUMPS
LITTLE GIANT

Pony Pump® Series:

Non-submersible self-priming transfer pumps. Both in 115 V and 12 VDC, these models are designed to operate 15 minutes per hour.



Part #	Model #	Volts	HP	Cord	GPH @ 1'	LIST
555502	360	115	60	6'	360	**264.20**
555103	360S	115	60	6'	360	
555602	365	120	-	1'	300	**325.00**

5 Series:

1/6 hp Submersible Sump/Utility Pump with cast aluminum housing, plastic base, bottom sump-type pick-up with removable plastic screen, pumps down to 1/8", thermal overload protection, 1" FNPT discharge with a garden hose adapter.



Part #	Model #	Volts	HP	Cord	GPH @ 1'	LIST
505176	5-MSP	115	1/6	18'	1200	**365.00**
505486	5-MSPR	115	1/6	10'	1200	**357.00**

WATER REMOVAL SYSTEMS

WRS-6:

Drainosaur® includes 5 gallon polypropylene tank and lid with 1-1/2" side intake port, 1-1/2" top discharge port and 2" FNPT top vent port, 1/3 hp automatic pump. Completely assembled and ready to be installed. IAPMO approved basin.



Part #	Model #	Volts	HP	Cord	GPH @ 5'	LIST
506055	WRS-6	115	1/3	8'	45	**763.00**

SUMP/EFFLUENT PUMPS

6EN Series:

1/3 hp Submersible Sump/Effluent Pump designed to handle 1/2" solids. Cast iron housing, thermoplastic base, cover and impeller, thermal overload protection and 1-1/2" FNPT discharge. “RFSN” version features a remote float switch with “piggyback plug”. Snap-action float switch on the “SFS” models. “On” level at 7" to 10" and “off” level at 2" to 5".



Part #	Model #	Volts	HP	Cord	GPH @ 5'	LIST
506630	6EN-CIA-SFS	115	1/3	10'	50	**424.00**

10EN Series:

1/2 hp Submersible Sump/Effluent Pump designed to handle 1/2" solids. Cast iron housing, thermoplastic base, cover and impeller, thermal overload protection and 1-1/2" FNPT discharge.



Part #	Model #	Volts	HP	Cord	GPH @ 5'	LIST
511330	10E-CIA-RFS	115	1/2	10'	67	**697.00**

SUMP PUMPS
LITTLE GIANT

5.5 Series:

Snappy John® 1/4 hp submersible sump pump designed to handle 3/8" solids. Zinc housing, glass-filled polypropylene base and cover, non-clog nylon impeller, thermal overload protection, 1-1/4" FNPT discharge with garden hose adapter and snap-action float switch. “On” level at 7" to 10" and “off” level at 2" to 5".



Part #	Model #	Volts	HP	Cord	GPH @ 5'	LIST
505700	5.5-ASP	115	1/4	10'	35	**472.00**

6 Series:

1/3 hp submersible sump pump with cast iron housing, polypropylene base, polycarbonate cover, and thermal overload protection. “CIA” models have integral diaphragm switch with “on” level at 7" to 10" and “off” level at 1" to 4". The 6-CIA-RS has a piggyback diaphragm switch with same “on/off” ranges. “RFS” models have piggyback remote float switches. 1-1/2" FNPT discharge with 1-1/4" FNPT adapter. Manual versions include a garden hose adapter.



Part #	Model #	Volts	HP	Cord	GPH @ 5'	LIST
506158	6-CIA	115	1/3	10'	46	**435.00**
506171	6-CIA-RFS	115	1/3	10'	46	**479.00**
506271	6-CIM-R	115	1/3	10'	46	**411.00**
506274	6-CIM-R	115	1/3	25'	46	**433.00**

Cast Bronze 8 Series:

4/10 hp submersible sump pump with cast bronze housing, polypropylene base, polycarbonate cover, thermal overload protection. “ 1-1/2" FNPT discharge with a 1-1/4" FNPT adapter.



Part #	Model #	Volts	HP	Cord	GPH @ 5'	LIST
508257	8-CBM	115	4/10	10'	54	**1,137.00**

EFFLUENT PUMPS

9EN Series:

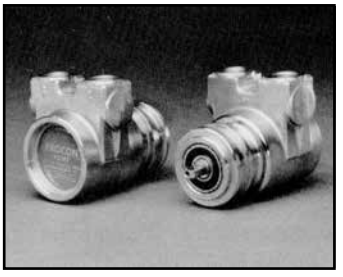
4/10 hp Submersible Sewage Pumps designed to handle 3/4" solids. Permanent split capacitor (PSC) motor, heavy-duty cast iron housing, volute and cover, non-clog thermoplastic elastomer impeller and thermal overload protection.

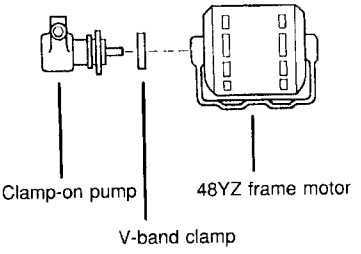


Part #	Model #	Volts	HP	Cord	GPH @ 5'	LIST
509100	8E-CIA-RFS	115	4/10	20'	80	
509209	9EN-CIA-RF	115	4/10	20	80	**893.00**

CARBONATOR PUMPS
PROCON

Carbonator Pumps





Part #	Description	LIST
CO-1504-AFZ (102A100S12XX)	For Pumping Refrigerant (100GPH)	846.00
CO-1504-X (112A100F11BA)	For Pumping Water (100GPH)	846.00
1113	V-Band Mounting Clamp	10.60

Carbonator Pump Motors

Carbonator pump motors are designed for use on carbonator pumps, utility pumps, direct drive gear and vane type pumps.

• 1725 rpm, reversible rotation



Part #	HP	Volts	Amps	LIST
CB2024AV1	1/4	115	4.4	413.00
CB2034AD	1/3	115/230	4.6 / 2.3	478.00
CB2054AD	1/2	115/230	6.8 / 3.4	585.00

PNEUMATIC CONTROLS

HONEYWELL

This section shows a small portion of our Pneumatic product offering. We carry a large variety of parts for new installations and replacement.

Please contact your nearest branch for pricing and availability on any of your Pneumatic requirements.

TP970 and TP971 Series Thermostats

Honeywell offers the most accurate, reliable full line of Pneumatic thermostats for new construction, modernization and retrofit. TP970 thermostats supply proportional control of Pneumatic valves and actuators for all of the following applications:

The TP970 Series Pneumatic Thermostats are one, two or three-pipe, proportioning thermostats with bimetal elements. They are suitable for controlling dampers and/or valves in HVAC systems.

Part #	Description
TP970A2234	Direct Acting 2-PIPE STAT 15-30C SCALE single set point
TP970A2020	Direct Acting 2-PIPE STAT 15-30C SCALE single set point
TP970B2010	Reverse Acting 2-PIPE STAT 15-30C SCALE single set point
TP971A2011	Direct Acting 2 Temp, 2-Pipe Stat 15 to 30 C. Day & 10 to 27C. Night dual S/P
TP971A2029	Direct Acting 2 Temp, 2-Pipe Stat 15 to 30 C. Day & 12 to 24 F. Night dual S/P
TP971A2102	Direct Acting 2 Temp, 3-Pipe Stat 15 to 30 C. Day & 12 to 24 F. Night dual S/P c/w cover
TP971C2058	Same as a TP971A2011 in Celsius & Fahrenheit



Stat Covers & Accessories

Stat covers for the TP970 series Pneumatic thermostats come several variations: Blank, Celsius & Fahrenheit scale, vertical and horizontal.

Part #	Description
14004406-110	Satin Chrome, Vertical, Set Point & room Temp,15-30°C. Range
14004406-310	Satin Chrome, Vertical, Set Point & room Temp, 60-90°F. Range



Pneumatic Temperature Sensors

The LP915A Pneumatic Temperature Sensors is a direct acting, proportional-type for use with a Pneumatic controller in HVAC systems to control valves and dampers.

The LP915A has a liquid-filled averaging element for duct mounting and as an alternative the LP914A has a rod and tube insertion element for duct, well or through-the-wall-mounting.

Part #	Description
LP915A1044	Temp Sensor, D/A, 0-200 F. 18' ELEMENT
LP915A1051	Temp Sensor, D/A, 0-200 F. 8' ELEMENT



PNEUMATIC CONTROLS

HONEYWELL

TG5 Universal Thermostat Guard

Transparent polycarbonate cover (smoke tint) ring base and Allen wrench.
Available with in small, medium, and large sizes and with a clear or painted steel cover.



Part #	Description
TG510A1001	Clear locking stat cover designed for TH510A1001, TH510D1005, TH511A1000 TH511D1004, TH512A1009, TH512D1003

Airstream Insertion Thermostat

The LP907A Airstream Insertion Thermostat is most commonly used as a discharge controller in unit ventilator applications. Other applications include a limit device when used with other controllers and as a proportioning type controller for Pneumatic valves and dampers in fan room applications. When used as limit controllers, they provide a "submaster action" caused by over control during light load conditions.



Part #	Description
TG510A1001	SMALL CLEAR THERMOSTAT GUARD

SP970A Manual & Minimum Position Pressure Regulator

The SP970 manual & minimum pressure regulator provides regulated pressure to a control device such as a Pneumatic damper operator. The SP970 supplies ether a manually set pressure or a manually set minimum pressure with a variable maximum pressure.



Part #	Description
SP970A1005	10# SPAN, MIN OR MAN.POSITION SW
SP970A1013	5# SPAN, MAN.OR MIN.POS.SWITCH

MP516 Unit Ventilator Damper Actuator

The MP516A unit ventilator is a sturdy compact Pneumatic damper actuator used primarily on unit ventilator control systems, and may be adapted to various configurations for individual unit ventilator system requirements.



Part #	Description
MP516A1087	VENTILATOR ACTUATOR 3-8 PSI, 2-1/2"STROKE
MP516A1095	VENTILATOR ACTUATOR 3.4-8 PSI
MP516A1103	VENTILATOR ACTUATOR 5-12 PSI

PNEUMATIC CONTROLS
HONEYWELL

MP953 Pneumatic Actuators

MP953 Pneumatic Actuators operate V5011 and V5013 Valves to provide proportional control of steam or hot and cold liquids of HVAC systems.



Part #	Description
MP953C1000	5", 2-7 #, 3/4" Trvl., N/O AirStem-Up
MP953C1018	5", 8-12#, 3/4" Trvl., N/O AirStem-Up
MP953C1026	5", 4-11#, 3/4" Trvl., N/O AirStem-Up

MP909D Pneumatic Damper Operator

The MP909D Pneumatic Damper Operator provides proportional control of variable volume terminal units, mixing boxes, and small dampers. Choices of shaft end connections provide versatile mounting and hardware connection options.



Part #	Description
MP909D1201	ACTUATOR, 50-140F, 3-8 PSI
MP909D1219	ACTUATOR, 50-140F, 8-13 PSI
MP909E1026	ACTUATOR, -28-160F, 3-13 PSI
MP909E1034	ACTUATOR, -28-160F, 5-10 PSI
14003640-001	MTN BRACKET FOR MP909

MP918A and B Pneumatic Damper Actuators

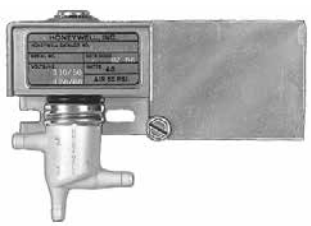
The MP918A and B Damper Actuators position damper blades, controlling the airflow through a particular portion of an HVAC system. The MP918A is the same as the MP918B with a positive positioner.



Part #	Description
MP918A1024	8-13# W/Pos5 or 10# Span EXT. MOUNT
MP918B1014	ACTUATOR, 3-13 PSI, INT. MOUNT BR

RP418A-C & RP818A, B Electric/Pneumatic Relays

The RP418 and RP818 Electric/Pneumatic Relays are solenoid valves that open and close the air supply to Pneumatic controls. The control input is an on/off line voltage signal to the RP418A-C and 24V ac signal to the RP818A and B.



Part #	Description
RP418A1107	120V 60HZ E-P RELAY, W/ JUNCTION BOX
RP418B1071	120V,OPEN COIL, EP RELAY
RP818A1004	24V Surface Mt. E/P Relay w/Spl.Bx.
RP818B1002	24V WALL MOUNT E/P RELAY

PNEUMATIC CONTROLS

HONEYWELL

VP525C Pneumatic Radiator Valves

The VP525C Pneumatic Radiator Valves are normally open, single-seated valves with straight-through or angle-body construction. The VP525C rating is 240°F (116°C).

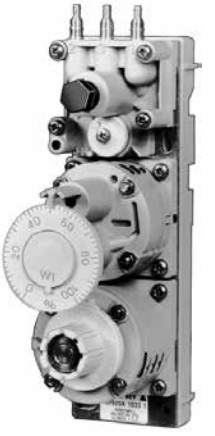
Part #	Description
VP525C1016	1/2” ST Male Union N/O, 3-10#, 2.0CV
VP525C1024	3/4” ST MALE UN, N/O, 3-10#, 3.0CV
VP525C1032	3/4” ST MALE UN, N/O, 3-10#, 5.0CV
VP525C1040	1/2” ANGLED MALE UN N/O 3-10# 2.0CV
VP525C1057	3/4” ANGLED MALE UN N/O 3/10# 3.0CV
VP525C1065	3/4” ANGLED MALE UN N/O 3-10# SPRING 5.0 CV
14003118-001	VP525A REPAIR KIT 3/4” CV 5.0
14003299-001	VP525A REBUILD KIT 1/2” SWEAT
14004897-003	TOP & INSERT FOR 525C 3/4” 3cv
14004623-001	STEM BUTTON ONLY, NO SET SCREW



RP920A-D Modular Pneumatic Controller

The RP920 Modular Pneumatic Controller, in conjunction with remote sensors, provides Proportional (P) or Proportional Plus Integral (p + I) control of temperature, humidity, pressure, or dew point in WAC systems.

Part #	Description
RP920A1033	DIRECT ACTING CONTROLLER W/O REMOTE SET



RP7517A, B Electronic-Pneumatic Transducers

The RP7517A Electronic-Pneumatic Transducer is used in electronic-pneumatic control systems to convert a proportional electric output signal from a controller into a direct-acting, proportional pneumatic signal. The RP7517A is powered by the control signal. It is available with a cover or without a cover for panel mounting (the panel model has a higher pressure output than the cover model and is approximately equal to the RP7517B in branch line buildup).

Part #	Description
RP7517A1017	E/P TRANSDUCER PANEL MOUNT



Refrigerated Air Dryers for Pneumatic Control Systems

The A-4400 series refrigerated air dryers are designed for continuous operation to supply dry air to Pneumatic control systems. All components are selected and assembled to provide dependable service over a long period of time with a minimum amount of maintenance.
There are six models available, models can be ordered with or without an optional factory mounted air purification system. For air dryers not equipped with and optional factory mounted air purification system, a properly configured air supply system must include a coalescing oil removal filter as well as an activated carbon oil vapor removal filter.

Specifications:

Electrical Rating: 115 volt
Current Draw: 5.75 amperes
Ambient Operating
Temperature Limits: 40 to 115°F (4 to 46°C) with maximum dew point of 86°F (30°C), non-condensing

UL Listed and CSA approved.

Part	Flow Capacity at Rated Condition scfm (L/s)[a]	Air Purification System	Shipping Weight (lb)	LIST
A-4412-1	12 (5.7)	yes	72	10,182.00
A-4412-2	12 (5.7)	no	67	7,079.00
A-4417-1	17 (8.0)	yes	78	10,627.00
A-4417-2	17 (8.0)	no	73	
A-4423-1	23 (10.9)	yes	78	
A-4423-2	23 (10.9)	no	72	9,743.00



(a) The rated condition is 20 psig (140 kPa) supply pressure, 100°F (38°C) saturated inlet air temperature, 100°F ambient temperature, and 80 psig inlet pressure.

A-4400 Series Refrigerated Air Dryers Replacement Parts:

Part	Description	LIST
G-2010-5	system pressure gauge	95.90
A-4300-600	service bypass valve	654.00
A-4000-148	coalescing filter: complete assembly for air dryer model A-4412	
A-4000-149	coalescing filter: complete assembly for air dryer model A-4417 and A-4423	916.00
A-4110-604	filter element with o-rings for air dryer model A-4412	197.50
A-4000-604	filter element with o-rings for air dryer model A-4417 and A4423	198.20
A-4000-620	universal o-ring kit for filter element bowl	72.70
A-4000-610[b]	replacement drain valve	
A-4000-632	carbon filter element only: for air dryer model A-4412	789.00

(b) An F-400-20 coupling (1/8 in. external NPT x 1/8 in. internal NPT) is included with the replacement drain valve.

PNEUMATIC CONTROLS
JOHNSON CONTROLS

Oil Removal Filters


A-4000-1037

Combining coalescing and activated carbon filters in series provides clean, oil free air by removing both oil aerosols and vapors in Pneumatic control systems.
Note: The air supply to this filter combination must be from a properly broken-in-air compressor producing less than 6 ppm aerosol oil (as measured bya Johnson Controls A-4000-120 Oil Indicator on the compressor tank outlet) and must also pass through a properly operating air dryer.


A-4000-148


A-4000-149


A-4000-601


A-4000-610

Part	Description	Connection	LIST
A-4000-1037	inline filter	1/4 in. barb	91.10
A-4000-148	coalescing filter: nominal scfm 10; max scfm 17	3/8 in. NPT	786.00
A-4000-149	coalescing filter: nominal scfm 20; max scfm 30	3/8 in. NPT	916.00
A-4000-601	coalescing filter: nominal scfm 40; max scfm 50	3/8 in. NPT	
A-4000-147	activated carbon filters: nominal scfm 10; max scfm 12	1/2 in. NPT	1,348.00
A-4110-604	coalescing filter elements: nominal scfm 10; maximum scfm 17		198.20
A-4000-632	activated carbon filter elements: nominal scfm 10; max scfm 12		789.00
A-4000-610	auto drain kit (all coalescing filters)		

Electro-Pneumatic Transducer

The EP-8000 electro-pneumatic transducer converts a 0 to 10 VDC or 4 to 20 mA signal from an electric controller into proportional Pneumatic output pressure signal. Four models are available, which are grouped into two basic versions: low-volume output units (non-relay) and high-volume output units (relay).



Part	Output	Input	Input Range	Factory Output Range psig	LIST
EP-8000-2	high volume (relay)	voltage	0.25 to 9.5 VDC	0.5 to 19 (3.5 to 133)	609.00
EP-8000-3	low volume (no relay)	current	4 to 20 mA DC	3 to 15 (21 to 105)	

Accessories

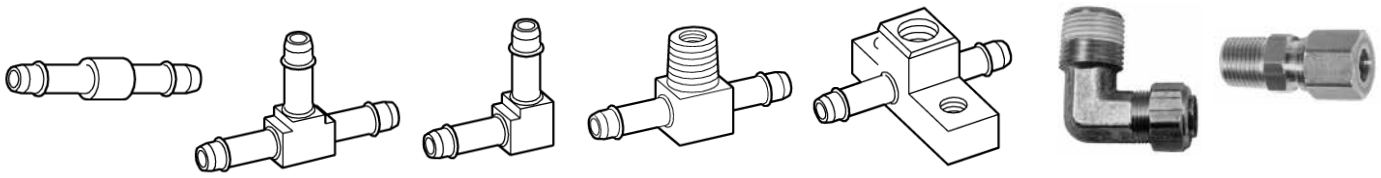
Part	Description	LIST
R-3710 series	0.007 in. restrictor (required for low volume models)	34.40
A-4000-1037	in-line filter (required for all models; package of 5)	91.10
JC-5361	hypodermic needle test probe assembly	126.80
G-2010 Series	0 to 30 psig (0 to 210 kPa) gauge	106.00

PNEUMATIC CONTROLS

JOHNSON CONTROLS

Pneumatic Fittings

We stock a large and wide variety of fittings for Pneumatic systems. Please check with your local branch.



Pneumatic Tubing

Dekoron 1219-44003 is a black, 1/4” OD tubing for pneumatic HVAC systems. It is designed to control flame spread and smoke generation in case of fire. This tubing can be installed in accordance with NFPA, Standard 90A “Installation of Air Conditioning and Ventilation Systems 1985”.

Part	Description	LIST
1219-13004	Wirex 5/32" single poly tubing	0.40/ft
1219-130T4	Wirex 5/32" twin poly tubing	1.10/ft
1219-44003	Wirex 1/4" single poly tubing	0.60/ft
1219-66203	Wirex 3/8" single poly tubing	1.40/ft
1219-86203	Wirex 1/2" single poly tubing	

Restrictors

The R-3710 series restrictors limit pressure and flow direction in pneumatic operating systems.



Part	Colour / Size	LIST
R-3710-3005	red 0.005 in. orifice 1/4 in. x 1/4 in. x 1/4 in.	33.20
R-3710-3007	aqua 0.007 in. orifice 1/4 in. x 1/4 in. x 1/4 in.	33.20
R-3710-2007	aqua 0.007 in. orifice 1/4 in. x 1/4 in.	28.30
R-3710-1005	red 0.005 in. orifice	34.40
R-3710-1007	aqua 0.007 in. orifice	34.40

PNEUMATIC CONTROLS
JOHNSON CONTROLS

Air Pressure Gauge



The G-2010 air pressure gauge provides continuous indication of air pressure or on-off status in Pneumatic controls systems.

Specifications:

Accuracy: 3-2-3% of full range per ANSI Spec. B40, 1M

Ambient Temp. Limits: -20 to 150°F (-29 to 66°C)

Part	Gauge Size (in)	Range (psig/kPa)	Mounting	LIST
G-2010-5[(a)]	1-1/2	0 to 30/0 to 200	stem	95.90
G-2010-11[(a)]	2	0 to 30/0 to 200	stem	106.00
G-2010-23[(a)]	2	0 to 100/0 to 700	stem	136.30

(a) All connections 1/8 in. NPT center back

Drainview Model 67



For drawing and expelling:
- condensed moisture
- emulsified oil
- viscous condensate

See-Level
Auto-Drain

When condensate level rises, float lifts, allowing air under pressure to flow through the hollow stem into the auto-drain where a diaphragm distends with increasing pressure and opens a large scavenger-action dumping valve. Float drops and the control unit waits for the next accumulation.
Drain port size: 3/8" diameter
Tubing connection must be made on tank above bowl but never into air supply line.

Part	Description	LIST
67XAD	Drainview auto-drain	525.00

JOHNSON CONTROLS

Pneumatic Actuator

The V-3000 Pneumatic actuator can position steam or water valve-modulating plugs in response to a Pneumatic signal from a controller.
Used on 1/2 in. flare valves, VT series valves, and 3/4 to 1-1/2 cage trim valves. This actuator is not used with VG7000 series valves.



Specifications:
Maximim Control Pressure: 30 psig
Available Spring Ranges: 3-6, 4-8, and 9-13 psig[(a)]
Air Connection: 1/8 in. NPT barbed fitting for 5/32 in. O.D. polytubing

Part	Description	LIST
V-3000-1	exposed yoke	278.20

Accessories & Replacement Diaphragms:

Part	Description	LIST
V-9502-15	positioner kit	659.00
V-3000-6000	diaphragm for exposed actuator (V-3000-1 only)	97.70
V-3000-6001	diaphragm for enclosed actuator (V-3000-2 and V-3000-8003)	

Three-Way Solenoid Air Valve

The V11 three-way solenoid valve is used in applications where an electrical circuit operates a pneumatic control device.
- two-position action
- three piping connections marked: N.O. (normally open); N.C. (normally closed); COM (common)
- can be operated manually by removing the plug and inserting a key
- furnished with an attached bracket
- operates in any position
- positive air seal



All V11 series air valves are designed for use as operating devices. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add devices or systems to protect against, or warn of, control failure.

Specifications:
Air Connections: 1/4 in. barb connections in common port and normally closed port; normally open port is 1/8 in. NPT (internal)
Operating Pressure (all three ports): 0 to 25 psig (0 to 175 kPa)

Part	Description	LIST
V11HAA-100	110/120 V, 50/60 Hz	581.00
V11HBA-100	220/240 V, 50/60 Hz	574.00
V11HCA-100	208 V, 50/60 Hz	574.00
V11HGA-100	24 V, 50/60 Hz	618.00
V11HAA-115	110/120 V, 50/60 Hz includes internal grounding lug	583.00

PNEUMATIC CONTROLS

JOHNSON CONTROLS

T-4000 Series Pneumatic Room Thermostats





The T-4000 sereis Pneumatic room thermostats provide individual space temperature control in all types of heating and cooling applications. By producing a proportional output signal, these thermostats modulate controlled devices in response to load changes in the space. This imposes the least demand on mechanical heating and cooling apparatus. A variety of high volume output controllers are available to meet the functional requirements of any control system. Auxiliary devices are available to perform functions such as two-position action, high-low pressure selection, sequencing, etc.

*BECAUSE OF THE LARGE NUMBER OF VARIATIONS AND OPTIONS IN THE T-4000 SERIES OF PNEUMATIC THERMOSTATS, WE REQUEST YOU CONTACT THE NEAREST BRANCH FOR HELP WITH YOUR SELECTION.

Accessories

Part	Description	LIST
JC 5361	hypodermic needle test probe for calibration (c/w 1.5' tubing, 2 needles, coupling & gauge adaptor)	126.80
JC 5310	screw-in gauge for calibration	130.70

T-5800 Series Pneumatic Receiver-Controller



The T-5800 Pneumatic Receiver-Controller is designed for use with remote temperature, humidity, or pressure transmitters that are connected to a control variable (CV) input. The controller provides precise control of Pneumatic devices. The T-5800 is capable of providing restricted supply air to low volume remote transmitters, reducing the number of air line connections needed between instruments to only one line. The "CV" input accepts the transmitted output of any pneumatic device with a calibrated output of 3 to 15 psig (21 to 105 kPa)

Specifications:

Action:

T-5800-1: Direct or reverse acting, field selectable

T-5800-3: Direct or reverse acting with direct or reverse readjustment, field selectable

Gain: Adjustable from 0.5:1 to 15:1, factory set at approximately 10:1

Supply Pressure: 18 to 22 psig (126 to 154 kPa), nominal 20 psig (140 kPa)
Air supply must be clean, dry and oil-free

Part	Description	LIST
T-5800-1	single input, proportional	2,327.00
T-5800-3	dual input, proportional	3,216.00

ELECTRONIC TEMPERATURE CONTROL

JOHNSON CONTROLS

A421 Electronic Temperature Controls

Description:

The A421 Series controls are single stage, electronic temperature controls with a single-pole, double-throw (SPDT) output relay. The controls feature an adjustable backlit LCD for viewing the temperature and status of other functions, and a three-button touchpad for setup and adjustment. An LED indicates the On/Off status of the output relay.

The A421 controls are available in low voltage 24 VAC and high voltage 120 or 240 VAC models, which provide options for most refrigeration and HVAC applications.

The A421 controls provide heating or cooling control, sensor offset, temperature setback, adjustable anti-short cycle delay, and a restricted user adjustment

mode. The temperature units can be displayed in °F or °C. The temperature adjustment range is -40 to 212°F or -40 to 100°C.

Features

- Control Front Panel LCD
- Basic and Advanced Programming Menu
- On/Off Temperature Adjustment
- Switch-Activated Temperature Setback
- Adjustable Anti-Short Cycle Delay
- Adjustable Sensor Offset
- Optional Restricted Adjustment Mode
- Sensor Failure Mode
- Backlight Brightness Level

Applications

The A421 Electronic Temperature Control can be used to control a wide variety of single-stage refrigeration or HVAC equipment. Sample temperature control applications include:

- temperature monitoring and alarming
- on/off control of boilers and chillers
- boiler and chiller pump control
- heating or cooling control
- cooling tower fan control based on water temperature
- supply, makeup, and mixed air temperature control
- temperature actuated valve control
- supply and makeup air damper and fan control
- condenser fan control based on condenser temperature



Part #	Replaces	Description	LIST
A421ABC-02C	A419ABC-1C	Type 1 (NEMA), IP20 enclosure for DIN and surface mount applications. 120/240 VAC. Includes A99 sensor with 6.6 ft (2M) cable	244.90
A421ABC-03C	A419ABC-2C	Type 1 (NEMA), IP20 enclosure for DIN and surface mount applications. 120/240 VAC. Includes A99 sensor with 9.75 ft (3M) cable	
A421ABC-04C	A419ABC-3C	Type 1 (NEMA), IP20 enclosure for DIN and surface mount applications. 120/240 VAC. Includes A99 sensor with 13.1 ft (4M) cable	
A421ABC-06C	A419ABC-4C	Type 1 (NEMA), IP20 enclosure for DIN and surface mount applications. 120/240 VAC. Includes A99 sensor with 19.5 ft (6M) cable	
A421AEC-01C	A419AEC-1C	Type 4x (NEMA), IP66 enclosure for DIN and surface mount applications. 120/240 VAC. Includes A99 sensor with 9-3/4 in (0.25M) cable	360.00
A421AEC-02C	A419AEC-2C	Type 4x (NEMA), IP66 enclosure for DIN and surface mount applications. 120/240 VAC. Includes A99 sensor with 6.6 ft (2M) cable	
A421GBF-02C	A419GBF-1C	Type 1 (NEMA), IP20 enclosure for DIN and surface mount applications. 24 VAC. Includes A99 sensor with 6.6 ft (2M) cable	244.90
A421GEF-01C	A419GEF-1C	Type 4x (NEMA), IP66 enclosure for DIN and surface mount applications. 24 VAC. Includes A99 sensor with 9-3/4 in (0.25M) cable	358.00
A421GEF-02C	A419GEF-2C	Type 4x (NEMA), IP66 enclosure for DIN and surface mount applications. 24 VAC. Includes A99 sensor with 6.6 ft (2M) cable	375.00
A421ABG-02C	A419ABG-3C	Type 1 (NEMA), IP20 enclosure for DIN and surface mount applications with 6 ft (1.8m) cord with 120 VAC grounded male plug and 6 ft. (1.8 m) cord with 120 VAC grounded female plug. Includes A99 sensor with 6.6 ft (2M) cable.	336.00
A421ABJ-02C	New Model	Type 1 (NEMA), IP20 enclosure for DIN and surface mount applications with 6 ft (1.8m) cord with 120 VAC combination male/female grounded piggyback plug. Includes A99 sensor with 9.75 ft (3M) cable	
A421AEJ-01C	New Model	Type 4x (NEMA), IP66 enclosure for DIN and surface mount applications with 6 ft (1.8m) cord with 120 VAC combination male/female grounded piggyback plug. Includes A99 sensor with 9-3/4 in (0.25M) cable	
A421AEJ-02C	New Model	Type 4x (NEMA), IP66 enclosure for DIN and surface mount applications with 6 ft (1.8m) cord with 120 VAC combination male/female grounded piggyback plug. Includes A99 sensor with 6.6 ft (2M) cable	

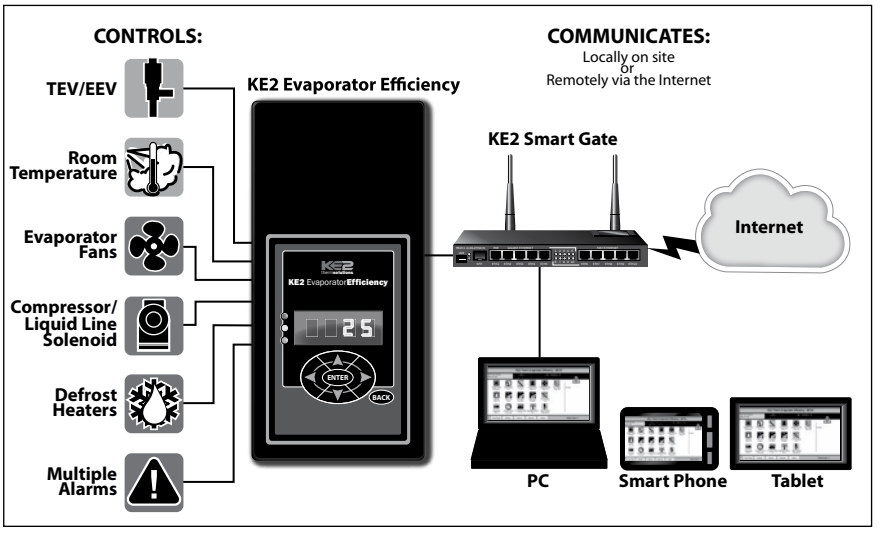
ELECTRONIC TEMPERATURE CONTROL
KE2 THERMSOLUTIONS

KE2 Evaporator Efficiency (KE2 Evap)



- UL Recognized - Canada/U.S.
- Alarms can be automatically e-mailed/texted
- New install or retrofit

The KE2 Evaporator Efficiency is an electronically operated evaporator controller designed to save energy in refrigeration systems through precise control of superheat, fan cycling, reducing compressor run time and implementing demand defrosts.



Each Evaporator Efficiency controller comes with one return air temperature sensor and one coil surface temperature sensor. Superheat temperature sensor and pressure sensors are optional add ons.

KE2 Evaporator Efficiency Controllers, Kits, Communications and Accessories				
Part #	**Category**	**Description**		**List Price**
20178	KE2 Evap	KE2 Evaporator Efficiency Controller Kit - 120 / 208 / 230VAC		$ 1,840.00
20222	KE2 Evap	KE2 Evaporator Efficiency Controller Beacon® Replacement	includes pressure transducer and suction temperature sensor	$ 2,357.00
20217	KE2 Evap	KE2 Evaporator Efficiency Voltage/High Amp Contactor Kit - 230/460/575 V, 50 amp	includes transformer, contactors, fully wired, UL Recognized	$ 4,105.00
20218	KE2 Evap	KE2 Evaporator Efficiency Voltage/High Amp Contactor Kit - 230/460/575 V, 65 amp		$
20219	KE2 Evap	KE2 Evaporator Efficiency Voltage/High Amp Contactor Kit - 230/460/575 V, 80 amp		$
20529	KE2 Evap	KE2 Evaporator Efficiency Replacement Fuses	5 per pack	$ per pack
20695	KE2 Communications	KE2 Smart Gate - Communications tool for KE2 Evap Installations		$ 1,384.00
20184	KE2 Communications	KE2 Router - 4 Ports		$ 729.00
20199	Accessories	Temperature Sensor – NTC Thermistor Assembly, 10 ft.		$ 64.40
20200	Accessories	Temperature Sensor – NTC Thermistor Assembly, 40 ft.		$ 110.20
20201	Accessories	Pressure Transducer – 0 to 150 psia, 10 ft. leads		$ 327.00
20204	Accessories	Pressure Transducer – 0 to 150 psia, 40 ft. leads		$ 380.00
20543	Accessories	Door Switch - Basic		$ 152.10
20544	Accessories	Door Switch - Nema 4X		$ 851.00
20687	Accessories	Mounting Box for KE2 Evap		$ 162.20

KE2 Data Logging Key		
Part #	**Description**	**List Price**
20536	Permanent/Lifetime Key (1 key available for lifetime of controller)	$ 253.40

ELECTRONIC TEMPERATURE CONTROL
KE2 THERMSOLUTIONS

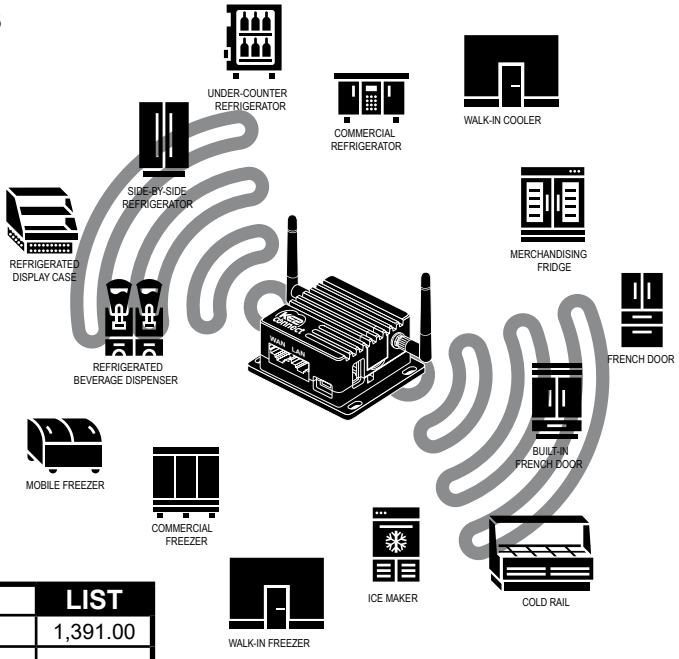
KE2 Edge Manager & KE2 Wireless Sensors

The KE2 Edge Manager is similar to the KE2 LDA communication device with several features that make it unique, including easily creating a common dashboard that integrates KE2 sensor data with in-depth system operational information from KE2Therm controllers.

The KE2 Edge Manager provides real-time data tracking, storing, and uploading. And, while many monitoring options force users to store their data on the provider's "cloud," with the KE2 Edge Manager, local access is FREE - the user owns their data.

Plus, accessing the data has never been easier. The KE2 Edge Manager lets users access data locally, on their network, using their own "cloud" portal, or via the secure KE2 Portal.

The KE2 Edge Manager, when used with KE2 Wireless Sensor technology provides the feasibility to remotely monitor and receive alarm notifications in almost any refrigeration applications – from warehouses, to walk-ins, reach-ins, cold rails, under counter and more.



Part #	Description	LIST
21634	KE2 Edge Manager KE2-EM35	1,391.00
21660	KE2-EM35 & (5) Sensor Kit *(Kit includes (3) 21632 & (2) 21633, a USB Bluetooth Adapter pn 21690)*	1,977.00
21632	KE2 Wireless Sensor	173.90
21633	KE2 Wireless Sensor w. Remote Probe	183.80

KE2 Products Guide



Controller Features	KE2 Temp + Defrost	KE2 Temp + Valve Control	KE2 Low Temp + Defrost	KE2 Adaptive Control	KE2 Evaporator Efficiency	KE2 Controlled Environment
Part Number	20611	21301	20903	21177	20178, 20844	20893, 20897, 20650
Defrost Type	Air (off time)	Air (off time)	Air, Electric	Air, Electric	Air, Electric, Hot Gas	Air, Electric, Hot Gas
Initiate Defrost	Time	Time	Time	Demand, Time	Demand, Time, or Run-Time	Demand, Time, or Run-Time
Terminate Defrost	Time	Time	Temperature/Time External Signal	Temperature/Time External Signal	Temperature/Time	Temperature/Time
Evaporator Fan Management Options	No	No	Yes	Yes	Yes	Yes
Defrost Heater Management Options	N/A	N/A	Yes	Yes	Yes	Yes
Alarm Options	Display or E-mail with KE2 LDA	Display or E-mail with KE2 LDA	Display, Buzzer, or E-mail with KE2 LDA	Display, Buzzer, or E-mail with KE2 LDA	Display, Alarm Relay, Buzzer/ Light kit, email/text	Display, Alarm Relay, Buzzer/ Light kit, email/text
Eliminates T-Stat, Time Clock	Yes	Yes	Yes	Yes	Yes	Yes
Eliminates Fan Delay, Defrost Termination Device	NA	NA	Yes	Yes	Yes	Yes
Valve Control	TEV	TEV, EEV, EEPRV, EHGBPV	TEV	TEV	TEV or EEV	EEV
Humidity Control/Monitor	No	No	No	No	No	Yes
Communication	ModBus	ModBus	ModBus	ModBus	TCP/IP, API, XML	TCP/IP
Data Logging	366 days with KE2 LDA & KE2 Flash Drive	366 days with KE2 LDA & KE2 Flash Drive	366 days with KE2 LDA & KE2 Flash Drive	366 days with KE2 LDA & KE2 Flash Drive	30 days (native), or 366 days with KE2 LDA & KE2 Flash Drive	30 days (native), or 366 days with KE2 LDA & KE2 Flash Drive

ELECTRONIC TEMPERATURE CONTROL
KE2 THERMSOLUTIONS

KE2 Temp + Defrost



- UL Recognized - Canada/United States
- Combines functions of a thermostat and defrost timeclock.

The KE2 Temp + Defrost controller is designed to simplify refrigeration controls by combining the functions of a thermostat and defrost timeclock.

The KE2 Temp's robust design provides versatility for a wide range of medium and low temperature applications. When applied to medium temperature applications of 37°F and higher, the built-in defrost clock may be used to perform time-initiated and time-terminated defrost cycles.

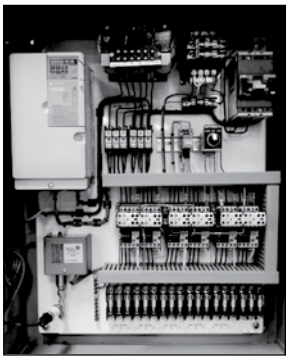
In low temperature applications, the KE2 Temp provides an easy-to-understand thermostat that eliminates end user frustration with the overly complicated options available today. The KE2 Temp has been thoughtfully setup to provide the best system operation and an intuitive user interface.

The controller's single-pole-double-throw relay controls the refrigeration and defrost cycles.

KE2 Temp + Defrost

Part #	Description	List Price
20611	KE2 Temperature and defrost controller	$ 436.00

KE2 Fan Control



- UL Listed control panel - Canada/United States
- Fully wired VFD, circuit breakers, motor overloads, bypass contactors, and electronic head pressure control
- Suitable for multi-fan applications, including air cooled condensers on refrigeration and air conditioning applications
- Simple, fast, installation with selectable head pressure setpoints; suitable for outdoors

The KE2 Fan Control provides a simple packaged solution to optimize energy efficiency of air cooled condensers. This package incorporates Variable Frequency Drive (VFD) technology to match fan speed with the varying load and ambient conditions.

Typically, condensers are sized for conditions that are experienced less than 5% of the time. The KE2 Fan Control package contains proprietary algorithms that match system conditions with equipment operation, providing the highest levels of efficiency, improving system operation and saving money.

KE2 Fan Control

Part #	Description	List Price
Varies	KE2 Fan Control - available in 230V, 460V, and 575 Volt, 3-phase in a variety of sizes and with options.	Call for pricing

Variable Control with KE2 Fan Control

Fan speed varied - matching capacity need is PRECISE



All fans ON at 87.5% speed

ELECTRONIC TEMPERATURE CONTROLS
JOHNSON CONTROLS

MR Series Defrost Control Modules



The MR Series controls are versatile, microprocessor-based, multifunction, programmable temperature controls. Depending on the model chosen, the MR Series controls can also manage alarm, defrost cycle (active or passive defrost), and evaporator fan functions. The MR Series controls have large red LED displays. These compact controls are available in panel mount and DIN rail mount varieties. The MR Series controls use the A99B temperature sensors, which allow remote mounting of the display unit. All MR Series controls perform temperature and alarm management. Some models have additional capabilities.

MR2 Series Controls
The MR2 Series provides temperature, alarm and defrost cycle management. The MR2 control performs defrost cycle management using time-based, passive, off cycle defrost. It can replace a temperature control, a digital temperature readout, and a defrost timer.

MR4 Series
The MR4 Series provides temperature, alarm, defrost and evaporator fan management. The MR4 Series provides defrost cycle management with hot gas or electric heat defrost and defrost termination based on time or temperature. The MR4 Series consolidates the functions of a temperature control, a digital temperature readout, a defrost cycle timer, and a defrost termination device.

Features:

- Alarm management functions provide local alarm display and an alarm output relay that can be used to trigger a remote alarm or dial-out modem
- Programming button lockout allows user to disable programming buttons and deter accidental or unauthorized changes

Part	Description	LIST
MR2DR24-11C	refrigeration temperature / defrost control	
MR2PM24-11C	refrigeration temperature / defrost control w/1	980.00
MR4PM12C-12C	replacement control & sensor	988.00
MR4PM24-12	refrigeration defrost temperature	1,209.00
MR4PMUHV-12C	defrost control kit	1,140.00

MS Series Temperature Stage Control Modules

The MS Series temperature controls are versatile, microprocessor-based, multifunction, programmable temperature controls. They are designed for single and multiple stage temperature control applications. Depending on the model selected, the MS Series controls can operate in the following modes:

- Direct mode
- Reverse mode
- Deadband mode
- Independent Setpoint mode

The MS Series controls have large, easy-to-read, red LED displays. These compact controls are available in panel mount and DIN rail mount models. MS Series controls use the A99B temperature sensors, which allow remote mounting of the display unit.

Part	Description	LIST
MS2PM24T-11C	2 stage temperature control	724.00
MS4DR24T-11C	4 stage temperature control	963.00
MS4PM12CT-11C	replacement multi-stage control	
MS4PM24T-11C	4 stage temperature control, panel mount	628.00
MS4PMUHVT-11C	multi-stage control kit	1,571.00

TEMPERATURE CONTROL APPLICATIONS

JOHNSON CONTROLS

A11 Series Low Temperature Cutout

Description:

The A11 Series are low temperature cutout controls, which incorporate a 20 foot long, vapor charged, sensing element. The A11 reacts to the coldest 18 inch section of the controls sensing element. The A11 is suitable for monitoring the face temperature of hot water coils.

Features:

- snap-acting contacts
- external temperature scale
- easy setpoint adjustment (i.e., top or bottom access)

Accessories:

- replacement cover: CVR30A-601R

Applications:

- low temperature cut-out for coils and/or liquid sensing pipes



Part Number	Switch Action	Range °F (°C)	Diff F° (C°)	Bulb and Capillary	Range Adjuster	Electrical Ratings				LIST
						Motor Ratings VAC	120	208	240	
A11A-1C	SPST Open Low	35 to 45 (2 to 7)	Manual Reset	20 ft of 1/8 in. O.D. Tubing 4 ft Cap.	Screwdriver Slot	AC Full Load Amp	16.0	9.2	8.0	648.00
						AC Locked Rotor Amp	96.0	55.2	48.0	
A11B-1C	SPST Open Low	35 to 45 (2 to 7)	8 (Fixed) (4.4)	20 ft of 1/8 in. O.D. Tubing 4 ft Cap.	Screwdriver Slot	Non-Inductive or Resistance Load Amp (Not Lamp Loads)	16.0	9.2	8.0	624.00
						Pilot Duty - 125 VA, 24 to 277 VAC				

A19 High Range Temperature

Description:

The A19 Series are single stage temperature controls that incorporate liquid filled sensing elements.

Features:

- wide temperature ranges available
- constant differential throughout the entire range
- SPST or SPDT snap acting switches
- fixed or adjustable differential available
- unaffected by barometric pressure change
- unaffected by cross ambient conditions

Applications:

A19's are suitable for temperature control in heating, ventilating, and refrigeration applications.



Part Number	Switch Action	Range °F (°C)	Diff F° (C°) (Factory Set)	Bulb and Capillary	Bulb Well No. (not supplied)	Range Adjuster	Max Bulb Temp °F (°C)	Electrical Ratings				LIST
								Motor Ratings VAC	120	208	240	
†A19AAB-10C	SPST, Open High Oven Thermostat	200 to 550 (93 to 288)	10 (5.6)	3/16 in. x 6 in. copper 8 ft. Cap.	-	Convertible	620 (327)	Non-Inductive or Resistance Load Amp* (Not Lamp Loads)	22 amps 120 to 277 VAC			611.00
A19AAC-9C	SPDT	100 to 240 (38 to 116)	5 (2.8)	3/8 in. x 3-7/8 in. copper 6 ft. Cap.	WEL14A-602R	Screwdriver Slot External Scale	290 (143)	Pilot Duty - 125 VA, 24 to 600 VAC *SPST and only one side of SPDT control				325.00

† Universal replacement with removable knob and tension clip for conversion to knob, screwdriver, or concealed adjustment.

* Non-Stock item. Built to order.

TEMPERATURE CONTROL APPLICATIONS

JOHNSON CONTROLS

A19 Series Remote Bulb

Description:
The A19 Series are single stage temperature controls that incorporate liquid filled sensing elements.

Accessories:
Packing nut available for closed tank application. Specify part number FTG13A-600R. Bulb wells (WEL14A Series) available for liquid immersion applications.

Features:
- wide temperature ranges available
- constant differential throughout the entire range
- compact enclosure
- fixed or adjustable differential available
- variety of sensing element styles
- unaffected by cross ambient conditions

Applications:

A19's are suitable for temperature control in heating, ventilating, and refrigeration applications.

Part Number	Switch Action	Range °F (°C)	Diff F° (C°)	Bulb and Capillary	Bulb Well No. (not supplied)	Range Adjuster	Electrical Ratings				LIST
							Motor Ratings VAC	120	208	240	
WIDE RANGE - ADJUSTABLE DIFFERENTIAL											
A19ABA-40	SPST	-30 to +100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in.	WEL14A-602R	Screwdriver Slot	AC Full Load Amp	16.0	9.2	8.0	182.90
A19ABC-4	SPDT	50 to 130 (10 to 55)	3-1/2 to 14 (1.9 to 8)	3/8 in. x 5 in. 8 ft. Cap	WEL14A-603R	Knob	AC Locked Rotor Amp	96.0	55.2	48.0	322.00
†A19ABC-24	SPDT	-30 to +100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in. 8 ft. Cap	WEL14A-602R	Convertible	Non-Inductive or Resistance Load Amp* (Not Lamp Loads	22 amps 120 to 277 VAC			182.10
†A19ABC-36	SPDT	-30 to +100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in. 20 ft. Cap	WEL14A-602R	Convertible					364.00
A19ABC-37	SPDT	-30 to +100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in. 10 ft. Cap	WEL14A-602R	Screwdriver Slot	Pilot Duty - 125 VA, 24 to 600 VAC *SPST and only one side of SPDT control				310.00
FIXED DIFFERENTIAL											
A19AAF-12	SPDT	25 to 225 (-4 to 107)	3-1/2 (1.9)	3/8 in. x 3 in. 10 ft. Cap	WEL14A-602R	Screwdriver Slot	AC Full Load Amp	6.0	3.4	3.0	360.00
							AC Locked Rotor Amp	36.0	20.4	18.0	
							Non-Inductive or Resistance Load Amp* (Not Lamp Loads)	10 amps 120 to 277 VAC			
							Pilot Duty - 125 VA, 24 to 277 VAC				
CASE COMPENSATED - FIXED DIFFERENTIAL											
A19AAC-4	SPDT	0 to 80 (-18 to 27)	5 (2.8)	3/8 in. x 4 in. 6 ft. Cap	WEL14A-602R	Screwdriver Slot	AC Full Load Amp	16.0	9.2	8.0	364.00
							AC Locked Rotor Amp	96.0	55.2	48.0	
							Non-Inductive or Resistance Load Amp* (Not Lamp Loads)	22 amps 120 to 277 VAC			
							Pilot Duty - 125 VA, 24 to 600 VAC *SPST and only one side of SPDT control				
A19AAD-12	SPST Open Low	-30 to +50 (-34 to 10)	2-1/2 (1.4)	3/8 in. x 4 in. 7 ft. Cap	WEL14A-602R	Screwdriver Slot	AC Full Load Amp	6.0	3.4	3.0	363.00
							AC Locked Rotor Amp	36.0	20.4	18.0	
							Non-Inductive or Resistance Load Amp (Not Lamp Loads)	10 amps 120 to 277 VAC			
							Pilot Duty - 125 VA, 24 to 277 VAC				
CLOSE DIFFERENTIAL											
A19AAD-5	SPST Open Low	30 to 50 (Milk Cooler) (-1 to 10)	2 (1.1)	3/8 in. x 2-5/8 in. 6 ft. Cap	WEL16A-601R	Screwdriver Slot	AC Full Load Amp	6.0	3.4	3.0	337.00
A19AAF-20	SPDT	-30 to +100 (-34 to 38)	2-1/2 (1.4)	3/8 in. x 4 in. 6 ft. Cap	WEL14A-602R	Screwdriver Slot	AC Locked Rotor Amp	36.0	20.4	18.0	292.80
A19AAF-21	SPDT	40 to 90 (4 to 32)	1-1/2 (0.8)	3/8 in. x 5-3/4 in. 6 ft. Cap	WEL14A-603R	Screwdriver Slot	Non-Inductive or Resistance Load Amp (Not Lamp Loads)	10 amps 120 to 277 VAC			292.80
							Pilot Duty - 125 VA, 24 to 277 VAC				
MANUAL RESET											
A19ACA-14	SPST Open Low	-30 to +100 (-34 to 38)	Manual Reset	3/8 in. x 4 in. 6 ft. Cap	WEL14A-602R	Screwdriver Slot	AC Full Load Amp	16.0	9.2	8.0	295.80
							AC Locked Rotor Amp	96.0	55.2	48.0	
A19ACA-15	SPST Open Low	-30 to +100 (-34 to 38)	Manual Reset	3/8 in. x 4 in. 10 ft. Cap	WEL14A-602R	Screwdriver Slot	Non-Inductive or Resistance Load Amp (Not Lamp Loads)	16.0	9.2	8.0	317.00
							Pilot Duty - 125 VA, 24 to 600 VAC				
A19ADB-1	SPST Open High	100 to 240 (38 to 116)	Manual Reset	3/8 in. x 3-1/2 in. 6 ft. Cap	WEL14A-602R	Knob	AC Full Load Amp	10.0	-	6.0	324.00
A19ADN-1	SPST Open High	100 to 240 (38 to 116)	Manual Reset	3/8 in. x 4 in. 6 ft. Cap	WEL14A-602R	Screwdriver Slot	AC Locked Rotor Amp	60.0	-	36.0	
							Pilot Duty - 125 VA, 24 to 600 VAC				

† Universal replacement with removable knob and tension clip for conversion to knob, screwdriver, or concealed adjustment.

* Non-Stock item. Built to order.

TEMPERATURE CONTROL APPLICATIONS

JOHNSON CONTROLS

A19 Special Purpose Thermostat (Rubber Coated Bulb and Capillary)



Description:

Bulb is designed for direct immersion.

Features:

Rubber coated bulb and capillary provides corrosion resistance.

Applications:

- designed for use in cooling towers

Specifications:

- maximum bulb temperature: 140°F (60°C)

Part Number	Switch Action	Range °F (°C)	Diff F° (C°)	Bulb and Capillary	Range Adjuster	Electrical Ratings				LIST
						Motor Ratings VAC	120	208	240	
A19AAF-4	SPDT	40 to 90 (4 to 32)	1-1/2 (0.8)	3/8 in. x 5-3/4 in. Rubber Coated 6 ft. Cap.	Screwdriver Slot	AC Full Load Amp	6.0	3.4	3.0	395.00
						AC Locked Rotor Amp	36.0	20.4	18.0	
						Non-Inductive or Resistance Load Amp (Not Lamp Loads)	10 amps 120 to 277 VAC			
						Pilot Duty - 125 VA, 24 to 277 VAC				

A19 Hot Water Temperature Control (SPDT, Well Immersion)



Description:

Universal replacement control for open high, open low, or SPDT applications. Not available less well assembly.

Features:

- liquid filled element provides rapid response to temperature change
- control furnished with well assembly for 1/2 in. tappings
- adjustable differential
- truly universal replacement
- all controls supplied with well assembly

Applications:

- operating control for hot water boilers

Specifications:

- maximum bulb temperature: 290°F (143°C)

Part Number	Application	Switch Action	Range °F (°C)	Diff F° (C°)	Well Conn. Size-NPT	Range Adjuster	Electrical Ratings			LIST
							Motor Ratings VAC	120	240	
†A19ABC-11	Open High Open Low, (Operating and Circulator)	SPDT	100 to 240 (38 to 116)	6 to 24 (3 to 13)	1/2 in.	Convertible	AC Full Load Amp	10.0	6.0	291.10
							AC Locked Rotor Amp	60.0	36.0	
							Pilot Duty - 125 VA, 24 to 600 VAC			
†A19ABC-12	Remote Mtg. (Operating and Circulator)	SPDT	100 to 240 (38 to 116)	6 to 24 (3 to 13)	1/2 in. 8 ft. Cap.	Convertible	AC Full Load Amp	10.0	6.0	325.00
							AC Locked Rotor Amp	60.0	36.0	
							Pilot Duty - 125 VA, 24 to 600 VAC			

† Universal replacement with removable knob and tension clip for conversion to knob, screwdriver, or concealed adjustment.

* Non-Stock item. Built to order.

A19 Temperature Control Rainproof Enclosure (Industrial Thermostat)

Description:

Remote bulb temperature control with rainproof (NEMA 3R) enclosure.



Features:

- rainproof gasketed enclosure

Applications:

- control of cooling tower sump heaters

Specifications:

- maximum bulb temperature: 190°F (99°C)

Part Number	Switch Action	Range °F (°C)	Diff F° (C°)	Bulb and Capillary	Bulb Well No. (not supplied)	Range Adjuster	Electrical Ratings				LIST
							Motor Ratings VAC	120	208	240	
A19ANC-1	SPDT	0 to 150 (-15 to 65)	6 (Fixed) (3)	.290 x 2-1/2 in. 10 ft. Cap	WEL11A-601R	Screwdriver Slot	AC Full Load Amp	16.0	9.2	8.0	630.00
							AC Locked Rotor Amp	96.0	55.2	48.0	
							Non-Inductive or Resistance Load Amp* (Not Lamp Loads)	22 amps 120 to 277 VAC			
							Pilot Duty - 125 VA, 24 to 600 VAC *SPST and only one side of SPDT control				

† Universal replacement with removable knob and tension clip for conversion to knob, screwdriver, or concealed adjustment.

* Non-Stock item. Built to order.

JOHNSON/RANCO/
HONEYWELL 533-636

TEMPERATURE CONTROL APPLICATIONS

JOHNSON CONTROLS

A19 Coiled Bulb Space Thermostats



Description:

Wide range temperature control with air coil sensing element.

Features:

- wide temperature range
- NEMA 1 enclosure

Applications:

- return air or space temperature sensing

Specifications:

- maximum bulb temperature: 140°F (60°C)

Part Number	Switch Action	Range °F (°C)	Diff F° (C°)	Bulb and Capillary	Range Adjuster	Electrical Ratings				LIST
						Motor Ratings VAC	120	208	240	
VENTILATING, HEATING										
A19BAB-3	SPST, Open High "No Heat" position	35 to 95 (0 to 35)	3-1/2 (1.9)Fixed	1-3/8 in. x 2-1/4 in. Coiled	Knob	AC Full Load Amp	16.0	9.2	8.0	301.00
						AC Locked Rotor Amp	96.0	55.2	48.0	
†A19BAC-1	SPDT	30 to 110 (-1 to 43)	3-1/2 (1.9)Fixed	1-3/8 in. x 2-1/4 in. Coiled	Convertible	Non-Inductive or Resistance Load Amp* (Not Lamp Loads)	22 amps 120 to 277 VAC			325.00
						Pilot Duty - 125 VA, 24 to 600 VAC *SPST and only one side of SPDT control				
A19BAF-1	SPDT	30 to 110 (-1 to 43)	2 (1.1)Fixed	1-3/8 in. x 2-1/4 in. Coiled	Knob	AC Full Load Amp	6.0	3.4	3.0	360.00
						AC Locked Rotor Amp	36.0	20.4	18.0	
						Non-Inductive or Resistance Load Amp* (Not Lamp Loads)	10 amps 120 to 277 VAC			
						Pilot Duty - 125 VA, 24 to 277 VAC				
COOLING										
†A19BBC-2	SPDT	-30 to +110 (-34 to 38)	3 to 12 (1.7 to 7)	1-3/8 in. x 2-1/4 in. Coiled	Convertible	AC Full Load Amp	16.0	9.2	8.0	249.10
						AC Locked Rotor Amp	96.0	55.2	48.0	
						Non-Inductive or Resistance Load Amp* (Not Lamp Loads)	22 amps 120 to 277 VAC			
						Pilot Duty - 125 VA, 24 to 600 VAC *SPST and only one side of SPDT control				

A19 Flange Mounted Duct Thermostats



Description:

Wide range temperature control with special air coil sensing element and adjustable mounting flange.

Features:

- SPDT snap-acting contacts
- unaffected by barometric pressure or cross ambient temperatures
- Flat flange mounting with special coil element permits positioning the sensing bulb in the appropriate portion of the air stream

Applications:

These duct thermostats are used on roof top units, make-up heaters, duct heaters, and air handling systems of all types.

Part Number	No. of Stages	Switch Action	Range °F (°C)	Diff F° (C°)	Electrical Rating 120 VAC	Max. Allowable Temperature at Bulb °F (°C)	Electrical Ratings				LIST
							Motor Ratings VAC	120	208	240	
A19EAF-2	1	SPDT	30 to 110 (-1 to 43)	2(1.1)	6 amp	140 (60)	Non-Inductive	10 amps 120 to 277 VAC			361.00
							Pilot Duty - 125 VA, 24 to 277 VAC				

† Universal replacement with removable knob and tension clip for conversion to knob, screwdriver, or concealed adjustment.

* Non-Stock item. Built to order.

TEMPERATURE CONTROL APPLICATIONS

JOHNSON CONTROLS

A19 Hot Water Temperature Control With Strap-on Mount

Description:

SPDT, strap-on, surface type hot water control for direct or reverse action. May be used as either an open high control or as an open low control.



Features:

- terminals are colour coded to simplify installation
- may be mounted on either horizontal or vertical rise pipe
- insulated back portion of case minimizes the effects of ambient temperature
- SPDT switch action for high or low temperature detection

Accessories:

- supplied with convertible range adjuster

Applications:

- automatic changeover control for fan coil systems

Specifications:

- maximum case ambient temperature: 140°F (60°C)
- maximum sensing element temperature: 290°F (143°C)

Part Number	Switch Action	Range °F (°C)	Diff F° Fixed (C°)	Mounting	Electrical Ratings			LIST
					Motor Ratings VAC	120	240	
†A19DAC-1	SPDT	100 to 240 (38 to 116)	10 (5.6)	Clamp-on Strap Supplied	AC Full Load Amp	10.0	6.0	240.50
					AC Locked Rotor Amp	60.0	36.0	
					Pilot Duty - 125 VA, 24 to 600 VAC			

A19 Agricultural / Industrial Thermostat With NEMA 4X Enclosure

Description:

The A19PRC is a single stage electromechanical thermostat designed for heating and ventilation applications. It is designed with raintight enclosures for use in agricultural and industrial applications that require compliance with Article 547 of the National Electrical Code. The A19PRC has a rugged Noryl plastic that meets NEMA 4X specifications.



Features:

- A19PRC thermostats have an O-ring sealed setpoint adjustment knob and range scale with oversized white markings for easy readability in low light situations.
- Exposed portion of the liquid filled sensing elements are plated and plastic coated to resist damage in corrosive atmospheres.

Applications:

- controlling ventilation or heating equipment in animal confinement or industrial buildings

Part Number	Switch Action	Range °F (°C)	Diff F° (C°)	Bulb and Capillary	Range Adjuster	Electrical Ratings				LIST
						Motor Ratings VAC	120	208	240	
A19PRC-1	SPDT	30 to 110 (1 to 43)	3 to 12	1-3/8 in. x 2-1/4 in. Coiled	Knob	AC Full Load Amp	16.0	9.2	8.0	649.00
						AC Locked Rotor Amp	96.0	55.2	48.0	
						Non-Inductive or Resistance Load Amp (Not Lamp Loads)	16.0	9.2	8.0	

† Universal replacement with removable knob and tension clip for conversion to knob, screwdriver, or concealed adjustment.

* Non-Stock item. Built to order.

TEMPERATURE CONTROL APPLICATIONS

JOHNSON CONTROLS

A19 Water Chiller Control (With Locked Cutout-Adjustable Cut-In)

Description:

Remote bulb temperature control with limited setpoint range, adjustable differential, and cut-out.



Features:

- adjustable cutout (38 to 47°F)
- wide differential adjustment range

Applications:

- water chillers

Specifications:

- maximum bulb temperature: 140°F (60°C)

Part Number	Switch Action	Range °F (°C)	Diff F° (C°)	Bulb and Cap-illary	Bulb Well No. (not supplied)	Range Adjuster	Electrical Ratings				LIST
							Motor Ratings VAC	120	208	240	
A19ZBA-1	SPDT Close High Open Low	38 to 80 (3 to 27)	8 to 40 (4 to 22) Adjustable	3/8 in. x 3-7/16 in. 6 ft. Cap	WEL14A-602R	Knob	AC Full Load Amp	16.0	9.2	8.0	
							AC Locked Rotor Amp	96.0	55.2	48.0	
							Non-Inductive or Resistance Load Amp (Not Lamp Loads)	16.0	9.2	8.0	
							Pilot Duty - 125 VA, 24 to 277 VAC Note: When used as a two circuit control, the total connected load must not exceed 2000 VA				

A19 Defrost Duration and Fan Delay

Description:

Remote bulb control with adjustable defrost termination temperature and preset fan delay temperature



Features:

- sensing element unaffected by barometer pressure and cross ambient temperature problems
- limited adjustment range

Applications:

- defrost termination control for refrigerated display cases

Specifications:

- maximum bulb temperature: 140°F (60°C)
- fan delay temperature: factory set at 25°F (-4°C)

Part Number	Switch Action	Defrost Termination °F (°C)	Diff F° (C°)	Bulb and Capil-lary	Bulb Well No. (not supplied)	Range Adjuster	Electrical Ratings				LIST
							Motor Ratings VAC	120	208	240	
A19ZBC-2	SPDT	45 to 85 (7 to 29)	-	1-9/64 in. x 3-1/8 in. 6 ft. Cap	-	Knob	AC Full Load Amp	16.0	9.2	8.0	789.00
							AC Locked Rotor Amp	96.0	55.2	48.0	
							Non-Inductive or Resistance Load Amp (Not Lamp Loads)	16.0	9.2	8.0	
							Pilot Duty - 125 VA, 24 to 277 VAC Note: When used as a two circuit control, the total connected load must not exceed 2000 VA				

† Universal replacement with removable knob and tension clip for conversion to knob, screwdriver, or concealed adjustment.

* Non-Stock item. Built to order.

A28 Series Two Stage Temperature Controls

Description:

The A28 Series are two stage temperature controls that incorporate a liquid filled sensing element.



Features:

- wide temperature ranges available
- constant differential throughout the entire range
- SPST or SPDT snap acting switches
- unaffected by changes in barometric pressure
- unaffected by cross ambient conditions

Part Number	Switch Action	Range °F (°C)	Diff F° (C°)	Bulb and Capillary	Bulb Well No. (not supplied)	Range Adjuster	Electrical Ratings				LIST
							Motor Ratings VAC	120	208	240	
COILED BULB - FIXED DIFFERENTIAL											
†A28AA-8001	2-SPDT	30 to 110 (-1 to 43)	3-1/2 (1.9) ea. Stage 2 to 7 Adj. Fixed Between Stages	1-3/8 in. x 2-1/4 in. Coiled	-	Convertible	AC Full Load Amp*	16.0	9.2	8.0	652.00
CASE COMPENSATED - FIXED DIFFERENTIAL											
*A28AA-8	2-SPDT	-30 to +50 (-34 to 10)	5 (2.8) ea. Stage 3 (1.7) Fixed Between Stages	3/8 in. x 4-1/16 in.* 6 ft. Cap	WEL14A-602R	Knob	Non-Inductive or Resistance Load Amp* (Not Lamp Loads)	16.0	9.2	8.0	
WIDE RANGE - ADJUSTABLE INTERSTAGE DIFFERENTIAL											
†A28AA-29	2-SPDT	-30 to +110 (-34 to 38)	5 (2.8) ea. Stage 2 to 7 Adj. Between Stages	3/8 in. x 4-1/16 in.* 8 ft. Cap	WEL14A-602R	Convertible	AC Locked Rotor Amp	96.0	55.2	48.0	586.00
A28AA-36	2-SPDT	40 to 90 (4 to 32)	3 ea. Stage 2 to 7 Adj. Between Stages	3/8 in. x 6 in. 6 ft. Cap	-	Knob	Non-Inductive or Resistance Load Amp* (Not Lamp Loads)	16.0	9.2	8.0	
A28AA-37	2-SPDT	60 to 140 (16 to 60)	5 ea. Stage 2 to 7 Adj. Between Stages	3/8 in. x 4 in. 6 ft. Cap	WEL14A-602R	Knob	Pilot Duty - 125 VA, 24 to 277 VAC *When used as a two circuit control, the total connected load must not exceed 2000VA				575.00
A28AJ-4	2-SPDT	20 to 80 (7 to 27)	2 ea. Stage 2 to 7 Adj. Between Stages	3/16 in. x 22 in. 6 ft. Cap	-	Knob	AC Full Load Amp	6.0	3.4	3.0	
							AC Locked Rotor Amp	36.0	20.4	18.0	
							Non-Inductive or Resistance Load Amp (Not Lamp Loads)	10.0	9.2	8.0	
							Pilot Duty - 125 VA, 24 to 277 VAC *When used as a two circuit control, the total connected load must not exceed 2000VA				

† Universal replacement with removable knob and tension clip for conversion to knob, screwdriver, or concealed adjustment.

* Non-Stock item. Built to order.

TEMPERATURE CONTROL APPLICATIONS

JOHNSON CONTROLS

A28 Two Stage Flange Mounted Duct Thermostats

Description:

Two stage temperature control with special air coil sensing element and adjustable mounting flange.



Features:

- Flat flange mounting with special coil element permits positioning of sensing bulb in the appropriate portion of the air stream
- 2-SPDT snap acting switches
- unaffected by barometric pressure or cross ambient temperatures

Applications:

These duct thermostats are used on roof top units, make-up heaters, duct heaters, and air handling systems of all types

Part Number	No. of Stages	Switch Action	Range °F (°C)	Differential F° (C°) Fixed		Max. Allowable Temperature at Bulb °F (°C)	Electrical Ratings					LIST
				Each Stage	Between Stage		Motor Ratings VAC	120	208	240	277	
A28AK-1	2	2-SPDT Switches	30 to 110 (-1 to 43)	2 (1.1)	3 (1.7)	140 (60)	AC Full Load Amp	6.0	3.4	3.0	-	695.00
							AC Locked Rotor Amp	36.0	20.4	18.0	-	

A28 Two Stage Agricultural Thermostat with NEMA 4X Enclosure

Description:

The A28PJ series are two stage electromechanical thermostats with raintight enclosures.



Features:

- rugged Noryl plastic gasketed enclosures that meet NEMA 4X specifications
- O-ring sealed setpoint adjustment knobs
- Exposed portion of liquid filled sensing elements are plated and plastic coated to resist damage in corrosive atmospheres

Part Number	Switch Action	Range °F (°C)	Diff F° (C°)	Bulb and Capillary	Range Adjuster	Electrical Ratings					LIST
						Motor Ratings VAC	120	208	240	277	
A28PJ-1	2-SPDT	30 to 110 (-1 to 43)	3-1/2 (1.9) ea. Stage 3 (1.7) Fixed Between Stages	1-3/8 in. x 2-1/4 in. Coiled	Knob	AC Full Load Amp	6.0	3.4	3.0	-	893.00
						AC Locked Rotor Amp	36.0	20.4	18.0	-	
						Non-Inductive or Resistance Load Amp (Not Lamp Loads)	10.0	9.2	8.0	7.2	
						Pilot Duty - 125 VA, 24 to 277 VAC Note: When used as a two circuit control the total connected load must not exceed 2000 VA					

† Universal replacement with removable knob and tension clip for conversion to knob, screwdriver, or concealed adjustment.

* Non-Stock item. Built to order.

TEMPERATURE CONTROL APPLICATIONS

JOHNSON CONTROLS

A36 Series Four Stage Remote Bulb Thermostats



Description:

Four stage thermostat with open construction for use in panel mounting.

Features:

- case compensation (provides uniform performance at ambient temperatures from 0 to 140°F (-18 to 60°C)
- screwdriver slot adjustment with calibrated dial enables movement of entire staging band within the range

Applications:

- cycling control for multiple refrigeration compressors or unloading type compressors

Part Number	Switch Action	Range °F (°C)	Diff F° (C°) Fixed	Bulb and Capillary	Bulb Well No. (not supplied)	Range Adjuster	Electrical Ratings					LIST
							Motor Ratings VAC	120	208	240	277	
A36AHA-50 (1)	4-SPDT Switches	55 to 95 (13 to 35)	2 ea. Stage 1-1/2 Between Stages	3/8 in. x 5-1/4 in. 18 in. Cap. w/12 in. Nylon Armor	WEL14A-603R	Screwdriver Slot Calibrated Dial	AC Full Load Amp	10.0	6.9	5.0	-	1,439.00
							AC Locked Rotor Amp	60.0	41.4	30.0	-	
							Non-Inductive Amp	15.0	9.6	8.0	7.2	
							Pilot Duty - 125 VA, 120/277 VAC					
A36AHA-52 (1)	4-SPDT Switches	55 to 95 (13 to 35)	2 ea. Stage 1-1/2 Between Stages	3/8 in. x 5-1/4 in. 6 ft. Cap. w/12 in. Nylon Armor	WEL14A-603R	Screwdriver Slot Calibrated Dial	AC Full Load Amp	10.0	6.9	5.0	-	1,439.00
							AC Locked Rotor Amp	60.0	41.4	30.0	-	
							Non-Inductive Amp	15.0	9.6	8.0	7.2	
							Pilot Duty - 125 VA, 120/277 VAC					
A36AHA-58 (2)	4-SPDT Switches	0 to 70 (-18 to 21)	3 ea. Stage 2-1/2 Between Stages	3/8 in. x 4 in. 15 ft. Braid Ar. Cap.	WEL14A-602R	Screwdriver Slot Calibrated Dial	AC Full Load Amp	10.0	6.9	5.0	-	1,642.00
							AC Locked Rotor Amp	60.0	41.4	30.0	-	
							Non-Inductive Amp	15.0	9.6	8.0	7.2	
							Pilot Duty - 125 VA, 120/277 VAC					

(1) Calibrated at mid-switching point... compputer room or comfort control
(2) Calibrated at low-switching point... special close control chiller applications

A72 Series Two Pole Heavy Duty Temperature Controls (Adjustable Differential)



Description:

The A72 Series temperature controls incorporate a vapor charged sensing element and heavy duty contacts.

Features:

- double pole single throw contact block contains two isolated sets of contacts that make or break simultaneously

Part Number	Switch Action	Range °F (°C)	Diff F° (C°)	Bulb and Capillary	Max Bulb Temp °F (°C)	Range Adjuster	Electrical Ratings							LIST
							Motor Ratings VAC	120 ø	208 ø	240 ø	220 ø	208 ø	320 ø	
*A72AA-1	DPST Close High Open Low	-30 to +30 (-34 to -1)	4 to 25 (2 to 25)	3/8 in. x 3 in.* 6 ft. Cap.	200 (93)	Screwdriver Slot	Horsepower	2	3	3	5	5	5	547.00
A72AA-2	DPST Close High Open Low	15 to 55 (-9 to 13)	3 to 30 (.7 to 17)	3/8 in. x 3 in.* 6 ft. Cap.	200 (93)	Screwdriver Slot	AC Full Load Amp	24.0	24.0	24.0	15.0	15.9	15.0	563.00

† Universal replacement with removable knob and tension clip for conversion to knob, screwdriver, or concealed adjustment.

* Non-Stock item. Built to order.

FLOW SWITCHES
JOHNSON CONTROLS

F61 Series Flow Switch (Standard Flow Rate - SPDT)

Description:

The F61 flow switch is designed for use on liquid lines using water, ethylene glycol solutions, or other liquids not injurious to the brass and phosphor bronze parts that come in contact with the liquid. The SPDT contacts make or break an electrical circuit when flow starts or stops.



Features:

- The bronze paddle is of three segments for use in pipes from 1 in. to 3 in. diameter
- Paddle segments may be removed or trimmed as needed

Applications:

- Use on lines carrying well water, swimming pool water, sea water, brine, or ethylene glycol
- Not for use with hazardous fluids or in hazardous atmospheres

Specifications:

F61KB-11: This flow switch is supplied with a NEMA 1 type enclosure
F61MB-1: These flow switches are supplied with a NEMA 4X enclosure and are intended for inside or outside use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose directed water

Part Number	LIST
F61KB-11	306.00
F61MB-1	457.00

F61 Series Flow Switch (Low Flow Rate - SPDT)

Description:

For use on liquid lines using water, ethylene glycol solutions, or other liquids not injurious to the brass and phosphor bronze parts. SPDT contact switch is activated by a low flow rate; however, it has a large flow capacity with minimum pressure drop.



Applications:

Typical applications include:
- water purification and treatment systems
- booster pumps
- fast shut down on high input boilers to guard against circulated failure
- cooling systems for electronic tubes, bearings, and compressors

Part Number	Inlet and Outlet Size Female NPT	Enclosure NEMA Type	Adjustment Range - GPM (m^3/hr)		Maximum Liquid Temp °F (°C)	Maximum Liquid Pressure PSIG (kPa)	LIST
			R to Y Closes Flow Increase	R to Y Opens Flow Decrease			
*F61KD-4	3/4 in. x 3/4 in.	1	Minimum .6 (0.14) Maximum 1.1 (0.25)	Minimum .3 (0.07) Maximum 0.9 (0.2)	250 (121)	150 (1034)	376.00

* Non-Stock item. Built to order.

JOHNSON CONTROLS

P10 Series Low Pressure Control (Single or 2-Stage)

Description:

These SPDT pressure controls open or close an electrical circuit from a change in operating pressure. R to Y terminals make (cut-in) on pressure rise.



Applications:

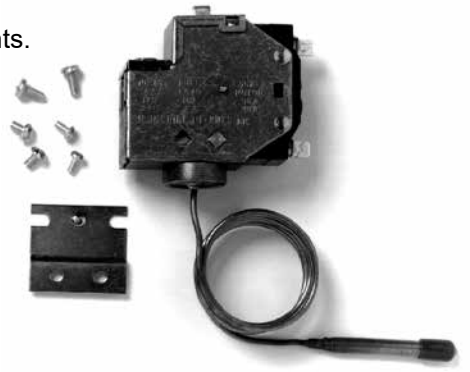
- Pneumatic systems
- control of pumps or small air compressors
- pressure-electric interlock of fluid flow systems

Part Number	No. of Stages	Contact Action	Range PSIG (kPa)	Factory Setting		Pressure Connector NPT	Electrical Ratings					LIST
				PSIG (kPa)	Switch Diff PSI (kPa)		Motor Ratings VAC	120	208	240	277	
P10BC-7	1	SPDT	3 to 20 (21 to 138)	12 (R to Y Cut-in)	2	Barbed	AC Full Load Amp	16.0	9.2	8.0	7.0	287.10
							AC Locked Rotor Amp	96.0	55.2	48.0	42.0	
							Non-Inductive Amp	16.0	9.2	8.0	7.2	
							Pilot Duty - 125 VA at 24 to 277 VAC On 2 and 3 stage models, the maximum connected load shall not exceed 2000 VA					

P20 Series Air Conditioning / Refrigeration Pressure Control

Description:

Field replacement high and low pressure controls for non-corrosive refrigerants. Dust-tight contact unit with arkles connectors, 36 in. capillary with 1/4 in. sweat section. Setpoint is screwdriver adjustable.



Applications:

- air conditioning high/low pressure control
- refrigeration high/low pressure control
- head pressure control

Part Number	Switch Action	Range PSIG (kPa)	Differential PSI (kPa)	Setting - PSIF (kPa)		Max Bellows Pressure PSIG (kPa)	LIST
				Opens	Closes		
P20BB-1	Open On Fall	7 to 150 (48 to 1034)	Manual Reset	40 (276)	Locked Man. Reset	250 (1724)	171.40
P20DB-1	Open On Rise	100 to 425 (690 to 2930)	Manual Reset	40 (2759)	Locked Man. Reset	450 (3103)	242.00
P20EB-1	SPDT	7 to 150 (48 to 1034)	25 (172) Fixed	40 (275)	65 (448)	250 (1724)	212.40
P20EB-2	SPDT	100 to 425 (690 to 2930)	70 (483) Fixed	400 (2758)	330 (2275)	450 (3103)	231.40

JOHNSON/RANCO/ HONEYWELL 533-636

PRESSURE SWITCHES & CONTROLS

JOHNSON CONTROLS

P28 Series Lube Oil Pressure Cutout Control (with Time Delay)

Description:

Provides dependable shutdown for major problems on pressure lubricated refrigeration compressors by sensing low lube oil pressure. A built-in time delay switch, accurately compensated for ambient temperature, allows for pressure pick up on start and avoids nuisance shutdowns on pressure drops of short duration during the running cycle.



Applications:

- Semi-hermetic compressors
  - The P28 control measures pressure available to circulate oil through the lubrication system.

Part Number	Time Delay	Heater Circuit VAC	Type of Reset	Range* PSIG (kPa)	Refrigerant	Pressure Connection	LIST
P28AA-1	90 sec	120 / 240	Manual	8 to 70 (55 to 483)	Non-Corrosive** All-Range	36 in. Cap. with 1/4 in. Flare Nut	739.00
P28AA-2	60 sec	120 / 240	Manual	8 to 70 (55 to 483)	Non-Corrosive** All-Range	36 in. Cap. with 1/4 in. Flare Nut	739.00
P28AA-17	120 sec	120 / 240	Manual	8 to 70 (55 to 483)	Non-Corrosive** All-Range	36 in. Cap. with 1/4 in. Flare Nut	739.00
P28AA-18	45 sec	120 / 240	Manual	8 to 70 (55 to 483)	Non-Corrosive** All-Range	36 in. Cap. with 1/4 in. Flare Nut	739.00
P28AN-15	30 sec	120 / 240	Manual		Ammonia	1/4 in. Female NPT	1,245.00
P28DA-1	90 sec with Runlight and Alarm Terminals	120 / 240	Manual		Non-Corrosive** All-Range	36 in. Cap. with 1/4 in. Flare Nut	
P28GA-2	90 sec	120 / 240	Automatic		Non-Corrosive** All-Range	36 in. Cap. with 1/4 in. Flare Nut	
P28NA-5	120 sec	24 VAC or VDC	Manual		Non-Corrosive** All-Range	36 in. Cap. with 1/4 in. Flare Nut	763.00

* Switch Differential approximately 5 PSI (34 kPa). Time delay relay energizes @ 9 PSI (kPa) pressure difference, de-energized @ 14 PSI (97 kPa) difference.
** Non-corrosive refrigerants include: R-12, R-22, R-134A, R-500, R-502 (R).

Replacement Timing Relays for P28 and P29 Oil Controls

Part Number	Voltage	Reset	Alarm Circuit	Timing	LIST
RLY13A-616R	120/240 VAC	Manual	No	120	353.00
RLY13A-613R	12 VAC	Manual	No	120	353.00
RLY13A-609R	24 VAC or DC	Manual	No	120	398.00
RLY13A-608R	120/240 VAC	Automatic	No	90	353.00
RLY13A-602R	120/240 VAC	Manual	No	90	353.00
RLY13A-610R	120 240 VAC	Manual	No	30	353.00

JOHNSON CONTROLS

P29 Series Low Pressure Cutout Control (with Time Delay)

Description:

The P29NC provides a low pressure cut-out control with time delay and lockout, which requires manual reset. Standard time delay is 60 seconds. Provides equipment shutdown on failure of lubrication system. Time delay prevents nuisance shutdowns due to momentary fluctuations in oil pressure.

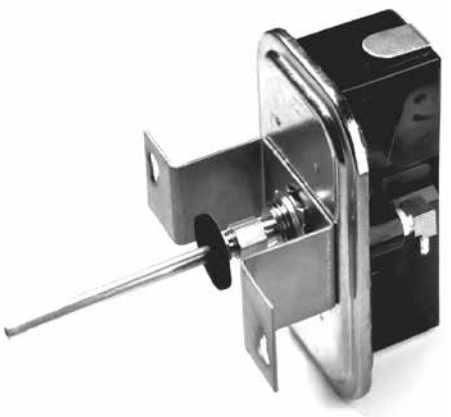


Applications:

- chiller low temperature cutout
- industrial equipment, oil pressure lubrication cutout

Part Number	Switch Action	Min to Max Pressure to Open Contacts PSI (kPa)	Pressure Drop to Close Contacts PSI (kPa)	Max Bellows Pressure PSIG (kPa)	Pressure Connection	Time Delay Setting (1)	LIST
P29NC-2	SPST	20 in. to 100 (-68 to 690)	1 to 3 (7 to 21)	325 (2241)	Locked Man. Reset	60 Seconds (Factory Set)	692.00
P29NC-3	SPST				36 in. Copper Capillary Tube with 1/4 in. Flare Nut		692.00

P32 Series Sensitive Pressure Switch



Applications:

Uses of this differential pressure switch are for air only and include:

- air proving with electric duct heaters, humidifiers etc.
- maximum air flow controller for variable volume systems
- reheat duct powered systems
- clogged filter detection
- detection of icing of air conditioning coils and initiation of defrost cycle

Part Number	Contact Action	Range WG (kPa)	Sensitivity at Minimum Setpoint WG (kPa)	Setpoint	Scale Plate	LIST
P32AC-1	SPDT	0.15 to 12 (.037 to 2.99)	.07 (.017)	Adjustable	Yes	239.70
P32AC-2*	SPDT	0.05 to 5 (.012 to 1.24)	.04 (.01)	Adjustable	Yes	268.00
P32AF-1	SPDT	0.05 to 5 (.012 to 1.24)	.025 (.006)	Adjustable	Yes	
P32AF-2*	SPDT	0.05 to 5 (.012 to 1.24)	.025 (.006)	Adjustable	Yes	268.00
FTG18A-600R		4 in. flanged sensing tube, 2 barbed fittings, 2 No. 10 screws and a gasket				64.20

* Supplied with 1/4 in. compression fitting, 4 in. extension tube, 2 mounting screws, "O" gasket, angle barbed fitting installed.

PRESSURE SWITCHES & CONTROLS

JOHNSON CONTROLS

P45 Series Lube Oil Pressure Cutout Control (with Time Delay)



Description:

The P45 control provides dependable, low lube oil cut-out for pressure lubricated refrigeration compressors. A built-in time delay relay, compensated for ambient temperature, allows for pressure pick-up on start and avoids nuisance shutdowns on short duration pressure losses during the running cycle.

Accessories:

These controls are supplied less mounting brackets.

Part Number	Time Delay	Heater Circuit VAC	Type of Reset	Factory Setting PSIG (kPa)	Refrigerant	Pressure Connection	LIST
COPELAND COMPRESSORS							
P45NCA-12*	120 sec	120/240	Manual	9** (62)	Non-Corrosive	36 in. Cap. with 1/4 in. Flare Nut	661.00
CARLYLE COMPRESSORS							
P45NCA-82**	45 sec	120/240	Manual	6.5*** (45)	Non-Corrosive	36 in. Cap. with 1/4 in. Flare Nut	661.00

* Replaces Ranco P30-5826
** Replacement for Carlyle/Carrier Part No. HK06CA-500, 6342050

Super Hose Lube Oil Failure Cutout Control



Part Number	Time Delay	Heater Circuit Volts, AC	Type of Reset	Range PSI	Refrigerant	Pressure Connection	LIST
P128AA-1	90 sec	120/240	Manual	8 to 70	Non-Corrosive All-Range	1/4" Male Flared Conn.	713.00
P128AA-2	60 sec	120/240	Manual	8 to 70	Non-Corrosive All-Range	1/4" Male Flared Conn.	706.00
P128AA-17	120 sec	120/240	Manual	8 to 70	Non-Corrosive All-Range	1/4" Male Flared Conn.	706.00
P145NCA-12	120 sec	120/240	Manual	Factory Set 9 psi	Non-Corrosive	1/4" Male Flared Conn.	631.00
P145NCA-82	45 sec	120/240	Manual	Factory Set 6.5 psi	Non-Corrosive	1/4" Male Flared Conn.	631.00

(1) Replacement for P28AA-1* Replaces Ranco P30-3701*
(2) Replacement for P28AA-2* Replaces Ranco P30-3601*
(3) Replacement for P28AA-17* Replaces Ranco P30-3801*
(4) Replacement for P45NCA-12* (Copeland Model) Replaces Ranco P30-5826*
(5) Replacement for P45NCA-82* (Carlyle Model)
* 2-H70AB-36 (36" Super Hose) may be required on some applications

PRESSURE SWITCHES & CONTROLS

JOHNSON CONTROLS

P70 Series Single Pole Low Pressure



Description:

The P70 Series of controls employ a set of SPST contacts that are opened and closed from the pressure actuated bellows. The load-carrying contacts provide direct control of AC motors within the control rating.

Applications:

- air conditioning and refrigeration applications
- control air, water, and oil pressure

Part Number	Switch Action	Range PSIG (kPa)	Differential PSI (kPa)	Pressure Connector	Limited Knob Adjustment	Max Bellows Overrun Pressure PSIG (kPa)	LIST
MICRO-SET FOR R-12, R-22, R134A, R-500, R-502 (R)							
P70AB-12	Close High Open Low	12 in. to 80 (-40 to 345)	Min 5 (34) Max 35 (241)	36 in. Cap. with 1/4 in. Flare Nut	Cutoff*	500 (3447)	304.00
"ALL RANGE" FOR R-12, R-22, R134A, R-500, R-502 (R)							
P70AB-1	Close High Open Low	20 in. to 100 (-68 to 690)	Min 6 (41) Max 50 (345)	1/4 in. Male Flared Conn.	Cutoff*	325 (2241)	290.80
P70AB-2	Close High Open Low			36 in. Cap. with 1/4 in. Flare Nut	Cutoff*		304.00
P70CA-1	Open High Close Low			36 in. Cap. with 1/4 in. Flare Nut	None		328.00
FOR AMMONIA							
P70AA-5	Close High Open Low	20 in. to 100 (-68 to 690)	Min 6 (41) Max 50 (345)	1/4 in. Female NPT	None	325 (2241)	557.00
P70CA-4	Open High Close Low			1/4 in. Female NPT			595.00

SEC99A UltraCap Armored Capillary

Description:

UltraCap is designed for use with 1/4 in. SAE male flare fitting connectors, such as those found on the Johnson Controls/PENN lines of pressure-actuated controls. Integral Schrader valve depressors are available. UltraCap Armored Capillary is compatible with all common non-corrosive refrigerants.



Specifications:

- Capillary Diameters: Inside 0.062 in. (1.5 mm); Outside 0.125 in. (3 mm)
- Temperature Range: -50 to 350°F (-46 to 177°C)
- Burst Pressure: 3000 psig (20685 kPa)
- Maximum Working Pressure: 600 psig (4137 kPa)
- Suggested Torque to Seal: 8 to 10 lb ft (10.9 to 13.6 N•m

Part	Schrader Depressor	Description	LIST
SEC99AA-24C	In One End	Two straight fittings, Length: 24 in. (610 mm)	74.70
SEC99AA-36C	In One End	Two straight fittings, Length: 36 in. (914 mm)	87.00
SEC99AA-48C	In One End	Two straight fittings, Length: 48 in. (1219 mm)	
SEC99AA-60C	In One End	Two straight fittings, Length: 60 in. (1524 mm)	111.50
SEC99AB-24C	In Both Ends	One straight and one 90° fitting, Length: 24 in. (610 mm)	74.80
SEC99AB-36C	In Both Ends	One straight and one 90° fitting, Length: 36 in. (914 mm)	87.00
SEC99AB-48C	In Both Ends	One straight and one 90° fitting, Length: 48 in. (1219 mm)	99.30
SEC99AB-60C	In Both Ends	One straight and one 90° fitting, Length: 60 in. (1524 mm)	111.50

PRESSURE SWITCHES & CONTROLS

JOHNSON CONTROLS

P70 Series Single Pole High Pressure



Description:

The P70 Series of controls employ a set of SPST contacts that are opened and closed from the pressure actuated bellows. The load-carrying contacts provide direct control of AC motors within the control rating.

Applications:

- air conditioning and refrigeration applications
- control air, water, and oil pressure

Part Number	Switch Action	Range PSIG (kPa)	Differential PSI (kPa)	Pressure Connector	Limited Knob Adjustment	Max Bellows Overrun Pressure PSIG (kPa)	LIST
HEAD PRESSURE FAN CYCLING FOR R-12, R-22, R-134A, R-500, R-502 (R)							
P70AA-118	Close High Open Low	100 to 400 (690 to 2758)	Min 35 (241) Max 200 (1379)	36 in. Cap. with 1/4 in. Flare Nut	None	475 (3275)	303.00
P70AA-2	Close High Open Low	0 to 150 (0 to 1034)	Min 12 (83) Max 40 (276)	36 in. Cap. with 1/4 in. Flare Nut		325 (2241)	311.00
"ALL RANGE" FOR R-12, R-22, R134A, R-500, R-502 (R)							
P70CA-2	Open High Close Low	50 to 450 (345 to 3103)	Min 60 (414) Max 150 (1034)	1/4 in. Male Flared Conn.	None	475 (3275)	312.00
P70CA-3	Open High Close Low			36 in. Cap. with 1/4 in. Flare Nut			338.00
P70DA-1	Open High Close Low		Lockout (Requires Manual Reset)	36 in. Cap. with 1/4 in. Flare Nut			339.00
FOR AMMONIA							
P70AA-119	Close High Open Low	50 to 300 (345 to 2068)	Min 20 (138) Max 100 (690)	1/4 in. Female NPT	None	400 (2758)	536.00
P70CA-5	Open High Close Low	50 to 450 (345 to 3103)	Min 60 (414) Max 150 (1034)	1/4 in. Female NPT		475 (3275)	595.00
P70DA-2	Open High Close Low		Lockout (Requires Manual Reset)	1/4 in. Female NPT			617.00

P170 Single Pole Low Pressure



Description:

The P170 Series of controls employ a set of SPST contacts that are opened and closed from pressure actuated bellows.

Applications:

- air conditioning and refrigeration applications
- control air, water, and oil pressure

Part Number	Switch Action	Range PSIG (kPa)	Differential PSI (kPa)	Pressure Connector	Limited Knob Adjustment	Max Bellows Overrun Pressure PSIG (kPa)	LIST
P170AB-2	Close High Open Low	20 in. to 100 (-68 to 690)	Min 6 (41) Max 50 (345)	1/4 in. Male Flared Conn.	Cutout	325 (2240)	281.80
P170AB-12	Close High Open Low	12 in. to 80 (-41 to 345)	Min 5 (34) Max 35 (241)	1/4 in. Male Flared Conn.	Cutout	500 (3447)	279.20
P170CA-1	Open High Close Low	20 in. to 100 (-68 to 690)	Min 6 (41) Max 50 (345)	1/4 in. Male Flared Conn.	None	325 (2240)	339.00

JOHNSON CONTROLS

P170 Single Pole High Pressure



Description:

The P170 Series of controls employ a set of SPST contacts that are opened and closed from pressure actuated bellows.

Applications:

- air conditioning and refrigeration applications
- control air, water, and oil pressure

Part Number	Switch Action	Range PSIG (kPa)	Differential PSI (kPa)	Pressure Connector	Limited Knob Adjustment	Max Bellows Overrun Pressure PSIG (kPa)	LIST
P170AA-118	Close High Open Low	100 to 400 (690 to 2758)	Min 35 (241) Max 200 (1379)	1/4 in. Male Flared Conn.	None	475 (3275)	281.50
P170CA-3	Open High Close Low	50 to 450 (345 to 3100)	Min 60 (414) Max 150 (1034)	1/4 in. Male Flared Conn.	None	475 (3275)	317.00
P170DA-1	Open High Close Low	50 to 450 (345 to 3100)	Lockout Requires Manual Reset	1/4 in. Male Flared Conn.	None	475 (3275)	326.00

P70 Series High Pressure Cutout With Alarm Circuit



Description:

This control has two sets of contacts. The main set of contacts controls the main load, and the auxiliary contact simultaneously actuates a signal or auxiliary circuit. The main contacts are (Line-M2) open-high/close-low. The electrical contacts operate from a pressure sensing element.

Applications:

- air conditioning and refrigeration applications
- control air, water, and oil pressure

Part Number	Switch Action	Range PSIG (kPa)	Differential	Pressure Connector	Max Bellows Overrun Pressure PSIG (kPa)	LIST
"ALL RANGE" FOR R-12, R-22, R-134A, R-500, R502 (R)						
P70KA-1	L-M1 Close High L-M2 Open High 4-wire, 2-circuit	Min 50 (345) Max 450 (3103)	Lockout (Requires Manual Reset after Cutout)	36 in. Cap. with 1/4 in. Flare Nut	475 (3275)	487.00

JOHNSON CONTROLS

P70 Series Single Pole Dual Pressure



Description:

The P70 Series of controls employ a set of SPST contacts that are opened and closed from the pressure actuated bellows. The load-carrying contacts provide direct control of AC motors within the control rating.

Applications:

- air conditioning and refrigeration applications
- control air, water, and oil pressure

Part Number	Switch Action	Low Pressure PSIG (kPa)		High Pressure PSIG (kPa)		Pressure Connector	Limited Knob Adj.	Max Bellows Overrun Pressure PSIG (kPa)	LIST
		Range	Diff	Range	Diff (Non-Adj)				
MICRO-SET FOR R-12, R-22, R134A, R-500, R-502 (R)									
P70LB-6	SPST	12 in. to 80 (-41 to 345)	Min 5 (34) Max 35 (241)	100 to 500 (690 to 2930)	Under 300 PSIG, 55 PSI, Over 300 PSIG, 65 PSI	36 in. Cap. with 1/4 in. Flare Nut	Cutout	500 Low 475 High (3447 Low) (3275 High)	569.00
P70MA-18	SPST				Lockout (Manual Reset)	36 in. Cap. with 1/4 in. Flare Nut	None		
"ALL RANGE" FOR R-12, R-22, R134A, R-500, R-502 (R)									
P70LB-1	SPST	20 in. to 100 (-68 to 690)	Min 6 (41) Max 50 (345)	100 to 500 (690 to 2930)	Under 300 PSIG, 55 PSI, Over 300 PSIG, 65 PSI	36 in. Cap. with 1/4 in. Flare Nut	Cutout	325 Low 450 High (2241 Low) (3103 High)	569.00
P70MA-1	SPST				Lockout (Manual Reset)	36 in. Cap. with 1/4 in. Flare Nut	None		575.00
P70NA-1	SPST		Lockout (Manual Reset)		Lockout (Manual Reset)	36 in. Cap. with 1/4 in. Flare Nut			580.00
FOR AMMONIA									
P70LA-2	SPST	20 in. to 100 (-68 to 690)	Min 6 (41) Max 50 (345)	100 to 500 (690 to 2930)	Under 300 PSIG, 55 PSI, Over 300 PSIG, 65 PSI	1/4 in. Female NPT Conn.	None	325 Low 450 High (2241 Low) (3103 High)	
P70MA-2	SPST				Lockout (Manual Reset)	1/4 in. Female NPT Conn.			1,115.00

P170 High Pressure Cutout With Alarm Circuit



Description:

This control has two sets of contacts. The main set of contacts controls the main load, and the auxiliary contact simultaneously actuates a signal or auxiliary circuit.

Applications:

- air conditioning and refrigeration applications
- control air, water, and oil pressure

Part Number	Switch Action	Range PSIG (kPa)	Differential PSI (kPa)	Pressure Connector	Max Bellows Overrun Pressure PSIG (kPa)	LIST
P170KA-1	L-M1 Close High L-M2 Open High 4-wire, 2-circuit	Min 50 (345) Max 450 (3100)	Lockout (Requires Manual Reset after Cutout)	1/4 in. Male Flared Conn.	475 (3275)	455.00

JOHNSON CONTROLS

P170 Single Pole Dual Pressure



Description:

The P170 Series of controls employ a set of SPST contacts that are opened and closed from pressure actuated bellows.

Applications:

- air conditioning and refrigeration applications
- fully adjustable throughout low and high ranges

Part Number	Switch Action	Low Pressure Range PSIG (kPa)	High Pressure Range PSIG (kPa)	Pressure Connector	Limited Knob Adjustment	Max Bellows Overrun Pressure PSIG (kPa)	LIST
P170LB-1	SPST (A)	20 in. to 100 (-68 to 690)	100 to 500 (690 to 2930)	1/4 in. Male Flared Conn.	Cutout (D)	325 (2241) Low 450 (3100) High	533.00
P170LB-6	SPST (A)	12 in. to 80 (-41 to 345)	100 to 500 (690 to 2930)	1/4 in. Male Flared Conn.	Cutout (D)	325 (2241) Low 475 (3275) High	533.00
P170MA-1	SPST (B)	20 in. to 100 (-68 to 690)	100 to 500 (690 to 2930)	1/4 in. Male Flared Conn.	None	325 (2241) Low 450 (3100) High	548.00
P170MA-18	SPST (B)	12 in. to 80 (-41 to 345)	100 to 500 (690 to 2930)	1/4 in. Male Flared Conn.	None	325 (2241) Low 475 (3275) High	600.00
P170NA-1	SPST (C)	20 in. to 100 (-68 to 690)	100 to 500 (690 to 2930)	1/4 in. Male Flared Conn.	None	325 (2241) Low 450 (3100) High	550.00

(A) Automatic reset high and low pressure
(B) Automatic reset low, manual reset high pressure
(C) Manual reset high and low pressure
(D) Adjusting knob supplied on differential (low side cutout setting) to limit adjustment 5 PSI above or below setting

P72 Series Two Pole Low Pressure



Description:

The P72 Series of controls employs a set of DPST contacts that are opened and closed from the pressure actuated bellows. The heavy duty load-carrying contacts provide direct control of motors having integral line-interrupting overload protectors up to three horsepower, 240 volt, single phase.

Part Number	Switch Action	Range PSIG (kPa)	Differential (PSI)	Pressure Connector	Knob Adj.	Max Bellows Pressure PSIG (kPa)	Electrical Ratings						LIST
							Motor Ratings VAC	120 1Ø	208* 1Ø	240* 1Ø	220* 2Ø	208 3Ø	220 3Ø	
P72AA-1	DPST Close High Open Low	20 in. to 100 (-68 to 690)	Min 6 (41) Max 50 (345)	36 in. Cap. with 1/4 in. Flare Nut	None	325 (2241)	Horsepower	2	3	3	5	5	5	462.00
							AC Full Load Amp	24.0	24.0	24.0	15.0	15.9	15.0	
							AC Locked Rotor Amp	144.0	144.0	144.0	90.0	95.4	90.0	
P72AB-1	DPST Close High Open Low			36 in. Cap. with 1/4 in. Flare Nut	Yes (1)		AC Non-Inductive Amp	24.0	24.0	24.0	-	-	-	
							DC Non-Inductive Amp	3.0	-	0.5	-	-	-	
							Pilot Duty - 125 VA, 120 to 600 VAC 57.5 VA, 120 to 300 VDC							

PRESSURE SWITCHES & CONTROLS

JOHNSON CONTROLS

P72 Series Two Pole High Pressure



Description:

The P72 Series of controls employs a set of DPST contacts that are opened and closed from the pressure actuated bellows.

Part Number	Switch Action	Range PSIG (kPa)	Differential (PSI)(kPa)	Pressure Connector	Max Bellows Pressure PSIG (kPa)	Electrical Ratings							LIST
						Motor Ratings VAC	120 1Ø	208* 1Ø	240* 1Ø	220* 2Ø	208 3Ø	220 3Ø	
HEAD PRESSURE FAN CYCLING FOR R-12, R-22, R-134A, R-500, R-502 (R)						Horsepower	2	3	3	5	5	5	
P72AA-27	DPST Close High Open Low	100 to 400 (690 to 2758)	Min 35 (241) Max 200 (1379)	36 in. Cap. with 1/4 in. Flare Nut	325 (2241)	AC Full Load Amp	24.0	24.0	24.0	15.0	15.9	15.0	462.00
						AC Locked Rotor Amp	144.0	144.0	144.0	90.0	95.4	90.0	
"ALL RANGE" FOR R-12, R-22, R-134A, R-500, R502 (R)													
P72CA-2	DPST Open High Close Low	50 to 450 (345 to 3103)	Min 60 (414) Max 150 (1034)	36 in. Cap. with 1/4 in. Flare Nut	475 (3275)	AC Non-Inductive Amp	24.0	24.0	24.0	-	-	-	480.00
P72DA-1	DPST Open High Close Low		Lockout (Requires Manual Reset)	36 in. Cap. with 1/4 in. Flare Nut		DC Non-Inductive Amp	3.0	-	0.5	-	-	-	498.00
						Pilot Duty - 125 VA, 120 to 600 VAC 57.5 VA, 120 to 300 VDC							

P72 Series Two Pole Dual Pressure



Description:

The P72 Series of controls employ a set of DPST contacts that are opened and closed from the pressure actuated bellows.

Part Number	Switch Action	Low Pressure PSIG (kPa)		High Pressure PSIG (kPa)		Pressure Connector	Limited Knob Adj.	Max Bellows Overrun Pressure PSIG (kPa)	LIST
		Range	Diff	Range	Diff (Non-Adj)				
MICRO-SET FOR R-12, R-22, R134A, R-500, R-502 (R)									
P72LA-1	DPST	20 in. to 100 (-68 to 690)	Min 6 (41) Max 50 (345)	100 to 500 (690 to 2930)	Under 300 PSIG, 55 PSI, Over 300 PSIG, 65 PSI	36 in. Cap. with 1/4 in. Flare Nut	None	325 Low 475 High (2241 Low) (3275 High)	
P72LB-1	DPST				Under 300 PSIG, 55 PSI, Over 300 PSIG, 65 PSI	36 in. Cap. with 1/4 in. Flare Nut	Yes (1)		730.00
P72MA-1	DPST				Lockout (Manual Reset)	36 in. Cap. with 1/4 in. Flare Nut	None		743.00
P72NA-1	DPST		Lockout (req. Manual reset)		Lockout (Manual Reset)	36 in. Cap. with 1/4 in. Flare Nut	None		743.00

JOHNSON CONTROLS



P74 Series Differential Pressure Controls

Description:

The Series P74 measures the pressure difference between two sources (supply and return lines). A change in pressure at either control element will reposition the switching mechanism to cause corrective action of supplementary control equipment.

Applications:

- pressure sensing on chillers, water cooled condensers, or heating systems for proof of flow
- lube oil failure cutout for refrigeration compressors (same as the P28, but does not incorporate time delay)

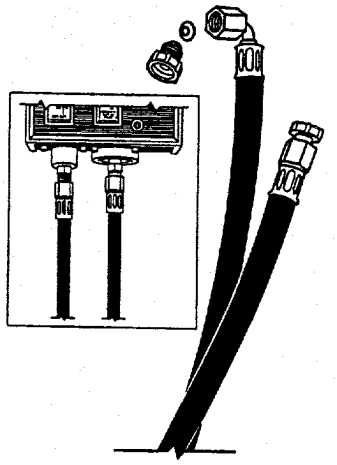
Part #	Switch Action	Pressure Diff Range PSI (kPa)	Pressure Connections	Electrical Ratings	Bellows Material	LIST
FOR ALL REFRIGERANTS EXCEPT AMMONIA						
P74AA-1	SPST Closes on Decreases In Pressure Diff	8 to 70 Adjustable (55 to 483)	36 in. Cap. with 1/4 in. Flare Nut	20 Amp 120 VAC 50/60 Hz	Stainless Steel	575.00
P74BA-1	SPST Opens on Decreases In Pressure Diff					548.00
P74EA-8C	SPDT (Snap-Acting)	2 to 26 Adjustable (14 to 207)	36 in. Cap. with 1/4 in. Flare Nut	16 Amp 120 VAC 50/60 Hz	Brass	557.00
P74FA-1	SPDT (Snap-Acting)	8 to 60 (55 to 414)	1/4 in. Male Flare	6 Amp 120 VAC 50/60 Hz	Brass	528.00

JOHNSON/RANCO/
HONEYWELL 533-636

PRESSURE CONTROL HOSES
YELLOW JACKET

Replaces regular copper capillary tubing on failure cut out controls and refrigeration pressure controls, saving you money. Also eliminates capillary failure due to work hardening from vibration. Easy to install, long lasting. Works better than Teflon hose.

- Operates to 800 psi and 266°F
- Hex style fittings with 1/4" SAE thread. Straight or 90°



Length	Str. x 90°	LIST
12"	78712	68.20
18"	78718	70.70
24"	78724	77.10
30"	78730	87.70
36"	78736	89.20
48"	78748	102.20
60"	78760	120.30
72"	78772	133.60

ELECTRONIC LUBE OIL CONTROL

The P545 Series Electronic Lube Oil Control is designed for use on refrigeration compressors equipped with an oil pump that accepts single-point differential pressure transducer. The P545 senses net lube oil pressure and
de-energizes the compressor if lube oil pressure falls below the manufacturers recommendation for longer than the time delay. Front-mount LEDs indicate the status of the lubrication system and a user-selectable time delay can be set to minimize compressor short cycling.

A Johnson Control R10A Current Sensing Relay is also available to prevent the P545 from locking out during normal compressor off cycles.

Features:

- SPDT relay contacts for liquid line solenoid and alarm applications
- Relay contact output for compressor
- Built-in test circuit
- Improved noise immunity
- Selection of anti-short-cycle time delay on loss of power
- User friendly display panel
- Standardized mounting, outer case size and wiring



Part #	Description	LIST
P545NCB-22	120 second delay before lockout, fixed setpoint pressure: 9 psi, 36 in. cable, includes sensor (Copeland)	690.00
P545NCB-25C	90 second delay befroe lockout, fixed setpoint pressure: 6.5 psi, 36 in. cable, includes sensor (Bitzer)	695.00
P545NCB-82	120 second delay befroe lockout, fixed setpoint pressure: 6.5 psi, 36 in. cable, includes sensor (Carlyle)	854.00

ELECTRONIC FAN SPEED CONTROL
JOHNSON CONTROLS

P266 Series Single-Phase Condenser Fan Speed Control

Description:

The P266 Series Single-Phase Condenser Fan Speed Control is a cost-effective, weather-resistant, durable motor speed control.



Features:

- One or two durable, accurate, stainless steel, remote-mount pressure transducers
- Available in 208/240 VAC (8 or 12 A), 380/460 VAC (4 A), or 460/575 VAC (4 A)
- Wide, adjustable pressure throttling range
- Optional auxiliary fan control
- Optional low-speed capacitor mode
- NEMA 3R, (IP54) enclosure with integral metal heat-sink and stand-off mounting feet

P266 Series Fan Speed Control Model and Kit Product Code Numbers, Descriptions, and Details

Part #	Description	Transducer Model Included in Kit	Voltage (VAC)	Maximum Output Amperes	High VAC Triacs	Available Auxiliary Fan Control Circuits[1]	LIST
P266AAA-100	P266 Fan Speed Control (only) (No Sensor)	N/A	208/240	8	3	0	
P266ABA-100	P266 Fan Speed Control (only) (No Sensor)	N/A	208/240	8	3	3	**1,271.00**
P266ACA-100	P266 Fan Speed Control (only) (No Sensor)	N/A	208/240	8	1	0	**1,062.00**
P266BHA-100	P266 Fan Speed Control (only) (No Sensor)	N/A	460/575	4	2	3	**1,314.00**
P266BCA-100	P266 Fan Speed Control (only) (No Sensor)	N/A	460/575	4	1	0	**1,073.00**
P266ABA-1K	P266 Fan Speed Control with one P266 Pressure Transducer and one 2 m (6.6 ft) cable	0–508 psi	208/240	8	3	3	
P266ABA-3K	P266 Fan Speed Control with one P266 Pressure Transducer and one 2 m (6.6 ft) cable	0–754 psi	208/240	8	3	3	
P266ABA-2K	P266 Fan Speed Control with two P266 Pressure Transducers and two 2 m (6.6 ft) cables	0–508 psi	208/240	8	3	3	
P266BHA-4K	P266 Fan Speed Control with two P266 Pressure Transducers and two 2 m (6.6 ft) cables	0–754 psi	460/575	4	2	3	

Note: Factory default settings - Start Voltage is set to 40% of the supply line-voltage. End Voltage is set to 95% of the supply line-voltage. Start Pressure is set to 44% of the P266 transducer's total pressure range. End Pressure is set to 51% of the P266 transducer's total pressure range

1. 24 VAC Class 2 at 1/4 A.

P266 Series SNR Electronic Pressure Transducers

Part #	Description	LIST
P266SNR-1	Electronic Pressure Transducer: 0 to 35 bar (0 to 508 psi) total range with a 1/4 in. SAE Female Flare connection and a 2 meter (6.6 ft) cable.	**338.00**
P266SNR-2	Electronic Pressure Transducer: 0 to 52 bar (0 to 754 psi) total range with a 1/4 in. SAE Female Flare connection and a 2 meter (6.6 ft) cable.	**338.00**

VARIABLE FREQUENCY DRIVES

JOHNSON CONTROLS

VFD66 3 Phase Condenser Fan Speed Control

Description

The VFD66 Series Condenser Fan Speed Controls are designed for speed control of 3-phase condenser fan motors in refrigeration and HVAC systems. The VFD66 controls regulate condenser fan motor speed by varying the frequency and voltage of the power supplied to the motor.

The VFD66 controls use input signals from various devices to adjust fan speed and optimize condenser head pressure, especially during low ambient conditions.

Condenser fan speed may be controlled by pressure or temperature. The VFD66 controls accept input signals from the P35 Pressure Transducer, P399 Electronic Pressure Transducer, System 350™ controls or any other device that provides a 0-5 VDC or 0-10 VDC analog input signal.

Applications

The VFD66 controls are intended for air-cooled condenser fan speed control in refrigeration and HVAC applications:

- commercial air-cooled condensers
- cooling tower fans
- fans in evaporative condensing units.

The VFD66 controls allow the system to:

- maintain optimum condenser head pressure in low ambient temperature conditions
- eliminate short cycling in low ambient or changing load conditions
- match the condenser fan speed to the load on the condenser, which increases the efficiency of the refrigeration system. This can reduce electricity cost and help maintain a constant evaporator temperature.



VFD Condenser Fan for Speed Control

Features

- allows use on dual refrigeration circuits cooled by a single fan
- provides installation ease and flexibility
- handles 3-phase motors ranging from fractional to multiple hp at 208/230 VAC or 400/460 VAC

Selection Table

NEMA 1 Enclosure without Alarm Output		NEMA 1 Enclosure with Alarm Output	Voltage	Max. Amp
VFD66 Model	**Kit = VFD66 Model Packaged with P35AG-9200**			
VFD66AAA-1C	**VFD66AAA-100C**	**VFD66AAE-1C**	230 VAC 50 Hz, 208/230 VAC 60 Hz	4.0
VFD66BAA-1C	**VFD66BAA-100C**	**—**	400 VAC 50 Hz, 460 VAC 60 Hz	1.8
VFD66CAA-1C	**VFD66CAA-100C**	**VFD66CAE-1C**	230 VAC 50 Hz, 208/230 VAC 60 Hz	7.5
VFD66DAA-1C	**VFD66DAA-100C**	**VFD66DAE-1C**	400 VAC 50 Hz, 460 VAC 60 Hz	3.6
VFD66EBA-1C	**VFD66EBA-100C**	**VFD66EBE-1C**	230 VAC 50 Hz, 208/230 VAC 60 Hz	10.6
VFD66FBA-1C		**VFD66FBE-1C**	400 VAC 50 Hz, 460 VAC 60 Hz	5.5

Accessories

Part Number	Description
P35AG-9200R	PRESSURE TRANSDUCER, 0-350 PSI RANGE
VFD66-CVR-1C	EXTERNAL POTENTIOMETER REPLACEMENT COVER
A350PS-1C	PROPORTIONAL PLUS INTEGRAL TEMPERATURE CONTROL
P352PN-3C	PROPORTIONAL PLUS INTEGRAL PRESSURE CONTROL
P499RAP-101K	PRESSURE TRANSDUCER 0-100 PSIS RANGE WITH 2 METER WIRING HARNESS AND STYLE 49 CONNECTION
P499RCP-101K	PRESSURE TRANSDUCER 0-100 PSIS RANGE WITH 2 METER WIRING HARNESS AND STYLE 45 CONNECTION
P499RAP-105K	PRESSURE TRANSDUCER 0-500 PSIS RANGE WITH 2 METER WIRING HARNESS AND STYLE 49 CONNECTION
P499RCP-105K	PRESSURE TRANSDUCER 0-500 PSIS RANGE WITH 2 METER WIRING HARNESS STYLE 45 CONNECTION
P499RAP-107K	PRESSURE TRANSDUCER 0-750 PSIS WITH 2 METER WIRING HARNESS AND STYLE 45 CONNECTION
P499RCP-107K	PRESSURE TRANSDUCER 0-750 PSIS WITH 2 METER WIRING HARNESS AND STYLE 45 CONNECTION
P499RAP-101C	PRESSURE TRANSDUCER, 0 TO 100 PSIS, 5 VDC, 1/8" NPT PORT.
P499RCP-101C	PRESSURE TRANSDUCER, 0 TO 100 PSIS, 5 VDC, 1/4" SAE FEMALE/SCHRADER.
P499RAP-105C	PRESSURE TRANSDUCER, 0 TO 500 PSIS, 5 VDC, 1/8" NPT PORT.
P499RCP-105C	PRESSURE TRANSDUCER, 0 TO 500 PSIS, 5 VDC, 1/4" SAE FEMALE/SCHRADER.
P499RAP-107C	PRESSURE TRANSDUCER, 0 TO 750 PSIS, 5 VDC, 1/8" NPT PORT.
N/A (Old Part #: P399CAC-1C)	PRESSURE TRANSDUCER, 0 TO 750 PSIS, 5 VDC, 1/4" SAE FEMALE/SCHRADER.
WHA-PKD3-200C*	CABLE HARNESS; 6.6 FT LONG(2.0 METERS) W/ PIGTAILS, FOR USE WITH THE P499.
WHA-PKD3-400C*	CABLE HARNESS; 13.1 FT LONG(4.0 METERS) W/ PIGTAILS, FOR USE WITH THE P499.
WHA-PKD3-600C*	WIRE HARNESS ASSY, 19.7 FT(6.0 METERS) LONG FOR USE WITH THE P499.

** The P399 harnesses are still available and are interchangeable with the new P499 harnesses.*

SYSTEM 450 CONTROL SERIES

JOHNSON CONTROLS

System 450™ is a family of modular, digital electronic controls that is easily assembled and set up to provide reliable temperature, pressure, and humidity control for a wide variety of HVACR applications, commercial process applications, and industrial process applications.The System 450 control system is designed to replace System 350™ and System 27 control systems, and to provide many additional features and benefits with fewer than twenty model variations. Most System450 control modules can control temperature, pressure, and humidity systems simultaneously.

Input(s)	Application	Basic Control	Power Module	Expansion Modules	Temperature Sensors	Pressure Sensors	Humidity Sensors	Static Pressure Transmitters	Accessories
• Temperature • Pressure • Humidity	On-Off	 **C450CBN-3** (single output) **C450CCN-3** (dual output)	 **C450YNN-1**	 **C450SBN-3** (single output up to 9) **C450SCN-3** (dual output up to 4)	 A99 Series TE -6000 Series	 P499 Series	 HE-67S3 Series	 DPT-2650 Series	BKT287 DIN Rail WHA-C450-100C Module Connection
• Temperature • Pressure	Reset	 **C450RBN-3** (single on/off output) **C450RCN-3** (dual on/off output)	 **C450YNN-1**	 **C450SBN-3** (single output up to 9) **C450SCN-3** (dual output up to 4)	 Come with two temp sensors		 HE-67S3 Series	 DPT-2650 Series	BKT287 DIN Rail WHA-C450-100C Module Connection cable
• Temperature • Pressure • Humidity	Proportional	 **C450CPN-3** (single output) **C450CQN-3** (dual output)	 **C450YNN-1**	 **C450SPN-1** (single output up to 9) **C450SQN-1** (dual output up to 4)	 A99 Series TE -6000 Series	 P499 Series	 HE-67S3 Series	 DPT-2650 Series	BKT287 DIN Rail WHA-C450-100C Module Connection
• Temperature • Pressure • Humidity	Hybrid (EC Motors)	 **C450CPW-100** (single proportional output & high input signal select)	 **C450YNN-1**	 **C450SPN-1** (single output up to 9)	 A99 Series TE -6000 Series	 P499 Series	 HE-67S3 Series	 DPT-2650 Series	BKT287 DIN Rail WHA-C450-100C Module Connection cable
• Temperature • Pressure • Humidity	Communicating	 **C450CEN-1** (ethernet module) **C450CRN-3** (RS485 Modbus RTU)	 **C450YNN-1**	 **C450SPN-1** (single output up to 10) **C450SQN-1** (dual output up to 5)	 A99 Series TE -6000 Series	 P499 Series	 HE-67S3 Series	 DPT-2650 Series	BKT287 DIN Rail WHA-C450-100C Module Connection

SYSTEM 450 CONTROL SERIES

JOHNSON CONTROLS

System 450™ Series Modular Controls

System 450™ is a family of modular, digital electronic controls that is easily assembled and set up to provide reliable temperature, pressure, and humidity control for a wide variety of HVACR applications, commercial process applications, and industrial process applications.

The System450 control system is designed to replace System 350™ and System 27 control systems, and to provide many additional features and benefits with fewer than twenty model variations.

System450 control modules provide a field-configurable out-of-the-box solution. Most System450 control modules can control temperature, pressure, and humidity systems simultaneously.

System 450 Control Modules with Communications enable you to connect System 450 control systems to Modbus® or Ethernet networks for remote monitoring and setup. The Modbus communications control module is an RS485, RTU-compliant slave device. The Ethernet communications control module has an integral web server that can deliver web pages by means of a direct connection, on your LAN, or across the Internet.

System 450 Reset Control Modules provide many of the features of the standard models for temperature and humidity control. In addition, these modules provide setpoint reset, real-time setback scheduling, and run-time balancing (equal run time) capability.

The System 450 Control Module with Hybrid Analog Output has a single self-selecting analog output to optimize and extend the controlled speed range of variable speed electronically commutated (EC) motors.Refer to the following documents for important product application information.

- System 450™ Series Modular Controls Product Bulletin (LIT-12011458)
- System 450™ Series Modular Control Systems with Standard Control Modules Technical Bulletin (LIT-12011459)
- System 450™ Series Modular Control Systems with Reset Control Modules Technical Bulletin (LIT-12011842)
- System 450™ Series Modular Control Systems with Communications Control Modules Technical Bulletin (LIT-12011826)

Features

- Durable, compact, interchangeable modular components with plug-together connectors and DIN rail or direct wall mount capability eliminate field wiring between modules and allow you to quickly and easily design, assemble, install, and upgrade your control systems.
- Versatile, multipurpose, field-configurable control modules and expansion modules designed for global use allow you to create a wide variety of application-specific control systems capable of controlling temperature, pressure, or humidity, or all three conditions simultaneously, with only a small suite of module models.
- Up to three hard-wired input sensors and up to ten relay or analog outputs (in any combination) per control system allow you to build complex custom control systems while reducing your control system cost to only the cost of the required components.
- Control Modules with bright backlit LCDs and four-button touch pad user interfaces provide quick, clear, visual status of your System450 control system inputs and outputs with the touch of a button and enable you to quickly and easily set up and adjust your control system.
- Multipurpose, all-in-one control modules enable simple stand-alone, single-module control systems that are temperature, pressure, and humidity capable out of the box and easy to set up in the field to replace a wide variety of OEM HVACR and process controls.
- An extensive suite of compatible temperature and humidity sensors, and pressure transducers allows you to monitor and control a wide range of HVACR and process conditions in a variety of standard and global units of measurement.
- High input signal selection enables your control system to monitor a temperature, pressure, or humidity condition with two or three sensors (of the same type) and control your system outputs based on the highest condition value sensed by the referenced sensors.
- Differential control enables your control system to monitor and maintain a temperature, pressure, or humidity differential between two sensor points within a system, process, or space.



System 450 Control System with a Control, Power, and Expansion Module

The Reset Control modules have additional features:

- Adjustable minimum and maximum setpoint temperatures (reset control modules only) enable compliance with the manufacturer's specifications for your controlled HVACR and process equipment.
- Selectable shutdown-high and shutdown-low temperature settings (reset control modules only) saves you energy by shutting down controlled equipment when the ambient temperature either rises or drops to a point where heating or cooling is no longer required.
- Real time clock and adjustable setback temperature (reset control modules only) save you energy by setting back heating, cooling, or humidity setpoints during scheduled unoccupied periods (24-hour day, 7-day week schedule).
- User-defined reset control capability (reset control modules only) saves you energy in a wide variety of temperature and humidity reset control applications by adjusting the temperature or humidity control loop, based on changes in ambient outdoor temperature or other uncontrolled condition.

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office.Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

System 450™ Series Modular Controls (Continued)

The Control Modules with Communications have additional features:

- Ethernet communication capability through a built-in web server (Ethernet Control Modules only) allows you to monitor your control system status and set up or change the parameters by means of a direct Ethernet cable connection, through a LAN connection, or over the Internet. The built in web server delivers user-friendly web pages to client browsers on a desktop, laptop, tablet, or smart device.
- The Web page server on Ethernet communication modules provides a simple, intuitive web interface for easy remote monitoring, setup, adjustment and remote monitoring of your control systems across Ethernet networks.
- RS485, RTU-compliant Modbus® network communication capability (Modbus control modules only) enables a head-end RS485 Modbus master controller to read and write control system status and setup parameters to the System 450 Modbus communication control module.
- Password protection for local access (Ethernet and Modbus control modules only) and password protection for remote access (Ethernet control module only) deters unauthorized changes to the control system settings, but allows local and remote monitoring of your control system status.
- Analog output signal limiting features (communication control modules only) allow you to select the rate and condition range at which the control updates the analog output signal, potentially reducing wear on the controlled equipment.
- Binary input with time delay (communication control modules only) allows you to use an external set of dry contacts and selectable time delays to control relay outputs.

Applications

You can create a wide variety of custom, application-specific control systems with System 450 modules. The following are some common control application examples:

- Temperature control
- Pressure control
- Humidity control
- Multipurpose control
- Reset and setback control
- High input-signal selection
- Differential control

Temperature Control

- Temperature monitoring and alarming
- On/Off staged control of boilers and chillers
- Proportional stage control of boilers and chillers
- Boiler and chiller pump control
- Heating and cooling control with deadband
- Floating temperature control of damper and valve actuators
- Cooling tower fan speed/stage control based on water temperature
- Supply, make-up, and mixed air temperature control
- Temperature actuated valve control
- Supply and make-up air damper and fan control
- Condenser fan staging or speed control based on condenser temperature

Refrigerant Pressure Control

- Condenser fan cycling and stage control
- Multispeed condenser fan control
- Floating pressure control of damper and valve actuators.
- Condenser fan speed and damper control
- High and low pressure cutout control
- Staged compressor control
- Cooling tower fan speed control based on high-side pressure
- Direct speed control of electronically commutated (EC) condenser fan motors (C450CPW-100 model)

Other Pressure Control

- Relief damper and fan control for building pressurization
- Constant static pressure control

Humidity Control

- On/Off humidification and dehumidification control
- Proportional humidification and dehumidification control
- Multistage humidification and dehumidification control
- Humidity monitoring and alarming

Multipurpose Control

- Temperature and pressure based refrigeration rack control
- Temperature and humidity control of wine cellars and greenhouses
- Temperature, humidity, and static pressure control of clean rooms and greenhouses
- Dehumidification with reheat control

Reset Control

- Boiler supply water temperature reset control based on outside air temperature
- Chiller supply water temperature reset control based on outside air temperature
- VAV zone temperature control based on outside air temperature
- Humidity reset based on outside air temperature
- Staged applications with runtime balancing
- Real-time Occupied/Unoccupied Setback

High Input Signal Selection

- Pressure-based fan speed or fan cycling control on multi-circuit condensers
- Temperature-based fan speed or fan cycling control on multi-circuit condensers

Differential Control

- Air and fluid pump-flow monitoring and alarming
- Air and fluid filter status monitoring and alarming
- Chiller barrel flow monitoring, control, and alarming
- Solar air and water heating applications

Note:Communications modules add network communication to any application of your choosing, except those requiring reset, setback, or EC motor control.

Repair Information

If a System 450 module fails to operate within its specifications, replace the module.

System 450™ Series Modular Controls (Continued)

Selection Charts

System 450 Modules and Accessories Ordering Information

Product Code Number	Product Description
C450CBN-3C	Standard Control Module with LCD, Four-Button Touchpad UI, and Relay Output; provides one relay output (SPDT line-voltage relay) for SPDT control.
C450CCN-3C	Standard Control Module with LCD, Four-Button Touchpad UI, and Relay Output; provides two relay outputs (SPDT line-voltage relays) for SPDT control.
C450CEN-1C	Control Module with Ethernet Communications, LCD, and Four-Button Touchpad UI. (No onboard outputs available on control modules with network communications capabilities.)
C450CPN-3C	Standard Control Module with LCD, Four-Button Touchpad UI, and Analog Output; provides one analog output (0–10 VDC or 4–20 mA self-selecting signal) for proportional control.
C450CPW-100C	Hybrid Analog Output Control Module with LCD, Four-Button Touchpad UI, Hybrid Analog Output and Optional High Input Signal Select; provides one hybrid analog output and optional high input signal select primarily used for variable-speed EC motor speed control. Only Analog Output 1 (OUTA1) can be configured as a hybrid analog output and/or use the High Input Signal Selection feature. These features are not available for any of the other outputs in a System 450 control system that uses the C450CPW-100C as the control module.
C450CQN-4C	Standard Control Module with LCD and Four-Button Touchpad UI, and Analog Output; provides two analog outputs (0–10 VDC or 4–20 mA self-selecting signals) for proportional control.
C450CRN-1C	Control Module with RS485 Modbus Communications, LCD, and Four-Button Touchpad UI. (No onboard outputs available on control modules with network communications capabilities.)
C450RBN-3C	Reset Control Module with LCD, Four-Button Touchpad UI, and SPDT relay output; provides one SPDT output relay. One A99BC-25C temperature sensor with 0.25 m (9-1/4 in.) silicon leads and one A99BC-300C temperature sensor with 3 m (9 ft 10 in.) silicon leads are included in the box with the Reset Control Module.
C450RCN-3C	Reset Control Module with LCD, Four-Button Touchpad UI, and SPDT relay output; provides two SPDT output relays. One A99BC-25C temperature sensor with 0.25 m (9-1/4 in.) silicon leads and one A99BC-300C temperature sensor with 3 m (9 ft 10 in.) silicon leads are included in the box with the Reset Control Module.
C450SBN-3C	Relay Output Expansion Module; provides one SPDT line-voltage relay output.
C450SCN-3C	Relay Output Expansion Module; provides two SPDT line-voltage relay outputs.
C450SPN-1C	Analog Output Expansion Module; provides one analog output (0–10 VDC or 4–20 mA self-selecting signal) for proportional control.
C450SQN-1C	Analog Output Expansion Module; provides two analog outputs (0–10 VDC or 4–20 mA self-selecting signals) for proportional control.
C450YNN-1C	Power Module; provides 24 V to System 450 Module Assembly; 120 VAC or 240 VAC supply power input terminals.
BKT287-1R	DIN Rail; 0.30 m (12 in.) long
BKT287-2R	DIN Rail; 1 m (39-1/3 in.) long
BKT287-3R	DIN Rail; 0.61 m (24 in.) long
BKT287-4R	DIN Rail; 0.36 m (14 in.) long
PLT344-1R	DIN Rail End Clamps (2 clamps)
WHA-C450-100C	System 450 module connection extension cable, 100 cm (3.3 ft) long

System 450 Compatible A99B Temperature Sensors and Accessories Ordering Information[1]

Product Code Number	Product Description
A99BA-200C	PTC Silicon Sensor with Shielded Cable; Cable Length 2 m (6-1/2 ft); Sensor Temperature Range: -40 to 120°C (-40 to 250°F) Cable Jacket Temperature Range: -40 to 100°C (-40 to 212°F)
A99BB-25C	PTC Silicon Sensor with PVC Cable; Cable Length 0.25 m (9-3/4 in.); Sensor Temperature Range: -40 to 120°C (-40 to 250°F) Cable Jacket Temperature Range: -40 to 100°C (-40 to 212°F)
A99BB-200C	PTC Silicon Sensor with PVC Cable; Cable Length 2 m (6-1/2 ft); Sensor Temperature Range: -40 to 120°C (-40 to 250°F) Cable Jacket Temperature Range: -40 to 100°C (-40 to 212°F)
A99BB-300C	PTC Silicon Sensor with PVC Cable; Cable Length 3 m (9-3/4 ft); Sensor Temperature Range: -40 to 120°C (-40 to 250°F) Cable Jacket Temperature Range: -40 to 100°C (-40 to 212°F)
A99BB-500C	PTC Silicon Sensor with PVC Cable; Cable Length 5 m (16-3/8 ft); Sensor Temperature Range: -40 to 120°C (-40 to 250°F) Cable Jacket Temperature Range: -40 to 100°C (-40 to 212°F)
A99BB-600C	PTC Silicon Sensor with PVC Cable; Cable Length 6 m (19-1/2 ft); Sensor Temperature Range: -40 to 120°C (-40 to 250°F) Cable Jacket Temperature Range: -40 to 100°C (-40 to 212°F)
A99BC-25C	PTC Silicon Sensor with High Temperature Silicon Cable; Cable Length 0.25 m (9-3/4 in.); Sensor Temperature Range: -40 to 120°C (-40 to 250°F) Cable Jacket Rated for Full Sensor Temperature Range.
A99BC-300C	PTC Silicon Sensor with High Temperature Silicon Cable; Cable Length 3 m (9-3/4 ft) Sensor Temperature Range: -40 to 120°C (-40 to 250°F) Cable Jacket Rated for Full Sensor Temperature Range.
A99BC-1500C	PTC Silicon Sensor with High Temperature Silicon Cable; Cable Length 15 m (49 ft) Sensor Temperature Range: -40 to 120°C (-40 to 250°F) Cable Jacket Rated for Full Sensor Temperature Range.
BOX10A-600R	PVC Enclosure for A99 Sensor; Includes Wire Nuts and Conduit Connector (for Outdoor Sensor)

System 450™ Series Modular Controls (Continued)

System 450 Compatible A99B Temperature Sensors and Accessories Ordering Information[1] (Continued)

Product Code Number	Product Description
WEL11A-601R	Immersion Well for A99 Sensor Liquid Sensing Applications
A99-CLP-1	Mounting Clip for A99 Temperature Sensor
ADP11A-600R	Conduit Adaptor, 1/2 in. Snap-Fit EMT Conduit Adaptor (box of 10)
TE-6001-1	Duct Mounting Hardware with Handy Box for A99 Sensor
TE-6001-11	Duct Mounting Hardware without Handy Box for A99 Sensor
SHL10A-603R	Sun Shield (for Use with Outside A99 Sensors in Sunny Locations)

1. Refer to the *A99B Series Temperature Sensors Product/Technical Bulletin (LIT-125186)* on the Johnson Controls® Product Literature web site for more information.

System 450 Compatible TE-6000 Series 1,000 Ohm Nickel Temperature Sensors and Accessories Ordering Information

Product Code Number	Product Description
TE-6000-x	TE6000 Series 1,000 ohm at 70°F nickel temperature sensors (only). Only the TE-6000-6 sensor can be used for the entire HI°C and HI°F temperature range. Different sensing element packages are available for various applications.For a complete list of compatible 1,000 ohm nickel sensors, including sensor descriptions, technical specifications, and mounting accessories, refer to the *TE-6000 Series Temperature Sensing Elements Product Bulletin (LIT-216288)*. (System 450 Sensor Types HI°C and HI°F)

System 450 Compatible TE-6300 Series 1,000 Ohm Nickel Temperature Sensors and Accessories Ordering Information

Product Code Number	Product Description
TE-631xx-x	TE6300 Series 1,000 ohm at 70°F nickel averaging and 1,000 ohm thin-film nickel temperature sensors (only). For a complete list of compatible 1,000 ohm nickel averaging and thin-film nickel sensors, including sensor descriptions, technical specifications, and mounting accessories, refer to the *TE-6300 Series Temperature Sensors Product Bulletin (LIT-216320)*. (System 450 Sensor Types HI°C and HI°F)

System 450 Compatible TE-68NT-0N00S 1,000 Ohm Nickel Temperature Sensor Ordering Information

Product Code Number	Product Description
TE-68NT-0N00S	TE6800 Series 1,000 ohm nickel temperature sensor for wall-mount applications. For more information, including sensor description, technical specifications, and mounting accessories, refer to the *TE-6800 Series Temperature Sensors Product Bulletin (LIT-12011542)*. (System 450 Sensor Types HI°C and HI°F**)**

System 450 Compatible HE67S3 Type Humidity Sensors with Integral A99B Temperature Sensor Ordering Information[1]

Product Code Number	Product Description
HE-67S3-0N0BT	Wall Mount Humidity Sensor with A99B Type Temperature Sensor: 10 to 90% RH; 0 to 60°C (32 to 140°F)
HE-67S3-0N00P	Duct Mount Humidity Sensor with A99B Type Temperature Sensor: 10 to 90% RH; 0 to 60°C (32 to 140°F)

1. The HE-67S3 sensors require 24 VAC input and must use the 0–5 VDC output. Refer to the *TrueRH Series HE-67xx Humidity Element with Temperature Sensors Product Bulletin (LIT-216245)* on the Johnson Controls Product Literature website for more information, including technical specifications and mounting accessories.

System 450 Compatible HE6800 Series Humidity Transmitters with Temperature Sensor Ordering Information[1]

Product Code Number	Product Description
HE-68N2-0N00WS	Wall Mount Humidity Transmitter with Nickel Temperature Sensor: 10 to 90 ±2% RH; 0 to 55°C (32 to 131°F)
HE-68N3-0N00WS	Wall Mount Humidity Transmitter with Nickel Temperature Sensor: 10 to 90 ±3% RH; 0 to 55°C (32 to 131°F)

1. The HE-6800 transmitters require 24 VAC input and must use the 0–5 VDC output. Refer to the *HE-6800 Series Humidity Transmitters with Temperature Sensor Product Bulletin (LIT-12011625)* on the Johnson Controls Product Literature website for more information, including technical specifications and mounting accessories.

System 450 Compatible Low Pressure Differential Transducer Ordering Information[1] [2]

Product Code Number	Product Description
DPT2650-R25B-AB	Low Pressure Differential Transducer: -0.25 to 0.25 in. W.C. (System 450 Sensor Type: **P 0.25**)[3]
DPT2650-0R5D-AB	Low Pressure Differential Transducer: 0 to 0.5 in. W.C. (System 450 Sensor Type: **P 0.5**)
DPT2650-2R5D-AB	Low Pressure Differential Transducer: 0 to 2.5 in. W.C. (System 450 Sensor Type: **P 2.5**)
DPT2650-005D-AB	Low Pressure Differential Transducer: 0 to 5.0 in. W.C. (System 450 Sensor Type: **P 5**)
DPT2650-10D-AB	Low Pressure Differential Transducer: 0 to 10 in. W.C. (System 450 Sensor Type: **P 10**)

1. Refer to the *Setra Systems Model DPT265 Very Low Differential Pressure Transducer Catalog Page* on the Johnson Controls Product Literature website for more information.
2. The DPT265 sensors require 24 VAC input and must use the 0–5 VDC output. Refer to the *Setra Systems Model DPT265 Very Low Differential Pressure Transducer Catalog Page* on the Johnson Controls Product Literature web site for more information.
3. Used only with Communications Control Modules.

System 450™ Series Modular Controls (Continued)

System 450 Compatible P499 Series Transducers with 1/4 in. SAE 45 Flare Internal Thread with Depressor (Style 47) Ordering Information[1]

Product Code Number	Product Description
P499RCP-401C	-1 to 8 bar; order WHA-PKD3 type wire harness separately
P499RCP-402C	-1 to 15 bar; order WH A-PKD3 type wire harness separately
P499RCP-404C	0 to 30 bar; order WHA-PKD3 type wire harness separately
P499RCP-405C	0 to 50 bar; order WHA-PKD3 type wire harness separately
P499RCPS100C	-10 to 100 psis (sealed for wet and freeze/thaw applications); order WHA-PKD3 type wire harness separately
P499RCPS100K	-10 to 100 psis (sealed for wet and freeze/thaw applications); WHA-PKD3-200C wire harness included
P499RCPS102C	0 to 200 psis (sealed for wet and freeze/thaw applications); order WHA-PKD3 type wire harness separately
P499RCPS102K	0 to 200 psis (sealed for wet and freeze/thaw applications); WHA-PKD3-200C wire harness included
P499RCP-101C	0 to 100 psig; order WHA-PKD3 type wire harness separately
P499RCP-101K	0 to 100 psig; WHA-PKD3-200C wire harness included
P499RCP-105C	0 to 500 psig; order WHA-PKD3 type wire harness separately
P499RCP-105K	0 to 500 psig; WHA-PKD3-200C wire harness included
P499RCP-107C	0 to 750 psig; order WHA-PKD3 type wire harness separately
P499RCP-107K	0 to 750 psig; WHA-PKD3-200C wire harness included

1. The P499 sensors must be powered with the +5 VDC and C terminals and the output is 0.5 to 4.5 VDC. Refer to the *P499 Series Electronic Pressure Transducers Product/Technical Bulletin (LIT-12011190)* on the Johnson Controls Product Literature website for more information.

System 450 Compatible P499 Series Transducers with 1/8 in. 27 NPT External Thread (Style 49) Ordering Information[1]

Product Code Number	Product Description
P499RAPS100C	-10 to 100 psis (sealed for wet and freeze/thaw applications); order WHA-PKD3 type wire harness separately
P499RAPS100K	-10 to 100 psis (sealed for wet and freeze/thaw applications); WHA-PKD3-200C wire harness included
P499RAPS102C	0 to 200 psis (sealed for wet and freeze/thaw applications); order WHA-PKD3 type wire harness separately
P499RAPS102K	0 to 200 psis (sealed for wet and freeze/thaw applications); WHA-PKD3-200C wire harness included
P499RAP-101C	0 to 100 psig; order WHA-PKD3 type wire harness separately
P499RAP-101K	0 to 100 psig; WHA-PKD3-200C wire harness included
P499RAP-102C	0 to 200 psig; order WHA-PKD3 type wire harness separately
P499RAP-105C	0 to 500 psig; order WHA-PKD3 type wire harness separately
P499RAP-105K	0 to 500 psig; WHA-PKD3-200C wire harness included
P499RAP-107C	0 to 750 psig; order WHA-PKD3 type wire harness separately
P499RAP-107K	0 to 750 psig; WHA-PKD3-200C wire harness included

1. The P499 sensors must be powered with the +5 VDC and C terminals and the output is 0.5 to 4.5 VDC. Refer to the *P499 Series Electronic Pressure Transducers Product/Technical Bulletin (LIT-12011190)* on the Johnson Controls Product Literature website for more information.

WHA-PKD3 Wire Harnesses Ordering Information[1]

Product Code Number	Product Description
WHA-PKD3-200C	Plug and 3-Wire Harness for P499 Electronic Pressure Transducers: 2.0 m (6-1/2 ft) cable
WHA-PKD3-400C	Plug and 3-Wire Harness for P499 Electronic Pressure Transducers: 4.0 m (13 ft) cable
WHA-PKD3-600C	Plug and 3-Wire Harness for P499 Electronic Pressure Transducers: 6.0 m (19-5/8 ft) cable

1. Refer to the *P499 Series Electronic Pressure Transducers Product/Technical Bulletin (LIT-12011190)* on the Johnson Controls Product Literature website for more information.

PRESSURE CONTROLS
JOHNSON CONTROLS

P470

The P470 electronic pressure control with display is a single-stage, on/off, electronic pressure control with an SPDT output relay. The control may be field set to operate in one of three pressure ranges (0 to 100 psi, 0 to 500 psi, or 50 to 750 psi), as either an open-high or open-low control. The P470 control features a large LCD that displays the sensed pressure and other system-status indicators, as well as the adjustable setpoints in the programming mode. The P470 control has a lockable, 3-button touchpad for adjusting setpoints, and a front panel LED that indicates the output relay status. The P470 control uses a P399 electronic pressure transducer to generate a pressure signal and WHA-P399 wiring harness, which eliminates many of the constraints of capillary-tube control applications.



P470 Electronic Pressure Control with Display

Part #	Description	LIST
P470EB-1C	Electronic pressure control with display 120 or 208/240 VAC Selectable Ranges: 0 to 100, 0 to 500 or 50 to 750 psi	294.10
P470FB-1C	Electronic pressure control with display 24 VAC class 2 transformer Selectable Ranges: 0 to 100, 0 to 500 or 50 to 750 psi	285.30

P399 Electronic Pressure Transducers and Wiring Harnesses

Part #	Description	LIST
P399AAC-1C	Electronic pressure transducer for 0-100 psi 1/4 in. SAE female fitting	
P399BAC-1C	Electronic pressure transducer for 0-500 psi 1/4 in. SAE female fitting	
WHA-P399-400C	Wiring harness for all P399 13ft 3 in.	64.60

LINE VOLTAGE WALL THERMOSTATS

T26

For line voltage control of residential, commercial or industrial heating or year round air conditioning. Heat or cold anticipators not required. Liquid charged temperature sensing element and highly efficient diaphragm and leverage provides close temperature control.

Features:

- Attractive, beige coloured, high impact plastic enclosure
- Close differential without the need for anticipators
- Bi-metal thermometer supplied as standard except where indicated
- Equipped with adjustable dial stops



Specifications:

Temperature range is 40°F to 90°F (5°C to 30°C), except energy conservation models

Part #	Type of Adjustment	Application	Selector Switch	Differential Approx. °F(°C) Heating		LIST
				Heating	Cooling	
HEATING						
T26A-14 (no therm.)	Knob	SPST, energy conservation heating model, max setting 75°F (24°C)	None	2 (1.1)	-	
HEATING AND COOLING						
T26S-18²	Knob	SPDT	None	1-3/4 (1)	2-1/4 (1.3)	298.50
T26T-3²	Knob	SPDT, heavy duty	None	3 (1.7)	3-4 (1.7-2.2)	473.00

PRESSURE CONTROLS

JOHNSON CONTROLS

Pressure Controls - Compatible with R-410A

P70 SERIES



P170 SERIES



P100 SERIES



P266 SERIES



	PRODUCT	SWITCH ACTION	BOTTOM OF RANGE	TOP OF RANGE	MAXIMUM WORKING PRESSURE	TYPICAL APPLICATIONS	LIST
P70 SERIES ADJUSTABLE ON/OFF PRESSURE CONTROLS	P70AA-2C†	SPST Open Low	0	150	325	Suction pressure control — loss of charge	311.00
	P70AA-400C†	SPST Open Low	100	470	690	Fan cycling for head pressure control	303.00
	P70CA-400C†	SPST Open High	200	610	690	High pressure compressor shutdown — Auto Reset	303.00
	P70DA-400C†	SPST Open High	200	610	690	High pressure compressor shutdown — Manual Reset	303.00
P170 SERIES ADJUSTABLE ON/OFF PRESSURE CONTROLS	P170AA-2C†	SPST Open Low	0	150	325	Suction pressure control — loss of charge	300.00
	P170AA-400C†	SPST Open Low	100	470	690	Fan cycling for head pressure control	281.50
	P170CA-400C†	SPST Open High	200	610	690	High pressure compressor shutdown — Auto Reset	281.50
	P170DA-400C†	SPST Open High	200	610	690	High pressure compressor shutdown — Manual Reset	281.50
P100 SERIES NON-ADJUSTABLE ON/OFF PRESSURE SWITCHES	P100AP-332C†	SPST Open Low	300	400	600	Fan cycling for head pressure control	83.60
	P100AP-201C†	SPST Open Low	10	32	600	Low pressure switch — loss of charge Compressor cycling Auto Reset	79.80
	P100DA-81C/D[1]†	SPST Open High	Manual Reset	630	800	High pressure compressor shutdown - Manual Reset	121.20
	P100DA-86D[3]†	SPST Open High	Manual Reset	575	800	High pressure compressor shutdown — Manual Reset	108.70
	P100CP-85D[2]†	SPST Open High	565	665	800	High pressure compressor shutdown — Auto Reset	91.60
	P100CE-11D[1]	SPST Open High HD Contacts	450	550	800	High pressure compressor shutdown — Auto Reset	
P266 SERIES ADJUSTABLE MODULATING ELECTRONIC FAN SPEED CONTROLS	P266Axx[3]†	Modulating	30	720	765	Head pressure control 208/230/240 V	1,271.00
	P266Bxx[3]†	Modulating	30	720	765	Head pressure control 460/480/575 V	1,073.00

1. Bulk Pack Only. 50 per box. Minimum order 250.
2. Bulk Pack Only. 50 per box. Minimum order 100.
3. R-410A compatibility offered with P266SNR-2C transducer
† In Stock.

JOHNSON CONTROLS

Pressure Controls - Compatible with R-410A

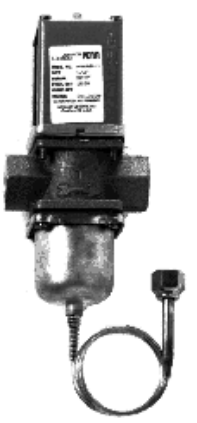
Product	Action	Size & Connection	Bottom of Range PSI	Top of Range PSI	Maximum Working Pressure PSI	LIST
V246 Series 2-Way Pressure-Actuated Water-Regulating Valves						
V246GA1-001C†	Direct Acting	3/8 in. NPT Screw	200	400	630	609.00
V246GB1-001C†		½ in. NPT Screw				661.00
V246GC1-001C†		¾ in. NPT Screw				756.00
V246GD1-001C†		1 in. NPT Screw				1,224.00
V246GE1-001C†		1-1/4 in. NPT Screw				1,427.00
V246GM1-001C		1-1/4 in. Union Sweat				
V246GR1-001C†		1-1/2 in. Flange				1,765.00
V246HA1-001C*		3/8 in. NPT Screw				
V246HB1-001C*†		½ in. NPT Screw				
V246HC1-001C*		¾ in. NPT Screw				
V246HD1-001C*		1 in. NPT Screw				
V246HE1-001C*		1-1/4 in. NPT Screw				
V246HR1-001C*		1-1/2 in. ASME Flange				
V246KA1-001C**		3/8 in. NPT Screw				
V248 Series 3-Way Pressure-Actuated Water-Regulating Valves						
V248GB1-001C	Direct Acting	½ in. NPT Screw	200	400	630	
V248GC1-001C†		¾ in. NPT Screw				1,164.00
V248GD1-001C		1 in. NPT Screw				
V248GE1-001C		1-1/4 in. NPT Screw				
V248GK1-001C		¾ in. Union Sweat				
V248GL1-001C		1 in. Union Sweat				
V248GM1-001C		1-1/4 in. Union Sweat				
V146 Series 2-Way Pressure-Actuated Water-Regulating Valves (for system water pressure up to 350 psi)						
V146GK1-001C	Direct Acting	3/4 in. Union	200	400	630	
V146GL1-001C		1 in. Union				
V148 Series 3-Way Pressure-Actuated Water-Regulating Valves (for system water pressure up to 350 psi)						
V148GK1-001C	Direct Acting	3/4 in. Union	200	400	630	
V148GL1-001C		1 in. Union				

* Maritime models for use with corrosive media.
** Low-flow model.
† In Stock.

WATER REGULATING VALVES
JOHNSON CONTROLS

V46 Pressure Actuated Water Regulating Valves

The V46 is a pressure actuated modulating valve that is suitable for use either on closed or open systems. Direct acting valves open on pressure increase. This type of valve is primarily used to regulate the flow of water or glycol to a water cooled condenser on a refrigeration system. Reverse acting valves open on pressure decrease and are generally used for bypass or heat pump application.



V46AB-1



V46AT-1

Features:

- no close fitting or sliding parts in water passages
- range spring does not come in contact with cooling water
- easy manual flushing, if required
- valve design minimizes chatter or water hammer
- free movement of all parts provide smooth pressure modulation
- refrigerant adjustment is not affected by water pressure
- withstands high hydraulic shock without damage
- 3/8, 1/2 and 3/4 in. valves may be disassembled and reassembled without detaching from the refrigeration system or without pumping down

Part #	Pipe Size (in.)	Inlet and Outlet	Opening Point Range - psig (kPa)	Pressure Element Style	Seat Repair Kit	LIST
COMMERCIAL TYPE - NON CORROSIVE REFRIGERANTS						
V46AA-1	3/8 NPT	Threaded	70 to 260 (483 to 1793)	30 in Capillary 1/4 in. Flare Nut (45)	STT14A-600R	444.00
V46AB-1	1/2 NPT				STT15A-602R	483.00
V46AC-1	3/4 NPT				STT16A-601R	581.00
V46AD-1	1 NPT				STT17A-609R	1,224.00
V46AE-1	1-1/4 NPT				STT17A-610R	1,429.00
V46AR-1	1-1/2	4 Hole ASME Flange				1,767.00
V46AS-1	2		70 to 170 (483 to 1172)	1/4 in. Male Flare Fitting (S)	STT18A-600R	2,567.00
V46AS-2	2		160 to 260 (1103 to 1793)			2,411.00
V46AT-1	2-1/2		70 to 170 (483 to 1172)		STT18A-601R	3,519.00
V46AT-2	2-1/2		160 to 260 (1103 to 1793)			3,519.00
COMMERCIAL TYPE - AMMONIA						
V46AC-8	3/4 NPT	Threaded	100 to 200 (690 to 1379)	1/4 in. Female NPT (15)	STT16A-601R	
V46AD-4C	1 NPT				STT17A-609R	
V46AR-2	1-1/2	4 Hole ASME Flange			STT17A-610R	2,616.00
V46AS-3	2				STT18A-600R	
V46AT-3	2-1/2				STT18A-601R	
MARITIME TYPE - NON CORROSIVE REFRIGERANTS						
V46BA-2	3/8 NPT	Threaded	70 to 260 (483 to 1793)	30 in. Capillary with Sweat Connection (34)	STT14A-601R	
V46BB-2	1/2 NPT				STT15A-603R	1,909.00
V46BC-2	3/4 NPT				STT17A-613R	1,255.00
V46BD-2	1 NPT				STT17A-611R	2,063.00
V46BE-2	1-1/4 NPT				STT17A-612R	2,569.00
V46BS-4C	2	4 Hole ASME Flange	160 to 260 (1103 to 1793)		STT18A-602R	
V46BT-4	2-1/2					7,258.00

WATER REGULATING VALVES
JOHNSON CONTROLS



V47 Temperature Actuated Modulating Valve

The V47 is a temperature actuated modulating valve that regulates the flow of water or glycol to maintain a desired temperature. Three temperature ranges for each valve size are available. Many valves come with a removable bypass plug that can be replaced by the bypass orifice provided separately with each valve. Valve action is open on temperature increase. For open on temperature decrease models, contact Application Engineering.

Features:
- no close fitting sliding parts in water passages
- range spring does not come in contact with the cooling water
- easy manual flushing, if required
- valve design minimizes chatter and water hammer

Specifications:

Maximum Bulb Temperature: 20°F (-6.7°C) above temperature range
Maximum Water Temperature: 170°F (77°C)
Maximum Supply Water Pressure: 150 psig (1034 kPa)
Capillary Length: 6 ft. (1.83m) Nylon Armor
Temperature Bulb Style 4: (1/2 in. NPT closed tank immersion)
Note: V47AB-2 Temperature Bulb Style 1; V47AC-8 Capillary Length 4 ft.

Part #	Pipe Size In.	Range (Opening Point) °F	Bulb Size In.	Std Bypass Orifice Dia. In.	Seat Repair Kit	LIST
V47AA-1	3/8	115 to 180	11/16 x 3-1/4	.062	STT14A-600R	1,158.00
V47AA-2	3/8	160 to 230	11/16 x 3-1/4	.062	STT14A-600R	1,259.00
V47AA-3	3/8	75 to 135 Cross Ambient	11/16 x 6	.062	STT14A-600R	1,182.00
V47AB-3	1/2	115 to 180	11/16 x 3-1/4	.062	STT15A-602R	1,233.00
V47AB-4	1/2	160 to 230	11/16 x 3-1/4	.062	STT15A-602R	
V47AB-5	1/2	75 to 135 Cross Ambient	11/16 x 10	.062	STT15A-602R	1,257.00
V47AC-3	3/4	115 to 180	11/16 x 3-1/4	.062	STT16A-601R	1,321.00
V47AC-4	3/4	160 to 230	11/16 x 3-1/4	.062	STT16A-601R	1,321.00
V47AC-6	3/4	75 to 135 Cross Ambient	11/16 x 10	.062	STT16A-601R	1,343.00
V47AD-1	1	75 to 135 Cross Ambient	11/16 x 16-1/4	.093	STT17A-609R	2,053.00
V47AD-2	1	115 to 180	11/16 x 6	.093	STT17A-609R	1,990.00
V47AD-3	1	160 to 230	11/16 x 6	.093	STT17A-609R	1,990.00
V47AE-2C	1-1/4	115 to 180	11/16 x 16-1/4	.093	STT17A-609R	2,146.00
V47AR-1	1-1/2	75 to 135 Cross Ambient	11/16 x 16-1/4	.093	STT17A-610R	2,567.00
V47AR-2	1-1/2	115 to 180	11/16 x 6	.093	STT17A-610R	2,504.00
V47AS-2	2	160 to 205	11/16 x 10	.125	STT18A-600R	
V47AT-3	2-1/2	75 to 115 Cross Ambient	11/16 x 43	.125	STT18A-601R	4,465.00

V46N Reverse Acting Valve

The V46N series are reverse acting pressure actuated modulating valves used on either open or closed loop coolant systems. Reverse acting valves open on a refrigerant pressure decrease. They are generally used for bypass or heat pump applications.

Part #	Pipe Size (in.)	Inlet and Outlet	Opening Point Range - psig (kPa)	Pressure Element Style	Seat Repair Kit	LIST
COMMERCIAL TYPE - NON CORROSIVE REFRIGERANTS						
V46NA-1	3/8 NPT	Threaded	90 to 280 (621 to 1931)	30 in Capillary 1/4 in. Flare Nut (45)	STT14A-600R	
V46NB-1	1/2 NPT				STT15A-602R	534.00
V46NB-2	1/2 NPT		40 to 100 (276 to 690)		STT15A-602R	530.00
V46NC-1	3/4 NPT		90 to 280 (621 to 1931)		STT16A-601R	732.00
V46NC-2	3/4 NPT		40 to 100 (276 to 690)		STT16A-601R	604.00
V46ND-1	1 NPT		90 to 280 (621 to 1931)		STT17A-609R	
V46ND-2	1 NPT		40 to 100 (276 to 690)		STT17A-609R	
V46NE-1	1-1/4 NPT		90 to 280 (621 to 1931)		STT17A-610R	
V46NE-2	1-1/4 NPT		40 to 100 (276 to 690)		STT17A-610R	

REGULATING VALVES

JOHNSON CONTROLS

V48 Series Three-Way Water Regulating Valves

Series V48 are designed specifically for condensing units cooled either by atmosphere or forced draft cooling towers. They are used on single or multiple condenser hook-ups to the tower to provide the most economical and efficient use of the tower. Water supply pressure to 150 psig (1034 kPa). Threaded inlet and outlet ports.

Part #	Pipe Size NPT	Range Opening Point of Normally Closed Side psig (kPa)	Pressure Element Style	Shipping Wt. (lbs)	Seal Repair Kit	Replacement Power Element	LIST
V48AB-1	1/2"	85 to 110 (586 - 758)	13	5.0	STT15A-605R	SEP91A-602R & SEC37A-602R*	
V48AB-2	1/2"	145 to 190 (1000-1310)	13	5.0	STT15A-605R	SEP91A-602R & SEC37A-602R*	952.00
V48AC-1	3/4"	85 to 110 (586 - 758)	13	6.5	STT16A-604R	SEP91A-601R & SEC37A-602R*	1,052.00
V48AC-2	3/4"	145 to 190 (1000-1310)	13	6.5	STT16A-604R	SEP91A-601R & SEC37A-602R*	1,031.00
V48AD-1	1"	85 to 110 (586 - 758)	13	12.0	STT17A-616R	SEP91A-603R & SEC37A-600R*	
V48AD-2	1"	145 to 190 (1000-1310)	13	12.0	STT17A-616R	SEP91A-603R & SEC37A-600R*	2,012.00
V48AE-1	1-1/4"	85 to 110 (586 - 758)	13	16.0	STT17A-617R	SEP91A-603R & SEC37A-600R*	
V48AE-2	1-1/4"	145 to 190 (1000-1310)	13	16.0	STT17A-617R	SEP91A-603R & SEC37A-600R*	2,064.00
V48AF-1	1-1/2"	85 to 110 (586 - 758)	5	25.0	STT17A-604R	SEP81A-602R	
V48AF-2	1-1/2"	145 to 190 (1000-1310)	5	25.0	STT17A-604R	SEP81A-601R	3,146.00

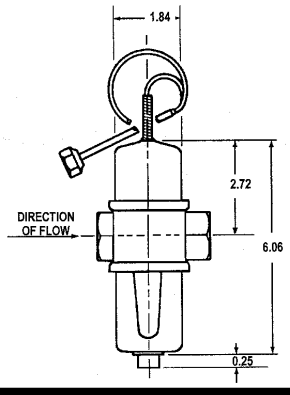


Maximum permissible bellows pressure for R-12 is 230 psig (1586 kPa) and for R-22 is 320 psig (2206 kPa)
* Replacement element provided with 1/4" male SAE connector. Order SEC37A capillary kit with 2 flare nuts separately if needed. Use only on valves specified.

DUAL ACTING WATER VALVE

PARKER

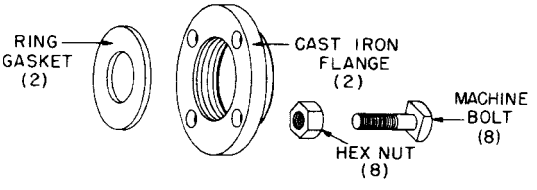
The Parker Model 265 Dual Acting Water Valve is a pressure modulated, variable flow water regulating valve. It is designed to maintain optimum refrigerant / water heat exchange in water source heat pumps used for all weather comfort conditioning. It does the work of two valves by handling both the heating and cooling cycles.



Part #	Adjustment Range		Head Pressure Connection	Water Connection	LIST
	Min.	Max.			
265-109	50#	300#	32" Cap & 1/4" F. Nut	3/4 FNPT	

FLANGE KITS

Kit #	Water Valve Size	Shipping Weight lbs (kg)	LIST
KIT14A-613	2"	11.8 (5.4)	704.00
KIT14A-614	2-1/2"	16.5 (7.5)	747.00
FLG15A-600	3"	20 (9.1)	
FLG15A-601	4"	34 (15.4)	



ELECTRONIC TEMPERATURE CONTROLS
DIXELL

Universal-XR Replacement Controller

The Universal-XR controller offers a 7 in 1 solution for Heating/Medium & Low Temperature/Defrost/ Fans /Alarms etc. in just one control. Select one of the six preset maps in the application menu, and you now have a replacement of virtually any control. It's the one control that is a must have on your service vehicle. Ultra simplified one does it all. The Universal-XR Advanced Map (tC=7) allows total flexibility with inputs and outputs. Comes complete with probes.



Replaces:

XR110C, XR10C, XR10CX, XR01CX, XR120C, XR20C, XR20CX, XR02CX, XR130C, XR30C, XR30CX, XR03CX, XR140C, XR40C, XR40CX, XR04CX, XR160C, XR60C, XR60CX, XR06CX

*And most other brands of 32x74 mm Electronic Controls

Part #	Description	LIST
XR60CX-4N1F1-UR	120 Volts	604.00
XR60CX-5N1F1-UR	240 Volts	604.00

Thermometer & Light Switch For Walk-ins

Now you can combine your Light Switch and Digital Thermometer in one easy to install package.The waterproof "elbow" engaged illuminated light switch allows operators to turn on the walk-in light easily, even when their hands are full. The industrial duty lightswitch is rated at 15A and includes optional gasket for outdoor use.



- ED Temp Display
- Light switch
- 120V Direct Power

Part #	Description	LIST
24DT-L4F1	Thermometer w/ Switchplate and Lighted Switch, 110Vac. °F -40/230°F	336.00

JOHNSON/RANCO/
HONEYWELL 533-636

ELECTRONIC TEMPERATURE CONTROLS

FULL GAUGE



CONV32



EASYPROG programming key



Complete Temperature, Defrost, Pressure, Humidity & Voltage Controls
Optional "SITRAD" Computer/Internet Communication Available

Part #	Description	LIST
MT514E	Universal Clg & Htg Contolerl 115/230 V - 2 relay, Defrost & Alarm	239.90
MT514EL	Universal Clg & Htg Contolerl 12/24 V AC/DC - 2 relay, Defrost & Alarm	239.90
MT-512E-2HP	Thermostat C/H 1 Stage 1 Sensor, Air Defrost, 1 rel, UL 115/230 volt AC	179.90
MT-512EL-2HP	Thermostat C/H 1 Stage 1 Sensor, Air Defrost, 1 rel, UL 12/24 volt AC/DC	179.90
MT512RIPLUS	MT-512Ri(L) "plus" model for "SITRAD" Local & Remote communication - specify voltage	376.00
MT512-RIL-LOG	MT-512Ri(L) "Log" model available with SITRAD communication & Internal Memory Chip For Logging	394.00
TC940RI	Controller with demand defrost, ALARM, Ref, Defrost, UL 115/230 volt AC	313.00
TC940RIL	Controller with demand defrost, ALARM, Ref, Defrost, UL 12/24 volt AC/DC	313.00
TC900E-POWER	TC900E Power Ref. Control, Therm & Defrost Terminate - High Amperage 115/230 volt	313.00
TC900EL-POWER	TC900EL Power Ref. Control, Therm & Defrost Terminate - High Amperage 12/24 volt AC/DC	313.00
TC-910RI(L)	Four Outputs Dual Stage W/Defrost Control & Hour Meters 12/24 V&115/230 V.	
TC-920RI(L)	Three Outputs W/Defrost, Energy Mgmt, & Digital Input Door Switch 12/24 V&115/230 V.	390.00
TC-518RI(L)	DUAL STAGE Cooling and/or Heating 12/24 V or 115/230 V	
BC-01	Junction Box to series wire multiple SITRAD (monitored) controllers	30.00
	Thermostats With Internet Communication	
TC900E-LOG	TC 900E Log - Refrigeration control Therm, Defrost, & SITRAD Com. UL 120/220 volt A/C	
TC900EL-LOG	TC 900EL Log - Refrigeration control Therm, Defrost, & SITRAD Com. UL 12/24 volt A/C	
MT543RI(L)-PLUS	MT-543Ri(L)Plus Three Stage & Two Ranges -50C to 105C or -99C to 300C with PT-100 Sensor (Extra)	391.00
	Pressure controls	
PCT100RI	Pressure controller with sensor, CFC, HCFC & HFC 120/220 volt a/c	548.00
PCT100RIL	Pressure controller with sensor, CFC, HCFC & HFC 12/24 volt AC/DC	548.00
	*Ammonia application requires SB49 Stainless Steel pressure sensor- ADD	
	Pressure controls With SITRAD Internet Communication	
PCT410EPLUS	PCT 410E plus Pressure Control c/w NSK sensor) & 12 vdc transformer	
	115/230 volt, 12 VDC 4 outputs, ALARM (CFC,HCFC, HFC) *Ammonia application requires S.S. SB49 pressure sensor - ADD	
	Precise Humidity Control with SITRAD communication	
AHC80-PLUS	c/w two sensors D/B & W/B with reservoir, 115/230 volt dual stage	1,999.00
MT530E-L-SUPER	Humid & Temp control with SITRAD, 3 outputs, buzzer alarm (spec voltage)	668.00
	Internet Interfaces Temperature & Pressure Controls	
CONV32	Interface U/L, cU/L (Up to*32 zones)	400.00
	*Stand Alone, USB Connection, can control up to 32 Full Gauge controls	
	Thermometers	
TC17RGTLI(L)*	Therm Digital Read Out i = 120/220 volt A/C *L = 12/24 volt with control contacts	
TI33RILPLUS	Thermometer Digital Up To 3 Read Outs i = 120/220 volt A/C *L = 12/24 volt no control	388.00
	**TPM 2000 - Thermometer C or F display, 24 Volt A/C D/C Replaces EPTM-902 A/C Max Product*	
	Solar Heating Controls	
ANASOL	Economy Pumped Solar Heating Control, 16 Amp, Freeze Protection, Automatic or manual control	
MICROSOL-II-PLUS	Full Feature solar Control, 3 Sensors & Outputs, Temp. Protection, 3 outputs & SITRAD	456.00
	Voltage Monitoring	
MT516RVTPLUS	Temperature Control & Voltage Monitoring, 115/230 Volt 2 Outputs, SITRAD communication	
PHASELOGPLUS	Full Feature solar Control, 3 Sensors & Outputs, Temp. Protection, 3 outputs & SITRAD	525.00
	Wireless Communication Converters for Full Gauge "SITRAD" controllers	
FG-WI-CONVERTER	Transmitter or Receiver That Converts Data To Radiofrequency	
FG-WI-ROUTER	Device Increases Transmission Reach of FG-WI Wireless Converters	
	Fully Proportional Controller with "SITRAD"	
AUTO-PID+	Fully Proportional Controller Cooling & Heating with sensor 90 - 264 V A/C	488.00
	Enclosure Box For Easy Wall Mounting of Full Gauge Controllers	
GB-01S	Wall Mount Enclosure c/w Pre Machined Slot & Separate Face Plate (Supplied Without Toggle Switches)	85.50
SB41	Sensor Black Cable 10K @ 25C NTC Thermistor Water Proof -Grey Cable optional	42.50
EASYPROG	Programing Key for Multiple Controller Set Up & Programing	

Nomenclature

R - Rectangular
C - Circular
I - New Design (only Ri – 120/240V)
L - Low Voltage (12/24V)
B - Blue Display

Clock - Real Time
Plus - Sitrad (Internet Communication)
Log - Internal Memory Chip & Sitrad Communication
H- High Humidity Enclosure
E = Evolution Series Controller

Example:
MT512Ri Plus : Temperature Controller, rectangular, 120/240V, Sitrad-internet (12/24V also available)

ELECTRONIC CONDENSER FAN SPEED CONTROL

SAGINOMIYA

For Use With Variable Speed Electric Motors
Penn-Johnson to Saginomiya Cross Reference

Penn-Johnson Model #	Saginomiya RGE Model #	Adjustable Operating Range - PSIG	Single Pressure Unit	Start Voltage % of Line Voltage	Capillary Length	Electrical Spec.	LIST
P66AAB-1	**RGE-Z1Q4-7L**	116/406	Yes	35%	60”	Single Phase 200/240 V. A/C 0.2 to 8 Amp	599.00
P66AAB-4	**RGE-Z1Q4-7L**	116/406	Yes	35%	60”		
P66AAB-6	**RGE-Z1Q4-7L**	116/406	Yes	35%	60”		
P66AAB-9	**RGE-Z1Q4-7L**	116/406	Yes	35%	60”		
P66AAB-10*	**RGE-Z1Q4-7L**	116/406	Yes	35%	60”		
P66AAB-25	**RGE-Z1Q4-7L**	116/406	Yes	35%	60”		
R-410A MODELS							
T.B.A	**RGE-Z1Q6-7L**	230/565	Yes	35%	60”	Same as above	702.00
* P66AAB-10 available with 120” capillary length							

Saginomiya Features:

1. Additional Saginomiya RGE Models Available For **Single and Three** Phase Applications
2. All RGE Models **CSA** Approved
3. All models With **Full Off or Minimum Speed Option** switch
4. Enhanced Noise Resistance Design
5. Can Control **Multiple Fans** Where Sum of Fan Amp Ratings is Less Than Amps Rating of Drive
6. Durable & High Impact Plastic Cover
7. Dual 50/60 Hertz Application
8. **Direct To Line Wiring** - No Transformer Required



RGE Single Phase Type



RGE Three Phase Type

XGE Compact Design



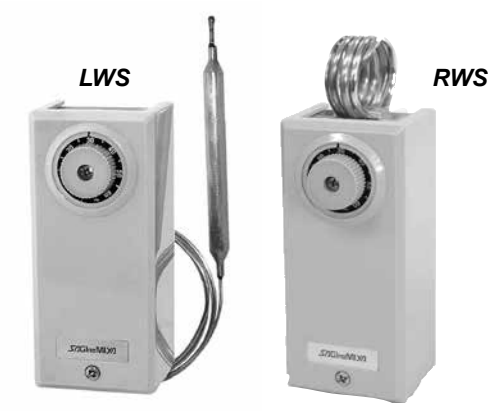
XGE Direct Mount
“Mini” Electronic Condenser Fan Speed Control

Model	Refrigerants	Adjustment Range PSI		Fan Motor Function	Fluid Temp Fahrenheit	Electric Specs	LIST
		Min	Max				
XGE-4CC-7	**R22,407C,404A**	145	365	Full cut off type	-4 to 158	230 V Single Phase 3 Amp	375.00
XGE-4MC-7	**R22,407C,404A**	145	365	Min.speed type	-4 to 158		375.00
XGE-6CC-7	**R-410A**	320	565	Full cut off type	-4 to 158		375.00
XGE-6MC-7	**R-410A**	320	565	Min.speed type	-4 to 158		375.00
XGE-AE01	**Optional bracket for panel mounting available**						26.20

SMALL PRESSURE CONTROLS
SAGINOMIYA

LWS/RWS Temperature Controls

— Remote bulb sensing (LWS)
— Direct sensing (RWS)



Features

- Narrow (fixed and adjustable) temperature differential from 4 to 14ºF (LWS & RWS)
- UL and cUL Recognized
- Wide temperature ranges available from –30 to +320ºF
- Durable SPDT switch rated 8/16A at 250/120 VAC
- Different capillary length (6 ft is standard), available up to 16 ft. (LWS)
- Units come with knob assembly and concealed plate (WS series)
- Durable PVC cover to eliminate corrosion

Part #	Description	LIST
LWS-C1030Q13	SPDT -30/100	161.70
RWS-C1030Q01	SPDT -30/100	170.90

AWR / VWR Control Valves

- Fresh water and Glycol system applications
- Available 3/8”, 1/2”, 3/4”, 1” and 1 ¼” with NPT thread
- All valves are with bronze casting bodies
- Valves are supplied with ¼” flare connection and 4 ft. capillary tube (supplied loose)
- Available for R22 and R407 refrigerant



Part #	Description	LIST
AWR1203Q71	3/8”	318.00
AWR1504Q71	1/2”	326.00
AWR2006Q71	3/4”	354.00
AWR2510Q71	1”	438.00
AWR3212Q71	1-1/4”	
VWR-1203GLWQ1	3/8" – ***R410A***	425.00
VWR-1504GLWQ1	1/2" – ***R410A***	493.00
VWR-2006GLWQ1	3/4" – ***R410A***	561.00

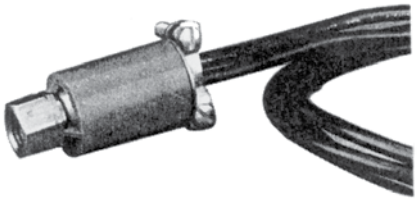
P100 Encapsulated Pressure Switches

Description:

Nonadjustable, SPST, direct mount switches for use with noncorrosive refrigerants. The switches are available with automatic reset in both open low and open high configurations and manual reset with open high action.

- 1/4" female flare fitting with built-in Schrader type depressor

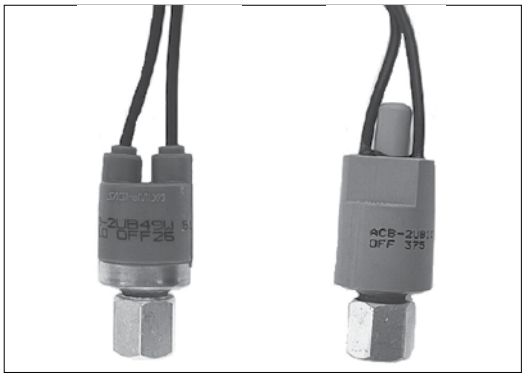
Part Number	Switch Action	Application	Setting - psig (kPa)		LIST
			Opens	Closes	
P100AP-201C	Open On Fall Open On Rise	Low Cutout	10 (69)	40 (276)	79.80
P100AP-2C			35 (241)	60 (414)	79.80
P100AP-3C		Fan Cycling	150 (1034)	225 (1551)	80.60
P100AP-4C			170 (1172)	250 (1724)	79.80
P100AC-1C		Low Cutout	5 (34)	20 (138)	89.30
P100AC-2C			15 (103)	30 (207)	89.30
P100CP-1C		High Cutout	400 (2758)	300 (2068)	79.80
P100CP-2C			425 (2930)	325 (2241)	81.30
P100CC-9C			275 (1896)	175 (1207)	90.20
P100DA-1		High Limit	410 (2827)	Lockout Man. Reset	143.10
P100DA-2			475 (3275)	Lockout Man. Reset	145.90
P100DC-3			375 (2586)	Lockout Man. Reset	153.90



P100AC

ACB Pressure Switches

- Economical, compact, for direct mounting
- Low pressure, fan cycling and high pressure up to 680PSI
- SPST & SPDT configuration
- Automatic & manual reset types
- Single, dual and triple pressure control
- 100,000 life cycle at rated load
- Refrigerant, water and air applications
- Burst pressure 5000 PSI
- UL, cUL & CSA



See the next page for part number and pricing

JOHNSON/RANCO/
HONEYWELL 533-636

SMALL PRESSURE CONTROLS

SAGINOMIYA

ACB Pressure Switches



Item No.	CATALOGUE NO.	Setting		Max. Pressure	Connection	Application	Contact Type	LIST
		Cut out (Off)	Cut in (On)					
1	ACB-2UA101	10±5	30±5	213	1/4" Flare	LP Cut out	NO	
2	ACB-2UA143	25±7	50±7	213	1/4" Flare	LP Cut out	NO	41.00
3	ACB-2UA94	30±5	60±5	213	1/4" Flare	LP Cut out	NO	41.00
4	ACB-2UA17	35±5	55±5	213	1/4" Flare	LP Cut out	NO	41.00
5	ACB-2UB36	55±5	35±5	213	1/4" Flare	LP Cut out	NC	40.00
6	ACB-2UB134	60±7	90±7	213	1/4" Flare	LP Cut out	NC	
7	ACB-2UB183	50±8	26±8	214	1/4" Flare	LP Cut out	NC	
8	ACB-2UA141	130±11.5	174±11.5	215	1/4" Flare	LP Cut out	NO	
9	ACB-2UA142	185±21.5	230±14.5	215	1/4" Flare	LP Cut out	NO	
10	ACB-2UA18	300±15	400±10	500	1/4" Flare	HP Cut out	NO	
11								
12	ACB-2UB191	375±14	275±21	500	1/4" Flare(Red Dot)	HP Cut out	NO	
13	ACB-2UB35	400±10	300±15	500	1/4" Flare	HP Cut out	NC	
14								
15	ACB-2UB192	600±14	450±28	650	1/4" Flare(Red Dot)	HP Cut out	NC	41.00
16	ACB-2UA135	25±7	50±7	213	Solder	LP Cut out	NO	
17	ACB-2UB180	550±15	420±20	650	Solder	HP Cut out	NC	
18	ACB-2UA318W	5±4	20±5	213	1/4" Flare	LP Cut out	NO	41.00
19	ACB-2UA97W	10±5	25±5	213	1/4" Flare	LP Cut out	NO	41.00
20	ACB-2UA626W	15±5	35±5	213	1/4" Flare	LP Cut out	NO	41.00
21	ACB-2UA40W	20±5	45±5	213	1/4" Flare	LP Cut out	NO	41.00
22	ACB-2UA303W	25±5	50±5	213	1/4" Flare	LP Cut out	NO	
23	ACB-2UA47W	25±7	65±7	213	1/4" Flare	LP Cut out	NO	41.00
24	ACB-2UA39W	29±7	44±7	213	1/4" Flare	LP Cut out	NO	
25	ACB-2UA227W	35±5	55±5	213	1/4" Flare	LP Cut out	NO	41.00
26	ACB-2UA375W	40±5	65±5	213	1/4" Flare	LP Cut out	NO	41.00
27	ACB-2UA354W	40±5	80±7	213	1/4" Flare	LP Cut out	NO	41.00
28	ACB-2UA286W	55±5	75±7	213	1/4" Flare	LP Cut out	NO	41.00
29								
30	ACB-2UB46W	60±5	45±5	213	1/4" Flare	LP Cut out	NC	41.00
31	ACB-2UB37W	65±7	40±7	213	1/4" Flare	LP Cut out	NC	41.00
32	ACB-2UA441W	75±10	105±10	500	1/4" Flare	LP Cut out	NO	41.00
33	ACB-2UA630W	120±15	170±10	500	1/4" Flare	fan cycling	NO	41.00
34	ACB-2UA685W	150±14	225±15	500	1/4" Flare	fan cycling	NO	41.00
35	ACB-2UA417W	150±15	250±15	500	1/4" Flare	fan cycling	NO	41.00
36	ACB-2UA38W	160±21	203±15	500	1/4" Flare	fan cycling	NO	41.00
37	ACB-2UA48W	170±15	215±15	500	1/4" Flare	fan cycling	NO	41.00
38	ACB-2UA631W	170±15	250±10	500	1/4" Flare	fan cycling	NO	41.00
39	ACB-2UA49W	190±15	265±15	500	1/4" Flare	fan cycling	NO	41.00
40	ACB-2UA319W	210±15	275±12	500	1/4" Flare	fan cycling	NO	41.00
41	ACB-2UA50W	250±15	305±15	500	1/4" Flare	fan cycling	NO	41.00
42	ACB-2UA627W	300±20	400±15	500	1/4" Flare	fan cycling	NO	41.00
43	ACB-2UB724W	275±15	175±20	500	1/4" Flare	HP Cut out	NC	41.00
44	ACB-2UB723W	300±15	200±20	500	1/4" Flare	HP Cut out	NC	41.00
45	ACB-2UB38W	350±10	250±10	500	1/4" Flare	HP Cut out	NC	41.00
46	ACB-2UB489W	325±10	225±15	500	1/4" Flare	HP Cut out	NC	41.00
47	ACB-2UB36W	355±15	284±21	500	1/4" Flare	HP Cut out	NC	
48	ACB-2UB430W	375±10	275±15	500	1/4" Flare	HP Cut out	NC	41.00
49	ACB-2UB237W	360±10	245±10	500	1/4" Flare	HP Cut out	NC	
50	ACB-2UB393W	400±10	300±10	500	1/4" Flare	HP Cut out	NC	41.00
51	ACB-2UB282W	425±10	325±20	500	1/4" Flare	HP Cut out	NC	41.00
52	ACB-2UB488W	470±10	350±20	600	1/4" Flare	HP Cut out	NC	41.00
53	ACB-2UB428W	550±15	420±20	650	1/4" Flare	HP Cut out	NC	
54	ACB-2UB717W	565±15	400±20	650	1/4" Flare	HP Cut out	NC	
55	ACB-2UB754W	600±14	450±28	650	1/4" Flare	HP Cut out	NC	41.00
56	ACB-2UB148MW	350±15	(260)	500	1/4" Flare	HP Manual	NC	65.00
57	ACB-2UB107MW	375±15	(270)	500	1/4" Flare	HP Manual	NC	65.00
58	ACB-2UB367MW	410±15	(310)	500	1/4" Flare	Hp Manual	NC	65.00
59	ACB-2UB487MW	475±15	(360)	500	1/4" Flare	Hp Manual	NC	65.00
60	ACB-2UB629MW	610±15	(480)	650	1/4" Flare	Hp Manual	NC	
61	ACB-2UA284W	2±5	18±5	213	solder	LP Cut out	NO	
62	ACB-2UA100W	7±4	22±5	213	solder	LP Cut out	NO	41.00
63	ACB-2UA436W	25±5	50±6	213	solder	LP Cut out	NO	
64	ACB-2UA307W	225±10	325±10	500	solder	fan cycling	NO	
65	ACB-2UB280W	250±10	150±10	213	solder	HP Cut out	NC	
66	ACB-2UB281W	350±10	250±15	213	solder	HP Cut out	NC	
67	ACB-2UB683W	425±10	325±10	500	solder	HP Cut out	NC	
68	ACB-2UB697W	550±15	420±20	500	solder	HP Cut out	NC	
69	ACB-2UB109MW	360±15	(270)	500	Capillary Manual	HP Manual	NC	



Contact type: NC = Normally Closed NO =Normally Open

NOTE: Non-Priced Models are Special Orders

INTERMITTENT PILOT IGNITION CONTROL

BASO

L62GB-3C Baso Automatic Pilot Switch



Specifications:

- 100% shutoff
- Maximum Amb. Temperature: 175°F
- Manual Reset
- Switch Action: SPST

Part #	LIST
L62GB-3C	391.00



H91 Series



Safety Shutoff Device



BG1600M00EK-1AA

Baso Intermittent Pilot Ignition Control

Part #	Description	LIST
H91WG-1	Auto Gas Valve 42,000 Btu Sub 025-22287-000 York 1/4" 24v. 1/2# Max.	324.00
L62GB-3C	Saftey Pilot Switch 100% Shut Off	391.00
Q90CC-1C	Electrode, Pilot Burner & Sensor Kit For REZNOR Unit Heaters	240.40
Q90DD-1C	Electrode, Pilot Burner & Sensor Kit For REZNOR Roof Top Unit	244.80
J991LYW-7225	Pilot Burner Assembly	285.40
Y70AA-1C	Gas Valve Grease 2.5 Oz.	67.60
Y75AS-2H	Replacement Flame Sensor	101.90
Y75BS-1H	Replacement Flame Sensor	104.90
Y99AR-1H	1/4"x 60" Aluminum Gas Pilot Tubing C/w 4 Nuts	132.00
BG1100MAAK-1G	Gas Ignition Control Substitute For G765BAD-1R (3 Trial 5 Min 0pp 4 Sec TFI DSI)	378.00
BG1100MADL-1G	Gas Ignition Control Substitute For G765BCA-12R (3 Trial 30 Sec PP 8 Sec TFI DSI)	360.00
BG1600M00EK-1AA	Gas Ignition Control Substitute For G600AY-1, 24v.	397.00
BG1600M02CR-1AD	Gas Ignition Control Substitute For G776rgd-11 & 14 For Lennox (15pp 85 TFI 24v)	
BG1600M51EF-1AAC	Universal Gas Ignition Control Substitute For S8610U3009 & G779LHA-1 & LH33CM600	395.00
RAA160A-601D	1/4" Spay To RAJAH Adapter. Same As 4074EPM From Honeywell	10.00

ETC ELECTRONIC TEMPERATURE CONTROLS

RANCO

ETC offers the accuracy and reliability of an electronic control at an affordable price.

Features:

- Wide temperature range (-30°F to 220°F)
- Adjustable differential range (1°F to 30°F)
- LCD Digital Display of :
  - Sensor Temperature
  - Control Settings
  - Relay Status
  - Onboard Diagnostics
- Simple Key Pad settings
- Remote temperature sensing - up to 400 feet
- Selectable Heat and Cool Modes
- Selectable Fahrenheit and Celsius Modes
- Output relay rated at one horsepower
- Lockout switch to prevent tampering
- Operates on 120/240 VAC (24 VAC models available)
- One and Two Stage models available
- Optional 0 and 10 Volt Analog Output
- Sensor included with control
- Settings retained in the event of a power failure



Part Number	Type	Input Voltage AC	No. of Stages	0-10 V Output	LIST
ETC-1110	NEMA 1	120/240	1	NO	193.00
ETC-1111	NEMA 1	120/240	1	YES	250.00
ETC-2110	NEMA 1	120/240	2	NO	388.00
ETC-2111	NEMA 1	120/240	2	YES	518.00
ETC-1120	NEMA 1	24	1	NO	192.10
ETC-1121	NEMA 1	24	1	YES	298.50
ETC-2120	NEMA 1	24	2	NO	387.00
ETC-2121	NEMA 1	24	2	YES	477.00
ETC-1410	NEMA 4X	120/208/240	1	NO	293.40
ETC-2410	NEMA 4X	120/208/240	2	NO	327.00

PRESSURE CONTROLS

RANCO



Single Function Controls

These controls offer a variety of pressure ranges and switch actions to provide maximum application flexibility.

Features:

- NEMA 1 enclosure with non-conductive cover
- Front-located captive cover screw
- Super Cap capillary protection system
- Universal mounting and compact design
- Laser-welded bellows for extended life

	Range PSIG	Diff. PSI	SPST - OPEN LOW						SPST - OPEN HIGH			
			Male Flare	LIST	36" Cap. with Flare Nut	LIST	48" Cap. with Flare Nut	LIST	Male Flare	LIST	36" Cap. with Flare Nut	LIST
R12/R500/ R134a	(12") to 50	5 to 35	**010-1401**	205.90	**010-1402**	**190.40**	**010-1842**		Use 016		-	
R22/R502	(10") to 100	10 to 40	-		**010-1483**	190.40	-		Use 016		011-3099	
		* Manual Reset	Use 016		Use 016		Use 016		Use 016		Use 016	
	50 to 150	10 to 40	Use 016		Use 016		Use 016		Use 016		Use 016	
	100 to 250	20 to 100	-		-		010-2000	302.00	-		-	
	100 to 400	40 to 150	**010-1894**	275.10	**010-2054**	228.70	-		Use 016		Use 016	
		17 Fixed	-		Use 016		-		Use 016		Use 016	
	150 to 450	35 to 150	Use 016		Use 016		Use 016		Use 016		Use 016	
		50 to 100	Use 016		Use 016		Use 016		Use 016		**011-1711**	284.10
		* Manual Reset	Use 016		Use 016		Use 016		Use 016		Use 016	

	Range PSIG	Diff. PSI	SPDT - OPEN HIGH OR LOW						DPST - OPEN LOW	
			Male Flare	LIST	36" Cap. with Flare Nut	LIST	48" Cap. with Flare Nut	LIST	36" Cap. with Flare Nut	LIST
R12/R500/ R134a	(12") to 50	5 to 35	**016-120**	228.80	016-557	256.90	-		020-7002	
R22/R502	(10") to 100	10 to 40	**016-107**	226.90	**016-527**	248.40	-		020-7004	
		* Manual Reset	*016-585	267.30	-		*016-261	307.00	-	
	50 to 150	10 to 40	-		016-166	317.00	-		-	
	100 to 250	20 to 100	-		-		-		-	
	100 to 400	40 to 150	-		**016-108**	251.20	-		**020-7006**	404.00
		17 Fixed	-		**016-142**	372.00	-		-	
	150 to 450	35 to 150			-		-		-	
		50 to 100	016-503	297.40	-		-		-	
		* Manual Reset	016-209@	304.00	-		**016-200**	292.40	-	

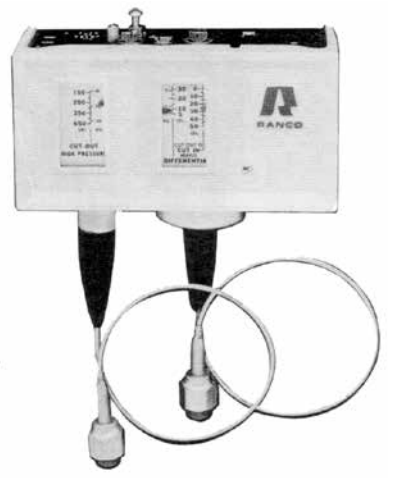
@ 016-209 available with 350 PSIG limit stop

Bold part numbers are high volume products

PRESSURE CONTROLS
RANCO

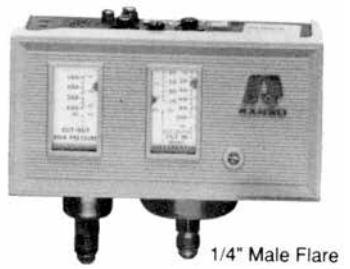
Dual Pressure Controls

These controls offer a tailored variety of ranges and options for refrigerants. Low and high pressure functions are combined into a single control with one switch.



Features:

- Exclusive "convertible" reset for manual or automatic high pressure reset on some models
- NEMA 1 enclosure with non-conductive cover
- Front-located captive cover screw
- Super Cap capillary protection system
- Universal mounting and compact design
- Color Coded Flare Nuts


1/4" Male Flare

Model Selection Chart:

Low Pressure Opens Low		High Pressure Opens High		Reset		SPST						DPST	
Cut-In Range PSIG (Inches Mercury Vacuum)	Diff. PSI	Cut-Out Range PSIG	Diff. PSI	Low Press. (Opens Low)	High Pressure (Opens High)	Male Flare	LIST	36" Cap. with Flare Nut	LIST	48" Cap. with Flare Nut	LIST	36" Cap. with Flare Nut	LIST
(12") to 50	5 to 35	100 to 250	50 Fixed	Auto.	Automatic	012-1505	441.00	**012-1506**	400.00	-		-	
				Auto.	**Auto/Man. (convertible)	-		-		-		022-7702	
(12") to 50	5 to 35	150 to 450	70 Fixed	Auto.	Automatic	012-4139		**012-1502**	418.00	-		-	
				Auto.	†Auto/Man. (convertible)	012-4842				012-4833	511.00	-	
(10") to 100	10 to 40	150 to 450	70 Fixed	Auto.	Automatic	012-1550	437.00	**012-1549**	378.00	-		-	
				Auto.	†Auto/Man. (convertible)	012-4846	487.00			**012-4834**	428.00	022-7706	
(10") to 100	*	150 to 450	†	*Manual	†Manual	-		012-1594	502.00	-		-	

* Locks open on pressure decrease, pressure must rise approx. 10 PSI to be reset
** Locks open on pressure increase, pressure must drop approx. 50 PSI to be reset
† Locks open on pressure increase, pressure must drop approx. 70 PSI to be reset
Bold part numbers are high volume products

PRESSURE CONTROLS
RANCO

Lube Oil Protection Controls

These lube oil protection controls guard pressure-lubricated refrigeration compressors against major damage due to loss of oil pressure. If adequate oil pressure is lost, the built-in S30 Time Delays Switch starts timing. If the oil pressure does not recover within the set period, the control circuit is opened, stopping the compressor.

Features:

- Alarm circuit standard
- Ambient temperature compensated
- Super Cap capillary protection system
- High impact, non-conductive cover
- Field replaceable switch module
- Manual reset
- Industry standard circuitry and terminal identification



Model Selection Chart:

Part Number	Pressure Range PSID	Time Delay (seconds)	LIST
36" CAPILLARY WITH FLARE NUT			
***P30-5826**	9 Fixed	120	550.00
P30-3801	8 to 60 Adjustable	120	
P30-3701	8 to 60 Adjustable	90	
See Note A	8 to 60 Adjustable	80	
MALE FLARE			
*P30-5827	9 Fixed	120	545.00

*Copeland Specifications

Note: (A) P30-3601, use P30-3801 and replace Time Module with S30-1304

Note: The range is the difference between the crankcase pressure and the oil pump pressure that will energize the time delay switch and lead to shut down. The difference in oil pressure needs to rise 7 PSI above the range to de-energize the time delay switch and prevent eventual shutdown.

Bold part numbers are high volume products.

TEMPERATURE CONTROLS

RANCO



General Range Temperature Controls

Features:
- Maximum adjustment accuracy with 7 revolution range adjustment screws
- NEMA 1 enclosure with non-conductive cover
- Laser-welded bellows for extended life
- Constant cut-in setting

Model Selection Chart:

Applications	Range (°F)	Differential (°F)	SPST - Opens Low					
			72" Capillary	LIST	Air Coil	LIST	72" Cap. Remote Bulb	LIST
Extra Low (Ice Cream)	-55 to 0	*†3 to 20	010-1000	321.00	-		-	
	-35 to 15		010-1419		-		010-1433	221.00
Low (Freezer)	-15 to 40		-		010-1072		**010-1408**	196.20
		1.5 Fixed	-		-		-	
	22.5 to 47.5		-		-		-	
Medium	0 to 55	*†3 to 20	**010-1416**	231.80	**010-1418**	231.50	**010-1409**	225.50
		7 to 55	-		-		010-1473	329.00
		**Manual Reset (Freeze Protection)	-		-		-	
Med./High	0 to 100	6 to 20	-		-		-	
High	25 to 75	*†3 to 20	-		010-1802		**010-1410**	232.90
	30 to 90	2.5 Fixed	-		-		-	
	50 to 105	*†3 to 20	-		-		-	

Applications	Range (°F)	Differential (°F)	SPDT - Opens High or Low						DPST - Opens Low	
			72" Capillary	LIST	Air Coil	LIST	72" Cap. Remote Bulb	LIST	96" Cap. 3/8 x 6" Cross Ambient Bulb	LIST
Extra Low (Ice Cream)	-55 to 0	*†3 to 20	-		-		-		-	
	-35 to 15		-		-		-		-	
Low (Freezer)	-15 to 40		-		-		-		-	
		1.5 Fixed	016-588		-		-		-	
Medium	22.5 to 47.5	2.5 Fixed	-		-		016-601	339.00	016-601	339.00
	0 to 55	*†3 to 20	016-111	245.20	-		**016-104**	354.00	**016-104**	354.00
		7 to 55	-		-		-		-	
		**Manual Reset (Freeze Protection)	016-264 96" Cap	381.00	-		016-263	286.30	016-263	286.30
Med./High	0 to 100	6 to 20	-		-		-		-	
High	25 to 75	*†3 to 20	-		-		-		-	
		2 Fixed	-		-		-		-	
	30 to 90	2.5 Fixed	-		@		-		-	
	50 to 105	*†3 to 20	-		@@		-		-	

* Locks open on pressure decrease, pressure must rise approx. 10 PSI to be reset *† Differential at the low end of range is 6 to 25

@ Use 052-6910 @@ Use 060-101 **Bold** part numbers are high volume products

TEMPERATURE CONTROLS

RANCO



Wide Range Temperature Controls

The 060 uses the industry's most advanced sensing element technology.

Features:

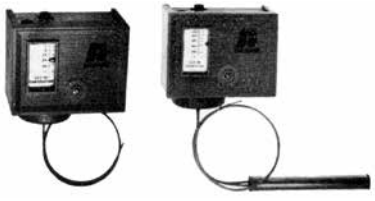
- Virtually unaffected by ambient temperature
- Gas-filled, non-position-sensitive bulb
- Adjustable differential
- 17 FLA for both 120 and 240 Vac
- Front-located captive cover screw
- NEMA 1 enclosure with non-conductive cover
- 10 times the setting sensitivity of most other wide range controls

Model Selection Chart:

Range (°F)	Differential (°F)	SPDT Opens High or Low			
		96" Capillary 3/8" x 6" Cross Ambient Bulb	LIST	Air Coil	LIST
-35 to 95	4 to 50	**060-100**	316.00	060-101	351.00
95 to 240	6 to 50	**060-200**		-	

Bold part numbers are high volume products

Soft Ice Cream and Bulk Milk Controls (and other narrow differential applications)



These controls provide a narrow adjustment range and a fixed 1.5° differential for close, accurate control.

Model Selection Chart:

Typical Applications	Range (°F)	Differential (°F)	SPDT Opens High or Low		
			36" Capillary 3/8" x 6" Cross Ambient Bulb	72" Capillary	LIST
Bulk Milk Cooler	22.5 to 47.5	1.5 Fixed	016-601	-	339.00
Soft Ice Cream Machine	-15 to 40		-	016-588	382.00

TEMPERATURE CONTROLS

RANCO

A22/30 Control Chart

Part #	Switch Function	Off Position	Knobs Assembly / Screwdriver Slot Adaptable	Differential	Normal Off	Normal On	Warm On	Cold Off	Cold On	Capillary	Bulb Type	LIST
A22-391	SPDT	NO	ADAPTABLE	8	27	35	51	11	19	66"		233.90
A22-392	SPDT	NO	ADAPTABLE	23.5	31	54.5	62.5	14	37.5	48"		264.60
A22-1112	SPST	NO	ADAPTABLE	5	-	-	44	25	30	72"		264.00
A22-2237	SPDT	YES	FIXED SETTING	4.5	40.5	36						190.30
A30-180	SPST	YES	ADAPTABLE	13	9	22	38	-4	9	42"		243.20
A30-181	SPST	YES	ADAPTABLE	13	9	22	41	-4	9	84"		
A30-182	SPST	YES	ADAPTABLE	17	3	20	44	-6		42"		260.50
A30-183	SPST	YES	ADAPTABLE	17	3	20	44	-6		84"		245.10
A30-184	SPST	YES	ADAPTABLE	19	6	25	40	-7		42"		264.40
A30-185	SPST	YES	ADAPTABLE	15.5	5.5	21	36	-15		42"		
A30-260	SPST	YES	ADAPTABLE	6	16	22	30	.5	5.5	72"		209.80
A30-261	SPST	YES	ADAPTABLE	6	-	-	61	32	38	84"		203.50
A30-262	SPST	YES	ADAPTABLE	12	20	32	43	3	15	84"		218.20
A30-263	SPST	YES	ADAPTABLE	22.5	11	33.5	47	.5	23	84"		214.90
A30-301	SPST	NO	ADAPTABLE	8.5	-3	5.5	20.5	-24		84"		253.50
A30-304	SPST	NO	ADAPTABLE	15.5	-6	9.5	19.5	-21.5		84"		
A30-307	SPST	NO	ADAPTABLE	23	0	23	43	-23		78"		
A30-308	SPST	NO	ADAPTABLE	11	-12	-1	12.5	-30.5		84"		302.00
A30-310	SPST	YES	ADAPTABLE	20	-14	6	23	-24		36"		304.00
A30-311	SPST	YES	ADAPTABLE	14	-14	0	23	-22		42"		294.30
A30-313	SPST	YES	ADAPTABLE	8	-10	-2	21	-20		42"		
A30-314	SPST	YES	ADAPTABLE	8	-10	-2	23	-23.0		54"		233.90
A30-323	SPST	YES	DIAL	10	-5	5	10.5	-11		48"		166.80
A30-542	SPST	YES	DIAL	15	10	25	41.5	1		27"		231.00
A30-2209	SPST	YES	DIAL	8	-	-	46	35		48"		155.40
A30-2210	SPST	YES	DIAL	8	32	40	42	30	43	48"		143.40
A30-2211	SPST	YES	DIAL	10	0	10	17.5	-10.5		48"		254.30
A30-2212	SPST	NO	SCREWDRIVER	6	47	53	57	42.5		48"		

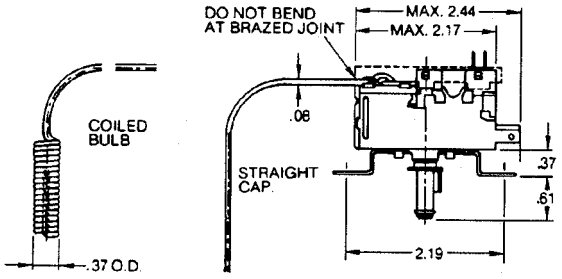
VaRifix Ranco Service Replacement Thermostat

Part #	Ref. No.	Temp °C		Capillary Length (mm)	Application	LIST
		N.I.	N.O.			
VC1	AC1	-5	-14.5	1200	Refrigerator / Manual Defrost	58.10
VA2	AA2	-0.5	-4.5	2000	Electric Absorption R.V. Refrigerator	43.10
VF3	AF3	-16	-24	2000	Freezer and Ice Cream Cabinet	55.10
VP4	AP4	-9.4	-17	1200	Refrigerator / Push Button Defrost	
VS5	AS5	-16.5	-24	2000	Freezer / Signal Make On Rise	
VR6	AR6	-16.5	-24	2000	Freezer / Signal Break On Rise	
VB7	AB7	7	3	1200	Bottle or Beverage Cooler and Frost Free Refrigerator	53.50
VW8	AW8	29.6	26	1200	Window A.C.	76.90
VT9	AT9	33.5	-18.5	1200	Refrigerator Auto Defrost	53.50
VB11	AB11	7	3	400	Bottle or Beverage Cooler and Frost Free Refrigerator	71.90

TEMPERATURE CONTROLS
BEVERAGE/REACH-IN MED. TEMP.
RANCO

A12 Series Constant Cut-In Control

The Ranco A12 Controls provide a constant cut-in feature. The constant cut-in design is generally used to provide an Off-Cycle defrost function. Each time the control cycles off, the control contacts will remain "open" until the evaporator is cleared of any frost that may have accumulated from the previous "On" cycle. The A12 constant cut-in setting will be between 35 and 41 degrees F (See control chart).



Generally, medium refrigeration units without hot gas or electric defrost systems will use a Constant Cut-In Control. (A12 series)
Rotating the knob/dial changes only the Cut-Out setting. The Cut-In setting remains the same regardless of the knob/dial position.

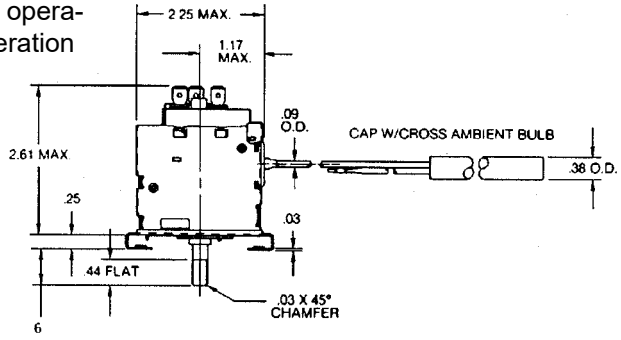
Model Selection Chart:

Part Number	Normal Off (°F)	Warm Off (°F)	Cold Off (°F)	Cut-In Off (°F)	Capillary Length	LIST
A12-1506	15	22	9	38	39 x 3/8 x 1-3/8"	233.60
A12-700	18	26	11.5	37	84"	170.80
A12-701	23.5	31	15	41	84"	174.60
A12-1560	24	29	19	38	72"	209.30

Defrost Termination / Fan Delay Controls

The F25 control terminates defrost and delays the evaporator fan operation on electric heat, hot gas and reverse cycle commercial refrigeration systems.

Features:
- Prevent warm, moist air from being circulated into the refrigerated space
- Remote bulb sensing
- Factory-fixed low event for fan delay



Model Selection Chart:

Part Number	Switch Action	Fan "On" Temperature (°F)	Defrost Termination (°F)	Sensing Element Style	LIST
F25-107	SPDT	20 Fixed	40 to 75 Adjustable	60" Capillary with 3/8" x 4" Cross Ambient Bulb	316.00

Bold part numbers are high volume products

ADAPTABLE AIR CONDITIONER CONTROL KITS

RANCO

Adaptable Replacement Cycling Controls for Room Air Conditioners

Adaptable control to replace OEM controls which govern the ON/OFF compressor function. Includes break-off shaft, dial knob and mounting bracket.



Model Selection Chart:

Part Number	Switch	Dial Range (°F)	Differential (°F)	Sensing Element		Popular Applications	LIST
				Capillary			
				Length	Type & Bulb Size		
A30-X450	SPST	58 to 89	5	-	Air Coil	-	186.50
A30-X451	SPST	58 to 86	5	36"	Straight	G.E. WJ28X500 G.E. WJ28X512	203.90
A30-X452	SPST	58 to 89	5	39"	3/8" x 4" Cross Ambient	G.E. WJ28X502	245.20
A30-X453	SPST	58 to 85	5	18"	Straight	Whirlpool 485760 Frigidare 8006445	190.50
A22-1114	SPST	60 to 91	5	54"	3/8" x 4"	G.E. WJ28X502	283.30
A22-2451	SPDT	45 to 81	5	27"	Straight	G.E. WJ28X504	256.80
A22-2453	SPDT	59 to 90	6	39"	3/8" x 4" Cross Ambient	G.E. WJ28X505	330.00

Bold part numbers are high volume products "X" version rated at 30 FLA at 120/240V

ICE EQUIPMENT, THERMAL STORAGE AND WATER COOLER CONTROLS

RANCO



Ice Bank Controls

Suitable for soft drink dispensers, drink vending machines and ice builders for thermal storage. Uses a special water-filled bulb and transmission fluid to control ice thickness in applications utilizing a refrigerated water bath with ice bank reserve capacity.

Model Selection Chart:

Part Number	Switch	Cut-Out Range (°F)	Differential (°F)	Sensing Element	LIST
018-100	SPST	50 to 65	6	24" Capillary	299.80



Ice Bin Level Control

Direct replacement control for ice machine applications. Provides narrow differential for accurate control of bin level.

Model Selection Chart:

Part Number	Switch	Range (°F)	Differential (°F)	Sensing Element	LIST
A22-1129	SPDT	35 to 51	6	48" Capillary	260.20



Ice Harvest Control

Adaptable replacement for ice machine applications. Parts and instructions included for easy installation.

Model Selection Chart:

Part Number	Switch	Range (°F)	Differential (°F)	Sensing Element	LIST
A22-4506	SPDT	-19 to 22	8	72" Capillary	267.30

ICE EQUIPMENT, THERMAL STORAGE AND WATER COOLER CONTROLS

RANCO



Ice Bank / Liquid Level Controls

The E37 uses solid state circuitry to control ice banks, ice thickness or water level.

Features:

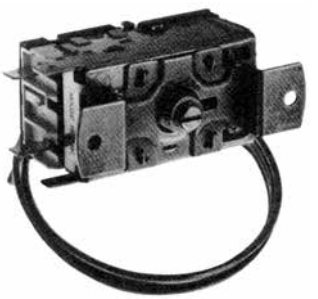
- Easy installation
- Remove sensing, up to 300 feet
- Includes three probe sensor with 118" leads. Allows field adjustment of liquid or ice thickness
- Accurate control
- Low voltage, AC sensing, eliminates electrolysis
- SPDT switching relay. Activates at 45K ohms sensor resistance, deactivates at 85K ohms

Model Selection Chart:

Part Number	Relay	Delay	Operating Voltages	LIST
E37-1201	SPDT	3 Probe	240	
E37-1204	SPDT	3 Probe	120	705.00

Direct Replacement Water Cooler Controls

Ranco's Water Cooler Controls will replace about 80% of your control needs for equipment from such manufacturers as Ebco, Elkay, Sunroc, Halsey-Taylor, Kelvinator and General Electric.



Features:

- Small compact design
- Computer calibrated
- Laser-welded bellows for reliability
- Patented switch for high performance

Model Selection Chart:

Part Number	Normal On (°F)	Normal Off (°F)	Differential (°F)	Cold Off (°F)	Warm On (°F)	Capillary Length	LIST
K-3001	53	46	7	37	61	48"	113.30
K-3002	50	23	27	7	66	36"	147.90
A30-2212	53	47	6	42.5	57	48"	

Bold part numbers are high volume products

REVERSING VALVES

RANCO

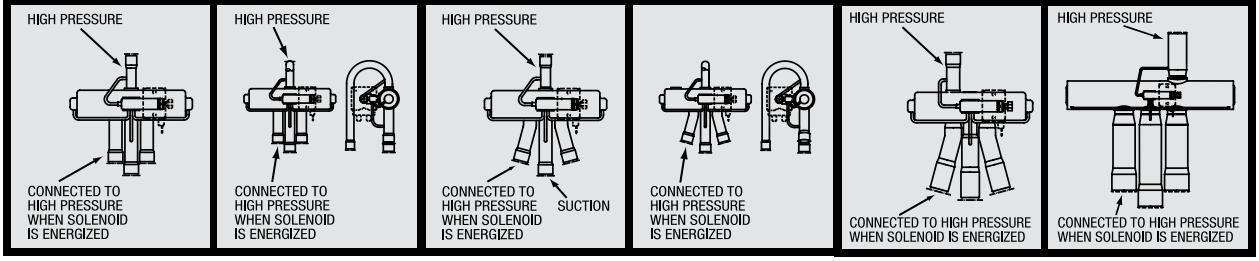
4-Way Pilot Valve

These solenoid operated Reversing Valves are slide type, 4-way with a 4-way Pilot valve and operate under the full pressure of the heat pump system. The valves are used on unitary, split system, and window-type heat pump applications. There are six different styles designed to meet your particular system need.

Part Number	Capacity (Tons)		Style#	Tube Size (I.D.)		Old Valve Number	LIST
	R22	R410A		Suction	High Pressure		
V1-408060-170	.4 to 1.0	.5 to 1.7	1	1/2"	3/8"	V1-188	368.00
V1-406060-270	.4 to 1.0	.5 to 1.7	2	3/8"	3/8"	V1-158	301.00
V2-408060-170	.75 to 2.0	.9 to 2.2	1	1/2"	3/8"	V2-128	368.00
V2-408060-270	.75 to 2.0	.9 to 2.2	2	1/2"	3/8"	V2-100	367.00
V2-4100F0-370	1.0 to 2.5	1.3 to 2.5	3	5/8"	3/8" O.D.	V2-179	364.00
V2-410060-470	1.0 to 2.5	1.3 to 2.5	4	5/8"	3/8"	V2-150	
V3-410080-770	1.0 to 2.8	1.3 to 3.1	5	5/8"	1/2"	V3-1003	335.00
V3-412080-870	1.0 to 3.0	1.3 to 3.5	5	3/4"	1/2"	V3-1004	326.00
V6-412080-170	1.0 to 5.5	1.3 to 6.7	1	3/4"	1/2"	V6-2101	525.00
V6-414080-170	1.0 to 5.5	1.3 to 6.7	1	7/8"	1/2"	V6-2103	525.00
V6-414120-170	1.0 to 5.5	1.3 to 6.7	1	7/8"	3/4"	V6-2106	488.00
V10-414080-170	3.0 to 8.5	3.8 to 10.1	1	7/8"	1/2"	V10-2500	708.00
V10-414120-170	3.0 to 8.5	3.8 to 10.1	1	7/8"	3/4"	V10-2750	
V10-418140-170	3.0 to 9.5	3.8 to 11.7	1	1 1/8"	7/8"	V10-2762	742.00
V10-414140-470*	3.0 to 8.5	3.8 to 10.1	1	7/8"	7/8"	V10-2765	957.00
V12-4220T0-270	6.0 to 12.0	6.3 to 15.0	6	1 3/8"	1 1/8" O.D.	V12-321	894.00

* Heat Recovery

STYLES



Style 1 | Style 2 | Style 3 | Style 4 | Style 5 | Style 6

Type LDK Solenoid Coils For Heat Pump Reversing Valves

CHOOSING THE CORRECT SOLENOID COIL

Type LDK solenoid coils are designed for use with V1-4 / V2-4 / V3-4 / V6-4 / V10-4 / V12-4 RANCO Heat Pump Reversing Valves. These color coded epoxy encapsulated, continuous duty, moisture resistant magnetic coils are designed to operate the pilot valve controlling the Reversing Valves listed above. Included with the solenoid coil is a W29 wiring harness with 48" leads.

WARNING

*Solenoid coils are **not interchangeable**. LDK Series coils must be used with the Vxx-4 Series reversing valves and the L30 Series coils used with the previous version valves listed above.*

Solenoid Coils

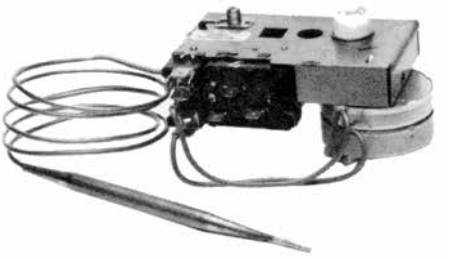
Part Number	Voltage (VAC)	Color Code	Watts		Old Coil Number	LIST
			50 Hz	60 Hz		
LDK-110000-070	24	Red	5	4	L30-0024	94.30
LDK-310000-070	120	Black	5	4	L30-0120	101.60
LDK-410000-070	208/240	Green	5	4	L30-0240	118.90

JOHNSON/RANCO/
HONEYWELL 533-636

HEAT PUMP CONTROLS

RANCO

Timer Activated Heat Pump De-Ice Controls

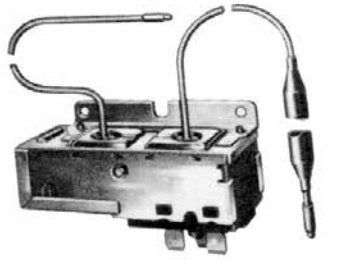


Provide field-adjustable timer control for de-icing of heat pump outdoor coils. Defrost cycle starts every 30, 45, or 90 minutes. Interlock prevents more than one defrost cycle per time period and temperature must be 28°F or lower to start. Termination temperature is adjustable from 55° to 78°F.

Model Selection Chart:

Part Number	Switch	Voltage	Sensing Element	LIST
E15-256	SPDT	24	54" Capillary with 5/16 x 5-1/16" Bulb	395.00
E15-1501		120	42" Capillary with 5/16 x 4-5/16" Bulb	
E15-2601		240	60" Capillary with 5/16 x 4-5/16" Bulb	365.00

Temperature Activated Heat Pump De-Ice Control



Provides automatic temperature-activated de-icing of heat pump outdoor coils, 120/240 volt operation.

Model Selection Chart:

Part Number	Switch Action	De-Ice Initiation (°F)		De-Ice Termination (°F)		Capillary Tube Length		Outdoor Capillary Bulb Size (in.)	LIST
		Ambient 40	Ambient 10	Ambient 40	Ambient 10	Ambient Capillary	Outdoor Coil Cap.		
D52-101	SPDT	25	0	63	45	36	39	5/16 x 3-3/16"	

Resistance Heat Thermostat for Heat Pumps



Ranco's C12-2001 Control is an adjustable thermostat which holds back additional stages of supplemental heat until the outdoor temperature falls below the control's setpoint. There are many ways in which the control can be wired into the system. However, the C12-2001 is typically wired through the relay circuit in conjunction with the indoor thermostat. Most indoor thermostats used with heat pumps will complete a circuit to the supplemental heat if the indoor temperature drops approximately 2°F or more below the indoor thermostat's setting.

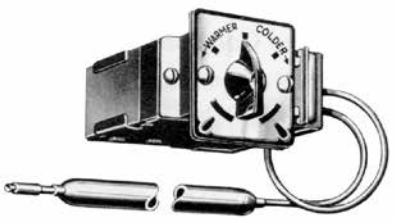
Model Selection Chart:

Part Number	Switch	Temperature Range (°F)	Differential (°F)	Sensing Element	LIST
C12-2001	SPDT	-1 to 63	5	30" Capillary with 3/8 x 6" Bulb	154.80

HEAT / COOL CONTROLS

RANCO

Single Stage Control For Packaged Terminal, Room and Through-The-Wall Heat/Cool Units

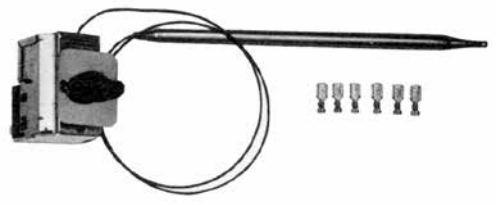


This control replaces many OEM controls on heat/cool units. C12-9025 replaces York 026-17371-00 / Heil Quaker 40889-001. C12-9018 replaces Singer / McQuay / Snyder General 02005451 and 02005610.

Model Selection Chart:

Part Number	Switch	Temperature Range (°F)	Dial Shaft	Diff. (°F)	Sensing Element	Parts Package	LIST
C12-5010	SPDT	60 to 98	3/4"	3	36" Cap. with 3/8 x 9" Bulb	Dial Plate Knob	243.30

Two-Stage Heating/Cooling Control



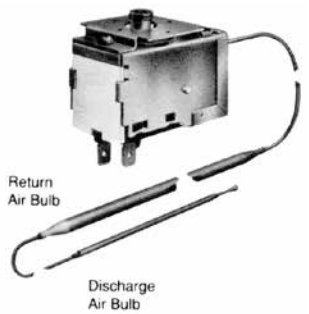
This control replaces many OEM controls on two-stage cooling and heat/cool units. The two SPDT switches are staged 3.5°F.

Model Selection Chart:

Part Number	Switch	Temperature Range (°F)	Differential (°F)	Sensing Element	LIST
C17-100	2-SPDT	71 to 101 (Cooling) 64 to 94 (Heating)	3.5	26" Capillary with 3/8 x 8-9/16" Bulb	302.00

Discharge Feedback Controls

Discharge feedback thermostats type C17 are replacements for room, packaged-terminal and through-the-wall air conditioning units equipped for either manual or automatic heat/cool changeover. The C17 has separate switches for heating and cooling. A wide energy saving comfort Zone ("dead band") is provided between heating and cooling cycles. A limited adjustment range prevents user from over heating or cooling conditioned space.



Features:
Dual bulb thermostats feature two sensing bulbs. The bulbs respond at the same time to both return and discharge air temperature. A limited adjustment range prevents the user from over heating or cooling space. As a result, room temperature variations are minimized. Comfort is improved and operating costs are reduced.

Control Applications:
These controls are used on Room Air Conditioners, Heat/Cool, Package-Terminal Air Conditioners and Through-The-Wall Air Conditioners - Heat/Cool

Model Selection Chart:

Part Number	Dial Shaft	Switch	Temperature Range (°F)	Diff.	Capillary	Replaces	LIST
C17-9043	Adaptable	2 SPDT	68 to 86 (cooling)	4	36" + bulb & 36" + bulb	21C50842P01 /21C55082P02	331.00

Note: C17 Two bulb controls (Discharge Feedback)

THERMOSTAT GUARDS

Plastic Thermostat Guards

Features

- Hi-impact plastic guards.
- Horizontal and vertical mounting.
- Heavy duty lock and key.
- Comes with complete mounting hardware.
- Each model includes a ring & solid base.
- Colour - clear cover with off white base.



TG2
Illustrated



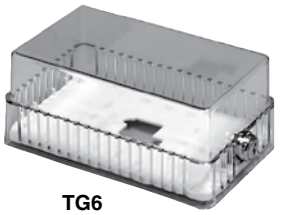
TG5
Illustrated



585-TG
Illustrated

Plastic Thermostat Guards

Part #	Base	Inside Dimensions L	W	D	Cross Reference		LIST
TG5	Ring	3.75"	3.50"	2.62"	BTG-EK	F29-0252	42.70
	Solid	4.00"	4.00"	2.50"	ECST	029-0178 029-0179	
TG2	Ring	5.25"	4.62"	3.12"	BTG-K	F29-0251	52.60
	Solid	5.75"	5.00"	2.81"	KCBT	F29-0257	
TG6	Ring	6.31"	3.62"	3.06"	BTG-RK	F29-0253	49.70
	Solid	6.62"	4.12"	2.75"	RCBT	029-0143	
TG	Ring	8.18"	4.62"	3.56"	BTG-UK	F29-0254	71.60
	Solid	8.50"	5.00"	3.87"	UCBT	029-0198	



TG6
Illustrated

Mounting Base Types
All mounting bases are plastic.

Metal Thermostat Guards

Features

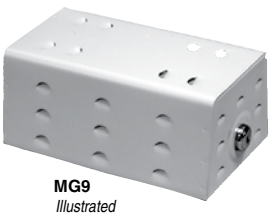
- Durable metal guards.
- Horizontal and vertical mounting.
- Heavy duty lock and key.
- Comes with complete mounting hardware.
- Each model includes a ring & solid base.*
- Colour - off white cover with off white base.

Mounting Base Types

MG3	*Plastic*
MG6	*Plastic*
MG9	*Metal*
MG12R	*Metal*
MG12S	*Metal*



MG3
Illustrated



MG9
Illustrated



MG6
Illustrated



MG12R - *Hinged*
Illustrated

Metal Thermostat Guards

Part #	Base	Inside Dimensions L	W	D	Cross Reference		LIST
MG3	Ring	5.31"	4.31"	3.00"	BTG-KWM	KMRT	61.20
	Solid	5.62"	5.12"	2.87"	BTG-KM	KMST	
MG6	Ring	6.31"	3.62"	3.18"	BTG-EM	EMST	61.20
	Solid	6.62"	4.12"	3.75"	BTG-RM BTG-RWM	RMRT	
MG9	Ring	6.75"	4.50"	3.43"	BTG-UWM	UMRT	37.00
	Solid	7.18"	5.25"	3.43"	BTG-UM	UMST	
MG12R*	Ring	6.12"	3.81"	3.12"	BTG-54VLW	F29-0256	59.70
MG12S*	Solid	6.37"	4.25"	3.00"	BTG-54VL	F29-0255	59.70

* Hinged metal guards do not come with both bases.

THERMOSTAT GUARDS
HONEYWELL

TG510, TG511, TG512 Versaguard Universal Thermostat Guards

Versaguard Universal Thermostat Guards...
to protect any Commercial Thermostat

Replacement Parts and Accessories: 191990A Replacement Keys



TG510



TG511



TG512

Model No.	Inside Dimensions (in.)		Outside Dimensions (in.)			Guard Cover Material	Ring Base Material	Wallplate Material	Use With	LIST
	Height	Width	Height	Width	Depth					
TG510A1001	4-7/16	4-7/16	5-7/8	5-7/8	2-1/2	clear acrylic	clear acrylic	opaque polystyrene	T87/Q539, Others	72.40
TG510D1005	4-7/16	4-7/16	5-11/16	5-11/16	2-7/16	painted metal	opaque polystyrene			136.30
TG511A1000	5-1/16	6-1/16	6-1/2	7-1/2	2-15/16	clear acrylic	clear acrylic		874/Q674, Others	72.30
TG511D1004	5-1/16	6-1/16	6-3/8	7-3/8	2-7/8	painted metal	opaque polystyrene			106.90
TG512A1009	5-7/8	8-3/8	7-1/4	9-3/4	3-3/8	clear acrylic	clear acrylic		T8600, T8090, Others	75.00
TG512D1003	5-7/8	8-3/8	7-1/8	9-5/8	3-1/4	painted metal	opaque polystyrene			129.30

SINGLE STAGE THERMOSTATS

HONEYWELL - MERCURY FREE

T87 Thermostat - The Round



Provides temperature control for 24 to 27 Vac residential heating, cooling or heating-cooling systems

- Available with two or three-wire wallplate for heating-only, cooling-only, or heating-cooling systems with remote switching
- Adjustable heat anticipator for comfortable temperature control

Adjustable Heat Anticipator: 0.1A to 1.2A
Cooling Anticipator: 0A to 1.5A, 24 to 27 Vac.

Part #	Type	Description	LIST
T87K1015	Mechanical	HON H/O ROUND 5-30C T-STAT MERCURY FREE GAS/OIL/STEAM/ FORCED AIR/GRAVITY WHITE	123.70
T87N1018	Mechanical	HON H/C ROUND 5-30C T-STAT MERCURY FREE GAS/OIL/STEAM/ FORCED AIR/GRAVITY WHITE	204.00

T8775 Electronic Round Non-Programmable Thermostat



- One setback program for nighttime energy savings
- Compatible with 24 volt single-stage gas, oil and electric heating and cooling systems
- Advanced power stealing
- Premier White colour
- Decorator cover wallplate
- Resistor included for use with Taco zone valves
- Front wired for easy installation
- Simple 4-wire installation (5-wire not available)
- Cycle rate and clock configurable through the keyboard
- Electronic memory chip (EEPROM) - no batteries required for memory retention in case of power outage

Model Number	Application	Stages		Switching		Terminal Designations	Colour	LIST
		Heat	Cool	System	Fan			
T8775A1017	Gas, oil or electric 24V heating only system	1		HEAT-OFF	ON-AUTO	R, W	White	273.90
T8775C1013	Gas, oil or electric 24V heating-cooling systems with manual changeover from heat to cool	1	1	COOL-OFF-HEAT	ON-AUTO	R, G, W, Y,	White	291.00

T822/834K Mercury-Free Econostat



The economic choice for meeting mercury-free regulations.

Features

- Available in heat/cool and heat only models
- Budget price
- Meets mercury-free requirements
- 5-Year warranty

Model Number	Description	LIST
T822K1034	BI-METALIC T-STAT H ONLY	79.50
T834N1010	H/C T-STAT C/W FAN SWCH	98.70

WIFI THERMOSTATS
HONEYWELL

Lyric Wi-Fi Thermostat

The updated Lyric Round™ thermostat is ideal for customers who want to connect their home systems via the Lyric app, maximizing savings, comfort, and security. Customers gain intelligent benefits, such as location-based control using their smartphone location to adjust for comfort when they're home, savings when they're away.

The Lyric Round is also compatible with **Apple HomeKit™** and **Samsung SmartThings™**, and provides proactive smart alerts about maintenance needs and extreme condition. Installation and setup are easy via the on-screen menu for installer setup.



Part #	LIST
TH8732WFH5010	583.00

WiFi 9000 Color Touchscreen Thermostat

Honeywell's Wi-Fi 9000 allows remote access to the thermostat through a computer, tablet, or smart phone with Honeywell's Total Connect Comfort Service.



Features

- Get Connected – Connect to home's existing Wi-Fi network
- Remote Control – Convenience, comfort and control from anywhere through web, tablet or smartphone access
- Apps available for tablet and smartphones
- Automatic software updates through Wi-Fi
- Selectable to 7 Day or Non-Programmable
- Program thermostat locally or over the web or app
- Customize the screen color to match any décor

Part #	LIST
TH9320WF5003/U	652.00

WIFI THERMOSTATS
HONEYWELL

Wi-Fi VisionPRO® 8000 Touchscreen Thermostat

Wi-Fi VisionPRO® 8000 for residential or commercial use.
Stages up to Up to 3 Heat / 2 Cool.

Your customers want comfort, convenience and connectivity. With the Wi-Fi VisionPRO, you can offer them all three. Using an existing Wi-Fi network plus Honeywell's free Total Connect Comfort services, the Wi-Fi VisionPRO allows homeowners to remotely control their comfort settings and manage their energy costs – with ease.



Features

- Intuitive programming for easier setup
- Remote comfort control via computer, tablet or smartphone
- Universal application across more system types
- Equipment check/change reminders
- Programmable for annual energy savings

Part #	LIST
TH8321WF1001/U	517.00

T Series Thermostats

Features

- **Intuitive setup that fits your technicians to a T**
  Every T Series thermostat features on-screen menus with familiar installer setup (ISU) steps, helping to eliminate the learning curve that can come with a new product.
- **Faster installs that fit your operation to a T**
  With the new UWP mounting system, you can standardize your training program, install process, and truck stock – helping your techs get in and out and on their way more quickly.
- **Easy upsell that fits your revenue model to a T**
  The T Series has a snap-together design that enables you to easily move customers from a non-connected to a connected thermostat without having to rip and replace the connector and cover plate.*
  **C-wire required*



Part #	Description	LIST
Lyric T6 Pro Wi-Fi Series		
TH6320WF2003	3H/2C Heat Pump or 2H/2C Conventional	452.00
TH6220WF2006	2H/1C Heat Pump or 2H/2C Conventional	339.00
T6 Pro Series		
TH6220U2000/U	2H/1C Heat Pump or 2H/2C Conventional	249.90
TH6210U2001/U	2H/1C Heat Pump or 1H/1C Conventional	185.10

ELECTRONIC THERMOSTATS
HONEYWELL

VisionPRO 8000



Maximum comfort and energy savings made effortless.

- Effortless, menu-driven programming
- Up to 3H/2C - conventional and heat pump
- Real-time clock
- Large 10-square-inch touchscreen display
- 5-Year warranty

Residential

Part #	Description	LIST
TH8320R1003/U	3H / 2C	555.00
TH8110R1008/U	1H / 1C	499.00
C7089U1006	Outdoor Sensor	81.40
C7189U1005	Indoor Air Sensor	94.00
C7089R1013	Wireless Outdoor Sensor	179.20
C7189R1004	Wireless Indoor Sensor	135.60

CommercialPRO 8000



- 7 day programmable touchscreen thermostat
- Selectable for residential or light commercial use
- Can be wired directly to the equipment, used with the THM5421R1021 Equipment Interface Module or used with the THM4000R1000 TrueZONE Wireless Adapter
- Works with the RedLINK™ accessories including the RedLINK™ Internet Gateway, Portable Comfort Control, Wireless Outdoor Sensor, Wireless Indoor Sensor, Wireless Entry/Exit Remote and Wireless Vent and Filter Boost Remote.

Commercial

Part #	Description	LIST
TH8321R1001/U	Touchscreen 3H/2C	611.00

FocusPRO 6000



Simplicity and comfort that's easy to see - and easy to program.

- Easy-access battery replacement
- Built-in instructions
- Largest display in its class
- Up to 2H/2C - conventional and heat pump
- 5-Year warranty

Part #	Description	LIST
TH6110D1039	1H / 1C	268.60
TH6220D1028	2H / 2C	332.00

FocusPRO 5 Series



Simplicity and comfort that's easy to see.

- Easy-access battery replacement
- Largest display in its class
- Up to 3H/2C - conventional and heat pump
- Dual-powered (battery and/or hardwire)
- 5-Year warranty

Part #	Description	LIST
TH5110D1022	1H / 1C	193.20
TH5220D1029	2H / 2C	267.80

ELECTRONIC THERMOSTATS

HONEYWELL

RedLINK Wireless Products

Wireless FocusPRO Systems - (Non-Zone)

	**Programmable Wireless FocusPRO Kit — YTH6320R1001** Programmable FocusPRO, Equipment Interface Module and Return Air Sensor
	**Non-Programmable Wireless FocusPRO Kit — YTH5320R1000** Non-Programmable FocusPRO, Equipment Interface Module and Return Air Sensor

Wireless Zoning Systems

	**Programmable Wireless Zoning Adapter Kit —YTH6320R1023** Programmable Wireless FocusPRO Thermostat and Wireless Adapter

EConnect™ Wireless Thermostats for Electric Heat

	**Wireless Line Volt Thermostat Kit — YTL9160AR1000** EConnect Thermostat and Equipment Interface Module

Individual System Components

	**Prestige 2.0 Thermostats - THX9421R5013** Prestige IAQ Thermostat
	**Wireless FocusPRO Thermostats - TH6320R1004** 5-1-1 Programmable FocusPRO Thermostat
	**Wireless FocusPRO Thermostats - TH5320R1002** Non-Programmable FocusPRO Thermostat

Accessories

	**THM6000R1002** RedLINK Enabled Internet Gateway
	**C7189R1004** Wireless Indoor Sensor
	**C7089R1013** Wireless Outdoor Sensor
	**REM5000R1001** Portable Comfort Control
	**C7735A1000** Return/Discharge Air Temperature Sensor
	**THM5421R1013** Prestige IAQ Equipment Interface Module

	**THM5320R1000** Equipment Interface Module
	**TLM1110R1000** Honeywell Wireless Line Volt Equipment Interface Module
	**THM4000R1000** Wireless Adapter
	**THP9045A1023** Prestige WireSaver Module
	**REM1000R1003** Wireless Entry/Exit Remote
	**HVC20A1000** Wireless Vent and Filter Boost Remote 20/40/60 Minute Ventilation and Filtration Timer

ELECTRONIC THERMOSTATS

HONEYWELL

T498A,B Electric Heat Thermostats



Provide line voltage control of electric heating systems.

- Include thermometer
- Include long lasting Micro Switch mechanism; makes on temperature fall

Temperature Setting Range: 40°F to 80°F (5°C to 27°C)
Fixed Differential: 3°F (2°C)
Electrical Ratings (resistive): 22A at 120/208/240 Vac; 19A at 277 Vac
Sensing Element: Bimetal
Performance Certification: T498A: 16A resistive at 120, 208, 240 and 277V
Note: To maintain cycles per hour, a minimum load of 8 amps is required
Mounting: Mounts directly on 2 x 4 in. outlet box

Model Number	Switching	Positive Off (Yes/No)	Sensing Element	Electrical Rating	Styling / Colour	Setting Range	Thermometer	Range Stops and Locking Cover Included	LIST
T498A1927	Spst	No	Bimetal	Resistive	White	5°C t 27°C	No	No	61.80
	Dpst	Yes			Beige				
T498B1652							No	Yes	71.30
T498B1678					White		No	No	83.90

TEMPERATURE CONTROLLERS

T775 Electronic Remote Temperature Controllers



- Easy-To-Use Graphical Interface
- Internal Time Clock Scheduler give you more control of the equipment without needing to purchase an additional time clock.
- Up To Two Independent Modulating Outputs — Each output can be individually configured for 0-10 Vdc, 2-10 Vdc, 4-20 mA or Series 90
- NEMA 4X Enclosure Option
- Modulating High Or Low Limit Control
- Configurable Minimum Off Time
- Sensor Calibration — Calibrate input sensors up to +/-10° F
- Universal Model To Control Pressure, Humidity Or Temperature —The T775U Universal model has an easy setup for configuring control of pressure or humidity with a 0-5Vdc, 0-10 Vdc or 4-20 mA input. Control humidity with % RH displayed, CO2 with ppm displayed, or control pressure with in. w.c., psi, Pa, or kPa displayed. Outputs include two modulating and two relay outputs that can each have their own setpoint.
- Special Sequencing Model For Staging Up To 12 Relays With Up To Two Setpoints
- Special Boiler Model — The T775 boiler model offers features including dedicated pump output, staging for up to 12 relays, digital output alarm, pump exercise, pump pre-purge and post-purge, warm weather shut-down, built-in scheduler, displayed run time, equal run time, first-on, first-off and more. With a single control, you can handle multi-boiler applications. The T775 boiler model can be used on chillers as well.

Models for Standard Applications

Model No.	LIST
T775A2009	450.00
T775B2032	679.00
T775B2024	1,090.00
T775B2040	993.00
T775M2006	511.00
T775M2022	1,045.00
T775M2048	890.00
T775M2014	1,455.00
T775M2030	1,238.00
T775R2035	852.00
T775R2027	1,006.00

Models for Special Applications

Model No.	LIST
T775P2003	1,160.00
T775L2007	968.00
T775U2006	890.00
T775U2016	1,034.00
T775S2008	298.60

Compatible Components

Model No.	LIST
50021579-001	137.10
T775-SENS-WR	178.00
T775-SENS-WT	224.50
T775-SENS-OAT	177.50
C7031D2003	159.00
C7031J2009	257.10
C7046D1008/U	159.50
C7130B1009/U	118.00
H7625A2010	578.00
H7655A1001	233.20
H7655B2014	458.00
P7650A1000	535.00
C7232A1008	735.00

See Next Page for More Product Details

T775 Electronic Remote Temperature Controllers (cont'd)

Models for Standard Applications

Product Number	Description	Replaces	Relay Outputs	Analog Outputs 4-20 mA, 0-10 Vdc, 2-10 Vdc, & Series 90	Floating Output[1]	Sensor Inputs Available	# Sensors Included[2]
T775A2009	Standard	T775A1001	1 SPDT			1	1
T775B2032	Standard	T775A1019, T775B1000	2 SPDT		1	2	1
T775B2024	Standard-NEMA 4X	T775C1009, T775D1008	4 SPDT		2	2	1
T775B2040	Standard	T775A1027, T775A1035, T775B1018, T775B1026, T775B1040	4 SPDT		2	2	1
T775M2006	Modulating		None	2		2	1
T775M2022	Modulating-NEMA 4X		2 SPDT	2		2	1
T775M2048	Modulating	T775E1015, T775E1023, T775E1056, T775E1064, T775E1098	2 SPDT	2		2	1
T775M2014	Modulating-NEMA 4X	T775G1005, T775G1013, T775G1021, T775G1039	4 SPDT	2		2	1
T775M2030	Modulating	T775E1114, T775F1022, T775F1055, T775F1089	4 SPDT	2		2	1
T775R2035	Reset option	T775J1001, T775J1076	2 SPDT		1	2	2
T775R2043	Reset option	T775J1019, T775J1027, T775J1035	None	2		2	2
T775R2027	Reset option	T775J1043, T775J1050, T775J1068	2 SPDT	2		2	2

[1] One floating output eliminates two relay outputs.
[2] 50021579-001 included with non-NEMA 4X models, and T775-SENS-WR included with NEMA 4X models.

Models for Special Applications

Product Number	Description	Replaces	Relay Outputs	Analog Outputs 4-20 mA, 0-10 Vdc, 2-10 Vdc, & Series 90	Digital Output	Dedicated Pump Output	Sensor Inputs Available	# Sensors Included	Expandable[1]	Output Reset
T775P2003[2]	Special boiler with reset		4 SPDT		1	•	3	3	•	•
T775L2007	Stage sequencer with reset option		4 SPDT[3]				2	1	•	•
T775U2006	Universal — humidity, pressure, etc.	H775A1006, H775A1022, H775A1048, H775A1063, H775B1005, H775C1004, H775D1003, H775E1002	2 SPDT	2			2[4]			•
T775U2016	Universal - Control to sensor A (universal input) and Sensor B (temp) independently.		2 SPDT	2			2[4]			•
T775S2008	Relay expansion module		4 SPDT	Use with T77P or T775L						

[1] 4 or 8 more relays possible with T775S2008 relay expansion module(s).
[2] Includes dedicated pump output, equal run time, pump pre-purge and post-purge, WWSD and more.
[3] Up to 2 independent non-sequenced relays are also available.
[4] First input configurable for temperature 0-5Vdc, 0-10 Vdc, or 4-20 mA; second input is configurable for temperature only.

Compatible Components (Sensors and Transmitters)

	Part Number	Description	Application	Use With
Temperature	50021579-001	Standard temperature sensor for indoor applications	Monitoring temperature of return air, discharge air and mixed air	All T775 Series 2000 models
	T775-SENS-WR	Water-resistant sensor with 5-ft. leads		
	T775-SENS-WT	Water-tight sensor with 6-ft. leads		
	T775-SENS-OAT	Outdoor air temperature sensor	Outdoor air for reset	
	C7031D2003	5-in. immersion sensor (comes with immersion well, 50001774-001)	Hot or chilled water	
	C7031J2009	12-in. duct averaging sensor with four elements	Duct discharge air	
	C7046D1008	8-in. duct probe with mounting flange	Duct discharge air mounts on flat duct or plenum surface	
	C7100D1001	12-in. fast response, duct averaging sensor with flange	Averaging duct discharge air for use in troubleshooting	
	C7130B1009	Room mount sensor	Wall mount air temperature sensor	
Humidity	H7625A2010	Humidity transmitter, 2% RH accuracy, wall mount or duct mount	Humidity	T775U2006, T775U2016
	H7655A1001	Humidity transmitter, 5% RH accuracy, wall mount		
	H7655B2014	Humidity transmitter, 5% RH accuracy, duct mount		
Pressure	P7650A1000	Panel mount pressure sensor has ± 0-.1", 0-.25", 0-.5", 0-1" w.c. selectable pressure range, with display	Duct, room and building static pressure, clean rooms, hospitals, fume hoods and computer rooms	
CO_2	C7232A1008	Non-Dispersive Infrared (NDIR) carbon dioxide sensor, 0-2,000 ppm adjustable, 0/2-10 Vdc or 0/4 to 20 mA adjustable, one adjustable SPST relay output, wall or duct mount, LCD option and Honeywell logo option	Ventilation and air conditioning systems to control the amount of fresh outdoor air supplied to maintain acceptable levels of CO_2 in the space (demand control ventilation)	

VENTILATION CONTROLLERS
HONEYWELL

Honeywell Jade Economizer
Demand Control Ventilation (DCV)

JADE™ economizers are the perfect examples of Honeywell innovation that makes saving energy easier for your customers. For buildings with less than 50,000 sq ft and standalone rooftop unit (RTU) applications, JADE is the best solution for a fresh air ventilation system. JADE Fresh Air Economizers with integrated demand control ventilation (DCV) systems are compatible with most individually packaged rooftop or built-up air handling units.

JADE eliminates the complicated set up typically associated with fresh air ventilation systems and can be installed and configured by technicians without significant training. JADE saves time during installation with clear instructions on its LCD display. This display also gives ongoing economizer status indicating whether the economizer is working properly, satisfying ventilation and cooling needs and minimizing energy costs.


Y7220A7215


M7215A1008


MS7503A2030


50001194-001

Part #	Description	LIST
Y7220A7215	JADE Economizer Systems with Dry Bulb and black motor, W7220A1000, C7250A1001, C7250A1001, and M7215A1008	1,320.00
W7220A1000	JADE Economizer logic module with DCV and commissioning for Economizer Systems	642.00
M7215A1008	Honeywell Actuator 2-10vdc 24v 25 Lb/inch	744.00
MS7503A2030	Honeywell Damper Actuator Sr 27 Lb/inch 24v	553.00
C7046A1004	Honeywell disc. air temp. sensor	84.90
C7150B1004	Honeywell mix or discharge air temp. sensor	60.60
C7400A2001	Honeywell solid state enthalpy sensor	212.40
C7232A1008	Honeywell CO2 sensor/controller wall mt. w/LCD display,0-3000 PPM range,24V,2 outputs, 1 analog 2/10DCV & 1SPST relay	735.00
C7232B1014	Honeywell CO2 sensor, without display, duct mt., 1 analog output 2-10VDC & 1 SPST relay output	857.00

LCBS CONNECT
HONEYWELL

Honeywell LCBS Connect™

LCBS Connect™ solution consists of a technology platform that includes three key components.

- Advanced remote monitoring and alerting with programming capabilities enable facilities managers and service contractors unparalleled system access.
- Cloud-based data storage provides secured access via smartphone, tablet, and personal computers so users can get data they need, when they need it.
- Hardware platform enables precise control of constant volume air handling units with selectable user interface.



Part #	Description	LIST
YCRL6438SR1000	LCBS controller and stat	1,055.00
LGW1000	Gateway	863.00
C7400S1000	Enthaply sensors	183.80
50053060-001	Bracket for Enthaply sensors	62.00
MCSP-A	Digital current sensor	109.50
CTP-V-50	Analog current sensor	222.30
C7232B1014	CO2 sensor	857.00
C7250A1001	Dry bulb sensor	51.70
TR40	Sylk wall module sensor	100.00
TR40-CO2	Sylk CO2 wall module	804.00
TR40-H-CO2	Sylk CO2 & humidity module	981.00
209541B	Network termination device	124.40 /Pack of 10
WSK-24	Occupancy sensor	483.00
C7041B2005	Discharge air temperature sensor	47.80
C7770A1040	Discharge air temperature sensor	52.90
C7041D2001	Water probe temperature sensor 5 inch	51.20
C7041F2006	Outdoor air temperature sensor	68.90

LINE VOLTAGE THERMOSTATS

HONEYWELL



T631 Controller

For control of cooling, heating, or ventilating equipment

Model #	Control Range	Switching	Fixed Differential	LIST
T631A1162	35°F - 100°F	1-spdt snap switch	1.1°C	319.00
T631B1070	35°F - 100°F	2-spdt snap switches	per switch 1.1°C interstage 1.9°C between switches	412.00
T631C1103	-30°F - 100°F	1-spdt snap switch	1.1°C	375.00
T631C1020	70°F - 140°F	1-spdt snap switch	1.7°C	391.00

T6031A Refrigeration Temperature Controllers

Wide range controller used in applications where remote mounting of sensing element is required. Controls temperature in duct, tank, freezer or cooler. Max. Ambient Operating Temperature: 52°C (125°F)



Contact Ratings (1/3 hp):

	120 Vac		240 Vac	
	R-B	R-W[1]	R-B	R-W[1]
Full Load	8.0A	16.0A	5.1A	8.0A
Locked Rotor	48.0A	80.0A	30.6A	40.0A
Pilot Duty				125 VA

[1] Maximum temperature at element: 54°C (130°F)

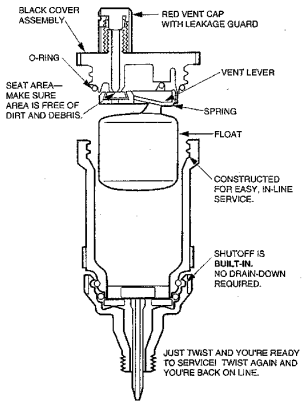
Model #	Range		Switching	Differential		Capillary Length		LIST
	C	F		C	F	m	ft	
T6031A1219	-35 to +30	-30 to +90	SPDT switch makes R to W on temperature rise; R to B on temperature fall	Adjustable 1.9 to 8	Adjustable 3.5 to 16	2.4	8	249.20
T6031A1235	-35 to +30	-30 to +90				6.1	20	345.00

HEATING - AIR VENTS

EA122A1002 Automatic Air Vent for Heating System Applications

Purges air trapped in closed hot or cold water systems

- Maintains quiet and efficient operation
- Built-in brass shutoff valve for servicing without system shutdown
- Built-in vacuum breaker
- Leakage guard safeguards operation
- Includes removeable float/valve assembly for easy servicing
- Not for use in steam systems
- Body, cover and float assembly made of thermoplastics
- Internal parts made of corrosion-resistant and chemical-resistant materials for use with water systems containing propylene glycol, mineral oils or petroleum-based oils
- Oil resistant seal

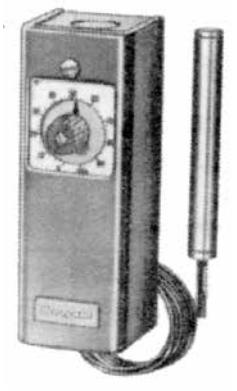


Part #	Description	Connections	LIST
EA122A1002	Automatic air vent with built-in shutoff valve & leakage guard	1/8 in. male, threaded	72.90
EA122B117	Auto air vent w/o shut off	1/8 in. male, threaded	56.00

LINE VOLTAGE THERMOSTATS
HONEYWELL

T675A,B; T678A Controllers

Remote bulb, temperature compensated thermostats regulate temperature of air or liquids in ducts, pipes, tanks and boilers.



Electrical Ratings (1/3 hp):

	120 Vac	240 Vac
Full Load	8.0A	5.1A
Locked Rotor	48.0A	30.6A

T675A - nonadjustable differential models 125 VA at 120/208/240 Vac.
T675B - 125 VA at 240 Vac pilot duty
T678A - Maximum connected load: 2000 VA

Switching:
T675A - SPDT switch breaks R-B and makes R-W at setpoint on temperature rise
T675B - SPST switch breaks at setpoint on a temperature fall
T678A - 2 SPDT switches operate in sequence. Right switch breaks R-B and makes R-W at setpoint on a temperature rise; left switch breaks R-B and makes R-W if temperature continues to rise through interstage differential.

Model	Control Range		Capillary Length and Material	Max.Temp.		Differential		LIST
	C	F		C	F	C	F	
T675A1045	-18 to +38	0 to 100	6.1m (20 ft) st. steel	52	125	1.7 to 5.6 adj.	8	915.00
T675A1458	13 to 79	55 to 175	1.5m (5 ft) copper	93	200	0.6 fixed		329.00
T675A1524	13 to 79	55 to 175	6.1m (20 ft) copper	93	200	0.6 fixed		382.00
T675A1722	13 to 79	55 to 175	1.5 (5 ft) copper	93	200	2.0 to 6.7 adj.		397.00
T675A1771	13 to 79	55 to 175	1.5 (5 ft) copper	93	200	0.6 fixed		501.00
T675A2068	-15 to +35	5 to 95	1.5 (5 ft) copper	52	125	1.7 to 5.6 adj.		557.00
T675A2084	-15 to +35	5 to 95	6.1 m (20 ft) copper	52	125	adjustable		580.00
T675A2118	75 to 125	167 to 250	1.5 (5 ft) copper	138	280	1.7 to 5.6 adj.		524.00
T675B1002	-1 to +10	30 to 50	3.0 m (10 ft) copper	52	125	Manual Reset		391.00
T678A1155	-15 to +35	5 to 95	1.5 (5 ft) copper	52	125	Each switch fixed at 1.7°C (3°F). Adjustable differential between switches 1.7°C to 5.6°C (3°F to 10°F)		627.00
T678A1163*	-15 to +35	5 to 95	6.1 m (20 ft) copper	52	125			945.00
T775B2032	75 to 125	167 to 250	1.5 (5 ft) copper	138	280			679.00
T678A1478	-18 to +38	0 to 100	Fast response capillary tube	52	125			512.00

**Now With 2 Relays*

LINE VOLTAGE THERMOSTATS
HONEYWELL

T6051 & T6052 Heavy Duty Line Voltage Thermostats



Heavy duty line voltage thermostats are used to control fan coils, fans, motor starters, valves, contactors, and circulator motors in heating and / or cooling systems.
Add Q651A,B Subbases to provide system and fan switching at the thermostat location. The set point knob is removable to lock set point and prevent tampering. With locking cover.

Model #	Application	Switching	Mounting	Differential °F (°C)	Scale Range °F (°C)	Remarks	LIST
T6051A1057	Heating/cooling; with resistive rating for electric heat applications	spdt	Vertical or horizontal mounting on standard outlet box, or on Q651 Subbase vertical mounting on explosion-proof housing	1.0 (0.6)	46 to 84 (10 to 25)	Standard cover 135535B	483.00
T6052A1023	1-stage heating-cooling system	2-spdt switches	Vertical mounting on standard outlet box	*	50 to 77 (10 to 25)	celsius scaleplate	660.00

* Differential: Stage 1 heat, stage 2 cool - 1.4°C (2.5°F) nominal; stage 2 heat, stage 1 cool - 1.8 (3.2°F) nominal
** Differential: Stage 1 heat - 1.4°C (2.5°F) nominal; stage 2 cool 1.8°C (3.2°F) nominal

PROPORTIONAL TEMPERATURE CONTROLS
HONEYWELL

T991A Proportional Temperature Controllers



For modulating control of water or air temperature in ducts, tanks, and similar applications.

Model #	Setpoint		Capillary Length and Material	Adj. Throttling		Bulb (in.)	Pot. Res. (ohms)	LIST
	F	C		F	C			
T991A1012	0 to 100	-18 to +38	6.1m (20 ft) copper	3.0 to 30.0	1.7 to 16.7	1/2 x 4-3/16	135	956.00
T991A1061	160 to 260	71 to 127	1.5m (5 ft) copper	3.0 to 30.0	1.7 to 16.7	1/2 x 4-3/16	135	946.00
T991A1194	55 to 175	13 to 79	6.1m (20 ft) copper	3.5 to 36.0	1.9 to 20.0	1/2 x 3-9/16	135	1,002.00
T991A1244*	55 to 175	13 to 79	1.5 m (5 ft) copper	3.5 to 36.0	1.9 to 20.0	1/2 x 3-9/16	135	850.00
T991A1350	55 to 175	13 to 79	6.1 m (20 ft) copper	3.5 to 36.0	1.9 to 20.0	Averaging	135	1,390.00
T991A1426*	0 to 100	-18 to +38	1.5 m (5 ft) copper	3.0 to 30.0	1.7 to 16.7	1/2 x 4-3/16	135	850.00
T991A1756**	55 to 175	13 to 79	1.5 m (5 ft) copper	3.5 to 36.0	1.0 to 20.0	Fast response	135	1,254.00
T991A1764	0 to 100	-18 to +38	7.3 m (24 ft) copper	3.5 to 36.0	1.0 to 20.0	Averaging	135	951.00

* Includes 311266D Duct Bulb Holder
** Includes 131524A Duct Coil Holder

AQUASTAT CONTROLLERS

HONEYWELL

L4006A,B,E; L6006A,B,C Aquastat Controllers



Immersion type controllers for limiting or regulating temperatures of liquids in boilers or tanks.

Electrical Ratings (A):

Models with 1.1°C (2°F) Fixed Differential:

	120 Vac	240 Vac
Full Load	2.6	1.3
Locked Rotor	15.6	7.8

Models with 2.8°C (5°F) Differential:

	120 Vac	240 Vac
Full Load	8.0	5.1
Locked Rotor	48.0	30.6
Millivoltage	0.25 at 1/4 to 12 Vdc	

Model #	Temperature Range		Application	Midscale Differential		Includes	LIST
	F	C		F	C		
L4006A1017	100 to 240	38 to 116	High or low limit	5 to 30 adj.	2.8 to 16.7 adj.	1-1/2 in. insulation, stop factory set at 240°F immersion well	479.00
L4006A1678	100 to 240	38 to 116	High or low limit	5 to 30 adj.	2.8 to 16.7 adj.	2-7/8 in. sensing bulb, stop factory-set at 240°F less immersion well	353.00
L4006A1959	40 to 180	4 to 82	High or low limit	2 fixed	1.1 fixed	2-78 in. sensing bulb,with well adapter, heat-cond.compound. Horizontal or Vertical Mount	359.00
L4006E1042	110 to 290	43 to 143	High limit	manual reset	manual reset	2-7/8 in. sensing bulb, stop factory-set at (240°F). Horizontal or vertical mount	532.00
L6006A1145	100 to 240	38 to 116	Circ.& high or low limit	5 to 30 adj.	2.8 to 16.7 adj.	2-7/8 in. insulation, stop factory-set at 240°F. With well adapter, heat-cond. compound. Horizontal or vertical mount.	371.00
L6006C1034	65 to 200	18 to 93	Circ., high & low limit	5 to 30adj.	2.8 to 16.7 adj.	Bracket for strap on mounting, stop factory-set at 200°F	336.00

L4008A,B,E; L6008 Remote Bulb Controllers



Hydronic controllers for limiting or regulating temperatures of boiler water or liquid in tanks.
Can also sense duct or outside air temperature.

Model #	Temperature Range		Application	Midscale Differential		Switch Action	LIST
	F	C		F	C		
L4008A1015	100 to 240	38 to 116	High or low limit	5 to 30 adj.	2.8 to 16.7 adj.	Contacts break on temp. rise	399.00
L4008B1013	100 to 240	38 to 116	Circulator	5 to 30 adj.	2.8 to 16.7 adj.	Contacts make on temp. rise	434.00
L4008E1040	110 to 270	43 to 143	High Limit	manual reset	manual reset	Contacts break on temp. rise	343.00

L4064B,D,L,R,W Fan and Limit Controllers; L6064A 2-Speed Fan and Limit Controllers



For control of high limit and fan motor in all types of forced air heating systems

- Three wiring terminal options available for easy installation:
  - push in receptacles for stripped wire
  - female receptacles for 1/4 in. male flag connectors
  - field add-on screw terminals
- Controls adapt to many competitive mounting holes in replacement applications
- Available in a variety of fan and high limit setting ranges
- L4064B, W models have manual fan switch that overrides fan control to keep fan running continuously

Accessories:

110265A Rigid Bracket. Single wing, with No. 8-32 setscrew

Pilot Duty: 2A at 24 Vac; 0.25A at 0.25 to 12 Vdc

Max Combined Connected Load: 2000Va

Electrical Ratings (A):

	120 Vac		240 Vac	
	Fan	Limit	Fan	Limit
Full Load	14	8	7	4
Locked Rotor	84	48	42	24

Model	Application	Insertion Element		Mounting	Mounting	LIST
		in.	mm			
	Turns fan on and off according to plenum temperature. With helical bimetal sensing element. High limit stop factory-set at 200°F (93°C). With manual fan switch. Replaces L4064A, B, E			Surface or rigid[1] bracket	Large case, strain relief, bushings, snap ring, single wire bracket, mounting screws	
L4064B2889		5	127			
L4064B2947		5	127		Small case, strain relief, mounting screws	136.40
L4064B2954		11-1/2	292			136.40
L4064B2962		8	203			
L4064D1010	Replaces L4064D	2-1/2	64			
					Small case, strain relief, mounting screws	
L4064W1197	With 24 Vac bimetal heater, time assist switch turns on fan motor 20 to 90 sec. after call for heat. High limit factory set at 200°F (93°C). With manual switch. Replaces L4064T, Y.	5	127			186.40
L4064W1205		8	203			
L4064W1213		11-1/2	292			186.20
L6064A1037	With two-speed fan control capable of controlling multi- speed motor applications. Replaces L4064 and a relay.	11-1/2	292	Surface	Small case, strain relief, mounting brackets	113.90

[1] Use of rigid mounting bracket allows installer to vary insertion length to fit application

JOHNSON/RANCO/
HONEYWELL 533-636

HUMIDITY CONTROLLERS
HONEYWELL

H600A Humidity Controller



Operates humidification equipment on RH fall or dehumidification equipment on RH rise.

- Sensing element of thin, moisture sensitive nylon ribbon provides reliable operation even when ambient temperature conditions change
- Fully enclosed, dust free, spdt, snap-acting switch
- Removable setting knob prevents tampering
- Mount vertically on 2 x 4 in. junction box (not to be duct mounted)
- Includes alternate scale and faceplate for horizontal mounting

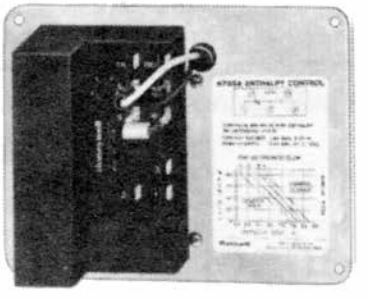
Operating Temperature Range: 50°F to 125°F (10°C to 52°C)

Electrical Ratings (amperes):

	Dehumidifier (Red to Yellow)		Humidifier (Red to Blue)	
	120 Vac	240 Vac	120 Vac	240 Vac
Full Load	7.5	3.8	4.4	2.2
Locked Rotor	30.0	15.0	26.4	13.2
Resistive	12.0	6.0	12.0	6.0

Model	Range (percent RH)	Fixed Differential	Colour	LIST
H600A1014	20 to 80	5 percent RH	Beige	474.00

H705A Solid State Enthalpy Controller



Provides solid state enthalpy changeover control in economizer systems

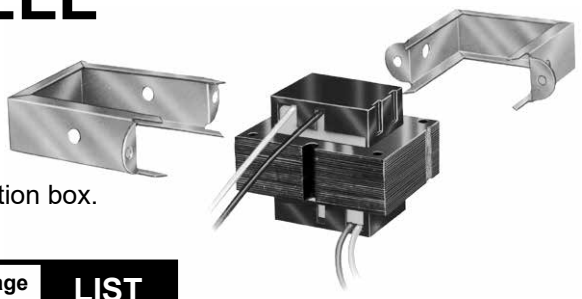
- Maximizes the use of outdoor air for free cooling for electronic and electromechanical systems
- Mounts in any position in outdoor air duct
- Allows use of enthalpy setpoint to select desired combination of air temperature and humidity
- Humidity sensor element is solid state
- Thermistor temperature sensing element

Operating Ambient Temperature: -25°F to +125°F (-32°C to +52°C)

Model	Description	LIST
H705A1003	SPDT switching action. Terminals 2 and 1 make with enthalpy increase setpoint; terminals 2 and 3 make with enthalpy decrease.	307.00

TRANSFORMERS
HONEYWELL

AT20 Transformer



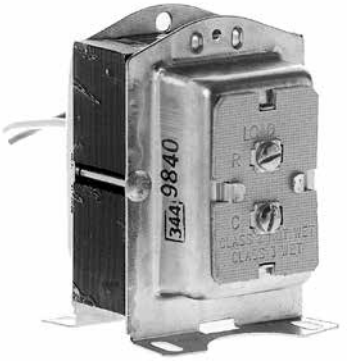
Power a 24V control system; for spud mounting to any electrical junction box.

Model Number	Output (100 percent power factor)	Primary Voltage (50/60 Hz)	Secondary Voltage (open circuit)	LIST
AT20B1056	20 VA	120V	28	62.60

AT72D NEMA Standard Transformer

24V control circuit step-down transformer designed to power any 24V control system, including thermostats, gas valves and relays.

Can be foot mounted; plate mounted on 4 x 4 in., 4 in. octagon, or 2 x 4 in. electrical boxes (transformer all above plate or 3/4 above plate); or clamp mounted via a junction box knockout



Model Number	Output (100 percent power factor)	Primary Voltage (50/60 Hz)	Secondary Voltage (open circuit)	LIST
AT72D1725	40 VA	120	26.5	72.90
AT72D1733	40 VA	208/240	26.5	81.30

AT120A; AT140A; AT175A General Purpose Transformers

Provide power to 24 Vac circuits in heating/cooling control systems. Intended for use in systems with predictable, uniform loads. Can be used in any application that does not exceed the listed ratings.

Foot mounted, plate mounted on 2 x 4 in. or 4 x 4 in. outlet box, clamp mounted using outlet box knockout, or panel mounted.



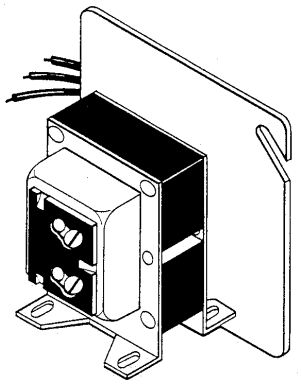
Model Number	Output (100 percent power factor)	Primary Voltage (50/60 Hz)	Secondary Voltage (open circuit)	LIST
AT120A1004	20 VA	120/208/240	27.0	53.80
AT140A1018	40 VA	120/208/240	27.0	
AT175A1008	75 VA	120/208/240	27.5	124.90

TRANSFORMERS

Multi-Mount Transformers

- Optional 3-way mounting for maximum flexibility

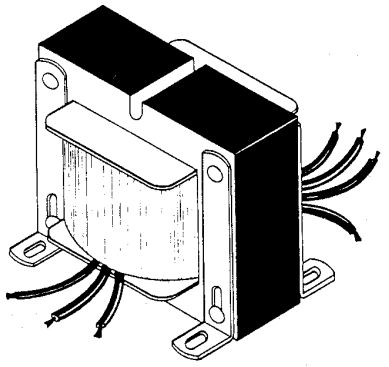
Model	VA	Primary VAC	Secondary VAC	LIST
4011M	40	120	24	59.00
4031M	40	120/208/240	24	66.50
5031M	50	120/208/240	24	81.70
5032M	50	120/208/240	2.5/12/24	72.90



Power Transformers

Foot mount, wire leads

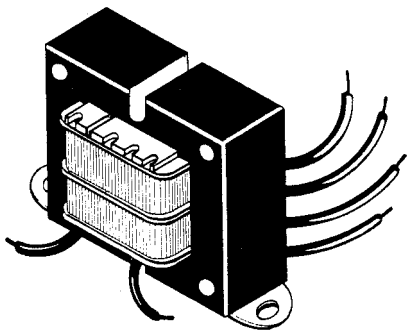
Model	VA	Primary VAC	Secondary VAC	LIST
5024P	50	208/240	120/24	147.50
7524P	75	208/240	120/24	160.40
10048PC	100	120/240/480	120/24	232.70
10048STPC	100	208/277/575	120	256.20



Foot Mount Transformers

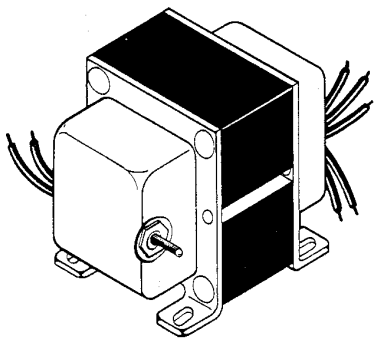
Open Construction, wire leads

Model	VA	Primary VAC	Secondary VAC	LIST
2031F	20	120/208/240	24	34.30
4011F	40	120	24	50.30
4031F	40	120/208/240	24	41.60
4032F	40	120/208/240	2.5/12/24	60.80
5032F	50	120/208/240	2.5/12/24	61.40
7531F	75	208/240	24	80.00



Closed construction with circuit breaker

Model	VA	Primary VAC	Secondary VAC	LIST
5041C	50	120/208/240/480	24	111.70
6041C	60	120/208/240/480	24	118.40
7541C	75	120/208/240/480	24	167.80
7541STC	75	120/277/380/575	24	179.50
10041C	100	120/208/240/480	24	242.60
10041STC	100	120/208/277/575	24	268.10

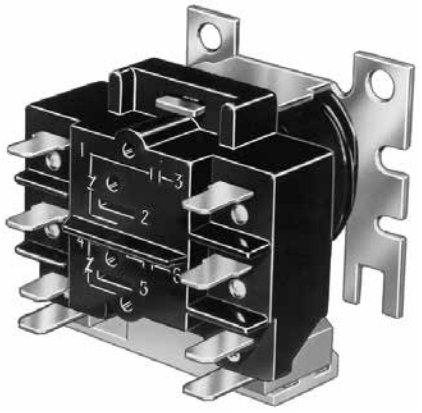


RELAYS

HONEYWELL

R4222, R8222 General Purpose and R4228, R8228 Heavy Duty Switching Relays

Honeywell's switching relays are available in multiple configurations for various applications. For whatever you need — general purpose relays or electric heat relays — Honeywell has you covered.



Provide general purpose and heavy duty switching for refrigeration and air conditioning equipment, appliances, vending machines and similar applications.

Ambient Temperature Range: -20°F to +155°F (-29°C to +68°C)
Accessories:

129384A Case and Cover Assembly
135887 Wire Bail only
135959 Receptacle only
137881A Adapters for converting 1/4 in. quick-connects to No. 6 screw terminals (bag of 8)
4074BVJ Receptacle with 8 colour-coded plug-in leadwires and retaining bail, for panel mounting applications
4074EAK Receptacle with 6 plug-in leadwires and retaining bail
Q633A1007 4 x 4 in. plate-mounted relay receptacle with metal relay cover and 8 colour-coded plug-in leadwires

Contact Ratings: Power Poles (Amps per pole)

R4222, R8222	120 Vac	208/240/277 Vac	480 Vac
Full Load	12	6	3
Locked Rotor	60	35	18
Resistive - A and C models	20.8	20.8	10
- All Others	15	15	10
Horsepower	1/2 hp	1/2 hp	1/2 hp

R4228A,B; R8228A,B	120 Vac		208/240 Vac	277 Vac	480 Vac
Full Load	16	18	18	12	5
Locked Rotor	96	72	72	72	30
Resistive [1]	18		25	25	15
Horsepower	1 hp		2 hp	2 hp	1.5 hp

[1] Also rated 10A resistive at 600V

Pilot Duty Poles for R4222 and R8222 only:
Minimum - 3 VA at 24, 120 and 480 Vac
Maximum - 25 VA at 24 Vac, 125 VA at 120, 240 and 480 Vac
Resistive - 3A at 277 Vac (0.75 power factor)

Millivoltage for R4222 and R8222 only; normally open pilot duty contacts are rated for millivoltage (Powerpile) applications - 0.25A at 0.25 to 12 Vdc

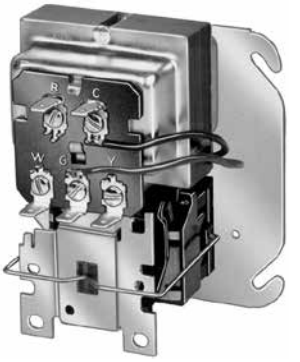
R4228D; R8228D	Combined Load
120 V	20.8A Res. (2.5 kW) + 6.4 AFL
208 / 240 / 277V	20.8A Res. (5 kW) + 6.4 AFL
480 V	10.4A Res. (5 kW) + 3.2 AFL
600 V	10A Resistive Only

Model #	Switching	Coil Voltage (50/60 Hz)	Pole 1-2-3	Pole 4-5-6	LIST
R8222 / R4222 General Purpose Relays					
R8222B1067	Spdt	24	Power	None	51.00
R8222D1014	Dpdt	24	Power	Power	54.70
R8222N1011	Dpdt	24	Pilot Duty	Pilot Duty	57.80
R8222V1003	Dpdt	24	Power	Pilot Duty	61.70
R4222B1082	Spdt	120	Power	None	56.80
R4222B1090	Spdt	208/240	Power	None	
R4222D1013	Dpdt	120	Power	Power	58.80
R4222D1021	Dpdt	208/240	Power	Power	61.50
R4222N1002	Dpdt	120	Pilot Duty	Pilot Duty	89.10
R8228 / R4228 Heavy Duty Switching Relays					
R8228B1012	Spdt	24	Power	Power	90.80

[1] Rating - 25A Resistive

FAN RELAY CENTERS

HONEYWELL



R8285 Control Centre

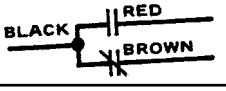
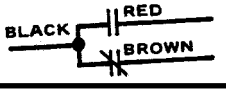
Provides low voltage control of line voltage fan motors and auxiliary circuits in heating, cooling or air conditioning systems.

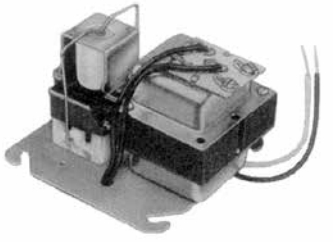
Voltage	120 Vac	240 Vac
Full Load	12	6
Locked Rotor	72	35

Model #	Switching	Configuration & Colour Coding	Primary Voltage	Application	LIST
R8285A1048	SPDT		120V	For Single or Two Speed Fan	110.30

R8239 Control Centers

Include NEMA standard transformer for excellent voltage control. Provide low voltage control of line voltage fan motors and auxiliary circuits in heating, cooling or heating -cooling circuits.

Model #	Switching	Configuration & Colour Coding	Primary Voltage	Application	LIST
R8239A1011	SPDT		208/240V	For Single or Two Speed Fan	
R8239B1043	DPDT		120V	For System with F50 Electronic Air Cleaner, humidifier and blower motor	



90-113 Fan Control Centers

One package transformer and relay combination. Rugged controls for remote mounting. Incorporate the recently developed over/under bobbin wound energy-limiting class 2 transformer and fan relay on a common plate for mounting on a standard four inch junction box.

Model #	Switching	Connections	Primary Voltage	Application	LIST
90-113	SPDT	Colour coded leads, pre-stripped	120 V	For use in remote control circuits. Furnace & A/C, operation of relays, contactors & solenoids, temperature indicating and regulation equipment	

GAS BURNER CONTROLS
HONEYWELL

Gas Pilot Safety Systems

Pilot burners, thermocouples, thermopiles and accessories in the various combinations shown below make a complete pilot burner generator.

PILOT BURNERS

Q314A With natural gas orifice and optional LP gas orifice. Universal mounting bracket



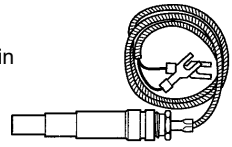
Q327 With natural gas and optional LP gas orifice



USE WITH

THERMOPILES

Q313 750 mV for universal push-in or screw-in mounting



AND

Q340 OR Q390 THERMOCOUPLES

392451 ECO connector for V800

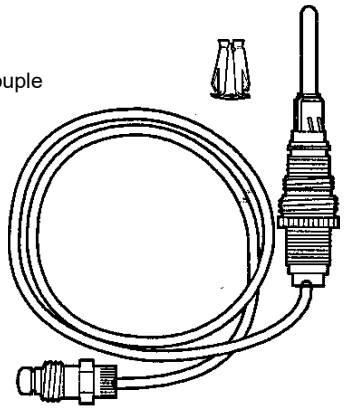


393200-1 ECO connector for VR8200 and VR8300 controls



Q340A Universal 30 mV Thermocouples

- Add the 392451-1 or 393200-1 ECO Adapter to hook up a high limit switch in series with the thermocouple
- Available in a variety of lead lengths - 18 to 48 in. (0.5 to 1.5m)



Model	Lead Length		LIST
	in.	m	
Q340A1405	18	0.5	22.40
Q340A1413	24	0.6	23.90
Q340A1421	30	0.8	24.70
Q340A1439	36	0.9	26.20
Q340A1447	48	1.2	28.40

PILOT BURNER TUBING

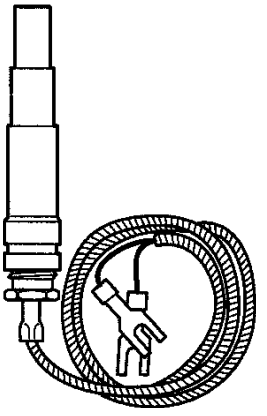
Part	Description	LIST
1/4-AL	Bulk 1/4" aluminum tubing	3.00
Y99AR-1H	1/4" x 60" pilot tube kit c/w four 1/4" fittings	53.50
11-291	1/8" x 60" pilot tube kit c/w four 1/4" fittings	33.90
11-293	1/4" x 60" pilot tube kit c/w four 1/4" fittings	37.00

GAS BURNER CONTROLS

HONEYWELL

Q313A,B Replacement Thermopile Generators

Provide power for a millivoltage, self-powered control system.



Model	Open Circuit Output (mV)	Includes	Use With	LIST
Q313A1402	600-750	35 in. leads	Q314, Q324, Q327	147.40
Q313A1055		47 in. (1194 mm), 1/2 in. thermopile attaching nut		168.80
Q313A1105		75 in. (1905 mm), 1/2 in. thermopile attaching nut		N/A
Q313A1188		35 in. (889 mm), push-in clip, 1/2 in. thermopile attaching nut		145.70
Q313B1005		35 in. (889 mm), terminal block		195.20

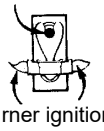
Q327A Pilot Burner

Primary-aerated, spud orifice type pilot burner for main burner ignition with Q340 or Q390 thermocouple for pilotstat safety control operation.

- Use with Q313 thermopile generator for 750 mV Powerpile applications.

Target Span: 1 in. (25 mm)



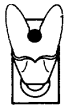
Model	Tip Style	Type of Gas	Mounting Bracket	Includes	LIST
Q327A1626	Thermocouple  Main burner ignition flame 1 in. (25 mm) span	Natural, LP	B	Natural gas orifice; LP gas orifice; 1/4 in. cc inlet fitting	115.30

Q314A Pilot Burner

Nonprimary-aerated, insert orifice type pilot burner for main burner ignition with Q340 or Q390 thermocouple for Pilotstat safety control operation.

- Use with Q313 thermopile generator for 750 mV Powerpile applications.



Model	Tip Style[1]	Type of Gas	Mounting Bracket	Includes	LIST
Q314A4586		Natural, LP	B	Natural gas orifice; LP gas orifice; 1/4 in. cc inlet fitting; special mounting bracket with screws for converting "B" bracket to "A"	99.00
Q314A6094		Natural, LP	B		99.00
Q314A6102		Natural, LP	B		99.50

[1] ● denotes thermocouple

GAS BURNER CONTROLS
HONEYWELL

VR8245, VR8300, VR8304 Dual Intermittent Pilot Gas Control



VR8300A



VR8245M

Part #	Description	LIST
VR8245M2530	24 Vac Dual Intermittent Pilot Gas Valve with 1/2 in. x 1/2 in. inlet/outlet, standard opening and 3.5 in. wc pressure regulator setting	344.00
VR8300A4508	24 Vac Dual Standing Pilot Gas Valve with 3/4 in. x 3/4 in. inlet\outlet, standard opening and 3.5 in. wc pressure regulator setting	374.00
VR8304H4503	24 Vac Dual Intermittent Pilot, Slow Opening Gas Valve with 3/4 in. x 3/4 in. inlet/oulet, slow opening and 3.5 in. wc pressure regulator setting	584.00
VR8304M4515	24 Vac Dual Intermittent Pilot, Slow Opening Gas Valve with 3/4 in. x 3/4 in. inlet/oulet, standard opening and 3.5 in. wc pressure regulator setting	629.00
VR8304P4504	24 Vac Dual Intermittent Pilot, Slow Opening Gas Valve with 3/4 in. x 3/4 in. inlet/oulet, step opening and Full Rate: 3.5 in. wc; Step Setting: 0.9 in. wc pressure regulator setting	601.00

VS820A, C Millivoltage Combination Gas Controls

Application / Description:
V800A1179/V800C1052: Automatic 24V control. Use with 30 mV thermocouple / colour coded blue to identify 24V operation. Terminal block has 3 combination screw and 1/4 in. quick connect terminals. Current draw: 0.2A
VS820A1054: Self powered automatic control. Use with 750 mV pilot generator / colour coded red to identify powerpile operation. Red pigtail power unit lead. Terminal block has 3 combination screw and 1/4 in. quick connect terminals.

Model	Inlet-Outlet size (in.)	A.G.A. Certified Capacity[1][2]		Pressure Regulator Setting[1]		Type of Gas	Includes Reducer Bushings / Adapters[2]	LIST
		cfh	m^3/r	in. wc	kPa			
V800A1179	3/4 x 3/4	335	9.5	3.5	0.87	Nat.	Two 3/4 x 1/2 in.;one 1/2 x 3/8 in.	893.00
V800C1052	3/4 x 3/4	335	9.5	0.9 Step[3] 3.5 full rate	0.22 Step[3] 0.87 full rate	Nat.	Two 3/4 x 1/2 in.;one 1/2 x 3/8 in.	1,799.00
VS820A1054	3/4 x 3/4	335	9.5	3.5	0.87	Nat.	Two 3/4 x 1/2 in.;one 1/2 x 3/8 in.	1,198.00

[1] 1000 Btu/ft³, 0364 sp gr natural gas at 1 in. wc p.d. (37.3 MJ/m³, 0.64 sp gr natural gas at 0.25 kPa p.d.)
[2] Use of reducer bushings resulting in 3/4 x 1/2 in. inlet-outlet size reduces capacity to 250 cfh (7.1 m³/hr); use of reducer bushings resulting in 1/2 x 3/8 in. inlet-outlet size reduces capacity to 110 cfh (3.1 m³/hr.)
[3] Step pressure is not adjustable
* Includes Q340 thermocouple with adapters

GAS BURNER CONTROLS

HONEYWELL

VR8200 Continuous Pilot Dual Automatic Valve Combination Gas Controls



Combination gas controls for use in 24 Vac, gas-fired, standing pilot appliances with capacities from 20 to 200 cfh.

VR8200 controls replace the following Honeywell and competitive combination gas controls for applications requiring a minimum capacity of 20 cfh and a maximum capacity of 200 cfh.

- Honeywell V800A and VR800A models
- White Rodgers 36C03/01 series
- Robertshaw 7000BER (700-400) and 7200BER (720-400) series
- ITT B57 and B59 series
- Essex SX242N

Model	Inlet-Outlet size (in.)	A.G.A. Certified Capacity[1]		Pressure Regulator Setting		Type of Gas	Type of Pressure Regulator	LIST
		cfh	m^3/r	in. wc	kPa			
VR8200A2322	1/2 x 1/2	130	3.7	3.5	0.87	Nat.	Standard	375.00
VR8200A2330				10.0	2.5	LP Nat.		N/A
VR8200C1140				10.7 Step[2] 3.5 full rate	0.17 Step[2] 0.87 full rate		Step-opening	
VR8200H1236				3.5	0.87		Slow opening	320.00
VR8200A2124	24 Vac Dual Standing Pilot Gas Valve with 1/2 in. x 1/2 in. inlet\outlet, standard opening and 3.5 in. wc pressure regulator setting							401.00

VR8204M, VR8205A 1/2" Gas Control

Part #	Description	LIST
VR8204M1026	Honeywell / YORK 1/2" GAS VALVE	487.00
VR8205A2024	24 Vac Dual Direct Ignition Gas Valve with 1/2 in. x 1/2 in. inlet/outlet, standard opening and 3.5 in. wc pressure regulator setting for YORK	545.00

VR8345M Universal Electronic Ignition Combination Gas Control



Universal electronic ignition combination gas control for use with direct spark ignition, hot surface ignition or intermittent pilot ignition in 24 Vac, gas-fired appliances, with capacities from 30 to 415 cfh.

Model	Inlet-Outlet size (in.)	A.G.A. Certified Capacity		Pressure Regulator Setting		Type of Gas	Type of Pressure Regulator	Includes	LIST
		cfh	m^3/r	in. wc	kPa				
VR8345M4302	3/4 x 3/4	300	8.5	3.5	0.9	Nat.	Standard	Two 3/4 x 1/2 in. NPT bushings and one 1/2 x 3/8 in. bushing	368.00

GAS BURNER CONTROLS
HONEYWELL

S8610U Universal Intermittent Pilot Module

Field service replacement for most Honeywell, Robertshaw, Johnson, and UTEC (HSC) intermittent pilot ignition modules. Provides electronic control of most intermittent pilot ignition systems used on gas-fired furnaces, boilers and other heating appliances.

Model Number	Max. Shutoff Time (sec.)	Features	LIST
S8610U3009	90	100 percent pilot gas shutoff and lockout on loss of pilot flame. Includes remote reset, and automatic vent damper plug. For use in systems with combination igniter-sensor (single rod or sense) or separate igniter and sensor (dual rod or remote sense)	391.00



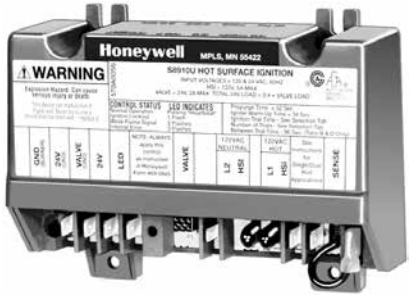
S8910U Universal Hot Surface Ignition Module

Provides operating control of a direct ignition system using a 120 Vac hot surface igniter.

The S8910U can only be used for direct replacement.

Ambient Temperature Range: -40°F to +175°F (-40°C to +79°C)
Hot Surface Igniter or Igniter-Sensor: Norton Model 201 or 271 or equivalent
Sensor: Separate sensor required for remote sense applications

Electrical Ratings:
- IMPORTANT: The S8910U is for use only in 60 Hz systems
- Control Voltage: 24V, 60 Hz
- Maximum Valve Contact Rating: 2A
- Current Draw: 0.4A plus valve load
- Hot Surface Igniter Voltage: 120 Vac, 60 Hz
- Contact Rating at 120 Vac: 5A



Model #	Application	LIST
S8910U1000	For direct replacement of a wide range of hot surface ignition modules manufactured by Honeywell, White Rodgers, and Robertshaw. Refer to the product specification sheet and the cross reference for specific models that can be replaced by the S8910U	357.00

FLAME SAFEGUARD CONTROLS

HONEYWELL



RA890F Protector Relay Primary Control

Non-programming primary control provides solid state, electronic, flame safeguard protection for industrial and commercial single or dual fuel burners.

Model #	Voltage	Safety Switch Timing (sec)	Flame Failure Response Time (sec)	SPDT Alarm Contacts	LIST
RA890F1288	120	15	3.0	Yes	8,921.00

C7500A,B Flame Rectifier Pilots

Combination rectification flame rod and pilot burner for use with suitable electronic relay on industrial or commercial gas or gas pilot-ignited oil burners.

Model #	Application	Ignition Electrode	LIST
C7005A1037	For continuous(standing) pilot applications	No	
C7005B1035	For automatic electric-gas pilot applications	Yes	

C7027A Minipeeper Ultraviolet Flame Detector



Compact flame detector for use with RA890G, R7023C R4795, R4126, R4127, R4075, R4138, R4150, and R4140 Flame Safeguard Controls with ultraviolet amplifiers

Model #	Ambient Temperature Range		Lead Length		LIST
	C	F	m	ft	
C7027A1023	-18 to +102	0 to +215	1.8	6	368.00
C7027A1031	-40 to +102	-40 to +215	1.8	6	554.00
C7027A1049	-18 to +102	0 to +215	1.8	6	N/A
C7027A1064	-40 to +102	-40 to +215	7.3	24	N/A

Q179A,B Flame Recitifier Gas Pilots



Combination rectifying flame rod and pilot burner for use with suitable electronic relay on indutrial or commercial gas burners or gas-pilot-ignited oil burners.

Model #	Application	Tip Style	LIST
Q179A1001	For intermittent or interrupted ignition. Has both flame electrode and ignition electrode.	I	
Q179A1050		T	
Q179A1092		45 deg. T	860.00
Q179B1042	For continuous (standing) pilot. Has flame electrode only.	T	1,062.00

MOTORIZED VALVES
HONEYWELL

Glowfly™ Universal 120Vac Hot Surface Igniter



The Igniter Kit is designed to provide a robust field service replacement igniter, in gas fired appliances with Norton / St. Gobain / CoorsTek 120 Vac, silicon carbide, hot surface igniters.

- Replaces over 110 OEM igniter models
- Each igniter package includes cross reference instructions, six brackets, and installation accessories.
- Robust Silicon nitride igniter construction
- Remote flame sense appliance applications only
- High temperature ceramic wire nuts
- Multiple brackets to adapt as field replacement of Norton / St. Gobain / CoorsTek silicon carbide igniters
- Lead Wire Maximum - 250 C
- 120 Vac
- Lead wire Length - 15 in.

Part #	LIST
Q3200U1004	93.60

Igniter Flame Rod Assembly



- 250° C (484° F)
- Flame Rod Assembly
- Field replacement for Q3450, Q3480 hot surface pilot burner
- Flame Rod Tip: 982 C; Igniter Insulator: 485 C; Flame Rod Insulator: 677 C; Flame Rod Lead: 250 C
- Ignition Wire--30 in.

Part #	LIST
Q3400A1024	190.50

V8043, V8044 Motorized Valves



On-Off and diverting valves consist of an actuator motor and valve assembly for controlling the flow of hot or cold water, and some models for steam.

Manual opener (on all except straight-through, normally open valves) for valve operation on power failure. Valve returns to automatic position when power is restored. Motor actuator may be replaced without removing the valve body or draining the system. Moisture sealed motor on all diverting and normally open valves.

Model #	De-Energized Position	1/16" End Switch	Bypass Hole	Pipe Connections / Remarks	LIST
V8043C1041	Closed	No	No	1/2" sweat	213.10
V8043C1058	Closed	No	No	3/4" sweat	246.40
V8043D1023	Open	No	Yes	3/4" NPT	
V8043D1031	Open	No	No	3/4" NPT	259.50
V8043D1080	Open	No	No	1/2" OD flare with 2 flare to sweat	293.60
V8043D1205	Open	No	No	1/2" inverted flare - order fittings separately	255.50
V8043F1119	Closed	Yes	No	1" sweat, end switch, terminal board and cover	
V8043G1018	Closed	Yes	No	3/4" sweat	254.30
V8043G1026	Closed	Yes	No	1" sweat	294.00

MOTORS AND ACTUATORS

HONEYWELL



M436A, M836A,B Damper Motors

Spring return motors for 2-position zone or damper control

Model #	Application Description	Voltage (60 Hz)	Nominal Opening Current (A)	Nominal Opening Time (sec)	Max. Load Torque		Break-Away Torque[1]		Break-Away Torque		LIST
					N-m	lb - in	N-m	lb - in	m²	sq. ft.	
M436A1116	Use with 2-wire thermostats or other SPST controllers. With thermal breaker for overload protection during the lifting stroke or if motor stalls	120	0.37	30	2.3	20	3.4	30	1.2	13	945.00
M436A1124		240	0.19	30	2.3	20	3.4	30	1.2	13	1,315.00
M836A1042	Use with SPST controllers without heat anticipation. With thermal breaker for overload protection during the lifting stroke or if motor stalls	24	1.85	30	2.3	20	3.4	30	1.2	13	916.00
M836B1033	Use with SPST controllers which have heat anticipation	24	1.34	25	1.7	15	3.4	30	0.9	10	999.00

[1] Maximum torque available to overcome large loads such as seized damper or valve. MUST NOT BE USED CONTINUOUSLY AT THIS RATING

M7415A, M7415B, M8405A, M8415A, Damper Actuators



Spring-return, 24 Vac damper actuators provide two-position, three-position or modulating control of economizer systems, ventilation dampers and combustion air dampers.

Model #	Power VA	Timing (sec)	Stroke (deg)	Application	LIST
M7415A1006	8	90	90	Modulating, spring-return, rotate to open counter-clockwise	829.00
M7415B1004	8	90	90	Modulating, spring-return, rotate to open clockwise	829.00
M8405A1006	7	90	90	3-position, with adjustable minimum position control	779.00
M8415A1004	7	90	90	2-position, with adjustable auxiliary switch	802.00

Q769 Adapters



Used with M7405 and M7415 Actuators to allow operation from a 6 to 9 Vdc, 4 to 20 mA, 0 to 10 Vdc, or 2 to 10 Vdc input signal. Mounts directly to actuator with quick connect terminals.

Model #	Electrical Ratings, Power Supply	Inputs	LIST
Q769A1009	25 mW at Vdc input, maximum voltage is ±25 Vdc	6 to 9 Vdc	
Q769C1007		0 to 10 Vdc or 2 to 10 Vdc (adj)	141.90

M9184D, M9194D Modutrol IV Motors

Reversing, proportional motors used to operate dampers and valves

Model #	Voltage (50/60 Hz)	Power		Torque		Timing (sec)	Stroke (deg)	Includes	LIST
		W	VA	lb-in	N-m				
M9184D4009	24	18	19	150	17.0	30 to 60	90 to 160		1,856.00
M9184E4006	24	18	19	150	17.0	30 to 60	90 to 160	2 spdt auxiliary switches	2,045.00
M9194D1003	24	18	19	300	34.0	120 to 240	90 to 160	Dual shaft	

MOTORS AND ACTUATORS

HONEYWELL

M9175D; M9185D,E; M9186G Modutrol IV Motors

Reversing, proportional spring-return motors used to operate dampers and valves.



Auxiliary Switch Ratings (A):

One Contact[1]	120 V	240 V
Full Load	7.2	3.6
Locked Rotor	43.2	21.6

[1] 40 VA pilot duty, 120/240 Vac on opposite contact

Model #	Voltage[1] (50/60 Hz)	Power		Torque		Timing[3] (sec)	Stroke (deg)	Includes	LIST
		W	VA	lb-in	N-m				
M9185D4008	24	23	24	60	5.7	60	160		2,123.00
M9185E4005	24	23	24	60	5.7	30 to 60	90 to 160	1 spdt auxiliary switch	2,367.00

[1] Internal actuator motor and circuitry operate from 24 Vac. Line voltage models shipped with internal transformers
[2] M9186G drives to full open position when powered with control wiring not connected
[3] Shorter timing applies to 90 degree stroke

DAMPERS

Q605A,B,D,E Damper Linkages

Linkages include ball joints, motor crank arm, and 1/2 in. (13 mm) damper arm. Adjustable to any degree of damper opening.



Accessory:
191385 Internal Motor Mounting Kit. Must be used when Q605B is used with non-TRADELINE dampers.

Model #	Motor Mounting Bracket	Includes Damper Arm for 1/2 in. (13 mm) Diameter Shaft	Motor Crank Arm	Ball Joints	Application	LIST
Q605A1070	yes	90 sec	yes	2	For mounting motor externally on duct	163.40
Q605D1051	yes	7 min	yes	2	For adapting two dampers to one motor	244.60
Q605E1050	none	90 sec	yes	2	For mounting motor directly on wall or on outside of duct	124.30

Push Rod Linkage	Length (in)	LIST
A27520C	12	
A27520D	15	
A27520E	18	
A27520G	24	22.70
A27520K	36	22.40
A27520L	48	

Parts & Accessories	Description	Description	LIST
26026B	Crank arm assembly for 1/2 in. shaft		51.80
26026G	Damper crank arm for 1/2 in. shaft. Elongated slot	For Q605	52.70
27518 skin pk.	Ball joint assembly for 5/16 in. pushrod connection to duct damper linkage assembly or damper motor crank arm. Mount with 1/4 - 28 x 5/16 in. stud, lockwasher and nut	Dampers, damper linkages	26.00
7616BR	Motor crank arm		39.20

HONEYWELL



ML6161, ML7161 Direct Coupled, Non-spring Return Damper Actuators

Used to control dampers in applications such as variable air volume (VAV) terminal units.
Complete with declutch 24Vac and 45, 60 and 90° stroke

Model #	Torque lb - in.	Timing[1]	Control Input	Application	LIST
ML6161A2009	35	90 sec	SPDT floating & two-position	Pressure Dependent	226.50
ML7161A2008/U	35	90 sec	2-10 VDC or 4-20 MA	Pressure Independent	368.00

[1] Timing shown is for 90 degree stroke

EASY-TO-SELECT MODEL NUMBERS — MS and MN Families



Spring Return, High Torque



Spring Return, Low Torque



Non-Spring Return, Low Torque



Non-Spring Return, High Torque

MS 75 10 A 2 2 XX

Fail Safe Mode
- **MS** Spring Return
- **MN** Non-Spring Return

Input Signal Type
- **41** Two-Position, 100-250 Vac
- **61** Floating, 24 Vac/dc
- **75** Modulating/Floating, 24 Vac/dc
- **81** Two-Position, 24 Vac/dc

Torque
- **03** Nm = 27 in-lb
- **05** Nm = 44 in-lb
- **10** Nm = 88 in-lb
- **20** Nm = 175 in-lb
- **34** Nm = 300 in-lb

Application Type
- **A** Standard Model
- **H** Enhanced Model
- **W** Model with Whips Cable

Feedback
- **1** No Feedback
- **2** Voltage Feedback

Auxiliary Switches
- **0** No Internal Switches
- **2** Two Internal Switches

System Controlled Numbers

ML Family

ML 61 61 B 2 XXX

Fail Safe Mode
- **ML** Non-Spring Return

Input Signal Type
- **61** Floating, 24 Vac
- **71** Modulating, 24 Vac

Torque
- **61** (4 Nm) = 35 in-lb
- **74** (8 Nm) = 70 in-lb

Declutch
- **1** Standard
- **2** Includes Declutch Function

Feedback & Conduit
- **A** Feedback w/Accessory
- **B** Standard
- **C** Feedback w/Accessory and Cover w/Conduit Connections
- **D** Cover w/Conduit Connections

System Controlled Numbers



Foot Mounting Kit
50001194-001

SPRING RETURN ACTUATORS

BELIMO

Standard Spring Return Damper Actuator Product Range

		Running Time(s)		Power Supply			Power Consumption		Control Input					Control Input MFT				Position Feedback		Auxiliary Switches
		Motor Drive (Default)	Spring Return	24 VAC +/- 20%, 50/60 HZ, VDC +/- 10%	120 VAC +/- 10%	230 VAC +/- 10%	VA Rating, Transformer Sizing	Wattage Running (Holding)	On/Off	Floating Point	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	3 kΩ NTC Type 10 Thermistor	6 - 9 VDC, 20 VDC Output Voltage	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0 to 8, Span 2 to 10 VDC	1 SPDT, 3 A (0.5 A inductive) @250V
 **LF Series** 35 in-lbs [4 Nm] Approx. 8.5 sq. ft.	LF24 US	<40 to 75	<25♦	●			7	5.0 (2.5)	●											
	LF24-S US	<40 to 75	<25♦	●			7	5.0 (2.5)	●											●
	LF120 US	<40 to 75	<25♦		●		7.5	5.5 (3.5)	●											
	LF120-S US	<40 to 75	<25♦		●		7.5	5.5 (3.5)	●											●
	LF230 US	<40 to 75	<25♦			●	7	5.0 (3.0)	●											
	LF230-S US	<40 to 75	<25♦			●	7	5.0 (3.0)	●											●
	LF24-SR US	150	<25♦	●			5	2.5 (1.0)			●							●		
	LF24-SR-S US	150	<25♦	●			5	2.5 (1.0)			●							●		●
	LF24-SR-E US	150	<25♦	●			5	2.5 (1.0)			●							●		
	LF24-3 US	150	<25♦	●			5	2.5 (1.0)		●										
	LF24-3-S US	150	<25♦	●			5	2.5 (1.0)		●										●
	LF24-ECON-R03 US	95	<25♦	●			5	2.5 (1.0)				●						●		
	LF24-MFT US	75…300 (150)	<25♦	●			5	2.5 (1.0)			●			●	●	●	●	●	●	
	LF24-MFT-S US	75…300 (150)	<25♦	●			5	2.5 (1.0)			●			●	●	●	●	●	●	●
	LF24-MFT-20 US	150	<25♦	●			6	3.5 (1.5)					●	●	●	●	●	●	●	
	LF24-MFT-S-20 US	150	<25♦	●			6	3.5 (1.5)					●	●	●	●	●	●	●	●
	LFC24-3-R US	90	<25♦	●			5	2.5 (1.0)		●										
	LFC24-3-S US	90	<25♦	●			5	2.5 (1.0)		●										●
 **TFB Series** 22 in-lbs [2.5 Nm] Approx. 5.5 sq. ft.	TFB24	<75	<25♦	●			5	2.0 (1.3)	●											
	TFB24-S	<75	<25♦	●			5	2.0 (1.3)	●											●
	TFLB24	<75	<75	●			5	2.0 (1.3)	●											
	TFB120	<75	<25♦		●	●	5	2.5 (1.3)	●											
	TFB120-S	<75	<25♦		●	●	5	2.5 (1.3)	●											●
	TFLB120	<75	<75		●	●	5	2.5 (1.3)	●											
	TFCB120-S	<30	<25♦		●	●	6	3.0 (1.5)	●											●
	TFB24-SR	95	<25♦	●			4	2.0 (1.0)			●							●		
	TFB24-SR-S	95	<25♦	●			4	2.0 (1.0)			●							●		●
	TFB120-SR	95	<25♦		●	●	5.5	2.5 (2.0)			●							●		
	TFB24-3	95	<25♦	●			4	2.5 (1.0)		●										
	TFB24-3-S	95	<25♦	●			4	2.5 (1.0)		●										●
	TFB24-MFT	75…300 (150)	<25♦	●			4	2.5 (1.0)			●			●	●	●	●	●	●	
	TFB24-MFT-S	75…300 (150)	<25♦	●			4	2.5 (1.0)			●			●	●	●	●	●	●	●

♦ <60 seconds @ -22°F [-30°C].

SPRING RETURN ACTUATORS

BELIMO

Standard Spring Return Damper Actuator Product Range

		Running Time(s)		Power Supply				Power Consumption		Control Input				Control Input MFT				Position Feedback		Auxiliary Switches	NEMA 4
		Motor Drive (Default)	Spring Return	24 VAC +/- 20%, 50/60 HZ, VDC +/- 10%	24 to 240 VAC +10%/- 20%, 50/60 HZ 24 to 125 VDC +/- 10%	120 VAC +/- 10%	230 VAC +/- 10%	VA Rating, Transformer Sizing	Wattage Running (Holding)	On/Off	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	0-20 V Phasecut	Honeywell Series 90, 0-135 Ω	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0 to 8, Span 2 to 10 VDC	2 SPDT, 3 A (0.5 A inductive) @250V	NEMA 4 Option (part # + N4) Example: EFB24 N4
 **EF Series** 270 in-lbs [30 Nm] Approx. 66 sq. ft.	EFB24†	75	<20♦	●				16	9.5 (4.5)	●											●
	EFB24-S†	75	<20♦	●				16	9.5 (4.5)	●										●	
	EFX120†	75	<20♦			●	●	21	9.5 (4.5)	●											
	EFB120-S†	75	<20♦			●	●	21	9.5 (4.5)	●										●	●
	EFB24-SR	95	<20♦	●				14	8 (4.5)		●							●			●
	EFX24-SR-S	95	<20♦	●				14	8 (4.5)		●							●		●	●
	EFB24-MFT†	60…150 (150)	<20♦	●				16	9.5 (4.5)		●			●	●	●	●	●	●		
	EFB24-MFT-S†	60…150 (150)	<20♦	●				16	9.5 (4.5)		●			●	●	●	●	●	●	●	
 **AFB Series** 180 in-lbs [20 Nm] Approx. 45 sq. ft.	AFB24†	<75	20♦	●				7.5	5.0 (2.5)												●
	AFB24-S†	<75	20♦	●				7.5	5.0 (2.5)											●	●
	AFBUP†	<75	20♦		●			8.5*	7.0 (3.5)	●											●
	AFBUP-S†	<75	20♦		●			8.5*	7.0 (3.5)	●										●	●
	AFB24-SR	95	<20♦	●				8.5	5.5 (3.0)		●							●			●
	AFB24-SR-S	95	<20♦	●				8.5	5.5 (3.0)		●							●		●	●
	AFB24-PC	150	<20♦	●				10	7.5 (3.0)			●						●			
	AFB24-MFT†	70…220 (150)	<20♦	●				10	7.5 (3.0)		●			●	●	●	●	●	●		●
	AFB24-MFT-S†	70…220 (150)	<20♦	●				10	7.5 (3.0)		●			●	●	●	●	●	●	●	●
	AFB24-MFT95†	70…220 (150)	<20♦	●				10	7.5 (3.0)				●					●	●		●
 **NFB Series** 90 in-lbs [10 Nm] Approx. 22 sq. ft.	NFB24	<75	20♦	●				8.5	6.0 (2.5)	●											●
	NFB24-S	<75	20♦	●				8.5	6.0 (2.5)	●										●	●
	NFBUP	<75	20♦		●			6.5	6.0 (2.5)	●											●
	NFBUP-S	<75	20♦		●			6.5	6.0 (2.5)	●										●	●
	NFB24-SR	95	<20♦	●				6	3.5 (2.5)		●							●			●
	NFB24-SR-S	95	<20♦	●				6	3.5 (2.5)		●							●		●	●
	NFB24-MFT	40…220 (150)	<20♦	●				9	6.5 (3.0)		●			●	●	●	●	●	●		●
	NFB24-MFT-S	40…220 (150)	<20♦	●				9	6.5 (3.0)		●			●	●	●	●	●	●	●	●

♦ <60 seconds @ -22°F [-30°C].
† Piggy back mounting on a single shaft: On/Off wired in parallel and -MFT (EFB and AFB only) wired master slave. Please call Belimo customer service for details.
* 8.5 VA for 120 VAC; 7 VA for 24 VAC, 18 VA for 240 VAC.

Spring Return Damper Actuators

The quickest install or retrofit designed with ease in mind

The ZG-JSL linkage is designed to simplify the attachment of select Belimo actuators to a damper's jackshaft. The unique open ended design allows the linkage to clamp on to any part of a jackshaft measuring from 1/2" to 1.05" in diameter.

Saves time and cost

The ZG-JSL linkage simplifies typical installations and eliminates the difficulties where jackshaft bearings are hard to access. Belimo has simplified installing actuators onto jackshafts, reducing installation time translating into a cost savings. Now with the ZG-JSL linkage, jackshaft installations are done in minutes!

Ideal for tight spaces

The ZG-JSL linkage has a built-in shaft which allows the direct coupling of Belimo actuators. The anti-rotation plate enables the installed actuator to be rotated 90 degrees for space saving applications.

Part #	Description	LIST
ZG-JSL	Jackshafts (only)	369.00



SPRING RETURN ACTUATORS

BELIMO

Custom Spring Return Damper Actuator Product Range

		Custom Options	Running Time(s)		Power Supply				Power Consumption		Control Input			Control Input MFT				Position Feedback		Auxiliary Switches		NEMA 4
		10 ft. (3m) or 16 ft. (5m) cable	Motor Drive (Default)	Spring Return	24 VAC +/- 20%, 50/60 HZ, VDC +/- 10%	24 to 240 VAC +10%/- 20%, 50/60 HZ 24 to 125 VDC +/- 10%	120 VAC +/- 10%	230 VAC +/- 10%	VA Rating, Transformer Sizing	Wattage Running (Holding)	On/Off	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	Honeywell Series 90, 0-135 Ω	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0 to 8, Span 2 to 10 VDC	2 SPDT, 3 A (0.5 A inductive) @250V	1 SPDT, 3 A (0.5 A inductive) @250V	NEMA 4 Option (part # + N4) Example: EFX24-S N4
 **EFX Series** 270 in-lbs [30 Nm] Approx. 66 sq. ft.	EFX24†	●	75	<20♦	●				16	9.5 (4.5)	●											
	EFX24-S†	●	75	<20♦	●				16	9.5 (4.5)	●									●		●
	EFX120†	●	75	<20♦			●	●	21	9.5 (4.5)	●											
	EFX120-S†	●	75	<20♦			●	●	21	9.5 (4.5)	●									●		●
	EFX24-SR	●	95	<20♦	●				14	8 (4.5)		●						●				
	EFX24-SR-S	●	95	<20♦	●				14	8 (4.5)		●						●		●		●
	EFX24-MFT†	●	60…150 (150)	<20♦	●				16	9.5 (4.5)		●		●	●	●	●	●	●			
	EFX24-MFT-S†	●	60…150 (150)	<20♦	●				16	9.5 (4.5)		●		●	●	●	●	●	●	●		●
 **AFX Series** 180 in-lbs [20 Nm] Approx. 45 sq. ft.	AFX24†	●	<75	20♦	●				7.5	5.0 (2.5)	●											●
	AFX24-S†	●	<75	20♦	●				7.5	5.0 (2.5)	●									●		●
	AFXUP†	●	<75	20♦		●			8.5*	7.0 (3.5)	●											●
	AFXUP-S†	●	<75	20♦		●			8.5*	7.0 (3.5)	●									●		●
	AFX24-SR	●	95	<20♦	●				8.5	5.5 (3.0)		●						●				●
	AFX24-SR-S	●	95	<20♦	●				8.5	5.5 (3.0)		●						●		●		●
	AFX24-MFT†	●	70…220 (150)	<20♦	●				10	7.5 (3.0)		●		●	●	●	●	●	●			●
	AFX24-MFT-S†	●	70…220 (150)	<20♦	●				10	7.5 (3.0)		●		●	●	●	●	●	●	●		●
	AFX24-MFT95†		70…220 (150)	<20♦	●				10	7.5 (3.0)			●					●	●			●
 **NFX Series** 90 in-lbs [10 Nm] Approx. 22 sq. ft.	NFX24	●	<75	20♦	●				8.5	6.0 (2.5)	●											●
	NFX24-S	●	<75	20♦	●				8.5	6.0 (2.5)	●									●		●
	NFXUP	●	<75	20♦		●			6.5	6.0 (2.5)	●											●
	NFXUP-S	●	<75	20♦		●			6.5	6.0 (2.5)	●									●		●
	NFX24-SR	●	95	<20♦	●				6	3.5 (2.5)		●						●				●
	NFX24-SR-S	●	95	<20♦	●				6	3.5 (2.5)		●						●		●		●
	NFX24-MFT	●	40…220 (150)	<20♦	●				9	6.5 (3.0)		●		●	●	●	●	●	●			●
	NFX24-MFT-S	●	40…220 (150)	<20♦	●				9	6.5 (3.0)		●		●	●	●	●	●	●	●		●
 **TFX Series** 22 in-lbs [2.5 Nm] Approx. 5.5 sq. ft.	TFX24	●	<75	<25♦	●				5	2.0 (1.3)	●											
	TFX24-S	●	<75	<25♦	●				5	2.0 (1.3)	●										●	
	TFX120	●	<75	<25♦			●	●	5	2.5 (1.3)	●											
	TFX120-S	●	<75	<25♦			●	●	5	2.0 (1.3)	●										●	
	TFX24-SR	●	95	<25♦	●				4	2.0 (1.0)		●						●				
	TFX24-SR-S	●	95	<25♦	●				4	2.0 (1.0)		●						●			●	
	TFX24-3	●	95	<25♦	●				4	2.5 (1.0)												
	TFX24-3-S	●	95	<25♦	●				4	2.5 (1.0)											●	
	TFX24-MFT	●	75…300 (150)	<25♦	●				4	2.5 (1.0)		●		●	●	●	●	●	●			
	TFX24-MFT-S	●	75…300 (150)	<25♦	●				4	2.5 (1.0)		●		●	●	●	●	●	●		●	

♦ <60 seconds @ -22°F [-30°C].
† Piggy back mounting on a single shaft: On/Off wired in parallel and -MFT (EFX and AFX only) wired master slave. Please call Belimo customer service for details.
* 8.5 VA for 120 VAC; 7 VA for 24 VAC, 18 VA for 240 VAC.

NON-SPRING RETURN ACTUATORS

BELIMO

LM Series



LM24-MFT US

Torque:*	35 in-lb minimum (18 in-lb on LMC…models)
Control Input:*	Variable with MFT (VDC, PWM, Floating Point, On-Off)
Overload protection:	Electronic throughout rotation
Angle of rotation:*	95° (adjustable)
Fits shaft diameter:	5/16" to 23/32" [7.9-18.3mm]
Manual override:	Push-button
Direction of rotation:*	CW/CCW external switch Electronically selectable with MFT
Dimensions:	4.53" x 2.32" x 2.56" [115 x 58.9 x 65mm]
Electrical connection:	3 ft, 18 GA plenum rated cable (terminal strip on-T models)
Built-in auxiliary switch:	1 x SPDT. Adjustable 0°-95°
Housing:	NEMA 2 (-T models NEMA 1)

NM Series

Torque:*	70 in-lb minimum
Control Input:*	Variable with MFT (VDC, PWM, Floating Point, On-Off)
Overload protection:	Electronic throughout rotation
Angle of rotation:*	95° (adjustable) (Electronically variable 0-100%)
Fits shaft diameter:	3/8" - 3/4" [9.5-19mm]
Manual override:	Push-button
Rotation direction:*	CW/CCW external switch Electronically selectable with MFT
Dimensions:	5.41" x 2.09" x 3.19" [140 x 58 x 81mm]
Electrical connection:	3 ft, 18 GA plenum rated cable, 1/2" conduit fitting
Housing:	NEMA 2



NM24-MFT US

AM Series



AM24-MFT US

Torque:*	160 in-lb minimum (SM…133 in-lb)
Control Input:*	Variable with MFT (VDC, PWM, Floating Point, On-Off)
Overload protection:	Electronic throughout rotation
Angle of rotation:*	95° (adjustable) (Electronically variable 0-100%)
Fits shaft diameter:	1/2"-1.05" (1/2" and 1.05" shafts centered) [12.7-26.7mm]
Manual override:	Push-button
Direction of rotation:*	CW/CCW external switch Electronically selectable with MFT
Dimensions:	8.75" x 3.0" x 3.62" [222 x 76 x 92mm]
Electrical connection:	3 ft, 18 GA appliance cable, 1/2" conduit fitting
Built-in auxiliary switches:	2 x SPDT. Adjustable 0-95° (AM24-S US)
Housing:	NEMA 2

GM Series

Torque:*	320 in-lb minimum ††
Control Input:*	Variable with MFT (VDC, PWM, Floating Point, On-Off)
Overload protection:	Electronic throughout rotation
Angle of rotation:*	95° (adjustable) (Electronically variable 0-100%)
Fits shaft diameter:	15/32" to 3/4" [12-20mm]
Manual override:	Push-button
Direction of rotation:*	CW/CCW external switch Electronically selectable with MFT
Dimensions:	9.49" x 4.88" x 3.15" [241 x 124 x 80mm]
Electrical connection:	3 ft, 18 GA appliance cable, 1/2" conduit fitting
Housing:	NEMA 2



GM24-MFT US

SPRING RETURN ACTUATORS

BELIMO

TF Series



Torque:	18 in-lb minimum
Running time:	<75 sec. On/Off models (0 to 18 in-lb) 150 seconds constant (proportional models) < 75 sec. spring return fail safe position
Control Input:	2 to 10 VDC
Overload protection:	Electronic throughout rotation
Angle of rotation:	95° (mechanically adjustable)
Fits shaft diameter:	1/4"-1/2" (standard)
Position indication:	Visual indicator
Direction of rotation:	CW/CCW external switch (Proportional models)
Spring return reversible:	CW/CCW mounting
Dimensions:	5.9" x 3.0" x 3.4" [150 x 76.2 x 84.7mm]
Electrical connection:	3 ft cable, 1/2" conduit fitting, 18 GA plenum rated cable (appliance cable …-S)
Built-in auxiliary switch:	1 x SPDT. 3A (0.5A) @250 VAC, Adjustable 0°-95°
Housing:	NEMA 2

LF Series



LF24-MFT US

Torque:	35 in-lb minimum
Control Input:*	Variable with MFT (VDC, PWM, Floating Point, On-Off)
Overload protection:	Electronic throughout rotation
Angle of rotation:*	95°, (adjustable) (Electronically variable 0-100%)
Fits shaft diameter:	3/8"-1/2" (standard) 1/2"-3/4" (with K6-1 clamp accessory)
Direction of rotation:*	CW/CCW external switch (proportional models) Electronically selectable with MFT
Spring return reversible:	CW/CCW mounting
Dimensions:	7.67" x 3.15" x 3.23" [195 x 80 x 82mm]
Electrical connection:	3 ft cable, 1/2" conduit fitting, 18 GA plenum rated cable (appliance cable …-S)
Built-in auxiliary switch:	1 x SPDT. Adjustable 0°-95°
Housing:	NEMA 2

NF Series

Torque:	60 in-lb minimum
Control Input:*	Variable with MFT (VDC, PWM, Floating Point, On-Off)
Overload protection:	Electronic throughout rotation
Angle of rotation:*	95° (adjustable) (Electronically variable 0-100%)
Fits shaft diameter:	1/2"-1.05" (1/2" and 1.05" shafts centered), 1/2" Default
Direction of rotation:*	CW/CCW external switch (Proportional models) Electronically selectable with MFT
Spring return reversible:	CW/CCW mounting
Dimensions:	10.59" x 3.86" x 3.10" [269 x 98 x 78mm]
Electrical connection:	3 ft, 18 GA appliance cable, 1/2" conduit fitting
Built-in auxiliary switch:	1 x SPDT. Adjustable 5°-85° (NF24-S2: 2 x SPDT)
Housing:	NEMA 2



NF24-MFT US

AF Series



AF24-MFT US

Torque:	133 in-lb minimum
Control Input:*	Variable with MFT (VDC, PWM, Floating Point, On-Off)
Overload protection:	Electronic throughout rotation
Angle of rotation:*	95° (adjustable) (Electronically variable 0-100%)
Fits shaft diameter:	1/2"-1.05" (1/2" and 1.05" shafts centered), 1/2" Default
Manual override:	3mm crank (supplied) (N/A w/AFR…)
Direction of rotation:*	CW/CCW external switch (Proportional models) Electronically selectable with MFT
Spring return reversible:	CW/CCW mounting
Dimensions:	10.59" x 3.86" x 3.10" [269 x 98 x 78mm]
Electrical connection:	3 ft, 18 GA appliance cable, 1/2" conduit fitting
Built-in auxiliary switches:	2 x SPDT. One at +5°, one adj. 25°-85° (AFR…1 x SPDT.)
Housing:	NEMA 2

CHARACTERIZED CONTROL VALVES

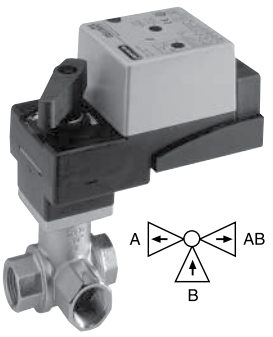
BELIMO

New CCV Product Options Offer More Flexibility



TR Compact Rotary Actuator

- TR24-3-T US (covered terminal strip)
- TR24-3 US (3-foot cable) on/off, floating control
- TR24-SR-T US and TR24-SR US, 2-10 VDC control
- Designed specially for 1/2" valves



B3…BD Diverting Valve for Direct Replacement of Standard Ball Valve

- 1/2" and 3/4" 3-way
- Chrome plated brass ball and stem
- Piping is the same as standard ball valves and zone valves

B2/B3 with low C_Vs down to 0.3

- 1/2", 2-way and 3-way
- Additional C_V range of 0.3 and 0.46
- Chrome-plated brass ball and stem or stainless steel ball and stem
- Compact solution with TR actuator ideal for unit ventilators, VAV re-heat



B661-B680 Flanged CCVs to 3" for Large Air Handler Applications

- 2-1/2" with C_V: 65, 90, 130, 180, and 265
- 3" with C_V: 90, 180, 220, and 265
- 100 PSI close-off
- Stainless steel ball and stem
- Spring return and non-spring return actuators



NR Actuator For Fluid Temperature to 250° F

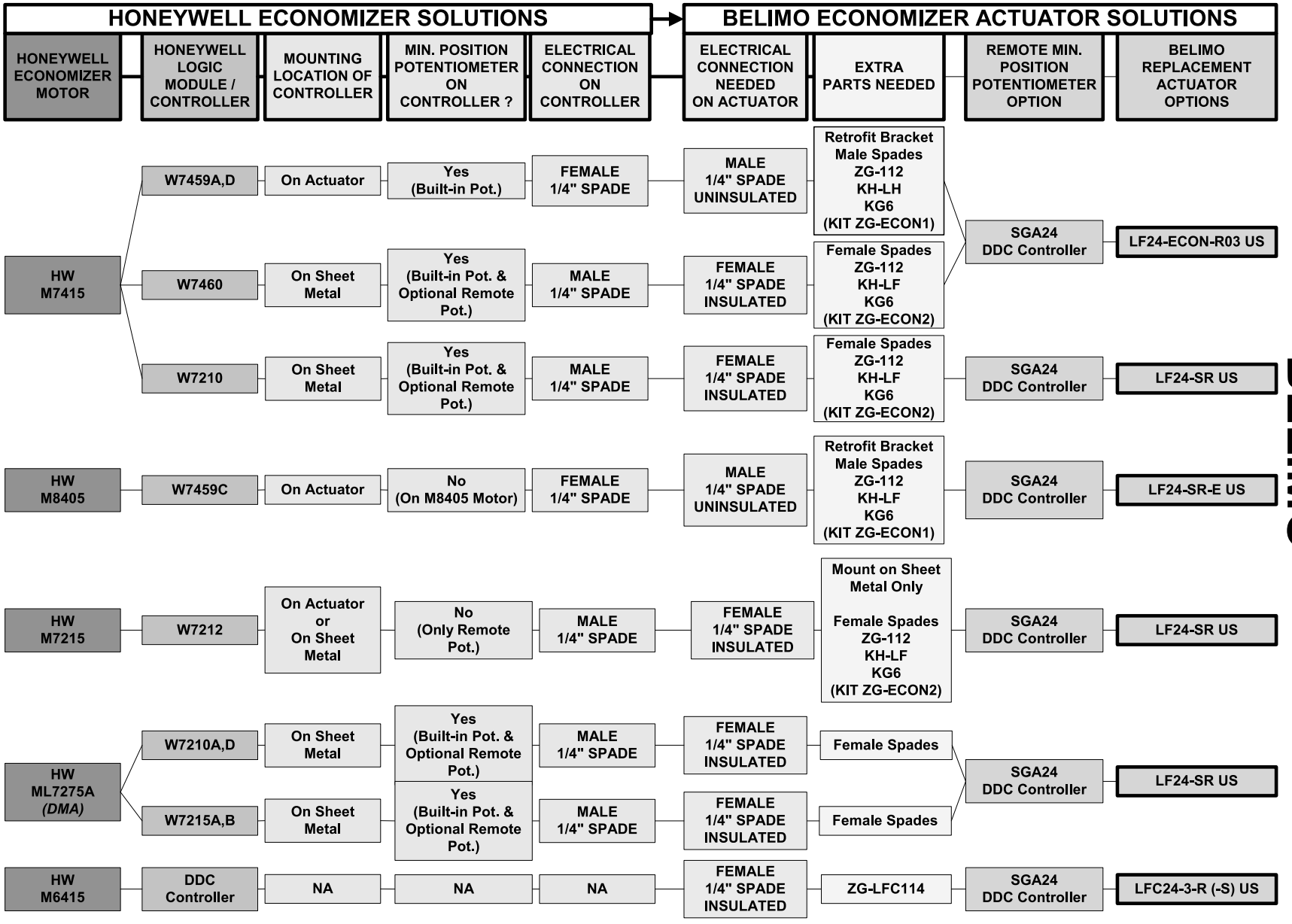
- NR24-3 US, on/off, floating control
- NR24-SR US, 2-10 VDC control
- For 1/2" to 2", 2-way and 3-way CCVs
- For use up to 160°F ambient and 250°F fluid temperature
- Temporary or permanent disengagement for manual operation



B251-B280 Threaded CCVs up to 3"

- 2" with C_V: 65, 90, 130, and 265
- 2-1/2" with C_V: 65, 90, 130, 180, and 265
- 3" with C_V: 90, 180, 220, and 265
- 100 PSI close-off
- Stainless steel ball and stem
- Spring return and non-spring return actuators

Please contact your local branch for more information.


HONEYWELL ECONOMIZER SOLUTIONS
BELIMO ECONOMIZER ACTUATOR SOLUTIONS
HONEYWELL ECONOMIZER MOTOR
HONEYWELL LOGIC MODULE / CONTROLLER
MOUNTING LOCATION OF CONTROLLER
MIN. POSITION POTENTIOMETER ON CONTROLLER ?
ELECTRICAL CONNECTION ON CONTROLLER
ELECTRICAL CONNECTION NEEDED ON ACTUATOR
EXTRA PARTS NEEDED
REMOTE MIN. POSITION POTENTIOMETER OPTION
BELIMO REPLACEMENT ACTUATOR OPTIONS
HW M7415
W7459A,D
On Actuator
Yes (Built-in Pot.)
FEMALE 1/4" SPADE
MALE 1/4" SPADE UNINSULATED
Retrofit Bracket Male Spades ZG-112 KH-LH KG6 (KIT ZG-ECON1)
W7460
On Sheet Metal
Yes (Built-in Pot. & Optional Remote Pot.)
MALE 1/4" SPADE
FEMALE 1/4" SPADE INSULATED
Female Spades ZG-112 KH-LF KG6 (KIT ZG-ECON2)
SGA24 DDC Controller
LF24-ECON-R03 US
W7210
On Sheet Metal
Yes (Built-in Pot. & Optional Remote Pot.)
MALE 1/4" SPADE
FEMALE 1/4" SPADE INSULATED
Female Spades ZG-112 KH-LF KG6 (KIT ZG-ECON2)
SGA24 DDC Controller
LF24-SR US
HW M8405
W7459C
On Actuator
No (On M8405 Motor)
FEMALE 1/4" SPADE
MALE 1/4" SPADE UNINSULATED
Retrofit Bracket Male Spades ZG-112 KH-LF KG6 (KIT ZG-ECON1)
SGA24 DDC Controller
LF24-SR-E US
HW M7215
W7212
On Actuator or On Sheet Metal
No (Only Remote Pot.)
MALE 1/4" SPADE
FEMALE 1/4" SPADE INSULATED
Mount on Sheet Metal Only
Female Spades ZG-112 KH-LF KG6 (KIT ZG-ECON2)
SGA24 DDC Controller
LF24-SR US
HW ML7275A (DMA)
W7210A,D
On Sheet Metal
Yes (Built-in Pot. & Optional Remote Pot.)
MALE 1/4" SPADE
FEMALE 1/4" SPADE INSULATED
Female Spades
W7215A,B
On Sheet Metal
Yes (Built-in Pot. & Optional Remote Pot.)
MALE 1/4" SPADE
FEMALE 1/4" SPADE INSULATED
Female Spades
SGA24 DDC Controller
LF24-SR US
HW M6415
DDC Controller
NA
NA
NA
FEMALE 1/4" SPADE INSULATED
ZG-LFC114
SGA24 DDC Controller
LFC24-3-R (-S) US

CONTROL VALVES

BELIMO



Electronic Globe Valves



Electronic Butterfly Valves



Electronic Zone Valves



Electronic Characterized Control Valves™

We have a large selection of Belimo Control Valves available.

Please contact your local branch for more information and pricing.

Sizing and Selection

Two-Way Valve, Water Application

Two-position applications — Valve should be line size.

Modulating applications

- Flow characteristic — Equal percentage
- Sizing — ΔP should match ΔP of coil or 3 to 5 psi drop

or use ASHRAE Authority Method

Note: Valve and actuator must meet conditions of service.
Always verify:

- Maximum pressure of body
- Close off pressure rating
- Ambient temperature limits are within valve/actuator limits
- Actuator control circuit matches analog or digital output

Three-Way Valve, Water Application

Two-position applications — Valve should be line size.

Modulating applications

Flow characteristic — Linear

- Constant flow — Valve should be line size or ΔP equal to coil drop
- Variable flow — Size valve for 3 to 5 psi pressure drop or use ASHRAE authority method
- Cooling tower bypass — Size valve according to required pressure drop and flow requirement
- System bypass — Size valve according to required pressure drop and flow requirement

Water Application

Equations: $C_V = \frac{Q\sqrt{G}}{\sqrt{\Delta P}}$

Where Q = Flow in gallons per minute (GPM) required to pass through the valve
G = Specific Gravity of Fluid (Water = 1)
ΔP = Pressure drop across the valve in PSI
C_V = Flow Coefficient

Alternate Forms:

$$Q = \frac{C_V\sqrt{\Delta P}}{\sqrt{G}} \qquad \Delta P = \left(\frac{(Q\sqrt{G})}{C_V}\right)^2$$

$$K_{VS} = \frac{C_V}{1.16}$$

THERMOSTATS

Fast-Stat Thermostat Multiplexer



The Fast-Stat is designed to simplify retrofit wiring projects by eliminating the need to pull new wiring for thermostat upgrades.

- Requires 2 wires only
- Provides up to 6 control signals
- 24 VAC for programmable stats - models 5000 and 7000
- All thermostat wiring completed in 15 minutes

Model #	Conversion	24 VAC	Terminals Provided							LIST
			R	C	Y	W1	W2	G	O/B	
3000	2 to 4 wire		•		•	•		•		164.90
5000	2 to 6 wire	•	•	•	•	•	•	•		234.20
7000	2 to 6 wire	•	•	•	•	•		•	•	307.00

WHITE-RODGERS

Comfort-Set 70 Single Stage Thermostats

For residential heating and cooling applications.

Features:

- Battery powered for maximum compatibility
- Fossil fuel or electric heat compatible
- Large LCD with backlight
- Selectable celsius or fahrenheit temperature display
- Includes O and B terminals
- Classic white colour



1E78-151

Specifications:

Setpoint Temperature Range..... 45 to 90°F (7 to 32°C)
Anticipation, Heating..... Adjustable
Anticipation, Cooling..... Adjustable
Rated Differential, Heat ..... 0.6 or 1.5°F
Rated Differential, Cool ..... 1.2°F
Dimensions..... 3-3/4"H x 5-1/8"W x 1-1/8"D



1F78-144

Part #	Typical Application	Programming	Stages Heat/Cool	System Switch	Fan Switch	Voltage	Power Method	Terminals	LIST
1F78-144	Gas, Oil, Electric	non-program-mable	1/1	Heat-Off-Cool	Auto-On	24 Volts or Millivolt	battery powered	RC, RH, W, Y, G, O, B	81.50
1E78-151		7 day program							97.20

THERMOSTATS
WHITE-RODGERS

Comfort-Set 80 Single Stage Thermostats

For residential and light commercial heating and cooling

Comfort-Set 80 Series Multi-Stage and Heat Pump Multi-Stage Thermostats

For residential and light commercial applications up to 2 stages heat, 2 cool multi-stage and 2 stages heat, 1 cool heat pump



1F80-0471

Features:

- Choice of battery powered or hardwired models
- Fossil fuel or electric heat compatible
- 60% larger LCD with backlight
- Permanent program retention during power loss
- Configuration menu allows keypad selection of options
- Selectable celsius or fahrenheit temperature display
- Classic white colour
- Selectable energy management recovery:
  Comfort-Set 80 Single Stage - 1F80-240 / 1F80-241 / 1F80-261
  Comfort-Set 80 Multi-Stage - 1F81-261 / 1F82-261

Comfort 80 Single Stage Specifications:

Setpoint Temp. Range ..... 45 to 90°F (7 to 32°C)
Anticipation, Heating..... Adjustable
Anticipation, Cooling..... Fixed
Rated Differential, Heat ..... 0.6 or 1.5°F
Rated Differential, Cool ..... 1.2°F
Dimensions..... 3-3/4"H x 6"W x 1-1/4"D

Comfort 80 Multi Stage Specifications:

Setpoint Temp. Range ..... 45 to 90°F (7 to 32°C)
Rated Differential (multi-stage)..... Heat 0.6 or 1.5°F
Cool 1.2°F
Rated Differential (heat pump) ..... Heat & Cool 0.75 or 1.2°F
Dimensions..... 3-3/4"H x 6"W x 1-1/4"D

Part #	Typical Application	Programming	Stages Heat/Cool	System Switch	Fan Switch	Anticipation Heat/Cool	Power Method	EMR	Terminals	LIST
SINGLE STAGE										
1F80-0471	Gas, Oil, Electric	5+1+1 or Non-0Programmable	1/1	Heat,Off, Cool	Auto, On	Adjustable/ Fixed	Dual Power	Yes	RC, C, RH, W, Y, G, O, B	168.00
1F86-0244	Gas, Oil, Electric	Non-Programmable	1/1	Heat,Off, Cool	Auto, On	Adjustable/ Fixed	Battery Powered	No	RC, RH, W, Y, G, O, B	
MULTI-STAGE										
1F81-261	Multi-stage	5 + 1 + 1	2/2	Heat,Off, Cool	Auto, On	Adjustable/ Fixed	Dual Power (R-C and/or batteries)	Yes	R, C, G, Y, Y2, W, W2	
1F85-0422	Multi-stage Gas/ Heat Pump	5 + 1 + 1 Keypad Lockout	2/2	Heat,Off, Cool, Emergency	Auto, On	Adjustable/ Adjustable	Dual Power (R-C and/or batteries)	Yes	R, C, G, W1, W2, Y1, Y2, L, O, B	164.20
1F850471	Multi-stage Gas/ Heat Pump	7 Day Keypad Lockout	3/2	Heat,Off, Cool, Emergency	Auto, On	Adjustable/ Adjustable	Dual Power (R-C and/or batteries)	Yes	R, C, G, W1, W2, Y1, Y2, L, O, B	

THERMOSTATS
WHITE-RODGERS

Comfort-Set 90 Single/Multi-Stage and Heat Pump Thermostats

For residential and commercial heating and cooling applications.

Features:
- Selectable automatic heat/cool system changeover
- Fossil fuel or electric heat compatible
- Large Comfort-View luminiscent display
- Permanent program retention during power loss
- Configuration menu allows keypad selection of options
- Selectable Celsius or Fahrenheit temperature display
- Programmable blower control and blower delay timings
- Selectable energy management recovery
- Built-in system and thermostat diagnostics
- Digital-signal remote sense capable
- Single Stage & Multi-Stage models: classic white colour
  Commercial model: commercial grey colour

Multi-Stage & Heat Pump Multistage added features:
- 7-day programming with automatic heat/cool system changeover
- Up to 4 digital-signal sensing locations with up to 3 remote indoor sensors plus thermostat. Also displays outdoor temperature with optional outdoor sensor. Temperature sensing can be averaged or weighted by sensor location.

Commercial Multi-Stage or Heat Pump added features:
- 7-day programming with occupied and unoccupied setback settings



1F80-0471



1F97-1277

Part #	Typical Application	Programming	Stages Heat/ Cool	System Switch	Fan Switch	Voltage	Power Method	Program Fan	Keypad Lockout	Terminals	LIST
SINGLE STAGE											
1F80-0471	Gas, Oil, Elec., 3-wire zone	5 + 2/5 + 1 + 1 Day Program	1/1	Heat,Off, Cool, Auto	Auto, On	24 Volts or Millivolt	Hardwired (R-C)	Yes	Yes	RC, RH, W, Y, G, MV, O, B, 6	168.00
COMMERCIAL MULTI-STAGE											
1F951277	Universal	7 Day	1/1	Heat,Off, Cool, Auto	Auto, On	24 Volts or Millivolt	Hardwired (R-C)		Yes	R, C, G, Y1, Y2, W1, W2, W3/A1, E2/P, E, O, B, L	486.00
1F97-1277	Gas, Oil, Elec., 3-wire zone	7 Day Program	1/1	Heat,Off, Cool, Auto	Auto, On	24 Volts or Millivolt	Hardwired (R-C)	Yes	Yes	RC, RH, W, Y, G, MV, O, B, 6	430.00

TEMPERATURE CONTROLS
WHITE-RODGERS



1E30N-311



1E56N-361



1E50N-303



1F83-0422

Horizontal & Vertical Thermostats

Control of low voltage heating, cooling, heating/cooling and zoning installations.

1E - Vertical
1F = Horizontal

Heating

Model No.	Range	Differential	Switch Action	Type Anticipation	LIST
1E30N-311	50 to 90°F (10 to 32°C)	1°F	Open on Rise	Adj. 0.15 to 1.2A	66.00

Heating/Cooling and Cooling Only - With Selector Switches

Heating/Cooling Type

Model No.	Range	Differential	Switch Action	LIST
1E56N-361	50 to 90°F (10 to 32°C)	Heating 1°F / Cooling 1.5°F	SPDT	78.80

Heating

Model No.	Range	Differential	System Switch Positions		LIST
			System	Fan	
1E50N-303	50 to 90°F (10 to 32°C)	1°F	None	Auto-On	72.40

Multi-Stage Low Voltage Heating Thermostat

Model No.	Range	Differential		Switch Action	LIST
		System	Fan		
1F83-0422	50 to 90°F (10 to 32°C)	1st 2nd	1.0°F 1.5°F	SPST	148.30

TEMPERATURE CONTROLS

WHITE-RODGERS

Refrigeration Temperature Controls (Remote Bulb)

Provide positive control of refrigeration applications where remote control is desired.



Part #	Range	Differential	Capillary Length	Switch Action	LIST
1609-90	-55 to 33°F (-12.7 to 0.5°C)	Fixed	40 in.	Close on Rise	244.70
1609-101	-30 to +90°F (-34 to +32°C)	Adj. 3.5 to 40°F (2 to 22°C)	5 ft.	Close on Rise	172.10
1609-102	-30 to +90°F (-34 to +32°C)	Adj. 3.5 to 40°F (2 to 22°C)	8 ft.	Close on Rise	
1609-103	-30 to +90°F (-34 to +32°C)	Adj. 3.5 to 40°F (2 to 22°C)	10 ft.	Close on Rise	
1687-9	-30 to +90°F (-34 to +32°C)	Adj. 4.5 to 40°F (2.5 to 22°C)	8 ft.	SPDT	186.10

Refrigeration Temperature Controls For Walk In Boxes Space Stat



Part #	Range	Differential	Switch Action	LIST
201-8	20 to 90°F (-7 to +32°C)	Adj. 3 to 20°F (1.5 to 11°C)	Close on Rise	
201-20	-30 to +90°F (-34 to +32°C)	Adj. 3 to 20°F (1.5 to 11°C)	Close on Rise	332.00

Line Voltage Electric Heat Thermostats



Part #	Description	LIST
1A65W-633	SPST, 4° to 29°C range, 0.5°C differential, 22A, 2500W @ 120VAC / 22A, 5000W @ 240VAC non-inductive, without thermometer, white colour	
1A66W-633	DPST, 4° to 29°C range, 0.5°C differential, with OFF position, 22A, 5000W @ 240VAC / without thermometer, white colour	83.70

Level-Temp Low Voltage Control Systems for Electric Heat



Part #	Input Voltage/Frequency	Thermostat Current	A.C. Resistive (non-inductive)	A.C. Motor Rating (inductive)		LIST
				Full Load	Locked Rotor	
24A01G-3	240 VAC 60 Hz	0.2A	25A, 6000W, 240V	12A, 240V	72A, 240V	210.70
24A05E-1	208 VAC 60 Hz	0.2A	25A, 5200W, 208V	12A, 208V	72A, 208V	196.60

FAN RELAY CENTERS

8A05A-1S1 Fan Centers

0.28A coil current, 14A @ 120VAC / 8A 240VAC FL



Model #	Switching	Primary Voltage	Application	LIST
8A05A-1S1	SPDT	120 V	For single or two speed motors	203.60

HOT SURFACE IGNITION CONTROLS
WHITE-RODGERS

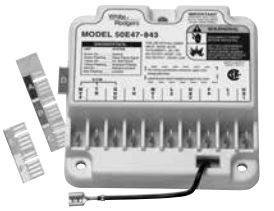
Universal Silicon Carbide Furnace Control

Universal 50A55-843 will replace all 50A50 and 50A55



Part #	Description	LIST
50A55-843	24V, remote flame sense, 4 recycles, 30 sec. prepurge, 15 sec. postpurge, 60 min. reset, 300 sec. lockout, replaces 50A55-143, 50A55-245, 50A55-286. All timing in seconds	319.00

Universal Hot Surface Ignition Module (HSI)



Part #	Description	LIST
50E47-843	4/7 sec. lockout, 0/2 retries, 30 sec. prepurge, 17/45 sec. warm up, 120VAC, 50/60 Hz. Replaces 50E47-50, 50E47-150, 50E47-170	347.00

AIR SWITCHES

Dual Purpose Air Switches

- Respond to positive, negative or differential air pressure
- Furnished with one 6" piece 1/4" O.D. flexible tubing, nuts and ferrules
- Can be mounted in any position except upside down

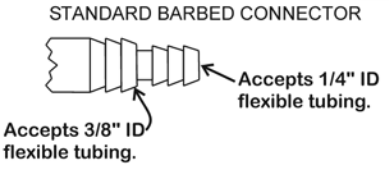


Part #	Operating Range	Switch Action	Electrical Ratings			Pilot Duty 125-277v AC	LIST
			Resistive (non-inductive)				
			120v AC	240v AC	277v AC		
770-3	0.07 to 12.0 W.C.	SPDT	15.0A	15.0A	15.0A	300 VA	101.60

Cleveland Controls Adjustable Air Switch

RSS-495 Series switches feature customer-specified fixed set points between 0.12” w.c. and 4.00” w.c. They can be used to sense positive, negative or differential air pressure, and are available with various sample line connections, terminal styles, and mounting arrangements.

- **Approximate Switching Differential:** .10 ± 0.02” w.c.
- **Measured Media:** Air, or combustion by-products that will not degrade EPDM and Thermoplastic.
- **Operating Temperature Range:** -40°F to 190F (-40 to 88°C).
- **Maximum Pressure:** 1 psi (0.06 bar).
- **Life:** 100,000 cycles minimum.
- **Electrical Rating:** 5 amp non-inductive 120 to 277 V AC, 1 amp pilot duty (120 va) at 120 V AC.
- spdt, spst/no or spst/nc logic.
- **Approval:** UL, CSA, CE, NRTL, & Aust. Gas Assoc.





Part #	LIST
RSS-495-011	76.40

Universal NS2000003

Low cost, high accuracy and reliable universal air pressure switch that replaces many small foot print type switches.

- Senses positive, negative or differential air pressure.
- Set Point Range: 0.10” to 10” w.c.
- Electrical Ratings: 1/10 hp @ 120 to 277 VAC. 28 VA pilot duty @ 24 VAC, 125 VA pilot duty @ 120 VAC.



Part #	LIST
NS2000003	55.70

TEMPERATURE CONTROLS

WHITE-RODGERS

Snap Disc Fan & Limit Controls

Types for regulation of fan or blower or for high limit safety control.

FAN CONTROL

Part #	Fixed Temperature Settings		Switch Action	LIST
	Cut-In	Cut-Out		
3F01-110	110°F (43°C)	90°F (32°C)	Close on Rise	15.50
3F01-120	120°F (49°C)	110°F (43°C)	Close on Rise	15.50
3F01-130	130°F (54°C)	115°F (46°C)	Close on Rise	15.50
3F01-140	140°F (60°C)	120°F (49°C)	Close on Rise	15.50
3F01-150	150°F (66°C)	130°F (54°C)	Close on Rise	15.50
3F01-160	160°F (71°C)	140°F (60°C)	Close on Rise	15.50
3F01-180	180°F (82°C)	160°F (71°C)	Close on Rise	15.50
3F01-200	200°F (93°C)	180°F (82°C)	Close on Rise	15.50
3F01-350	350°F (177°C)	320°F (160°C)	Close on Rise	



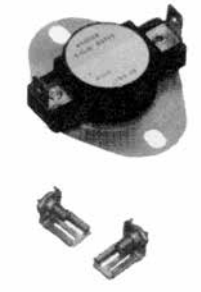
FAN CONTROL - WITH ANTICIPATOR HEATER (SEPARATE CIRCUIT)

Part #	Fixed Temperature Settings		Switch Action	Heater Voltage	LIST
	Cut-In	Cut-Out			
3F02-125	125°F (52°C)	100°F (38°C)	Close on Rise	24v AC	



LIMIT CONTROL

Part #	Fixed Temperature Settings		Switch Action	LIST
	Cut-In	Cut-Out		
3L01-120	110°F (43°C)	120°F (49°C)	Open on Rise	15.10
3L01-130	115°F (46°C)	130°F (54°C)	Open on Rise	15.10
3L01-140	100°F (38°C)	140°F (60°C)	Open on Rise	15.10
3L01-150	110°F (43°C)	150°F (66°C)	Open on Rise	15.10
3L01-170	130°F (54°C)	170°F (77°C)	Open on Rise	15.10
3L01-180	140°F (60°C)	180°F (82°C)	Open on Rise	15.10
3L01-190	150°F (66°C)	190°F (88°C)	Open on Rise	15.10
3L01-200	160°F (71°C)	200°F (93°C)	Open on Rise	15.10
3L01-230	190°F (88°C)	230°F (110°C)	Open on Rise	15.10
3L01-250	210°F (99°C)	250°F (121°C)	Open on Rise	15.10
3L01-300	250°F (121°C)	300°F (149°C)	Open on Rise	15.10
3L01-350	310°F (154°C)	350°F (177°C)	Open on Rise	15.10



LIMIT CONTROLS - MANUAL RESET

Part #	Fixed Temperature Settings		Switch Action	LIST
	Cut-In	Cut-Out		
3L02-160	manual reset	160°F (71°C)	Open on Rise	24.50
3L02-170	manual reset	170°F (77°C)	Open on Rise	24.50
3L02-180	manual reset	180°F (82°C)	Open on Rise	24.50
3L02-190	manual reset	190°F (88°C)	Open on Rise	24.50
3L02-200	manual reset	200°F (93°C)	Open on Rise	24.50



SPDT CONTROLS

Part #	Fixed Temperature Settings				Switch Action	LIST
	Terminal 1 & 3		Terminal 1 & 2			
	Cut-Out	Cut-In	Cut-In	Cut-Out		
3L03-140	140°F (60°C)	120°F (49°C)	140°F (60°C)	120°F (49°C)	SPDT	22.90
3L03-190	190°F (88°C)	170°F (77°C)	190°F (88°C)	170°F (77°C)	SPDT	22.90

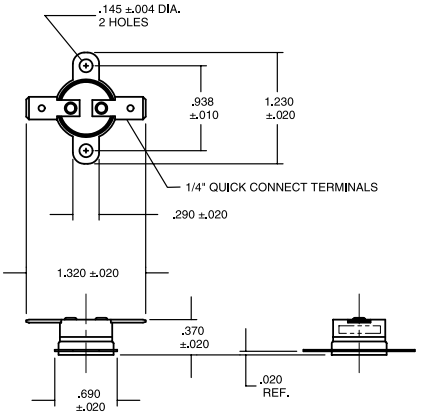


TEMPERATURE CONTROLS

WHITE-RODGERS

Bimetal Disc Thermostats





3L11/3F11 SERIES
1/2″ BIMETAL DISC THERMOSTATS

22 New Bimetal Disc Thermostats for Appliance and HVAC

FEATURES

- Loose ring, stainless steel mounting brackets.
- 1/4″ quick connect terminations.
- Automatic reset.
- Aluminum disc cup.

SPECIFICATIONS

Single pole, single throw
Available in either open or close on temperature rise
Electrical Ratings
Resistive . . . . . 15A @ 120VAC, 10A @ 240VAC
Inductive . . . . . 3.0FLA, 12.0LRA @ 120VAC; 1.5FLA, 6.0LRA @ 240 VAC
Pilot Duty 125VA
Dimensions . . . . . Length (1.23″), case width (1.32″), height (.37″)
Weight . . . . . 0.2 oz.
Agency . . . . . UL Recognized File #E19279
CSA Certified File #LR19988
VDE Lic. 81669

Model Number	Description	Temperature °F/°C	Differential °F/°C	Therm-O-Disc Type	Therm-O-Disc Style	Stancor Cross Reference
3L11-60	Open on rise	55 to 65 (°F), 13 to 18 (°C)	20 (°F), 12 (°C)	36T22	10842	STO-60
3L11-85	Open on rise	80 to 90 (°F), 27 to 32 (°C)	15 (°F), 8 (°C)	36T22	10843	STO-85
3F11-100	Close on rise	93 to 107 (°F), 34 to 42 (°C)	30 (°F), 17 (°C)	36T22	10844	STC-100
3L11-110	Open on rise	105 to 115 (°F), 41 to 46 (°C)	30 (°F), 17 (°C)	36T22	10845	STO-110
3L11-120	Open on rise	115 to 125 (°F), 46 to 52 (°C)	30 (°F), 17 (°C)	36T22	10846	STO-120
3F11-120	Close on rise	113 to 127 (°F), 45 to 53 (°C)	30 (°F), 17 (°C)	36T22	10847	STC-120
3L11-140	Open on rise	135 to 145 (°F), 57 to 63 (°C)	30 (°F), 17 (°C)	36T22	10848	STO-140
3F11-140	Close on rise	133 to 147 (°F), 56 to 64 (°C)	30 (°F), 17 (°C)	36T22	10849	STC-140
3L11-150	Open on rise	145 to 155 (°F), 63 to 68 (°C)	30 (°F), 17 (°C)	36T22	10850	STO-150
3L11-160	Open on rise	155 to 165 (°F), 68 to 74 (°C)	30 (°F), 17 (°C)	36T22	10851	STO-160
3L11-170	Open on rise	165 to 175 (°F), 74 to 79 (°C)	30 (°F), 17 (°C)	36T22	10852	STO-170
3F11-170	Close on rise	162 to 178 (°F), 72 to 81 (°C)	30 (°F), 17 (°C)	36T22	10853	STC-170
3L11-175	Open on rise	170 to 180 (°F), 77 to 82 (°C)	15 (°F), 8 (°C)	36T22	10854	STO-175
3L11-180	Open on rise	175 to 185 (°F), 79 to 85 (°C)	30 (°F), 17 (°C)	36T22	10855	STO-180
3F11-180	Close on rise	172 to 188 (°F), 78 to 87 (°C)	30 (°F), 17 (°C)	36T22	10856	STC-180
3L11-190	Open on rise	185 to 195 (°F), 85 to 91 (°C)	30 (°F), 17 (°C)	36T22	10857	STO-190
3L11-210	Open on rise	204 to 216 (°F), 96 to 102 (°C)	30 (°F), 17 (°C)	36T22	10858	STO-210
3L11-220	Open on rise	214 to 226 (°F), 101 to 108 (°C)	30 (°F), 17 (°C)	36T22	10859	STO-220
3F11-225	Close on rise	217 to 232 (°F), 103 to 111 (°C)	30 (°F), 17 (°C)	36T22	10860	STC-225
3L11-230	Open on rise	224 to 236 (°F), 107 to 113 (°C)	30 (°F), 17 (°C)	36T22	10861	STO-230
3F11-240	Close on rise	229 to 251 (°F), 109 to 122 (°C)	100 (°F), 56 (°C)	36T22	10862	STC-240
3L11-250	Open on rise	224 to 256 (°F), 118 to 124(°C)	30 (°F), 17 (°C)	36T22	10863	STO-250
3L11-325	Open on rise	315 to 335 (°F), 157 to 169 (°C)	50 (°F), 28 (°C)	36T22	10864	STO-325

TEMPERATURE CONTROLS

WHITE-RODGERS

Adjustable Snap Disc Fan & Limit Controls

This adjustable snap disc thermostat allows you to set the temperature set point to match your specific needs which simplifies inventory

Part #	Type #	Temperature Range	Differential	Switch Action	Function	Accessories	LIST
3F05-1	39205	90 to 130°F	20°F	SPST	Fan controls (Close on rise)	Includes thermostat and tab-to-screw terminals	40.60
3F05-2	39210	140 to 180°F	20°F	SPST			40.60
3L05-1	39220	135 to 175°F	40°F	SPST	Limit controls (Open on rise)		39.60
3L05-2	39225	175 to 215°F	40°F	SPST			39.60
3L05-3	39230	210 to 250°F	40°F	SPST			39.60
3L05-13	39235	250 to 290°F	40°F	SPST			

Board Mount Limit Controls

1/2" Bimetal Disc with Ranges for Your System Needs

Features:

- Proven reliability in a compact, versatile, cost-effective design
- Provides high-speed contact separation
- OEM replacement for competitive models

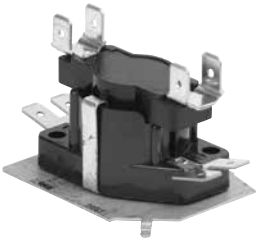


Part #	Figure	Construction	Opens/Closes (°F)	Length (in)	TOD Type	TOD Style	LIST
3L09-1	1		140/100	1.87	36T	612700	
3L09-2	1		170/130	1.87	36T	612708	
3L09-3	2	A	140/110	3.12	36T	612701	**32.60**
3L09-4	2	C	150/130	3.12	36T	612703	**32.60**
3L09-5	2	C	160/140	3.12	36T	612706	**32.60**
3L09-6	2	B	170/130	3.12	36T	612710	**32.60**
3L09-7	2	A	175/145	3.12	36T	612711	**32.60**
3L09-8	2	B	180/160	3.12	36T	612714	**32.60**
3L09-9	2	C	190/170	3.12	36T	612715	**32.60**
3L09-10	2	B	200/160	3.12	36T	612718	**32.60**
3L09-11	2	B	210/170	3.12	36T	612719	**32.60**
3L09-12	2	B	220/180	3.12	36T	612722	**32.60**
3L09-13	2	A	240/210	3.12	36T	612723	**32.60**
3L09-14	2	B	250/210	3.12	36T	612725	**32.60**

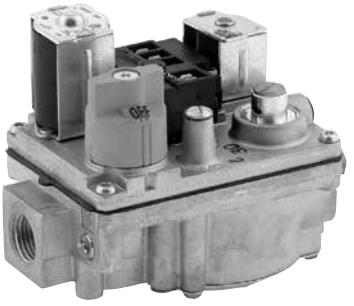
Electric Heat Sequencers - MODEL 24A34

The 24A34 series replacement fan/heat sequencers are for sequencing heating elements and fans in central electric furnaces, supplementary electric heating in heat pumps and central air conditioners and for time delay relay applications. These sequencers are voltage compensated PTC operated devices.

Part #	Heat On	Cool Off	LIST
ONE TIMING - SINGLE POLE			
24A34-29	15-35 secs	25-55 secs	36.00
ONE TIMING - DOUBLE POLE			
24A34-21	1-20 secs	1-50 secs	36.00
24A34-22	15-45 secs	1-30 secs	36.00
24A34-23	25-55 secs	15-45 secs	36.00
24A34-24	30-70 secs	1-40 secs	36.00
24A34-25	40-90 secs	1-30 secs	36.00
TWO TIMINGS - DOUBLE POLE			
24A34-26	1-20 secs	40-90 secs	51.20
	30-90 secs	1-30 secs	
24A34-36	1-20 secs	45-110 secs	54.60
	30-45 secs	1-30 secs	
THREE TIMINGS - 2 RELAYS ON PLATE			
24A34-27	1-160 secs	1-160 secs	54.10
24A34-28	1-160 secs	1-160 secs	56.20
24A34-37	1-110 secs	1-110 secs	52.50



GAS VALVES
WHITE-RODGERS



36E93-304



36H32-423

Part #	Description	LIST
36C03-258	Standing pilot, fast opening, nat, 230,000BTU, 3.5" W.C., 1/2" x 1/2" inlet/outlet size, 24 VAC, line interrupter, has E.C.O. terminals	290.90
36C53-239	Standing pilot, slow opening, 1/2" x 1/2" inlet/outlet size	
36C67-175	Standing pilot, step opening, nat or L.P. selection, 100,000BTU, 3.5" W.C. or 11.0"W.C., 1/2" x 3/8" inlet/outlet size, 24VAC, 100% shutoff pilot, 3/8 side taps, for mobile home/RV	
36C68-423	Redundant, single stage, fast opening, nat, 280,000BTU, 3.5"W.C., 3/4" x 3/4" inlet/outlet size, 24VAC, includes L.P. conversion kit and reducer bushings	
36C76-420	Redundant, two stage, bimetal, nat, 280,000BTU, 1.3"W.C. low setting, 3.5"W.C. high setting, 3/4" x 3/4" inlet/outlet size, 24 VAC	
36C76-450	Sub for York 025-26373-000	567.00
36C84-405	Sub for York 029-18977-700	
36C84-426	Cycle pilot, fast opening, nat, 280,000BTU, 3.5" W.C., 3/4" x 3/4" inlet/outlet size, 24VAC, with reducer bushings and converion kits, PC board connection	
36E36-304	Redundant, fast opening, nat, 140,000BTU, 3.5" W.C., 1/2" x 3/4" inlet/outlet size, 24VAC, three 1/4" spade terminals, includes reducer bushings & L.P. conversion kits, with side taps	
36E93-304	Redundant, delay open, nat. gas, 3.5" W.C., 24 VAC, .30A, 125,000 BTU, 1/2" x 3/4" inlet outlet, straight thru, pressure switch, LP converion kit, hose barb fitting included	
36H32-423	Universal 3/4" x 3/4" includes reducer bushings & L.P. conversion kits, with side taps	482.00

Cycle-Pilot Retrofit Kit

Control system designed to eliminate standing pilots by converting to cycle - pilot controls with automatic spark ignition. Gas valve functions are terminated on a printed circuit board that exits through the mercury flame sensor receptacle housing, on the terminal panel side. Interfacing to the ignition module is achieved with wiring harnesses.

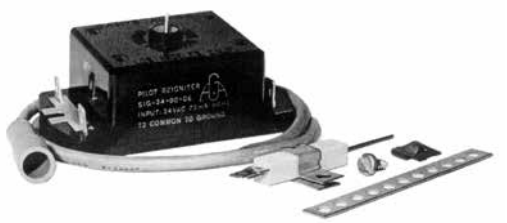
- Eliminates gas wasted by a standing pilot
- Eliminates pilot outage problems due to occasional drafts
- Each package contains the controls and hardware needed for conversion to cycling pilot operation



Part #	Coil Voltage 60 Hz	Electrical Rating	Inlet - Outlet Size	Capacity AGA Standard Gas	Gas Type	LIST
21D18-3	24v AC	0.61 amps	3/4" x 3/4"	335,000	Natural Only	

FAN/BLOWER CONTROLS CAM-STAT

Dual Voltage Pilot Reigniter

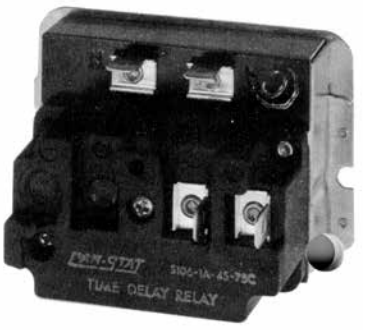


Protects a gas pilot flame from extinguishing. This lights a standing pilot by highly intense electrical sparks, provided that gaseous fuel (LPG, Natural Gas, etc.) is available. If the pilot flame goes out, sparks immediately relight the pilot. Sparking stops as soon as the pilot flame is re-established. Automatic & trouble-free.
Ambient Temperature: -40°F to +175°F
Recommended Spark Gap: 1/8 in. to 1/4 in. (.125 to .250)
Current Drain: 75 milliamperes max. (sparking)
High Voltage Lead: 24 inch length

Model Number	Power Input	Description	LIST
PR-24/120-36W	24/120 VAC	Hardware Kit, Spark Cable & Module	161.80

Time Delay Relay S106 Series

Ambient compensated 0° to 200°F. This Time Delay Relay is a device for use in controlling high current blowers, relays and contactors at a predetermined time interval after the heater is energized. The heater timer is connected to a 24 volt circuit and this circuit may be energized remotely by a manual switch, room thermostat or some other automatic electric contacting device.



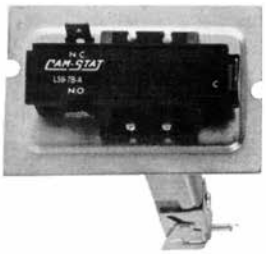
Model Number	Switch Action	Timing in Seconds		LIST
		Delay on Make	Delay on Break	
S106-1A45-75C	SPST	30-50	60-90	197.50
S106-1A50-40C	SPST	45-55	30-50	197.50
S106-1A55-60C	SPST	50-60	45-75	197.50
S106-1A40-100	SPST	35-45	80-110	197.50
S106-1B65-45C	SPDT	60-70	45-75	197.50

Electrical Rating: Time Delay Heater - 0.12 amps at 24 VAC

COMBINATION FAN/LIMIT CONTROLS

CAM-STAT

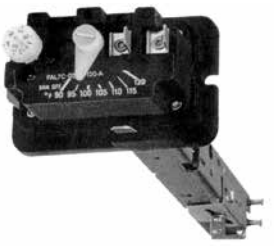
L-59 Series with SPDT Switches



These limit controls have SPDT switches that incorporate a fixed temperature setting. Consult factory for fixed settings. Pilot Duty: N.C. Contacts: 40 VA at 30, 120 and 240 VAC, N.O. Contacts: 120 VA at 30, 120 and 240 VAC.

Model Number	Extension Length	Fan / Temp. Off	LIST
L59-3B-A	3"	120° to 250°	119.10
L59-7B-A	7"	120° to 250°	119.10

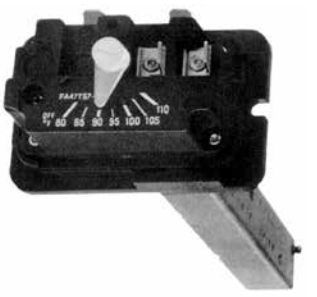
FAL Series for Universal Replacement



Universal replacements for application in all types of forced air heating furnaces. The fan portion incorporates an adjustable fan "OFF" setting and an adjustable differential to enable the installer to match the settings of the old device being replaced.

Model Number	Element Length	Fan Off Temp	Fan On Temp	Limit Temp	Fan/Limit Differential	LIST
FAL3C05TD120A	3"	90° to 120°	25° to 50°	150° to 250°	30°	253.90
FAL7C05TD120A	7"	90° to 120°	25° to 50°	150° to 250°	30°	253.90

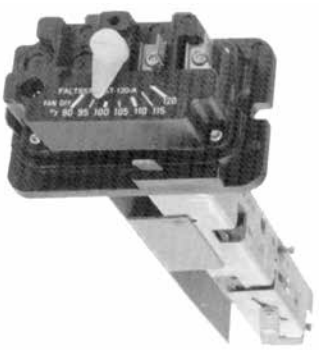
FA47TS Series with Time Start Fan Control



Replaces all F47TS series controls. Fan controls with a built-in "heat assist" timer. The time delay turns on the blower as a function of time and/or temperature after the room thermostat calls for heat and turns off the blower as a function of temperature at the indicated dial setting.

Model Number	Extension Length	Time Delay at 24 VAC	Fan Off Temp	Fan/Limit Differential	LIST
FA47TS3-110	3"	25-60 sec.	80° to 110°	60° Fixed	280.90
FA47TS7-110	7"	25-60 sec.	80° to 110°	60° Fixed	280.90

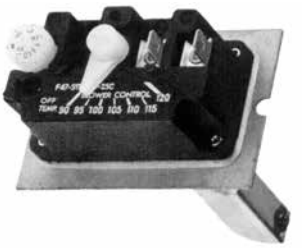
FALTS Series with Time Start Delay



Include a time start fan control ("heat assist"). The time delay turns on the blower as a function of time and/or temperature after the room thermostat calls for heat and turns off the blower as a function of temperature at the indicated dial setting of the fan. The limit portion will limit the temperature of the furnace to a safe operating temperature. A limit temperature adjustment is provided to match the setting of the old device being replaced. Electrical rating: Timer ("Heat Assist"): 0.08 amps at 24 VAC.
Pilot Duty: 40 VA at 30 VAC & 120 VAC

Model Number	Element Length	Fan Off Temp	Fan On Temp	Limit Temp	Fan/Limit Differential	LIST
FALTS57C05T120A	7"	90° to 120°	N/A	150° to 250°	30°	275.30
FALTS57C65T120A	7" w/shield	90° to 120°	N/A	150° to 250°	30°	285.40
FALTS57C13BT120A	7" SPDT	90° to 120°	N/A	150° to 250°	30°	285.40

F47 & F214 Series with Adjustable Temperature Dial



Incorporate an adjustable temperature dial to enable the installer to match the setting of the device being replaced.

Model Number	Extension Width	Length	Time Delay at 24 VAC	Fan Off Temp	Fan/Limit Differential	LIST
F47-3TD-120-25C	7/16"	3"	N/A	90° to 120°	25° to 45°	237.10
F47-7TD-120-25C	7/16"	7"	N/A	90° to 120°	25° to 45°	237.10
F214-12A-140-25C	1-1/16"	3"	N/A	60° to 140°	25° to 45°	237.10
F214-13A-140-25C	1-1/16"	7"	N/A	60° to 140°	25° to 45°	237.10

DEFINITE PURPOSE CONTACTORS

MARS


61730

1 Pole with JumperWire, 25 – 40 Amps

Part(Furnas) #	MARS #	F.L.A.	Locked Rotor AMPS				Non Inductive AMPS	Coil Volts	LIST
			240V	277V	480V	600V			
45EG10A-JA	61320	30	180	180	150	120	40	24	47.40
45EG10A-FA	61321							120	47.40
45EG10A-GA	61322							240	48.80
45GG10A-JA	61730	40	180	180	150	120	50	24	70.60

2 Pole, 20 – 40 Amps

Part(Furnas) #	MARS #	F.L.A.	Locked Rotor AMPS				Non Inductive AMPS	Coil Volts	LIST
			240V	277V	480V	600V			
45EG20A-J	61345	30	-	180	135	110	40	24	46.10
45EG20A-F	61346							120	46.10
45EG20A-G	61347							240	46.10

3 Pole, 75 – 150 Amps

Part(Furnas) #	MARS #	F.L.A.	Locked Rotor AMPS			Non Inductive AMPS	Coil Volts	LIST
			240V	480V	600V			
42FE35A-J	61480	75	450	375	300	93	24	519.00
42FE35A-F	61481						120	519.00
42FE35A-G	61482						240	519.00
42GE35A-J	61490	90	540	450	360	120	24	716.00
42GE35A-F	61491						120	716.00
42GE35A-G	61492						240	712.00

3 and 4 Pole, 25 – 60 Amp

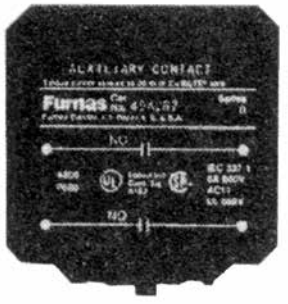
Part(Furnas) #	MARS #	F.L.A.	Locked Rotor AMPS			Non Inductive AMPS	Coil Volts	LIST
			240V	480V	600V			
3 Pole								
42BF35A-J	61430	30	180	150	120	40	24	95.20
42BF35A-F	61431						120	95.20
42BF35A-G	61432						240	95.20
42CF35A-J	61445	40	240	200	160	50	24	102.40
42CF35A-F	61446						120	102.40
42CF35A-G	61447						240	102.40
42DF35A-J	61460	50	300	250	200	63	24	249.90
42DF35A-F	61461						120	249.90
42DF35A-G	61462						240	249.90
42EF35A-J	61470	60	360	300	240	75	24	261.50
42EF35A-F	61471						120	261.50
42EF35A-G	61472						240	261.50
4 Pole								
EX9CK40A40B7	EX9CK40A40B7	40	240	200	160	50	24	92.40
EX9CK40A40G7	EX9CK40A40G7						120	
DP-4P40A240	DP-4P40A240						240	77.90

DEFINITE PURPOSE CONTACTORS

MARS / SIEMANS

Field Modification Kits

Snap-On Side Mounted Auxiliary Interlocks



49ACRO/C/6/7/8

Model No.	Furnas No.	Class	Description	Contractor F.L.A.	LIST
MARS					
61610	49ACR0	42	1 NO	30-60	43.70
61611	49ACRC		1 NC		43.70
61612	49ACR6		1 NO- 1 NC		76.70
61613	49ACR7		2 NO		121.10
61614	49ACR8		2 NC		121.10
61615	49D36098001		SPDT		86.00
61616	49D36098003		DPDT		73.10
61623	MARS, 75-90		SPDT	75-90	86.60
61624	MARS, 75-90		1 NO		86.60
61625	MARS, 75-90		1 NC		86.60
SIEMANS					
	49D57071001	Contactor DIN Rail Mounting Kit up to 60 amp			50.20
	49D57071002	Contactor DIN Rail Mounting Kit up over 75 amp			29.50

UNIVERSAL DEFROST TERMINATION THERMOSTATS

Low Ambient Control

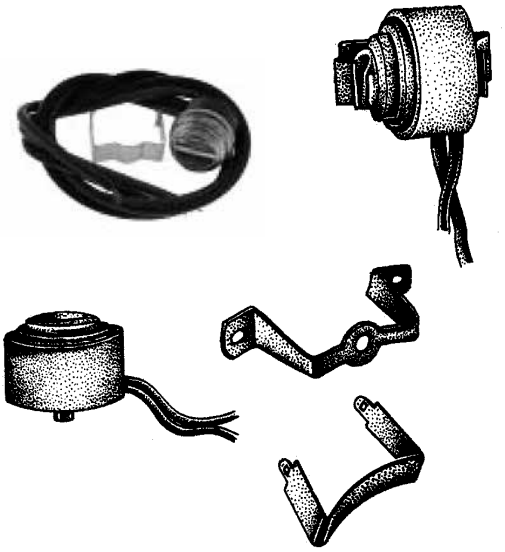
Opens at 45°F, closes at 55°F; prevents compressor from starting at low outdoor temp. Ideally mounted in outdoor condensing unit & wired to low voltage control circuit.



Part #	LIST
20601	21.70

Universal Defrost Termination Thermostats

Individually packaged • Mounting clips available if required • 24" lead length



Part #	Description	LIST
52959	surface clip	3.00
SL249	push in clip	3.00
7075819	Bohn curved to fit on pipe c/w clip	120.40
ML45	°Diff. 20, Open°F 45, Close°F 25	9.40
ML50	°Diff. 20, Open°F 50, Close°F 30	9.40
ML55	°Diff. 20, Open°F 55, Close°F 35	9.40
ML60	°Diff. 20, Open°F 60, Close°F 40	9.40
ML70	°Diff. 20, Open°F 70, Close°F 50	9.40
ML80	°Diff. 50, Open°F 80, Close°F 30	9.40
ML90	°Diff. 55, Open°F 90, Close°F 35	10.20
AE1C-1	evaporator anti-ice control	19.70

DEFROST TIMERS

Adjustable Defrost Timer

Adjustable defrost frequency 4 to 12 Hours. Adjustable defrost time 10 to 35 mins. Standard size & mounting to fit most Applications.



Part #	Voltage	Max. Compressor Rating	Max. Resistive Load	LIST
EDT10	120	1/3 HP	10 Amp	71.70
EDT20	208/240	1/3 HP	5 Amp	
EDT11	120	3/4 HP	20 Amp	80.70
EDT21	208/240	3/4 HP	20 Amp	89.70

Exact Replacement Defrost Timers

Exact OEM Features.
Replaces **Admiral 55467-1**



Part #	Defrost Freq (Hrs)	Defrost Time (Mins)	LIST
SPA1401AD	6	21	19.20
SPG1401GE	6	25	20.00

SURGE PROTECTOR & COMPRESSOR DEFENDER

INTERMATIC / GRASSLIN

AG3000 HVAC Surge Protection



Connects to the furnace/air handler disconnect to protect high-efficiency furnaces, hydronic heating systems, and ductless mini-splits from surges and spikes.

- 120/240 VAC Single Split Phase SPD for use on a variety of HVAC Equipment
- Green LED:Protection Indicator
- Unmatched Surge Protection Ratings
- Only HVAC Surge Protector that is both Type 1 and Type 2 compatible
- Meets all UL1449 3rd Edition Standards
- Type 4x Enclosure
- 18 in. 10 Gauge Leads
- State-of-the-art TPMOV® technology

Specifications:

Model #	Description	Service Voltage VAC	SPD Type	Nominal Discharge Current	Max. Continuous Operation Voltage	Short Circuit Current Rating	Enclosure	LIST
AG3000	**HVAC Surge**	**120/240**	**2**	**10kA**	**L-N/G: 150V, L-L: 300V**	**20kA**	**Type 4x**	195.40

CD1-024R Compressor Defender™



Installs onto the AC disconnect to protect compressors and circut boards in residential and light commercial, central AC and heat pump considering unit applications from surges, brownouts, and short cycles.

- Surge, brownout, and short cycle protection with 120, 208, and 240 VAC loads
- LED indicators provide real-time status updates for quick and easy troubleshooting
- For use inside condensing units or externally on disconnects
- Complies with ANSI/AHRI Standard 110-2012 Range B² for voltage drop protection
- Auto-sense voltage technology 120-240 VAC universal input voltage
- Meets ANSI/UL 1449 3rd edition requirements
- Type 3 weatherproof and UV resistant enclosure
- State-of-the-art TPMOV® technology

Specifications:

Model #	Description	Service Voltage VAC	SPD Type	Nominal Discharge Current	Max. Continuous Operation Voltage	Short Circuit Current Rating	Enclosure	LIST
CD1-024R	**Brownout, Surge, And Short Cycle Protection**	**120/240**	**2**	**10kA**	**L-N/G: 150V, L-L: 300V**	**20kA**	**Type 3 Outdoor**	280.40

Thermostat Relay	Control Output	Undervoltage Response Time	Short Cycle Delay	Undervoltage Protection ANSI/AHRI Standard 110-2012		
				120	208/230	240
N/C 24VAC	**2A @ 24VAC N/C**	**3 Line Cycles**	**3 Min.**	104	180	208

SURGE PROTECTOR & COMPRESSOR DEFENDER

INTERMATIC / GRASSLIN

IG2240-IMS Surge Protector

The IG2200 Series Surge Protective Devices with Consumable Modules utilizing TPMOV® technology can be easily and safely replaced by the end user as needed. No longer does the entire hardwired unit need to be replaced once the TPMOV has been sacrificed. The IG 2200 Series has been designed for a variety of Type 1 and Type 2 applications. Type 1 applications include outdoor installations before service entrances and utility meter cabinets. Type 2 applications include installations after service entrances. ANSI/UL 1449 3rd edition and UL Listed, the IG Series is approved for residential/light commercial services.



- Module Power Switch (on select models)
- Consumable Modules can be easily and safely replaced by end user
- Tamper proof Consumable Module Doors
- Power and Protection Status LEDs
- Type 1 or Type 2 applications
- 120, 240 VAC Single Phase
- 6 Modes of Surge Protection (L1-N, L2-N, L1-G, L2-G,N-G, L1-L2)
- Indoor applications
- Metal Housing
- 10-Year limited product warranty
- $25,000 Connected Equipment Coverage Warranty for 10 years on Appliances and Electronics

Specifications

Model No.	Description	SPD Type	No. of Phases	Mode	VPR (Vpk)	MCOV (V)	In (kA)	SCCR (kA)	LIST
IG2240-IMS	Metal Housing; 1/Indoor Service Voltage: 120, 240 VAC 6 Modes of Protection (L1-N, L2-N, L1-G, L2-G, N-G, L1-L2)	1 or 2	Single Phase	L-L L-N L-G N-G	1500 800 1500 700	300 150 300 150	10	10	973.00

MULTI FUNCTION TIME CONTROLS

INTERMATIC / GRASSLIN

DTAV 40 Series

The DTAV is applicable to air defrost (compressor shutdown) and in electric or hot gas defrost systems where the defrost is terminated by the timer or when the coil is frost free, as sensed by a temperature or pressure switch, even though the programmed defrost termination time has not been reached. The time termination functions as a fail-safe and will terminate the defrost if the temperature or pressure switch fails to do so.

- Multivoltage field adjustable for 120 or 240V
- Real-time clock face
- Red or green LED lights indicate defrost or run cycle
- Captive trippers can't be lost
- Independently adjustable trippers allow for full or partial defrost cycles
- Nema 3R outdoor enclosure standard
- Existing board easily retrofits into competitive enclosures



Specifications:

Switch Rating: 40A Resistive @ 208-250VAC
2HP @ 208-250VAC; 1HP @ 125VAC
690VA pilot duty @ 125-250VAC
"F" Terminal: 10A Resistive @ 208-250VAC
1HP @ 208-250VAC; 1/2HP @ 125VAC

Time Initiated, Remote Temperature, Pressure, or Time Terminated
Add "-M" for Mechanism only. Add "-P" for Panel Mount (less enclosure)

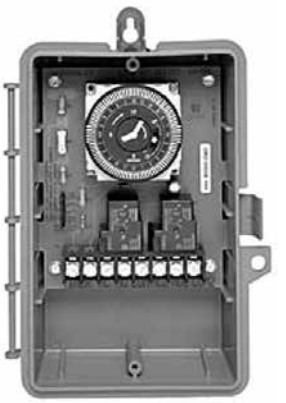
Model Number	Dual Voltage	Timer	Battery Backup	Defrost Frequency No./Day	Defrost Duration	Min. Duration Interval	LIST
DTAV40	120V through 240V	Synchronous	No	1 to 24	15 to 180 min.	15 minutes	295.40

NOTE: This Single Time Clock Replaces Every 8000 Series Time Clock Paragon Makes

GM MultiVolt Series

One time switch for four voltages
120, 208/240, 277VAC

- 24 hour and 7 day models
- 40A, 2 HP @ 240V switch
- 15 minute switch interval
- Captive trippers can't be lost
- Authentic clock face timer - easy to set
- On/Off/Auto override switch
- Battery backup available



Specifications:

Switch Rating: SPDT and DPDT switch models

NO Contacts
40A general purpose/res @ 277V
1 HP; 96ALR, 20AFL @ 120V
2HP; 72ALR; 12AFL @ 240V
15A, 1800W Tungsten @ 125V
5A, 1250W Tungsten @ 250V
20A Ballast @ 120-277V
1A pilot duty @ 120-240V
20A resistive @ 28VDC

NC Contacts
15A general purpose/res @ 250V
6A general purpose/res @ 277V
1/4 HP @ 125V, 1/2 HP @ 250V
3A, 750W Tungsten @ 125-250V
3A Ballast @ 120-277V
1A pilot duty @ 120-240V
15A resistive @ 28VDC

Note: If loads are connected to both NC and NO contacts, both contacts are derated to 67% of the above values.

Model Number	Dual Voltage	Switch	Amps	Timer	LIST
GM40AV	120V through 240V	DPDT	40	24 hour/synchronous	194.50

**** Both DTMV and GM40 are available with Auto Multi-Voltage Control***

TIME CONTROLS

INTERMATIC / GRASSLIN



MIL 72 Series

*** 24 hour or 7 day**
*** Synchronous drive or quartz drive with battery backup**
*** 21 A SPDT switch**
*** Captive trippers with interval as low as 15 minutes**
*** With 3-way override**

- Captive Trippers are easy to set, can't be lost
- Up to 48 (24 hr.) or 42 (7 day) on/off events
- Surface, flush (panel) or DIN rail mounting
- Synchronous drive for greatest accuracy and lowest cost
- **"Q" Model numbers** have 7 day rechargeable battery backup (Quartz Drive).
- Three-way OFF/AUTO/ON override switch provides continuous override

Part # (input voltage)	Switch Program	Min. On/Off Time	Max. On/Off Events/Wk.	Manual Override	Switch Rating 250V. Res	Tripper Type	Reserve Carry-Over	LIST
MIL 72A STUZH (24/120)	24 hr.	15 min.	48	✓	SPDT 21A	Captive		138.40
MIL 72A QTUZH (24/120)	24 hr.	15 min.	48	✓	SPDT 21A	Captive	7 days	271.70
MIL 72A SWUZH (24/120)	7 day	2 hr.	42	✓	SPDT 21A	Captive		245.00
MIL 72A QWUZH (24/120)	7 day	2 hr.	42	✓	SPDT 21A	Captive	7 days	378.00

Digi 20 Series

*** 24 hour or 7 day programming with accuracy to the second**
*** Easy programming**
*** Selectable blocks of weekdays or weekends for quick programming**
*** Automatically recharged NiCad battery**
*** Manual override**



Channels: 1
Programs: 20

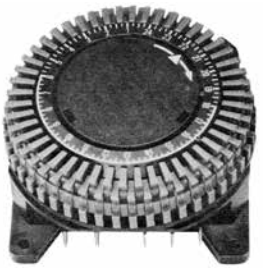
Holiday Program: No
Reserve Carryover; min.: 1 week

Automatic Spring/Fall Daylight Time Changeover: No

Part Number	Mounting	Setpoint Programs	Max. Weekly ON/OFF Events	Relay Output Resistive Rating	LIST
DIGI20A-120V	surface or DIN rail	20	140	SPDT, 16A	
FM1D20A-24	surface or DIN rail	20	140	SPDT, 16A	311.00

FM/1 Series

*** 24 hour or 7 day**
*** Authentic clock face**
*** Synchronous / Quartz drive**
*** 21A SPDT switch**
*** 3 way override switch**
*** Small size, ideal for OEM applications**



- Captive trippers are easy to set, can't be lost
- Quartz drive provides 7 day carry-over
- Synchronous drive for greatest accuracy

Part # * (input voltage)	Switch Program	Carry-over	Program On/Off Every	Minimum On/Off Time	Type	Rating	LIST
FM1STUZH (24/120)	24 hr.	No	15 min.	15 min.	SPDT	21 A Res.	120.30
FM1SWUZH (24/120)	7 day	No	2 hours	2 hours	SPDT	21 A Res.	204.70
FM1QTUZH (24/120)	24 hr.	7-day	15 min.	15 min.	SPDT	21 A Res.	248.20
FM1QWUZH (24V120)	7 day	7-day	2 hours	2 hours	SPDT	21 A Res.	351.00

ELECTRONIC TIME CONTROLS

INTERMATIC / GRASSLIN

FM2D50-120

The FM2D50-120 2-Channel Electronic Time Switch is a compact, 24-Hour/7-Day module with heavy-duty relay contacts for switching low or line voltage loads. The timer is applicable for time-of-day control of pumps, fans, heaters, HVAC control circuits, lighting, machinery, and many other types of commercial, industrial, and agricultural equipment.



- 24-Hour or 7-Day applications
- Auto Daylight Saving Time (DST) feature
- 50 setpoint programs
- 2 preset adjustable block programs
- Surface/Flush mount, DIN Rail
- Manual override with load switch indication
- Battery Backup
- Large LCD
- Easy-to-follow menu driven programming
- Available in English, German, French, Italian, Spanish, Portuguese, and Dutch

Part #	Volts AC	Num of Circuits	Switch Rating	Programs	Mounting	LIST
FM2D50-120V	120 VAC, 50/60 Hz	2	2xSPDT, 16 Amp	50	Flush or Surface	628.00

DIGI 322 Series

*** Year / week and day programmable**
*** Auto leap year and daylight savings adjustment**
*** 322 programs, up to 161 block holiday schedules**
*** Rechargeable battery backup - 7 day carry-over**
*** 16A SPDT switch rating**
*** Momentary contact programmable from 1 to 59 seconds on or off**



- Simple, flexible programming of up to 322 programs on up to 4 channels, fits any application
- Large LCD displays year, date, day, time, and load status
- Surface of DIN rail mounting
- Temporary override, and continuous On/Auto/Off override switches for each channel
- Automatically recharged NiCad battery maintains program and display for up to one week

Part Number	Operating Features			Relay Output		LIST
	Input Voltage	Switch Program	Programs	Type	Rating	
DIGI322-45/2Y-24	24 VAC/DC	2 channel, 365 day	322	(2) SPDT	16 A Res.	
DIGI322-45/2Y-120	120 VAC	2 channel, 365 day	322	(2) SPDT	16 A Res.	
DIGI322-45/4Y-120	120 VAC	4 channel, 365 day	322	(4) SPDT	16 A Res.	

DEFROST CONTROLS
PARAGON

8040 Series Defrost Controls



- Frequency of defrost initiation is adjustable from one to six cycles per day. Minimum of four hours between successive operations
- Duration of defrost cycle adjustable from four to 110 minutes in two minute increments
- Accuracy of defrost duration +/- two minutes
- Choice of four contact arrangements for electric heat, hot gas or compressor shutdown defrost
- Positive switch action slider bar
- Switch rating per pole: 40 amps, 2 hp per pole; 690 VA pilot duty 120-240 volts AC

Model Number	Volts 60 Hz	Description	Switch Arrangement Contacts			Adj. Length of Defrost	LIST
			2-4	1-3	3-N		
8041-00	120	For Electric Heat Defrosting (Auxiliary Contact Models)	Closed	Open	Closed	4-110 min.	397.00
8041-20	208-240						397.00
8043-00	120	For Hot Gas Defrosting	Open	Open	None	4-110 min.	N/A
8043-20	208-240						N/A
8045-00	120	Elec.Heat, Hot Gas or Compressor Shutdown Def.	Closed	Open	None	4-110 min.	265.10
8045-20	208-240						265.10
8047-00	120	For Electric Heat Defrosting (Auxiliary Contact Models)	Open	Open	Closed	4-110 min.	
8047-20	208-240						588.00

8140 Series Defrost Controls

- Frequency of defrost is one to six cycles per day. A minimum of four hours between successive defrost cycles
- Adjustable back-up defrost termination from four to 110 minutes in two minute increments
- Control works with an external temperature or pressure sensor
- Choice of three contact arrangements for electric heat, compressor shutdown or hot gas defrost
- Positive switch action slider bar
- Switch ratings per pole: 40 amp, 2 hp, 690 VA pilot duty, 120-240 volts AC



Model Number	Volts 60 Hz	Normal Position of Contacts During Refrigeration Cycle			LIST
		2-4	1-3	3-N	
8141-00	120	Closed	Open	Closed	397.00
8141-20	208/240	Closed	Open	Closed	397.00
8143-00	120	Open	Closed	Open	573.00
8143-20	208/240	Open	Closed	Open	638.00
8145-00	120	Closed	Open	None	261.20
*8145-20	208/240	Closed	Open	None	260.00

DEFROST CONTROLS
PARAGON

Universal ELECTRONIC Defrost Timers Multi-voltage 120/208/240 VAC



Paragon's new multi-function time/temperature/pressure defrost timer control is the one time clock you will want for your service trucks stock, it will fit into your exciting 8145 paragon time clock box so you don't have to replace the existing box and with the dual voltage function it has all your requirements covered.

Features include:

- Back light display for visibility
- System status indicator led's
- Manual defrost switch (initiates 15 min. manual defrost)
- Display shows defrost start time and duration
- Easy set up of time, defrost start & stop times
- Direct connect line voltage & 100 hrs. Power loss protection of both schedule & time.
- Tested to 30,000 cycles, at 4 cycles per day that 20 years.

General info:

120/208/240VAC
Power consumption 6VA max.
C-UR-US Agency Approved

Part #	Description	LIST
9145-00	Time initiate/Temperature, Pressure Terminated Defrost Timer with Metal enclosure	528.00
9045-00	Time initiate/ Time Terminated Defrost Timer with Metal enclosure	495.00

8240 Series Defrost Controls

- Frequency of defrost is one to six cycles per day. A minimum of four hours between successive defrost cycles
- Adjustable back-up defrost terminationk from four to 110 minutes in two minute increments
- Positive switch action slider bar
- Choice of three contact arrangements for hot gas, electric heat or compressor shutdown defrost
- Switch ratings per pole: 40 amp, 2 hp, 690 VA pilot duty, 120-240 volts AC
- All models have adjustable cut-in pressure setting dial calibrated from 36-110 pounds for R12, R22, R502



Model Number	Volts 60 Hz	Normal Position of Contacts During Refrigeration Cycle			LIST
		2-4	1-3	3-N	
8245-00	120	Closed	Open	None	907.00
8245-20	208-240	Closed	Open	None	987.00
8247-20	208-240	Open	Open	Closed	1,030.00

REVERSIBLE SKELETON MOTORS







Part #	H/P	Volts	RPM	SPD.	AMPS	Rot.	Stack	Shaft
2800*		24	1		0.83			
UEFM-1	1/500	115	2600		0.22	CCW	0.38	1.5" X 1/8"
K114	1/500	120	1100	1	0.74	CW	0.5	.1811" X 1.75"
K102	1/500	120	1100	1	0.57	CW	0.5	.1811" X 1.5"
GEFM-1	1/350	115	2600		0.30	CW	0.5	1.5" X 1/8"
K120	1/260	120	3000	2	.50 - .29	CW	0.5	.2178 X 1.55
WIFM-1	1/250	115	3000		0.4	CCW	0.38	1.5" X 1/8"
R617	1/230	208/230	1900	1	0.2	CW	0.4	.1811" X 1.1"
R611	1/215	115	1500	1	0.5	CCW	0.55	.1811 X 1.7"
K628	1/200	208/230	3000	1	0.25	CW	0.75	.25 X 1.60"
R670	1/130	115	3000	1	0.45	CW	0.65	3/16 X 1.3"
R603	1/110	115	2400	1	0.45	CCW	0.65	7/32 X 2.2"
K614	1/150	120	3000	1	0.59	CW	0.5	.2178 X 1.65"
K673	1/150	120	3000	2	.51 - .27	CW	0.62	.1875 X 1.30"
R3670	1/150	115/230	3000	1	.45 - .25	CW	0.63	3/16 x 1.5"
K672	1/150	240	3000	1	0.29	CCW	0.62	.1875 X 1.30"
RF100-2	1/155	115	3000	2	0.5	CW	0.65	FAN
R3100	1/130	115	3000	1	0.5	CCW	0.65	7/32 X 1.7"
R606	1/130	115	3000	1	0.5	CW	0.65	7/32 X 1.1"
R613	1/125	115	1600	1	0.5	CCW	0.65	7/32 X 2.5"
K111	1/120	120	3000	1	0.82	CCW	0.5	.2178 X 1.97
K683	1/100	240	3000	1	0.3	CW	1	.1875 X 1.30"
K100	1/100	120	2750	1	0.73	CW	0.62	.1811 X 1.05"
K115	1/100	115	3000	1	0.57	CCW	0.75	.2178 X 1.85
R604	1/90	115	2700	1	0.9	CCW	0.65	.181 X 1.2"
R601	1/80	115	3000	1	0.7	CCW	0.9	1/4 X 2.2"
R3101	1/80	115	3000	2	0.7	CW	0.98	7/32 X 1.6"
K109	1/75	115	3000	1	0.77	CCW	0.75	.2178 X 2.37
K113	1/70	120	3000	1	0.9	CCW	0.75	2178 X 1.19
K612	1/65	120	3000	1	0.73	CW	1	.25 X 2.70"
R1014	1/65	115	3000	1	0.7	CCW	0.88	3/16 X 1.1
K610	1/60	120	3000	2	.75 - .63	CCW	1	.2178 X 1.33"
R635	1/40	208/230	1700	1	0.8	CCW	1.5	1/4 X 1.5"
A1C605(R605)	1/55	115	2800	1	0.85	CCW	0.9	.1811 X 1.7"
R610	1/50	115	2400	1	0.9	CCW	0.9	7/32 X 1.2"
R607	1/35	115	2300	1	1.1	CW	1.15	7/32 X 1.7"
ACME7502	1/45	110/220	3000	1	1.1 - .55	REV	1.125	ADAPTABLE

*Humidifier Motor
R670 - c/w two fan blades
R3670 - two fan blades & mtg kit
RF100-2 - c/w bracket & blade
R3100 - c/w fan blade

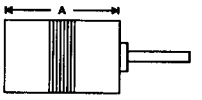
Please contact your local branch for more information and pricing

3.3" DIAMETER MOTORS

ROTOM

Totally Enclosed • Single Shaft • Sleeve Bearing • Shaded Pole

Typical Applications: Dehumidifiers, Electric Heaters, Fireplace Blowers, Humidifiers, Kitchen & Bathroom Fans



120 Volts • 1550 RPM

Part #		Amps	Shafts	A	Fig.	Comments	O.E.M.	LIST
CW	CCW							
R-503		0.40	1/4 x 2.4	1.94	1	Notched Shaft	Electrohome 2N4702	
R-506		0.50	1/4 x 2.0	1.69	1	Grooved Shaft, Spades	2N8701, Nutone	87.10
R-206		0.50	1/4 x 1.5	1.94	1	2 Speed Plug	Miami-Carey, Air King, B.D. Waite	106.50
	R-222	0.70	1/4 x 1.2	2.00	2	Plug, Stud Mounting	Nutone, Air King	89.10
R-207		0.72	1/4 x 1.5	1.94	2	Plug	Camco, Nutone 80100	89.10
R-225	R-224	0.80	1/4 x 2.3	2.19	6	Stud Mounting	General Replacement	112.30
R-209		0.85	1/4 x 1.5	2.19	2	Plug	Emerson, Nutone, Broan	100.50
	R-203	0.90	1/4 x 1.5	1.94	2	Left Hand Thread-plug	Leigh, Can Arm., Nutone	83.20
R-201		0.90	1/4 x 2.2	1.94	1	Spade Connector	Camco, Electrohome, Nutone	100.70
R-208		1.20	1/4 x 2.0	2.70	2	18" Leads	General Replacement	185.40
	R-450	1.35	5/16 x 2.6	4.30	5	Cooling Rings, Internal Fan	General Replacement	518.00
R-219		1.60	5/16 x 2.2	2.69	2	Plug, Stud Mounting	Nutone 80405	117.60
R-506	R-220	1.80	5/16 x 1.2	2.69	2	Plug, Stud Mounting	Leigh, Miami-Carey	122.90

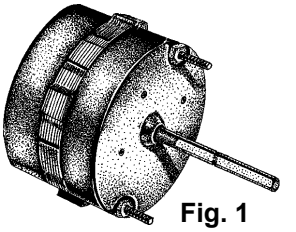


Fig. 1

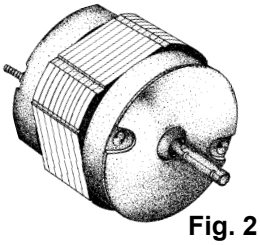


Fig. 2

120 Volts • 3000 RPM

Part #		Amps	Shafts	A	Fig.	Comments	O.E.M.	LIST
CW	CCW							
	R-230	0.50	1/4 x 1.3	2.16	1	Plug	Coldstream, CGE	119.00
	R-232	0.70	1/4 x 1.3	2.16	2	2 Speed Plug	Nutone	162.30
R-214		0.90	1/4 x 1.5	2.41	2	Plug - 2700 RPM	Miami-Carey, Quality Rlgs.	111.10
	R-233	1.10	1/4 x 1.8	2.41	2	2 Speed Plug	Nutone	164.80

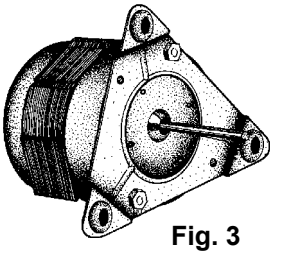


Fig. 3

120 Volts • Two Speed • 1550 & 3000 RPM

Part #		Amps	Shafts	A	Fig.	Comments	O.E.M.	LIST
CW	CCW							
R-206		0.50	1/4 x 1.5	1.94	1	1550 RPM	Miami-Carey, B.D. Waite, Air King	106.50
R-231	R-232	0.70	1/4 x 1.3	2.16	2	3000 RPM	Nutone	162.30
	R-233	1.40	1/4 x 1.6	2.72	2	3000 RPM	Nutone	164.80

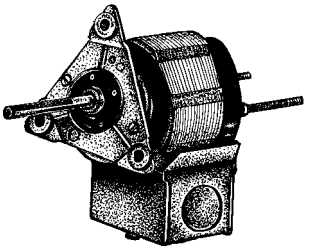


Fig. 4

240 Volts • 1550 RPM

Part #		Amps	Shafts	A	Fig.	Comments	O.E.M.	LIST
CW	CCW							
	R-215	0.22	5/16 x 2.3	1.94	3	Triangle Bracket - 1200 RPM	Chromalox, Thermolec	102.80
R-511		0.35	1/4 x 2.0	1.69	1	C-ring Groove	F.P.E., General, 2N8901	129.70
	R-210	0.40	1/4 x 1.5	2.19	1	24" Leads	C.G.E., Caloritech	99.10
R-217		0.45	1/4 x 1.3	2.44	2	Leads, Spades	C.G.E., F.P.E., Chromalox	98.60

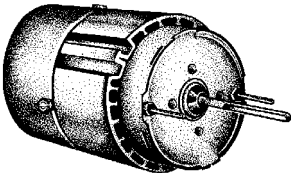


Fig. 5

120 Volts • 1050 RPM

Part #		Amps	Shafts	A	Fig.	Comments	O.E.M.	LIST
CW	CCW							
	R-235	0.75	1/4 x 1.0	2.2	2	C-ring Groove	Woods 2-70099-010, 011	136.30

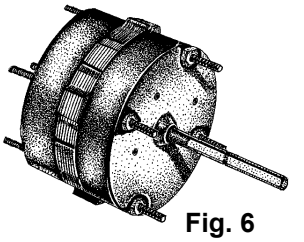


Fig. 6

Rotation determined by viewing opposite shaft end

3.3" DIAMETER MOTORS

ROTOM

Open Construction • Single Shaft • Sleeve Bearing • Shaded Pole

Typical Applications: Unit Coolers, Dehumidifiers, Display Cases, Humidifiers, Kitchen & Bathroom Fans

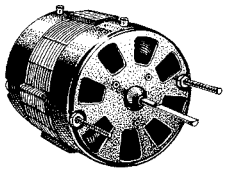
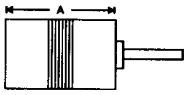


Fig. 2



120 Volts • 1550 RPM

Part # CW	Part # CCW	Amps	Shafts	A	Fig.	Comments	O.E.M.	LIST
	R-325	0.40	1/4 x 2.3	1.94	2	C-Ring Groove	Woods, 2N8001	182.00
R-326		0.50	1/4 x 1.4	1.94	4	U-Bracket, 35" Leads	Blanchard-Bohn E1001, 2, 3	157.70
R-306		0.65	1/4 x 1.1	2.92	2	Internal Fan	Coleman	277.80
R-309	R-308	0.70	1/4 x 2.3	1.94	8	Stud Mount	General Replacement	136.10
	R-315	0.80	1/4 x 1.2	2.03	3	Plug,Hex Hubs,C-Ring Groove	Nutone 82598, 82599	113.40
R-304		0.85	1/4 x 1.5	2.44	2	L-K Fitting	General Replacement, Nutone	144.20
	R-319	0.90	1/4 x 2.2	1.94	6	Plug	Camco, Nutone	90.30
R-205		1.00	1/4 x 1.9	2.44	9	Triangle Bracket	Keeprite 11796-8	129.80
R-360		1.00	1/4 x 1.6	2.50	5	3 Bolt Mount, Spades	Keeprite 504249	109.90
R-363	R-362	1.00	5/16 x 2.3	2.19	8	Stud Mount	General Replacement	179.10
R-318		1.60	5/16 x 2.8	2.75	4	Single Bracket Mount, Cut-off	Blanchard 79105	175.10
R-357	R-356	1.80	5/16 x 2.3	2.69	8	Stud Mount	General Replacement	158.90
	R-358	2.00	5/16 x 2.8	3.25	8	Stud Mount, Lyall Plug	Blanchard E1058, Keeprite 1043336	105.20
R-355		2.10	5/16 x 1.9	3.14	3	Hex Hubs	Nutone 81918	170.50

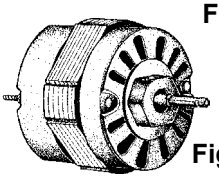


Fig. 3

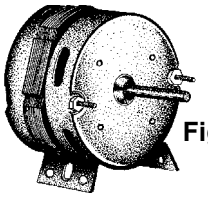


Fig. 4

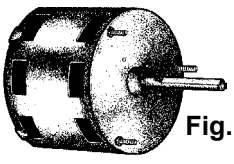


Fig. 5

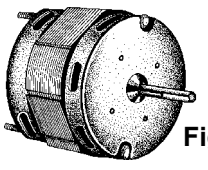


Fig. 6

115 / 208 / 230 Volts

Part # CW	Part # CCW	Amps	Shafts	A	Fig.	Comments	LIST
R90721		1.10	5/16 x 3.15	3.62	10	PSC / Cap Inc.	175.90

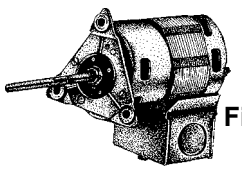


Fig. 7

240 Volts • 1550 RPM

Part # CW	Part # CCW	Amps	Shafts	A	Fig.	Comments	O.E.M.	LIST
R-302		0.30	1/4 x 1.5	1.94	8	Leads, 4 Point Mount, Spades	Camco, F.P.E.	95.70
R-130		0.80	5/16 x 1.5	2.69	4	Single Bracket, 35" Leads	Blanchard	164.90
	R-340	0.85	5/16 x 2.0	3.03	2	Stud Mount	C.G.E. 198A6404	194.70
	R-343	0.90	5/16 x 1.3	3.00	6	40" Leads, Spades	Fedders	300.00
	R-359	1.20	5/16 x 2.8	3.25	8	Stud Mount, Lyall Plug	Blanchard E1059, Keeprite 1043766	105.20

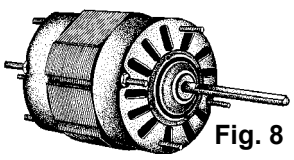


Fig. 8

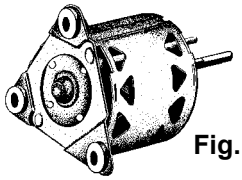


Fig. 9

120 Volts • 3000 RPM

Part # CW	Part # CCW	Amps	Shafts	A	Fig.	Comments	O.E.M.	LIST
	R-345	0.80	1/4 x 1.5	2.39	2	L-K Fitting, 35" Leads	Nutone	96.90
R-305	R-307	1.04	1/4 x 1.3	2.91	6	Leads, Case Bolt Mount	Keeprite 85680, M & D	193.10
	R-334	2.70	1/4 x 1.5	3.90	2	48" Leads	Torin, Clare	200.00



Fig. 10

Rotation determined by viewing opposite shaft end

AGITATOR MOTORS

Agitator Motors

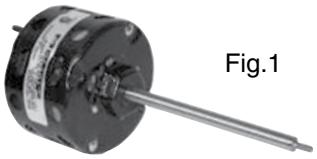


Fig.1

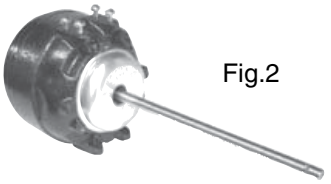
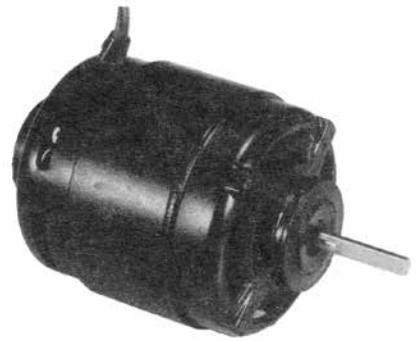


Fig.2

Part #	Amps	Volts	RPM	Body	Dia	Features	Comments	Fig
R6207	0.29	115	1550	2.10"	3.3"	With 2" Shaft Extension	Habco, C020106, C020114	1
R4119	0.60	115	1550	3.50"	3.9"	Two Pin Plug, Thr. Shaft	Scotsman 15W	2
R6203	0.60	115	1550	3.50"	3.9"	Two Pin Plug	Cornelius 15W, QBD	2
R6208	0.60	115	1550	3.40"	3.9"	10" Leads	Habco C020943, 15W	2
R6204	1.10	115	1550	3.50"	3.9"	Two Pin Plug	Cornelius 25W, QBD	2
R6205	1.10	115	1550	3.50"	3.9"	Two Pin Plug, Drive Pin	Cornelius 25W, QBD	2
R6206	1.70	115	1550	3.50"	3.9"	1.125" Flat on Shaft	Cornelius 50W, QBD	2



Part #	H/P	Volt	AMP.	ROT, OSE	RPM	Shaft
D469	1/12	208/230	1.3	CW	1550	5/16x2.12
D475	1/15	460	0.5	CW	1550	5/16x2.5
S-1232	1/15	230	1.2	CW	1550	5/16x1.5
D471	1/20	208/230	1.1	CW	1550	5/16x2.5
S-1332	1/20	208/230	1.1	CW	1550	5/16x2
D477	1/35	208-230	0.75	CW	1550	5/16x1.65
S-1432	1/30	208/230	0.87	CW	1550	5/16x1.25

Please contact your local branch for more information and pricing

3.3" DIAMETER MOTORS

FASCO



FIG. A D1152, D1154, D1101, D1103



FIG. B D1102



FIG. C D1120, D1121



FIG. D D1124, D1126



FIG. E D1125



FIG. F D1142



FIG. G D1144



FIG. H D1164



FIG. I D1243, D1245

MODEL	TYPE	HP	VOLTS	RPM	SPD.	AMPS	ENCLOSURE	ROT.	BRNG.	SHAFT DIM.	"A" DIM.	FIG.
D1124	SP	1/20	115	1550	1	2.1	Open Vent.	CW	SLV	5/16 X 3	3	D
D1126	SP	1/15	208-230	1550	1	1.1	Open Vent.	CW	SLV	5/16 X 3	3 1/2	D
D1125	PSC	1/12	208-230	1550	1	0.5	Open Vent.	CCW	SLV	5/16 X 2 5/8	3 3/4	E
D1120	SP	1/20	115	1550	1	2.1	Open Vent.	CW	SLV	5/16 X 2 1/2	3 1/2	C
D1121	SP	1/20	208-230	1550	1	1	Open Vent.	CW	SLV	5/16 X 2 1/2	3 1/2	C
D1243	PSC	1/20	115	1550	1	0.8	Open Vent.	CCW	SLV	5/16 X 2 3/4	4 1/8	I
D1245	PSC	1/20	208-230	1550	1	0.3	Open Vent.	CCW	SLV	5/16 X 2 3/4	4	I
D1152	SP	1/20	115	1500	1	1.7	Open Vent.	CW	SLV	5/16 X 2 3/8	2 7/8	A
D1154	SP	1/20	230	1550	1	1	Open Vent.	CW	SLV	5/16 X 2 3/8	3 1/8	A
D1101	SP	1/20	115	1500	1	1.9	Open Vent.	CCW	SLV	5/16 X 2 1/4	2 3/4	A
D1103	SP	1/20	208-230	1500	1	1.15	Open Vent.	CCW	SLV	5/16 X 2 1/4	3	A
D1144	PSC	1/25 - 1/35 - 1/65	115	1200	3	1.1-.9-.6	Open Vent.	CW	SLV	3/8 X 5 3/8	4 3/4	G
D1142	SP	1/15	115/230	1500	1	1.7-.9	Open Vent.	CW	SLV	5/16 X 2 1/2	3 1/2	F
D1164	SP	1/25	115/230	1550	1	1.3-.65	Totally Encl.	CW	SLV	5/16 X 2 1/2	3 1/8	H
D1102	PSC	1/20	115/230	1550	1	.75-.4	Open Vent.	CW	SLV	5/16 X 2-5/8	3 1/2	B

MOTORS 667-690

AXIAL FANS

AC Cooling Fans

- die-cast aluminum housing • shaded pole motor with impedance protection
- metal or plastic impeller

80 x 80 x 38 mm (3.15 x 3.15 x 1.5") • 3100 RPM
Metal Impeller • Mounting Centres 71.5 mm (2.82")

Part #	Voltage	Air Flow	Power	Bearing	Noise	Connection	LIST
RF200	115VAC	32 CFM	10 W	Sleeve	38db (A)	Wire Leads	96.90



119 x 119 x 38 mm (4.69 x 4.69 x 1.5") • 3000 RPM
Metal Impeller • Mounting Centres 105 mm (4.13")

Part #	Voltage	Air Flow	Power	Bearing	Noise	Connection	LIST
RF205	115VAC	105 CFM	22 W	Sleeve	50db (A)	Terminal	97.20
RF210	115VAC	105 CFM	22 W	Ball	50db (A)	Terminal	128.90
RF215	230VAC	105 CFM	21 W	Sleeve	50db (A)	Terminal	96.50
RF220	230VAC	105 CFM	21 W	Ball	50db (A)	Terminal	128.90
RF225	115VAC	105 CFM	22 W	Ball	50db (A)	Wire Leads	128.90



119 x 119 x 38 mm (4.69 x 4.69 x 1.5") • 2900 RPM
Plastic Impeller • Mounting Centres 105 mm (4.13")

Part #	Voltage	Air Flow	Power	Bearing	Noise	Connection	LIST
RF230	115VAC	105 CFM	14 W	Sleeve	44db (A)	Terminal	82.90
RF235	115VAC	105 CFM	14 W	Ball	44db (A)	Terminal	147.60



150 x 150 x 55 mm (5.9 x 5.9 x 2.2") • 3100 RPM
Metal Impeller • Mounting Centres 162 mm (6.38")

Part #	Voltage	Air Flow	Power	Bearing	Noise	Connection	LIST
RF240	115VAC	230 CFM	44 W	Ball	53db (A)	Wire Leads	211.50
RF245	230VAC	230 CFM	44 W	Ball	53db (A)	Wire Leads	211.50



254 x 254 x 89 mm (10 x 10 x 3.5") • 1650 RPM
Plastic Impeller • Mounting Centres 247 mm (9.72")

Part #	Voltage	Air Flow	Power	Bearing	Noise	Connection	LIST
RF250	115VAC	459 CFM	35 W	Ball	55db (A)	Terminal	321.00
RF255	230VAC	459 CFM	33 W	Ball	55db (A)	Terminal	321.00



AC Power Cord

Part #	Description	LIST
CFC-T24	24" cable	10.80



DUCT BOOSTER FANS

ROTOM

In-Line Air Duct Booster Fans

Air Duct Booster

Designed to be installed at any angle in the branch duct of under-ventilated rooms to increase either hot or cool air flow supply. One year limited warranty.



Control Options

Manual Control
- 115V Source - continuous operation.
- 115V Switch - manual ON/ OFF ctrl.
- 115V Speed Control - variable ctrl.

Automatic Control
- Wire to furnace fan.
- Wire to fan switch.
- Wire to a sail switch.
- Wire to a pressure switch.
- Wire to thermostat.

Standard Air Duct Boosters

Part #	Description	Max Boosted CFM	Free Air CFM	Watts	Amps	dBA	Blade	Housing Length	LIST
DB-204C	4" Round	80	40	30	0.30	52	Aluminum	6"	191.20
DB-205C	5" Round	225	140	30	0.35	51	Valox	6"	206.50
DB-206C	6" Round	250	160	30	0.35	50	Polycarbonate	6"	191.20
DB-208C	8" Round	500	210	60	0.75	54	Aluminum	8"	252.40
DB-210C	10" Round	650	300	120	1.50	55	Aluminum	8"	329.00
DB-212C	12" Round	800	650	120	1.50	55	Aluminum	8"	



DB6
Illustrated

Two Speed Air Duct Boosters

Part #	Description	Max Boosted CFM	Free Air CFM	Watts	Amps	dBA	Blade	LIST
DB-6-2	6" Round 2 Speed	200/300	100/160	30	0.35	50/52	Polycarbonate	164.60
DB10-2	10" Round 2 Speed	650/900	300/460	135	1.70	56/59	Aluminum	421.00



DB5-2
Illustrated

4-Pole Duct Boosters

Designed for larger ducts requiring commercial grade power and performance.

Part #	Description	Max Boosted CFM	Free Air CFM	Watts	Amps	dBA	Blade	LIST
DB-124E	12" Round	1160	700	120	1.50	61	Aluminum	
DB-144	14" Round	1580	900	140	1.75	61	Aluminum	438.00



4-Pole Duct Booster Illustrated

3.3" DIAMETER MOTORS

ROTOM

Hubless Design

Open & Totally Enclosed • Sleeve & Ball Bearing • Shaded Pole • 120 & 240 Volts • 1550 & 3000 RPM

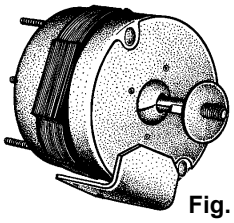


Fig. 1

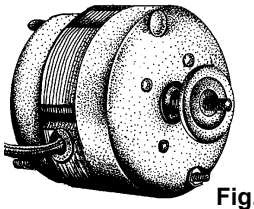


Fig. 2

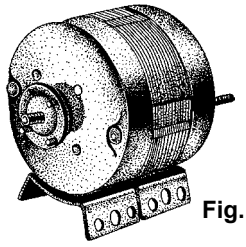
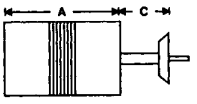


Fig. 3

Typical Applications:
Commercial Refrigeration, Walk-ins, Display Cases, Unit Coolers and Condensers



120 Volts • 1550 RPM

Part #		Amps	A	C	Fig.	Const.	Comments	O.E.M.	LIST
CW	CCW								
R-114	R-113	0.35	1.94	0.62	1	T.E.	Leads, 3 Point or Leg Mounting	General Replacement, 4 Watt	151.40
R-128		0.40	1.94	0.57	2	T.E.	3 Pt. Mtg., 3 Wire Lyall Plug	Coldstream	123.50
R-120	R-119	0.45	2.19	0.64	1	T.E.	Leads, 3 Point or Leg Mounting	Foster, 6 Watt	124.00
	R-108	0.55	1.94	0.67	3	T.E.	U-Bracket	Ideal	194.60
R-137		0.55	2.19	0.57	2	T.E.	Lyall Plug	Coldstream	147.60
R-123		0.66	2.44	0.55	3	T.E.	Double Bracket, Leads	Universal, Ideal	190.70
	R-127	0.75	1.94	1.00	2	T.E.	Stud Mounting	Foster	102.70
R-101L	R-103L	0.90	2.19	0.68	1	T.E.	same as above with leg mounting	Foster, Hussmann, 9 Watt	96.40
	R-133	1.10	2.60	0.69	2	T.E.	2 Speed, Leads	Mark Hot	126.50
	R-124†	1.60	2.78	0.88	2	T.E.	Ball Bearing, Lyall Plug	Dunham-Bush, 2-4 Point Mtg.	156.60

120 Volts • 3000 RPM

	R-129	0.70	2.41	0.45	2	T.E.	Lyall Plug	Hill PP32032E	151.50

240 Volts • 1550 RPM

R-122	R-121	0.35	2.19	0.57	1	T.E.	3 Wire Lyall Plug, 3 Pt. or Leg Mtg.	Coldstream, Foster	157.10
	R-125‡	0.75	2.78	0.88	2	T.E.	Ball Bearing, Lyall Plug	Dunham-Bush, 2-4 Point Mtg.	156.70

† 0350044, 0350046, MM2847 ‡ 0350043, 0350045, MM2848

Rotation determined by viewing opposite shaft end

ELCO

- **SHADED POLE**
- **CONTINUOUS AIR OVER**
- **TOTALLY ENCLOSED**
- **21/23" LEAD LENGTH**
- **4 POLE**
- **NUTS, SCREWS AND FAN BLADEADAPTER INCLUDED**
- **ALL ANGLE MOUNTING**
- **1 FOOT, FRONT SHROUD or TAPPED REAR 3 HOLE**



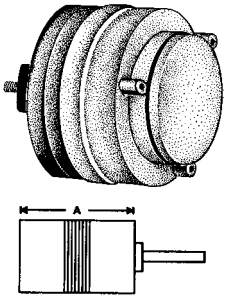
	Part#	Watt	RPM	Volts	Amps	Rot.	Shaft Dia.	A(INS.)	B(INS.)	D(INS.)	H(INS.)	LIST
	EC4W115	4	1550	115	0.36	CCWSE	THD	2.82	0.49	1.65	0.51	68.90
	EC5W115	5	1550	115	0.04	CCWSE	THD	2.82	0.49	1.65	0.51	77.30
*	EC6W115	6	1550	115	0.41	CCWSE	THD	3.05	0.49	1.89	0.79	87.10
	EC6W230	6	1550	230	0.20	CCWSE	THD	3.05	0.49	1.89	0.79	58.10
*	EC9W115	9	1550	115	0.58	CCWSE	THD	3.05	0.49	1.89	0.79	88.50
	EC9W230	9	1550	230	0.35	CCWSE	THD	3.05	0.49	1.89	0.79	70.90
	EC16W115	16	1550	115	1.0	CCWSE	THD	3.6	0.63	2.44	1.18	136.30
	EC16W230	16	1550	230	0.50	CCWSE	THD	3.6	0.63	2.44	1.18	136.30
*	EC34W115	34	1550	115	1.6	CCWSE	THD	4.19	0.61	2.4	1.77	174.20
	EC34W230	34	1550	230	0.80	CCWSE	THD	4.19	0.61	2.4	1.77	174.20
#	EC34W115V1543*	34	1550	115	1.60	CCWSE	THD	4.19	0.61	2.4	1.77	213.60

* Suggested Stock * Ref Plus # Lyall Plug

51 FRAME UNIT BEARING MOTORS

ROTOM

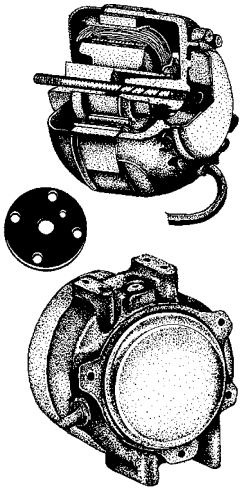
Domestic & Commercial Refrigeration Motors



120 Volts • 3.3" & 3.5" Diameter • 1550 RPM

Part #		Watts	Amps	A	Comments	O.E.M.	LIST
CW	CCW						
R-5109		2	0.16	2.47	Aluminum Body, Unit Brg.	Domestic Refrigeration, 3.5" Diameter	84.90
R-1211		2	0.25	1.69	3 Pt. Mount, Sleeve Brg.	Domestic Refrigeration, 3.3" Diameter	140.20

Unit Bearing • High Efficiency • Cast Iron



115 Volts • 3.5" Diameter • 1550 RPM

Part #		Watts	Amps	A	Comments	O.E.M.	LIST
CW	CCW						
R-5111		2 4 5	0.23	2.75	Pad or Leg Mount	Refrig. cond. fan	
M-5211	R-5212	6	0.29	2.58	Pad or Leg Mount	Tecumseh TFM41	113.80
R-5911		9	0.50	3.44	Plug Adapter w/Cord	Hill	126.20
R5311	R-5312	9	0.36	2.83	Pad or Leg Mount	Tecumseh TFM61	109.60
UB597		9	0.53	2.83	Pad or Leg Mount	Tecumseh TFM91	81.50
R-5611	R-5612	16	0.66	3.07	Hayco Plug, Pad Mount	Hussmann case	150.60
5R016		16	0.32			Replaces 9-12 watt	281.00
S-5444			0.40			Replaces 16 watt	333.00
UB566	R-5812		1.10	3.03	Pad or Leg Mount	General Replacement	106.80

208-230 Volts • 3.5" Diameter • 1550 RPM

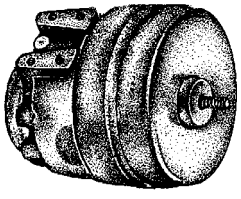
R-5221	R-5222	4	0.14	2.58	Pad or Leg Mount	General Replacement	128.30
M-5421	R-5422	9	0.29	2.83	Pad or Leg Mount	Tecumseh TFM92	133.50
UB568	D569	16	0.55	3.03	Pad or Leg Mount	General Replacement	106.80

Note: Motors may be converted to shaft type by using Shaft Adapter S8110

Electric Motor & Specialty • Unit Bearing • High Efficiency • Cast Iron

115 Volts • 3.8" Diameter • 1550 RPM

R-2011		20	0.80	3.75	Leads, Vertical Mount	C.V. Hill	551.00
UB570	D571	25	1.10	3.50	Leads	Tecumseh TFM191	222.00
UB574	D575	35	1.40	3.50	Leads	Tecumseh TFM351, Hussmann	233.30

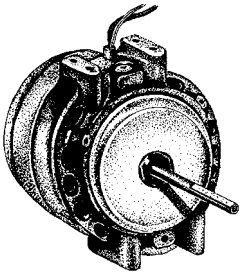


208-230 Volts • 3.8" Diameter • 1550 RPM

UB572	D573	25	0.60	3.50	Leads, Ring Term's	General Replacement	222.00
UB576	D577	35	0.70	3.50	Leads, Ring Term's	TFM352, 810M035A-21	233.30

115 Volts • 3.8" Diameter • 1550 RPM • Shaft Type

UB578	D579	50	1.70	4.50	3/8" x 1.5" Shaft w/Flat	Copeland	244.50



208-230 Volts • 3.8" Diameter • 1550 RPM • Shaft Type

R-3612		35	0.70	3.50	5/16" x 1.4" Shaft w/Flat	Tecumseh TFM362	440.00
R-5112		50	0.85	4.50	5/16" x 1.4" Shaft w/Flat	Tecumseh TFM372	422.00
276		50	0.85	4.00	5/16" x 2.0" Rear Shaft	Tecumseh TFM502	304.00
UB580	D581	50	0.85	4.50	3/8" x 1.5" Shaft w/Flat	Copeland	244.50

Rotation determined by viewing opposite shaft end

UNIT HEATER MOTORS

FASCO

5.0" & 5.6" Diameter Unit Heater Motors

Totally Enclosed Construction • Air-Over

Fig. 1

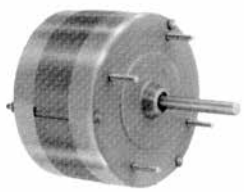


Fig. 2

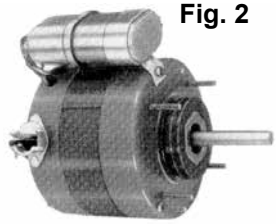


Fig. 3

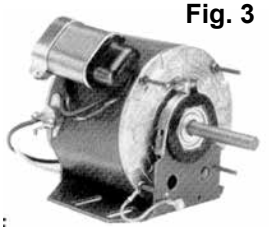
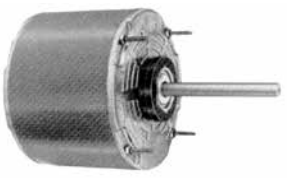
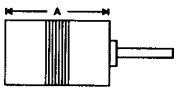


Fig. 4



Fig. 5





115 Volts

Part #	Dia.	A	Shaft Len. & Diam.	H.P.	Spd/RPM	Fig.	Amps	Rot'n	Type	LIST
D242	5.0	3-1/8	3/8 x 3	1/20	1/1050	1	2.0	CW	S.P.	354.00
D261#	5.0	3-5/8	1/2 x 3	1/8-1/15	1/1075	2	2.3-1.1	Rev	P.S.C.	556.00
D260#†	5.0	3-7/8	1/2 x 3	1/6	1/1075	2	2.9	CW	P.S.C.	580.00
D736	5.6	4-1/4	1/2 x 3-1/4	1/6	1/1625	3	2.0	Rev	P.S.C.	503.00
D834	5.6	4-1/4	1/2 x 3	1/6	1/1075	4	2.7	CW	P.S.C.	369.00
D733	5.6	4-1/4	1/2 x 4-1/2	1/6-1/8	1/1075	5	2.5-1.8	Rev	P.S.C.	455.00
D734	5.6	4-1/4	1/2 x 3-1/4	1/4	1/1075	3	3.8	Rev	P.S.C.	438.00
D732	5.6	4-3/4	1/2 x 5	1/3	1/1075	4	4.1	Rev	P.S.C.	421.00
D817	5.6	4-1/2	1/2 x 6	1/2	1/1140	3	5.5	CW	P.S.C.	603.00

† replacement for ITT Reznor
# 4M 370V capacitor included

Rotation determined by viewing shaft end

5.0" DIAMETER MOTORS

FASCO

Single Shaft

Open & Totally Enclosed Construction • Sleeve Bearing
Shaded Pole & Permanent Split Capacitor

Typical Applications: Unit Heater, Furnace, Condenser Fan

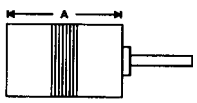




Fig. 8



Fig. 9

115/208-230 Volts

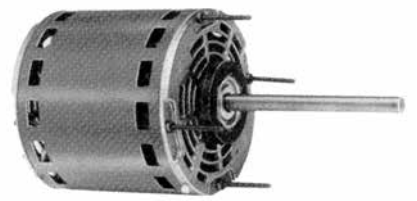
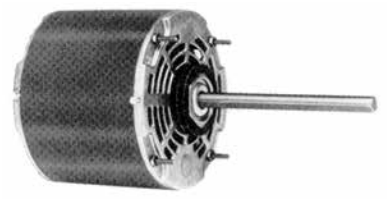
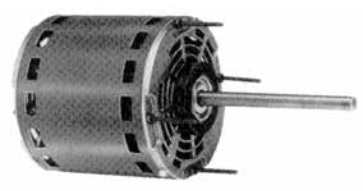
Part #	Cap.	A	Shaft Len. & Diam.	H.P.	Spd/RPM	Fig.	Amps	Rot'n	Type	Const.	Comments	LIST
D488	3/370	4.8	3-1/3 x 3/8	1/20	1/1550	8	1.2/.6	REV.	P.S.C.	OPEN	GE 2341, 2342, 2331, 2332	384.00
D489	3/370	4.8	3-1/3 x 3/8	1/15	1/1550	8	1.2/.6	REV.	P.S.C.	OPEN	GE 2241, 2242, 2231, 2232	385.00
D474	3/370	4.8	3-1/3 x 3/8	1/10	1/1550	8	1.9/.9	REV.	P.S.C.	OPEN	GE2141, 2142, 2131, 2132	410.00
D494		4	3-1/8x 3/8	1/20	1/1050	9	3.0/1.6	CW	S.P.	OPEN	GE 2321, 2322	351.00
D492		4.6	3-1/8x 3/8	1/15	1/1050	9	3.4/1.7	CW	S.P.	OPEN	GE 2223	353.00
D490		4.6	3-1/8x 3/8	1/10	1/1050	9	5.0/2.5	CW	S.P.	OPEN	GE 2121, 2122	381.00
D495		4	3-1/8x 3/8	1/20	1/1050	9	3.0/1.6	CCW	S.P.	OPEN	GE 2311, 2312	
D493		4.6	3-1/8x 3/8	1/15	1/1050	9	3.4/1.7	CCW	S.P.	OPEN	GE 2213	
D491		4.6	3-1/8x 3/8	1/10	1/1050	9	5.0/2.5	CCW	S.P.	OPEN	GE 2113	381.00

Rotation determined by viewing shaft end

5.6" DIAMETER MOTORS

Direct Drive Blower Motors

- Ideal for blowers and fans used in furnaces and air-conditioners
- 115 VAC
- Electrically reversible
- Thermally protected
- CSA certified
- All angle mount bearings

Part #	HP	RPM	Volts	Amps	Rot.	Shaft Dia.	Motor Dia
FDL1016	1/6	1075	115	2.7	REV	1/2"	5.5"
D721	1/4 - 1/5 - 1/6	1075	115	4.8	REV	1/2"	5.5"
D725	1/4 - 1/6 - 1/8	1075	208-230	2.2	REV	1/2"	5.5"
3471	1/4	1625	115	3.5	REV	1/2"	5.5"
D783	1/4	1625	208-230	1.5	REV	1/2"	5.5"
D727	1/3 - 1/4 - 1/5	1075	115	5.9	REV	1/2"	5.5"
D923	1/3 - 1/4 - 1/5	1075	208-230	2.9	REV	1/2"	5.5"
3994	1/3	1625	115	4.7	REV	1/2"	5.5"
3995	1/3	1625	208-230	2.1	REV	1/2"	5.5"
D701	1/2 - 1/3 - 1/4 - 1/5	1075	115	7.7	REV	1/2"	5.5"
3588	1/2	1075	208-230	4.2	REV	1/2"	5.5"
3996	1/2	1625	115	8.4	REV	1/2"	5.5"
3997	1/2	1625	208-230	3.8	REV	1/2"	5.5"
D728	3/4 - 1/2 - 1/3	1075	115	10.5	REV	1/2"	5.5"
D729	3/4 - 1/2 - 1/3	1075	208-230	5.4	REV	1/2"	5.5"
3999	3/4	1625	230	5.3	REV	1/2"	5.5"
D712	1 - 1/2 - 1/3	1075	115	11.8	REV	1/2"	5.5"
D711	1 - 1/2 - 1/3	1075	208-230	5.6	REV	1/2"	5.5"

Please contact your local branch for more information and pricing

5.5" DIAMETER MOTORS

Double Shaft Motors

Features:

- PSC
- Multiple Mounting Capacity
- 3 Speed
- Sleeve Bearing
- Auto overload
- Mounting holes in shell for capacitor bracket



Part #	HP	RPM	Volts	Amps	Rot.	Shaft Dia.	Motor Dia
3641	1/8	1075	115	2.3	DS	1/2"	5.5"
3642	1/8	1075	208-230	0.9	DS	1/2"	5.5"
3871	1/4	1625	115	2.8	DS	1/2"	5.5"
3862	1/5	1625	208-230	1.1	DS	1/2"	5.5"
3651	1/6	1075	115	2.7	DS	1/2"	5.5"
3652	1/6	1075	208-230	1.4	DS	1/2"	5.5"
3871	1/4	1625	115	3.8	DS	1/2"	5.5"
3872	1/4	1625	208-230	1.9	DS	1/2"	5.5"
3671	1/4	1075	115	3.9	DS	1/2"	5.5"
3672	1/4	1075	208-230	2.1	DS	1/2"	5.5"
3881	1/3	1625	115	5.9	DS	1/2"	5.5"
3882	1/3	1625	208-230	2.4	DS	1/2"	5.5"
3681	1/3	1075	115	6.9	DS	1/2"	5.5"
3682	1/3	1075	208-230	2.3	DS	1/2"	5.5"
3891	1/2	1625	115	9.4	DS	1/2"	5.5"
3892	1/2	1625	208-230	3.8	DS	1/2"	5.5"
3691	1/2	1075	115	9.6	DS	1/2"	5.5"
3692	1/2	1075	208-230	4.3	DS	1/2"	5.5"
3898	3/4	1625	208-230	5.3	DS	1/2"	5.5"
3698	3/4	1075	208-230	5.7	DS	1/2"	5.5"

Please contact your local branch for more information and pricing

5.6" DIAMETER MOTORS

Condenser Fan Motors

Shaft Up or Horizontal

- 208-230 VAC
- Electrically reversible
- Thermally protected
- CSA certified
- All angle mount bearings

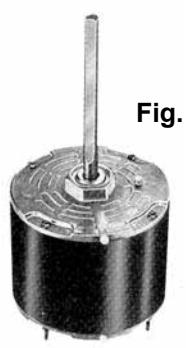


Fig. 1



Fig. 2

PSC • OPEN VENTILATION • AIR-OVER									LIST
Part #	H.P.	Volts	Amps	RPM	Load Factor	Fig.	"A" Dim.	Shaft Dim.	
3328	1/4	208-230	2.1	1075	1.3	2	4	1/2 x 6	252.90
3732•	1/4	208-230	2.1	1075	1.3	2	4	1/2 x 6	209.40
D748	1/3	208-230	2.9	1075	1.2	1	4	1/2 x 6-1/2	247.30
D935•*	1/2	208-230	4.1	1075	1.2	2	5	1/2 x 6-1/2	431.00
3330	1/2	208-230	4.1	1075	1.2	2	5	1/2 x 6-1/2	299.30
D929*	3/4	208-230	5.0	1075	1.0	2	5-1/4	1/2 x 6-1/4	379.00

• ball bearing motor * 10M 370V capacitor

Totally Enclosed Motors

- Ideal for any angle mounting
- Electrically reversible
- CSA certified
- All angle mount bearings

PSC • OPEN VENTILATION • AIR-OVER										LIST
Part #	H.P.	Volts	Amps	RPM	Load Factor	Rot.	Fig.	"A" Dim.	Shaft Dim.	
D919^	1/8	208-230	.9	1075	1.3	Rev.	1	3-3/4	1/2 x 6-1/2	278.30
D917^	1/6	208-230	1.0	1075	1.2	Rev.	1	3-3/4	1/2 x 6-1/2	185.50
D906^	1/5	208-230	1.5	1075	1.2	Rev.	1	4	1/2 x 6-1/2	285.30
D922†	1/4	208-230	1.8	1075	1.3	Rev.	1	4-1/3	1/2 x 6-1/2	328.00
D909	1/4	208-230	1.8	1075	1.2	Rev.	1	4	1/2 x 6-1/2	240.30
3729†+	1/3	208-230	2.7	1075	1.6	Rev.	1	4-3/4	1/2 x 6-1/2	233.30
D908^+	1/3	208-230	2.4	1075	1.2	Rev.	1	4-1/2	1/2 x 6-1/2	265.60
D932†*	1/2	208-230	3.9	1075	1.5	Rev.	1	5-5/8	1/2 x 6-1/2	317.00
3730*	1/2	208-230	3.7	1075	1.2	Rev.	1	4-3/4	1/2 x 6-1/2	255.80
3731†@	3/4	208-230	5	1075	1.3	Rev.	1	5-3/4	1/2 x 6-1/2	506.00
D931•@	3/4	230	4.5	1075	1.2	Rev.	1	5-1/4	1/2 x 6-1/2	290.90

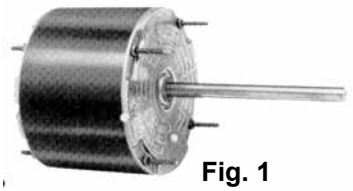


Fig. 1

+ 7.5M 370V capacitor *10M 370V capacitor • ball bearing motor @ 15M 370V capacitor † motor has increased stack for higher ambient temperatures.
^ has 4 drilled and tapped holes in shell

PSC • OPEN VENTILATION • AIR-OVER										LIST
Part #	H.P.	Volts	Amps	RPM	Load Factor	Rot.	Fig.	"A" Dim.	Shaft Dim.	
3227	1/6-1/8	208-230	1.2-.9	1075	1.2	Rev.	2	3-3/4	1/2 x 6-1/2	348.00
D904	1/4-1/5	208-230	1.8-1.0	1075	1.4	Rev.	2	4-1/4	1/2 x 6-1/2	524.00
D903+	1/3-1/4	208-230	2.7-1.3	1075	1.3	Rev.	2	4-3/4	1/2 x 6-1/2	517.00
D1702•	1/4-1/8	208-230	1.7-.8	1075	1.1	Rev.	2	4	1/2 x 6	621.00
X415•+	1/3-1/4	208-230	2.2-1.3	1075	1.1	Rev.	2	5	1/2 x 5-1/2	530.00
D1700•+	1/2-1/3	208-230	3.7-1.9	1075	1.1	Rev.	2	5	1/2 x 5-1/2	636.00

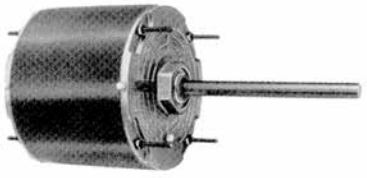


Fig.2

• ball bearing motor + 7.5M 370V capacitor

CONDENSER FAN MOTORS

Condenser Fan Motors



Features:

- Ball Bearing
- Open air over
- Belly band/ resilient ring mounting
- Three phase
- 56 frame
- Voltage change device (VCD as noted)

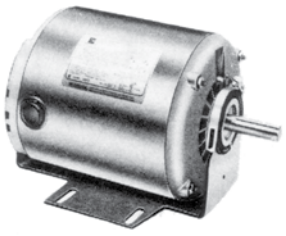
Part #	HP	RPM	Volts	^ Amps	Rot.	Shaft Dia.	Motor Dia.	Notes
T2539*	1/2	1140	208-230/460	2.4	REV.	5/8"	6.5"	VCD
AICH977	1/2	1140	575	1.0	REV.	5/8"	6.5"	
K1505	3/4	1140	575	1.5	REV.	5/8"	6.5"	
T2538*	1	1140	208-230/460	4.0	REV.	5/8"	6.5"	VCD
T2540*	1	1140	575	1.7	REV.	5/8"	6.5"	
T2537*	1	850	208-230/460	5.3	REV.	5/8"	6.5"	VCD
T2539*	1	850	575	2.1	REV.	5/8"	6.5"	
T2542*	1.5	1140	208-230/460	5.5	REV.	5/8"	6.5"	VCD
T2543*	1.5	1140	575	2.2	REV.	5/8"	6.5"	
T2544*	2	1140	208-230/460	7.2	REV.	5/8"	6.5"	VCD
T2536*	2	1140	575	2.7	REV.	5/8"	6.5"	
CAN2575	2	1140	575	1.4	REV.	5/8"	6.5"	1

* Alltemp Motors ^ 208 V Amp Shown 1) Rigid Base

Please contact your local branch for more information and pricing

BELTED FAN AND BLOWER MOTORS

- Reversible rotation by easy reconnection
- Threaded conduit hole
- Class "A" insulation
- Automatic reset thermal protector



Part #	HP	Volt	RPM	NEMA Frame	Bearings	Overload Protector	S.F.	F.L. Amps	Shaft Dim.	LIST
Single Speed										
H701	1/4	115	1725	48	Sleeve	Auto	1.35	4.8	1/2 x 1-1/2	212.20
HG711	1/3	115	1725	48	Sleeve	Auto	1.35	5.3	1/2 x 1-1/2	241.70
HG703	1/2	115	1725	48	Sleeve	Auto	1.25	8.7	1/2 x 1-1/2	306.00
Two Speed										
HG704	1/4	115	1725/1140	48	Sleeve	Auto	1.0	5.1/2.5	1/2 x 1-1/2	400.00
HG706	1/3	115	1725/1140	48	Sleeve	Auto	1.0	6.9/4.0	1/2 x 1-1/2	486.00
HG715	1/2	115	1725/1140	56	Sleeve	Auto	1.0	8.7/5.1	1/2 x 1-1/2	513.00
C474	3/4	115	1725/1140	56	Sleeve	Auto	1.0	11.5/6.4	5/8 x 1-13/16	749.00

- Split phase
- Dripproof
- Ball bearing
- Resilient base
- Auto overload
- Service Factor



Part #	Alt #	HP	RPM	Volts	Amps	Rot.	Shaft Dia.	Motor Dia.	Notes
B303	2888	1/4	1725	115	2.9	REV	1/2"	5.5"	48YZ
B305	2888	1/3	1725	115	4.0	REV	5/8"	5.5"	48YZ
B307	2888	1/2	1725	115	5.2	REV	5/8"	5.5"	48YZ

- Split phase
- Dripproof
- Ball bearing
- Rigid base
- Auto overload
- Service Factor

Part #	Alt #	HP	RPM	Volts	Amps	Rot.	Shaft Dia.	Motor Dia.	Notes
C159	L1301	1/3	1800	115/208-230	-	REV	5/8	-	56
C168	L1304	1/2	1800	115/230	-	REV	5/8	-	56
C176	L1307	3/4	1800	115/230	-	REV	5/8	-	56
C182	L1310	1	1800	115/208-230	-	REV	5/8	-	56

Please contact your local branch for more information and pricing

BELTED FAN AND BLOWER MOTORS

Belted Fan Motors

- Capacitor Start
- Dripproof
- Ball bearing
- Resilient base
- Auto overload
- Service Factor



Single Phase / Start Capacitor

Part #	HP	RPM	Volts	^Amps	Rot.	Shaft Dia.	Motor Dia	Notes
B313	0.25	1725	115/208-230	2.8	REV	1/2"	5.5"	48YZ
B315	0.3333	1725	115/208-230	3.1	REV	1/2"	5.5"	48YZ
C216	0.3333	1725	115/208/230			5/8		56
B317	0.5	1725	115/208-230	4.1	REV	5/8"	6.5"	56
B319	0.75	1725	115/208-230	5.2	REV	5/8"	6.5"	56
C1158	1	1725	115/208-230	7.2	REV	5/8"	6.5"	56
C1160	1.5	1725	115/208-230	8.4	REV	5/8"	6.5"	56H
C1162	2	1725	115/208-230	10.9	REV	5/8"	6.5"	56H

^ 208 V Amp Shown 1) Rigid Base

Three Phase

Part #	HP	RPM	Volts	^Amps	Rot.	Shaft Dia.	Motor Frame	Notes
G140	0.5	1725	208-230/460	2.3	REV	5/8"	56	1
G141	0.75	1725	208-230/460	2.9	REV	5/8"	56	1
G100	1	1725	208-230/460	3.4	REV	5/8"	56H	1
K063	1	1725	208-230/460	3.5	REV	7/8"	56HZ	2
G963	1	1725	575	1.4	REV	5/8"	56H	1
G143	1.5	1725	208-230/460	4.8	REV	5/8"	56	1
121004	1.5	1725	208-230/460	4.8	REV	7/8"	56HZ	2
G144	2	1725	208-230/460	6.2	REV	5/8"	56H	1
121005	2	1725	208-230/460	6.2	REV	7/8"	145T	2
121946	2	1725	575	2.5	REV	7/8"	56HZ	2
G145	3	1725	208-230/460	8.6	REV	7/8"	56HZ	1
131519	3	1725	208-230/460	9.2	REV	7/8"	56HZ	2
F31853	3	1725	575	3.3	REV	7/8"	56HZ	2
131520	5	1725	208-230/460		REV	7/8"		
F535256	5	3450	575	4.9	REV	7/8"	56HZ	1

^ 208 V Amp Shown 1) Risilient Bas 2) Rigid Base

Please contact your local branch for more information and pricing

GENERAL PURPOSE MOTORS



Open Drip Proof

Single Phase / Ridgid Base

Part #	HP	RPM 60 Hz	Nema Frame	Volts	Full Load Amps	Shaft	LIST
101423	1/4	1725	48	115/230-1	5/2.5	1/2 x 1-1/2	539.00
C159	1/3	1725	56	115/230-1	6/3	5/8 x 1-7/8	861.00
C168	1/2	1725	56	115/230-1	8.4/4.2	5/8 x 1-7/8	902.00
100008	3/4	1725	56	115/230-1	10.2/5.1	5/8 x 1-7/8	
110004	1	1725	56	115/230-1	13.4/6.7	5/8 x 1-7/8	1,059.00

Open Drip Proof

- Ball bearings

Three Phase / Ridgid Base

Part #	HP	RPM 60 Hz	Nema Frame	Volts	Full Load Amps @230V	Shaft	LIST
121004	1-1/2	1740	145T	230/460/3	4.8	7/8 x 6-5/8	1,373.00
121005	2	1725	145T	230/460/3	5.8	7/8 x 6-5/8	1,442.00
121948	2	1725	145T	575/3	2.3	7/8 x 6-5/8	1,442.00
131519	3	1725	182T	230/460/3	7.8	1-1/8 x 6-5/8	1,987.00
131520	5	1750	184T	230/460/3	12.8	1-1/8 x 2-3/4	2,170.00
132262	5	1750	184T	575/3	5.1	1-1/8 x 2-3/4	2,170.00

Totally Enclosed

- Ball bearings

Three Phase / Ridgid Base

Part #	HP	RPM 60 Hz	Nema Frame	Volts	Full Load Amps @230V	Shaft	LIST
120923	2	1800	145T	230/460/3	5.88	7/8 x 2-1/4	1,524.00
171320	3	1800	182T	230/460/3	7.8	1-1/8 x 2-3/4	1,965.00
171321	3	1800	182T	575/3	3.1	1-1/8 x 2-3/4	
171322	5	1800	184T	230/460/3	12.8	1-1/8 x 2-3/4	2,239.00
132255	5	1800	184T	575/3	5.1	1-1/8 x 2-3/4	2,255.00
170157	7-1/2	1800	213T	230/460	18.6	1-3/8 x 3-3/8	
170207	7-1/2	1800	213T	575/3	7.4	1-3/8 x 3-3/8	2,741.00

VARIABLE FREQUENCY DRIVE

HVAC Drive H300

1.0 hp - 450 hp (0.75 kW - 315 kW)
200 V | 575 V



H300 ratings and specifications

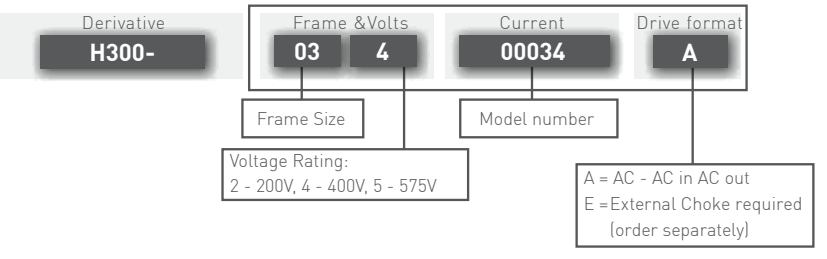
200/240 Vac ±10%			
Drive	Normal Duty		
	Max Continuous Current (A)	Motor Shaft Power (kW)	Motor Shaft Power (HP)
H300-032 00066 A	6.6	1.1	1.5
H300-032 00080 A	8	1.5	2
H300-032 00110 A	11	2.2	3
H300-042 00180 A	18	4	5
H300-042 00240 A	24	5.5	7.5
H300-052 00300 A	30	7.5	10
H300-062 00500 A	50	11	15
H300-062 00580 A	58	15	20
H300-072 00750 A	75	18.5	25
H300-072 00940 A	94	22	30
H300-072 01170 A	117	30	40
H300-082 01490 A	149	37	50
H300-082 01800 A	180	45	60
H300-092 02160 E	216	55	75
H300-092 02660 E	266	75	100
H300-102 03250 E	3 25	90	125
H300-102 03600 E	360	110	150

500/575 Vac ±10%			
Drive	Normal Duty		
	Max Continuous Current (A)	Motor Shaft Power (kW)	Motor Shaft Power (HP)
H300-055 00039 A	3.9	2.2	3
H300-055 00061 A	6.1	4	5
H300-055 00100 A	10	5.5	7.5
H300-065 00120 A	12	7.5	10
H300-065 00170 A	17	11	15
H300-065 00220 A	22	15	20
H300-065 00270 A	27	18.5	25
H300-065 00340 A	34	22	30
H300-065 00430 A	43	30	40
H300-075 00530 A	53	45	50
H300-075 00730 A	73	55	60
H300-085 00860 A	86	75	75
H300-085 01080 A	108	90	100
H300-095 01250 E	125	110	125
H300-095 01500 E	150	110	150
H300-105 02000 E	200	150	200
H300-115 02480 E	248	175	250
H300-115 02880 E	288	225	300
H300-115 03390 E	339	250	350

Normal Duty

Suitable for applications with a current overload capacity of 110%

Key:



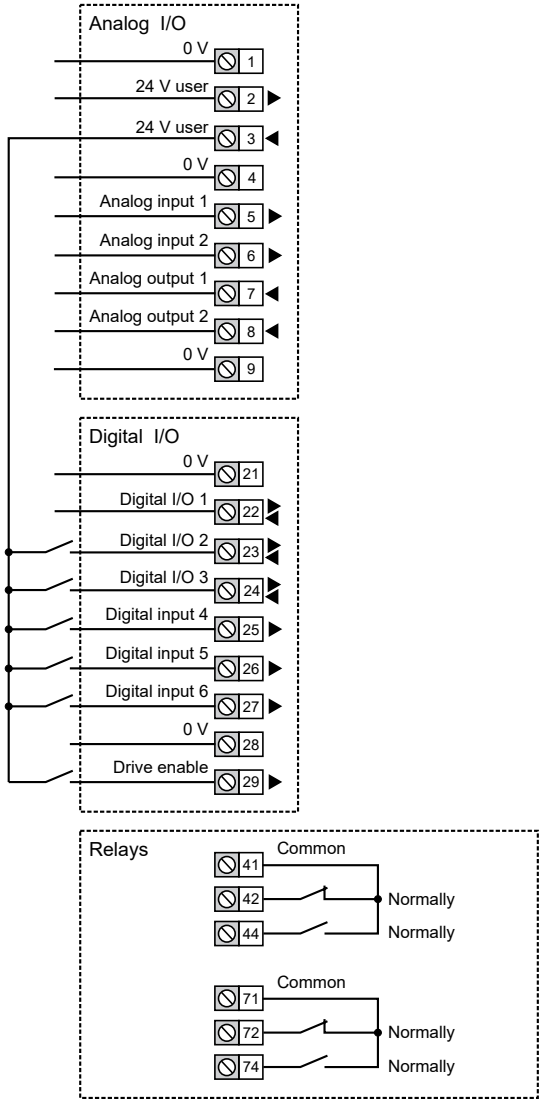
HVAC Drive H300



Dimensions and Weight

Frame Size	Dimensions (H x W x D)		Weight
	mm	in	kg (lb)
3	379 x 83 x 200	14.9 x 3.3 x 7.9	4.5 (9.9)
	379 x 124 x 200	14.9 x 4.9 x 7.9	6.5 (14.3)
5	379 x 143 x 202	14.9 x 5.6 x 8.0	7.4 (16.3)
	379 x 210 x 227	14.9 x 8.3 x 8.9	14 (30.9)
7	548 x 270 x 279	21.6 x 10.6 x 11.0	28 (61.7)
	785 x 310 x 290	30.9 x 12.2 x 11.4	52 (114.6)
9	With internal line choke* 1108 x 310 x 290	With internal line choke* 37.0 x 12.2 x 11.4	46 (101.4)
	With external line choke 1069 x 310 x 290	With external line choke 42.1 x 12.2 x 11.4	46 (101.4)
	1069 x 310 x 290	42.1 x 12.2 x 11.4	46 (101.4)
11	1410 x 310 x 310	55.5 x 12.2 x 12.2	63 (138.9)

Terminal Layout



MOTORS 667-690

HVAC Drive H300



Optional media and accessories

Description	Order code
SD-Smartcard Adaptor	SD-CARD-ADAPTOR
Smartcard (64 kB)	2214-0010

UL Type 1 Conduit kit

Frame size	Order code
3 & 4	C-BOX-GF3-4
5	C-BOX-F5
6	C-BOX-F6
7	C-BOX-F7
8	C-BOX-F8
9	C-BOX-F9-10
10	C-BOX-F9-10
11	C-BOX-F11

Retrofit brackets

H300 drives can be fitted in existing Affinity drive surface mount installations with retrofit brackets.

Frame size	Order code
4	3470-0062
5	3470-0066
6	3470-0074
7	3470-0078
8	3470-0087

Optional external EMC filters

H300 built in EMC filter complies with EN 61800-3 (Category C3). An external EMC filter is required for compliance with EN 61800-3 (Category C1/C2)

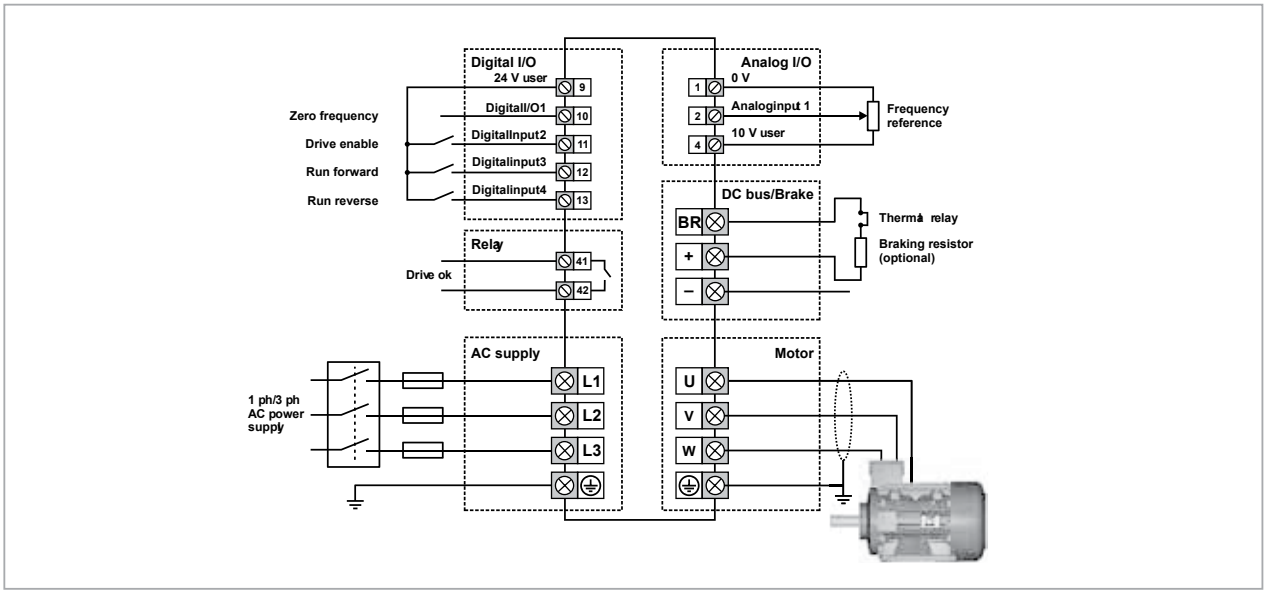
Frame size	Voltage	Order code
3	200 V	4200-3230
	400 V	4200-3480
4	200 V	4200-0272
	400 V	4200-0252
5	200 V	4200-0312
	400 V	4200-0402
	575 V	4200-0122
6	200 V	4200-2300
	400 V	4200-4800
	575 V	4200-3690
7	200 V & 400 V	4200-1132
	575 V	4200-0672
8	200 V & 400 V	4200-1972
	575 V	4200-1662
9	200 V & 400 V	4200-3021
	575 V	4200-1660
9E & 10	200 V & 400 V	4200-4460
	575 V	4200-2210
11	400 V	4200-0400
	575 V	4200-0690

UniDrive M100

0.25 kW - 7.5 kW Heavy Duty (0.33 hp - 10 hp)
100 V | 200 V | 400 V



Terminal layout



Dimensions and Weight



Frame Size		1	2	3	4
Dimensions (H x W x D)	mm	137 x 75 x 130	180 x 75 x 150	200 x 90 x 160	245 x 115 x 175
	in	5.4 x 3.0 x 5.1	7.1 x 3.0 x 5.9	7.9 x 3.5 x 6.3	9.7 x 4.5 x 6.9
Weight	kg (lb)	0.75 (1.65)	1.0 (2.2)	1.5 (3.3)	3.13 (6.9)

Notes:

Height dimension (H) does not include mounting feet.

Additional distance should be added to the height dimension (H) when the following options are fitted:

- AI-Back-up Adaptor: 15 mm (0.59 in)
- AI-Smart Adapter: 15 mm (0.59 in)

MOTORS 667-690

Unidrive M100 ratings and specifications

100/120 Vac ±10 %				
Order Code	Supply Phases	Heavy Duty		
		Max Continuous Current (A)	Motor Shaft Power (kW)	Motor Shaft Power (hp)
M100-011 00017A	1	1.7	0.25	0.33
M100-011 00024A	1	2.4	0.37	0.5
M100-021 00042A	1	4.2	0.75	1
M100-021 00056A	1	5.6	1.1	1.5

200/240 Vac ±10 %				
Order Code	Supply Phases	Heavy Duty		
		Max Continuous Current (A)	Motor Shaft Power (kW)	Motor Shaft Power (hp)
M100-012 00017A	1	1.7	0.25	0.33
M100-012 00024A	1	2.4	0.37	0.5
M100-012 00033A	1	3.3	0.55	0.75
M100-012 00042A	1	4.2	0.75	1
M100-022 00024A	1/3	2.4	0.37	0.5
M100-022 00033A	1/3	3.3	0.55	0.75
M100-022 00042A	1/3	4.2	0.75	1
M100-022 00056A	1/3	5.6	1.1	1.5
M100-022 00075A	1/3	7.5	1.5	2
M100-032 00100A	1/3	10	2.2	3
M100-042 00133A	1/3	13.3	3	3
M100-042 00176A	3	17.6	4	5

380/480 Vac ±10 %				
Order Code	Supply Phases	Heavy Duty		
		Max Continuous Current (A)	Motor Shaft Power (kW)	Motor Shaft Power (hp)
M100-024 00013A	3	1.3	0.37	0.5
M100-024 00018A	3	1.8	0.55	0.75
M100-024 00023A	3	2.3	0.75	1
M100-024 00032A	3	3.2	1.1	1.5
M100-024 00041A	3	4.1	1.5	2
M100-034 00056A	3	5.6	2.2	3
M100-034 00073A	3	7.3	3	3
M100-034 00094A	3	9.4	4	5
M100-044 00135A	3	13.5	5.5	7.5
M100-044 00170A	3	17	7.5	10

For Normal Duty applications, use Heavy Duty ratings.

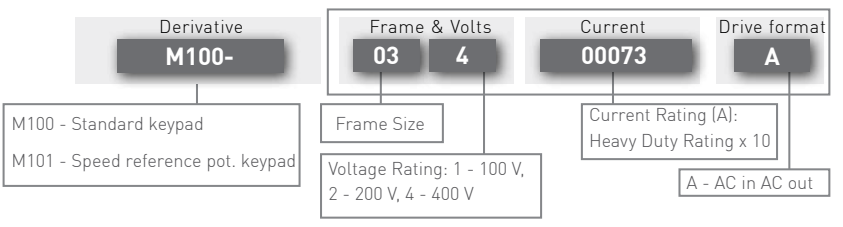
***Speed Potentiometer available.**

Environmental safety and electrical conformance

- IP21 / UL open class (NEMA 1).
- IP20 when the AI-Back-up Adaptor is fitted.
- UL TYPE 1 compliance requires the appropriate Conduit kit to be fitted.
- Ambient temperature -20 °C (-4 °F) to 40 °C (104 °F) as standard.

  Output current derating required at ambient temperatures >40 °C (104 °F).
- Storage temperature -40 °C to 60 °C (-40 °F to 140 °F).
- Humidity 95 % maximum (non-condensing) at 40 °C (104 °F) in accordance with EN/IEC 60068-2-78 and ANSI/EIA-364-31.
- EN/IEC 60068-2-60, Method 4 Corrosive gas.
- Altitude: 0 to 3000 m (0 to 9843 ft), derate 1 % per 100 m (328 ft) between 1000 m and 3000 m (3281 ft and 9843 ft).
- Random Vibration: Tested in accordance with EN/ IEC 60068-2-64.
- Mechanical Shock: Tested in accordance with EN/ IEC 60068-2-29.
- Electromagnetic Immunity complies with EN/IEC 61800-3 and EN/IEC 61000-6-2.
- With onboard EMC filter, complies with EN/IEC 61800-3 (2nd environment).
- EN/IEC 61000-6-3 and EN/IEC 61000-6-4 with optional footprint EMC filter.
- EN/IEC 61800-5-1 Electrical Safety.
- EN/IEC 61131-2 I/O.
- UL 508C Electrical Safety.

Key:



Heavy Duty

Suitable for demanding applications, current overload of 150 % (60 s) is available for dynamic loads.

ACCESSORIES

Band Mounting Kits

Lug Kits





KIT150



KIT49

Part #	Motor Dia.	Lug Size	Bolt Circle Range	LIST
55L	5.5"	Large	8-1/8-12-1/8	49.20
55S	5.5"	Small	6-7/8-8-1/8	43.60
KIT34	3.3"	Large	4-11/16-9-7/8	52.00
KIT50	5.0"	Large	6-7/16-11-11/16	49.20
KIT49	3 small lugs for kit 55S			21.10
KIT150	4 grommets to fit lugs on kits 49, 50,34, 55L, 55S			19.70



Part #	Motor Dia.	Lug Size	Bolt Circle Range	LIST
NO50L	4.4" & 5.0"	Large	6-1/2-11-8/16	54.80
NO33L	3.3"	Large	4-1/2-10	54.80



Part #	Description	LIST
KIT315	Fits 5.0" diameter motors	52.00
KIT317	Fits 5.6" diameter motors	52.00

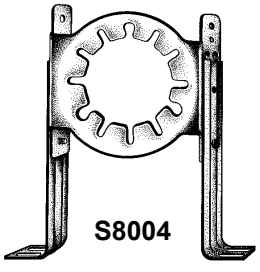
Mount Bracket Kits

For direct drive blower motors using the flexible bracket mounting.



Part #	Description	LIST
FM50	Fits 5.0" dia. motors	42.20
TFM55	Fits 5.5" dia. motors	32.30

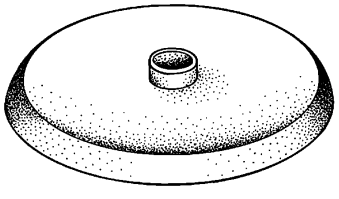
End-Mount Brackets



S8004

Part #	Description	Height Shaft Center to Base	LIST
S-8004	45 Adj. Brkt.	4-1/8" - 5-3/8"	59.60

Condenser Fan Rainshields



Part #	Shaft Dia.	Slinger O.D.	LIST
KIT170	1/2"	7"	16.90
RAIN6017	5/8"	7"	25.30

ACCESSORIES

Motor Speed Controls

Solid State Variable Spee AC Motor Controls

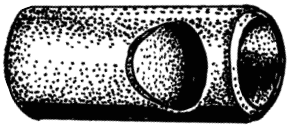
- Built-in On/Off Line Switch
- RFI Filter
- Min. Speed Trimmer



Part #	Max. Current Rating (RMS amps)	On/Off Line Switch Rating (Amps @ 125 VAC)	LIST
KBWC-13K	2.5	3.0	69.20
KBWC-15K	5.0	6.0	78.20
KBWC-16K	6.0	6.0	76.60
KBWC-110K	10.0	15.0	178.00
KBWC-115K	15.0	15.0	210.50

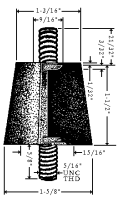
Shaft Adaptors

Steel Bushings

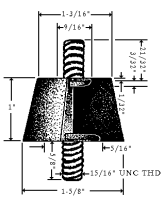


Part #	Description	LIST
BUSH3273	5/16" OD x 1/4" ID Bushing	24.30
S-8202	3/8" OD x 1/4" ID Bushing	14.50
BUSH3314	3/8" OD x 5/16" ID Bushing	28.80
S-8204	7/16" OD x 3/8" ID Bushing	13.20
S-8205	1/2" OD x 1/4" ID Bushing	1.90
S-8206	1/2" OD x 5/16" ID Bushing	26.10
BUSH3274	1/2" OD x 3/8" ID Bushing	29.00
BUSH6005	5/8" OD x 1/2" ID Bushing	32.80
S-8217	3/4" OD x 5/8" ID Adapter w/key	115.90
S-8215	5/8" OD x 1/2" ID Adapter w/key	43.20

Vibration Insulators



S7801



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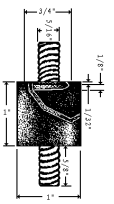
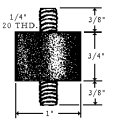


S7804



S7805



028-10505-000

Part #	Max. load in pounds (Compression)	LIST
S-7801	60	16.20
S-7802	100	16.20
S-7804	40	15.10
S-7805	50	14.30
028-10505-000		6.00

AIR MOVING PRODUCTS

SOLER & PALAU

Quick Reference Guide

In-line Fans

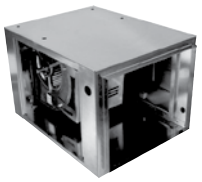

PV


TD MIXVENT


TD-SILENT


FF

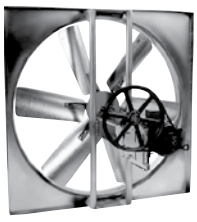

SQB/SQD


CFD/CVTT

Wall


S


LC


L2/L3


GED/GSD

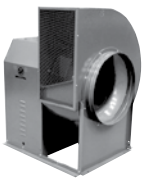

CWD

Tube Axial

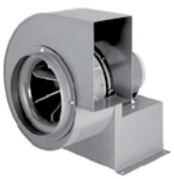

TDB


DDT

Vent Sets


CM

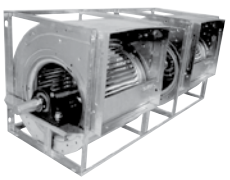

PW


KE


B/FCB

Centrifugal Blowers


CBS


CBP-DC/DE


CBP-RC/RE

Spun Aluminum Roof Top


ARE/ARS


TXD


TXB


DB

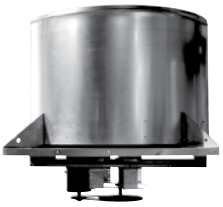

eRED/RED


LPD

Roof Top


HRSB


TUB


UBB/UBS/UBX


CSF


KSF


TH

MOTORS
667-690

AIR MOVING PRODUCTS

SOLER & PALAU

Competitors Cross Reference Models

Models are for general similarity only. Refer to specifications and construction data for details

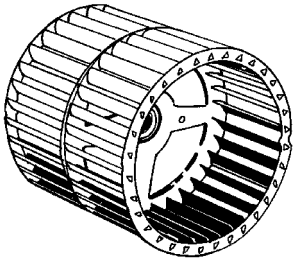
S&P	Description	Coolair	Cook	Twin City	Penn	Acme	Carnes	Green-heck	Fantech	Canarm/ Delhi
DB	R/T Down Blast Exhaust Centrif. BD	CRBCA	ACEB	BCDR	DXB/KB/ JB/MB	PV/PNN	VEBK	GB	BDD/ABE	BDCR/ CBR
LPD & RED	R/T Down Blast Exhaust Centrif. DD	CRDA	ACED	DCRD	DX	PRN	VEDK	G	REC/ DDD	DR-H/300/ CDR
TXB	R/T Up Blast Exhaust Centrif. BD	UBCA	ACRUB	BCRU	FXB/FMX	PNU/PU	VUBK	CUBE	BDU	CDU / CBU
TXB UL762	R/T Up Blast Exhaust Centrif. BD	CUBA	VCR	BCRUR	FXBFT/ FMBFT	PNU-RG	VRBK	CUBE	BDU	BDU/ CBUHP
TXD	R/T Up Blast Exhaust Centrif. DD	UDCA	ACRUD	DCRU/ R	FX/FMX	PDU	VUDK	CUE	DDU	DU-H / CDU
CWD	Sidewall Exhaust Centrif. DD	CWDA	ACWD	TCWX	WX/WA/ WB	PW	VWDK	GW	--	--
FF/FFC	Ceiling Cabinet fans DD	CF/CFL	GC-GN	T/TL	ZEPHER-Z	V/VQ/VQL	VCDD	SP/CSP	CEV/ IEV	--
KSF	R/T Filtered fresh air supply fan DD	CFS/SIS	KSPB	BCFS	MU/FS	AFSI	VSBB	KSU/RSF	FSU	SIS / SBAR
ARE / ARS	R/T Dome Exhaust/Supply Axial. DD	SASD/ SAED	AQD	--	DAE	LQ	LEDA	AIS	ADE /ADS	--
S	Direct drive shutter fan DD	CDP/WS	--	--	P	--	--	--	SHE	SD/ AX/ S
GED / GSD	Sidewall Exhaust/Supply Prop. DD	CDC	APD	TCPE	P	FQ/FN	LTDK/ LZDK	SE1/SS1	VLD	P
LCE / LCS	Sidewall Exhaust/Supply Prop. BD	CAB/CBL	XLM/SWB	WPMD	BLL/BFM/ BBK	DC/DCK	LWBA/ LWBK	SBE/S 1&2	SDE	DDS / ADD
L2E / L2S	HD Sidewall Exhaust/Supply Prop. BD	CAL	XL/XM/ AWB/ HWB	TCWPX *	BFM/BFH/ BCH	DCK/DCH	LABA	SBE/SBC	MDE	XB / HV
SQB	Square Inline Duct Fan Centrif. BD	SQBA	SQNB -B/ SQI-B	BSI	SXB	XB	VIBK	BSQ	--	DSQ-B
SQD	Square Inline Duct Fan Centrif. DD	SQDA	SQND -D/ SQI-D	DSI	SX	XD	VIDK	SQ	FSD	DSQ-D
UBS	R/T Upblast Exhaust Propeller DB	J/JT	LXU/LEU/ LSU	LPRVX	HS/HZ	UBG	LUBA	PUB/RBU	BLT	RB
HREB-C	R/T Hooded Exhaust Propeller BD	PEB	HXE/HEE	LPHD/B	AF/AC	EC/ECH	LTBA	RBE/ RBCE	RHE	PRE
UBSRD-HT	R/T Upblast Exh. H. Temp Prop. BD	HS	SUBH	UBT/TUB	HX	UBH-UF	LQBA	TAUB-HT	--	RTA
HRSB	R/T Hooded Supply Propeller BD	PSB	HXS/HES	HVWP	AF/AC	EC-S/ ECH-S	LGBA	RBS/ RBCS	RHS	PRI
TDB / DDT	Tube Axial fans BD/DD	TBC/ TEBC	EDB/EDD	TB/TD	BTA/TA	HA / HDD	LIBA/LIDA	TAB/ TAD		BTA/DDA
CM	Vent Sets/ BI / cUL705 & 762 & 793 BD	VSBC	CPV/S	BCV/J	D/RPK	QBR	--	SWB	--	BI/BI-RM
RCXII	Non-powered Roof Vent - Rnd Dome	ARVE	PR	GRV	DR	LQV	GSAA	GRS	--	--
CSF	R/T Centrifugal Filtered Supply BD	CFS	ASP	FSR	MU	--	VHBB/ VSBB	RSF	--	700
CVTT	Forward curve air handler 7' to 30" BD	--	--	DBS	--	--	VGBA		--	9200
CFD	Forward curve air handler 7' to 15" DD/BD	--	DB	DBS	ZC	--	VDBA		--	200
CBS	Single inlet blower BD	--	--	DBS	--	--	--		--	400
CBM	Direct drive dual inlet blower DD	--	--	--	--	--	--		BLR	GDD
CBP	Belt drive dual inlet blower BD	--	--	TFC	--	--	--		--	G
CBP-RC	Belt drive dual inlet Framed blower BD	--	--	VFC	--	--	--		--	800
CBP-RE	Belt drive dual inlet framed HD blower	--	--	TFC-2	--	--	--		--	900
FCB	Belt drive Forward curve vent set	--	--	FCV	--	--	VFB	SFB	--	600
TD	2 speed inline mixed flow fan DD	--	--	--	--	--	--	--	--	-
PV	Backward inclined inline fan DD	--	--	--	--	--	--	--	FG	-
SWF	Outside wall mount exhaust DD	--	--	--	--	--	--		RVF	-
PW	Radial blade pressure blower DD	--	--	--	--	--	--	FPB	--	PW
KE	Radial blade pressure blower DD	--	CPFD	JRW	--	--	--	IPA	--	KE
D	Forward curve direct drive blower DD	--	--	DDF	--	--	--	SFD		D

R/T = Roof Top, BD = Belt Drive , DD = Direct Drive

BLOWER WHEELS

LAU

Lau Universal PRESLOK wheels fit most blowers, regardless of manufacturer.



Basics of wheel replacement (for residential air conditioning or heating equipment):

- Determine if belt driven or direct driven blower
- Measure diameter and width - over the rim
- Determine bore size - measure hub in wheel or shaft diameter
- For direct drive or double inlet wheels

Note: Determine rotation by viewing from hub side

Wheels for Direct Driven Blowers

Part Number	Description	Bore	Overall		LIST
			Dia.	Width	
013334-01	DD9-4 CW	1/2	9-15/16"	4-1/2"	
013335-01	DD9-6 CW	1/2	9-15/16"	6"	156.00
013336-02	DD9-7 CW	1/2	9-15/16"	7-1/8"	139.60
013336-03	DD9-7 CCW	1/2	9-15/16"	7-1/8"	139.60
013337-01	DD9-8 CW	1/2	9-15/16"	8"	149.40
013337-03	DD9-8 CCW	1/2	9-15/16"	8"	
013332-01	DD9-9 CW	1/2	9-15/16"	9-1/2"	141.80
013332-03	DD9-9 CCW	1/2	9-15/16"	9-1/2"	153.80
013327-01	DD10-4 CW	1/2	11-1/8"	4-1/2"	170.30
013326-01	DD10-6 CW	1/2	11-1/8"	6"	
013326-02	DD10-6 CCW	1/2	11-1/8"	6"	171.10
013326-14	DD10-6 CW	5/8	11-1/8"	6"	
013325-01	DD10-7 CW	1/2	11-1/8"	7-1/8"	
027102-04	DD10-7 CCW	1/2	11-1/8"	7-1/8"	
013324-01	DD10-8 CW	1/2	11-1/8"	8"	
013324-02	DD10-8 CCW	1/2	11-1/8"	8"	
013317-01	DD10-9 CW	1/2	11-1/8"	9-1/2"	
013323-01	DD10-9 CW	1/2	11-1/8"	9-1/2"	
013316-02	DD10-10 CW	1/2	11-1/8"	10-5/8"	166.30
013322-03	DD10-10 CW	1/2	11-1/8"	10-5/8"	
013316-06	DD10-10 CCW	1/2	11-1/8"	10-5/8"	174.60
026940-03	DD11-6 CW	1/2	12-1/4"	6"	
026940-05	DD11-7 CW	1/2	12-1/4"	7-1/8"	
026940-07	DD11-8 CW	1/2	12-1/4"	8"	
026941-07	DD11-8 CW	1/2	12-1/4"	8"	
026940-08	DD11-8 CCW	1/2	12-1/4"	8"	
026940-09	DD11-9 CW	1/2	12-1/4"	9-1/2"	
026940-10	DD11-9 CCW	1/2	12-1/4"	9-1/2"	
026941-11	DD11-10 CW	1/2	12-1/4"	10-5/8"	183.90
026941-12	DD11-10 CCW	1/2	12-14"	10-5/8"	215.90
013693-25	DD12-9 CW	1/2	13-3/16"	9-1/2"	
013693-15	DD12-9 CW	5/8	13-3/16"	9-1/2"	239.20
015565-07	DD12-12 CW	1/2	13-3/16"	12-5/8"	222.10
015565-04	DD12-12 CW	5/8	13-3/16"	12-5/8"	

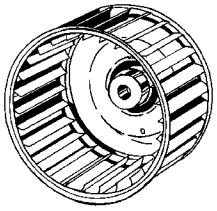
Wheels for Belt Driven Blowers

Part Number	Description	Bore	Overall		LIST
			Dia.	Width	
008666-12	A9-6A	3/4	9-15/16	6	
008621-12	A9-7A	3/4	9-15/16	7-1/8	146.40
008519-12	A9-9A	3/4	9-15/16	9-1/2	146.40
008519-16	A9-9A	1	9-15/16	9-1/2	168.30
012237-12	A10-4A	3/4	11-1/8	4-1/2	
008364-12	A10-6A	3/4	11-1/8	6	
008363-12	A10-7A	3/4	11-1/8	7-1/8	159.80
008361-12	A10-8A	3/4	11-1/8	8	160.80
008362-12	A10-9A	3/4	11-1/8	9-1/2	159.80
008360-12	A10-10A	3/4	11-1/8	10-5/8	151.60
008360-10	A10-10A	5/8	11-1/8	10-5/8	
008360-16	A10-10A	1	11-1/8	10-5/8	187.60
008971-16	A12-6A	1	13-3/16	6	
008507-16	A12-9A	1	13-3/16	9-1/2	230.50
008507-58	A12-9A	1-3/16	13-3/16	9-1/2	
008507-23	A12-9A	1-7/16	13-3/16	9-1/2	
009867-16	A12-11A	1	13-3/16	11-1/8	
008403-10	A12-12A	5/8	13-3/16	12-5/8	
008403-16	A12-12A	1	13-3/16	12-5/8	222.80
008403-93	A12-12A	1-3/16	13-3/16	12-5/8	
008403-79	A12-12A	1-7/16	13-3/16	12-5/8	343.00
008747-16	A12-15A	1	13-3/16	15	284.70
009548-16	A15-9A	1	15-1/2	9-1/2	323.00
009548-70	A15-9A	1-3/16	15-1/2	9-1/2	
009548-23	A15-9A	1-7/16	15-1/2	9-1/2	
008418-16	A15-11A	1	15-1/2	11-1/8	
008418-77	A15-11A	1-3/16	15-1/2	11-1/8	
008418-80	A15-11A	1-7/16	15-1/2	11-1/8	
008746-16	A15-12A	1	15-1/2	12-5/8	360.00
008276-16	A15-15A	1	15-1/2	15	310.00
017671-37	A15-15A	1-3/16	15-1/2	15	400.00
008276-72	A15-15A	1-7/16	15-1/2	15	322.00
008659-16	A18-13A	1	18-5/8	13-1/2	618.00
008659-60	A18-13A	1-7/16	18-5/8	13-1/2	
008658-16	A18-18A	1	18-5/8	18	572.00
008658-74	A18-18A	1-3/16	18-5/8	18	795.00
008658-87	A18-18A	1-7/16	18-5/8	18	786.00

BLOWER WHEELS

FASCO

Single Outlet



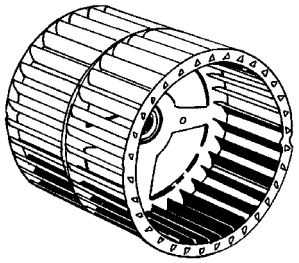
Rotation determined by viewing back plate

Typical Applications

- Condensers
- Small appliances
- Furnaces
- Draft booster
- Flue exhaust

Part Number	Diameter	Width	Rot'n	Bore	Max RPM	LIST
1-6038	3	1-7/8	CW	1/4	5000	40.70
1-6039	3	1-7/8	CCW	1/4	5000	40.70
1-6040	3-13/16	1-7/8	CCW	1/4	5000	44.20
1-6041	3-13-16	1-7/8	CW	1/4	5000	44.20
1-6042	3-13/16	1-7/8	CCW	5/16	5000	44.20
1-6043	3-13/16	1-7/8	CW	5/16	5000	44.20
1-6044	3-13/16	2-1/2	CW	5/16	5000	44.20
1-6045	3-13/16	2-1/2	CCW	5/16	5000	44.20
1-6114	3-27/32	1-1/4	CW	1/4	5600	46.00
1-6113	3-27/32	1	CW	1/4	5800	46.00
1-6051	3-27/32	1-13/64	CCW	1/4	5640	53.00
1-6141	4	1-1/2	CCW	5/16	3600	54.80
1-6133	4	2-1/2	CCW	1/4	3600	54.80
1-6046	4-1/4	2	CCW	1/4	4500	44.20
1-6047	4-1/4	2	CCW	5/16	4500	53.00
1-6052	4-1/4	2-15/16	CCW	1/4	4500	
1-6160	4-17/32	1-1/4	CW	5/16	6300	134.40
1-6161	4-17/32	1-1/4	CCW	5/16	6300	134.40
1-6048	4-23/32	2-15/16	CW	5/16	3600	44.20
1-6000	4-23/32	2-15/16	CCW	5/16	3600	44.20
1-6024	5-13/64	2-1/2	CW	5/16	3600	54.80
1-6025	5-13/64	2-1/2	CCW	5/16	3600	54.80
1-6053	5-13/64	2-29/32	CW	5/16	3600	54.80
1-6054	5-13/64	2-29/32	CCW	5/16	3600	54.80
1-6143	5-3/4	1-1/2	CCW	5/16	3600	116.70
1-6026	5-45/64	2-15/16	CCW	5/16	3000	
1-6002	5-45/64	4	CW	1/2	2800	
1-6057	5-45/64	4	CCW	1/2	2800	58.30
1-6058	6	3-1/4	CW	1/2	2400	68.90
1-6060	6-3/16	2-15/16	CCW	3/8	3000	63.60
1-6063	6-25/64	4	CW	1/2	1700	70.70
1-6064	6-25/64	4	CCW	1/2	1700	70.70
1-6066	7-1/8	2	CCW	5/16	2900	79.60
1-6005	7-1/8	4	CCW	1/2	1500	86.60
1-6070	7-31/32	3-1/2	CW	1/2	1800	88.40
1-6006	8-5/64	4	CW	1/2	1650	100.80
1-6074	8-5/64	4	CCW	1/2	1650	100.80
1-6077	8-35/64	3	CCW	1/2	2050	111.40
1-6007	9-1/8	4-1/4	CW	1/2	1475	109.60
1-6008	9-1/8	5	CW	1/2	1350	109.60
1-6009	9-1/8	5	CCW	1/2	1350	109.60
1-6079	9-31/32	4	CW	1/2	1350	129.10
1-6080	9-31/32	4	CCW	1/2	1350	129.10
1-6027	9-31/32	6	CW	1/2	1100	136.10

Double Outlet



Rotation determined by viewing hub extension

Typical Applications

- Condensers
- Small appliances
- Furnaces

Part Number	Diameter	Width	Rot'n	Bore	Max RPM	LIST
2-6011	4-27/32	7	CW	1/2	3600	86.60
2-6029	4-9/32	6-55/64	CCW	1/2	3600	86.60
2-6082	5-13/32	6-55/64	CCW	3/8	3600	83.10
2-6030	5-13/64	6-55/64	CW	1/2	3600	88.40
2-6012	5-19/64	7	CCW	1/2	3600	88.40
2-6013	5-9/16	6-1/2	CW	1/2	2500	
2-6014	5-9/16	6-1/2	CCW	1/2	2500	90.20
2-6031	5-45/64	7-5/8	CW	1/2	3000	93.70
2-6032	5-45/64	7-5/8	CCW	1/2	3000	93.70
2-6033	5-3/4	8-55/64	CW	1/2	1700	102.50
2-6083	6-25/64	7	CW	1/2	2050	102.50
2-6015	6-25/64	7	CCW	1/2	2050	102.50
2-6084	6-3/16	7-5/8	CW	1/2	3000	102.50
2-6085	6-3/16	7-5/8	CCW	1/2	3000	102.50
2-6034	6-25/64	8	CW	1/2	1500	111.40
2-6139	6-25/64	6-1/4	CCW	3/4	2275	
2-6086	7-31/64	4	CW	3/4	2700	
2-6087	7-31/64	4	CCW	3/4	2700	116.70
2-6035	7-31/64	4-1/2	CW	3/4	2400	
2-6036	7-31/64	4-1/2	CCW	3/4	2400	116.70
2-6016	7-31/64	6	CW	3/4	1950	122.00
2-6017	7-31/64	6	CCW	3/4	1950	122.00
2-6018	7-31/64	9	CW	1/2	1600	162.60
2-6089	9-1/2	6	CW	1/2	1750	166.10
2-6019	9-1/2	7	CW	1/2	1550	171.50
2-6090	9-1/2	8	CW	1/2	1400	180.30
2-6020	9-1/2	9-1/4	CW	1/2	1300	196.20
2-6092	10-25/32	6	CW	1/2	1550	205.10
2-6093	10-25/32	7	CW	1/2	1350	228.00
2-6021	10-25/32	7-3/4	CW	1/2	1250	244.00
2-6037	10-25/32	9-1/4	CW	1/2	1200	247.50
2-6022	10-25/32	10-1/2	CW	1/2	1150	252.80

FAN BLADES

Heavy Duty Condenser Type - 4 Blade (determine rotation by facing air discharge side of prop.)

*3 & 5 bladed fans are also available. Check with you local RSL brach for pricing & details.

Part Number	Dia. (in)	Pitch	RPM	Static Pressure								LIST
				.0		.10		.20		.30		
				CFM	H.P.	CFM	H.P.	CFM	H.P.	CFM	H.P.	
HD-1019-CW-4	10	19°	1140	419	.004	243	.006	104	.01			63.60
HD-1019-CCW-4	10	19°	1550	570	.010	432	.013	307	.015	200	.020	
			1725	634	.014	512	.017	395	.019	284	.023	
HD-1023-CW-4	10	23°	1140	508	.007	300	.009	153	.012			60.00
HD-1023-CCW-4	10	23°	1550	690	.018	530	.021	380	.024	264	.029	
			1725	768	.025	623	.03	486	.031	367	.036	
HD-1027-CW-4	10	27°	1140	580	.011	366	.023	209	.018			60.40
HD-1027-CCW-4	10	27°	1550	788	.027	600	.029	440	.033	350	.04	
			1725	877	.037	723	.039	587	.042	462	.049	
HD-1033-CW-4	10	33°	1140	700	.016	462	.020	287	.025			60.40
HD-1033-CCW-4	10	33°	1550	950	.040	712	.041	540	.043	458	.049	
			1725	1060	.055	868	.057	720	.059	600	.067	
HD-1219-CW-4	12	19°	1140	830	.02	666	.026	213	.03			69.20
HD-1219-CCW-4	12	19°	1550	1129	.05	1040	.056	870	.065	560	.078	
			1725	1257	.069	1185	.074	1052	.084	846	.096	
HD-1223-CW-4	12	23°	1140	883	.022	721	.028	283	.037			63.50
HD-1223-CCW-4	12	23°	1550	1200	.056	1125	.062	940	.072	650	.085	
			1725	1336	.077	1263	.084	1135	.094	935	.101	
HD-1227-CW-4	12	27°	1140	934	.025	772	.032	342	.041			69.20
HD-1227-CCW-4	12	27°	1550	1270	.064	1180	.072	1020	.083	740	.095	
			1725	1414	.088	1336	.098	1213	.108	1024	.121	
HD-1233-CW-4	12	33°	1140	1010	.029	858	.037	437	.047			66.50
HD-1233-CCW-4	12	33°	1550	1370	.073	1272	.085	1120	.095	870	.108	
			1725	1525	.101	1440	.115	1330	.126	1150	.142	
HD-1419-CW-4	14	19°	1140	993	.02	780	.03	574	.04	320	.05	73.00
HD-1419-CCW-4	14	19°	1550	1350	.06	1190	.07	1030	.082	880	.09	
			1750	1500	.08	1358	.10	1219	.11	1080	.12	
HD-1423-CW-4	14	23°	1140	1177	.03	960	.04	705	.05	430	.07	72.00
HD-1423-CCW-4	14	23°	1550	1600	.085	1430	.10	1260	.11	1090	.12	
			1750	1780	.12	1630	.13	1475	.14	1324	.15	
HD-1427-CW-4	14	27°	1140	1360	.04	1122	.054	853	.06	500	.08	72.40
HD-1427-CCW-4	14	27°	1550	1850	.11	1675	.12	1490	.14	1300	.15	
			1750	2059	.15	1903	.17	1736	.18	1570	.195	
HD-1433-CW-4	14	33°	1140	1640	.059	1380	.074	1050	.080	620	.092	72.30
HD-1433-CCW-4	14	33°	1550	2230	.148	2025	.157	1830	.175	1625	.198	
			1725	2515	.213	2305	.222	2120	.237	1940	.247	
HD-1619-CW-4	16	19°	1140	1515	.02	1346	.04	1173	.06	1000	.08	87.90
HD-1619-CCW-4	16	19°	1550	2060	.05	1935	.09	1810	.11	1680	.14	
			1725	2293	.07	2180	.11	2070	.14	1975	.17	
HD-1623-CW-4	16	23°	1140	1750	.05	1610	.07	1346	.10	1070	.12	87.20
HD-1623-CCW-4	16	23°	1550	2380	.125	2270	.15	2150	.16	2010	.20	
			1725	2650	.17	2560	.21	2460	.23	2360	.25	
HD-1627-CW-4	16	27°	1140	1986	.08	1853	.09	1574	.12	1300	.15	82.20
HD-1627-CCW-4	16	27°	1550	2700	.20	2610	.21	2490	.235	2340	.26	
			1725	3005	.28	2916	.29	2827	.32	2716	.34	
HD-1633-CW-4	16	33°	1140	2330	.126	2200	.134	1870	.162	1570	.195	86.80
HD-1633-CCW-4	16	33°	1550	3170	.315	3100	.320	2990	.330	2845	.350	
			1725	3525	.435	3450	.440	3365	.450	3275	.475	
HD-1827-CW-4	18	27°	850	2150	.062	1850	.080	1350	.100	1000	.115	108.70
HD-1827-CCW-4	18	27°	1000	2540	.100	2300	.120	1950	.140	1500	.170	
			1140	2850	.140	2650	.160	2400	.190	2060	.220	
HD-1830-CW-4	18	30°	850	2300	.075	1970	.095	1450	.115	1130	.140	114.50
HD-1830-CCW-4	18	30°	1000	2700	.120	2500	.145	2050	.177	1640	.190	
			1140	3080	.180	2900	.205	2560	.237	2150	.260	
HD-1833-CW-4	18	33°	850	2480	.095	2130	.115	1560	.135	1240	.160	108.60
HD-1833-CCW-4	18	33°	1000	2920	.150	2650	.172	2200	.203	1770	.230	
			1140	3300	.230	3080	.250	2750	.280	2300	.320	
HD-2027-CW-4	20	27°	850	2590	.090	2180	.103	1700	.130	1300	.142	114.50
HD-2027-CCW-4	20	27°	1000	3000	.150	2680	.162	2300	.180	1900	.200	
			1140	3420	.196	3120	.230	2800	.255	2450	.280	
HD-2030-CW-4	20	30°	850	2800	.110	2490	.128	1900	.145	1500	.170	
HD-2030-CCW-4	20	30°	1000	3300	.180	3020	.200	2650	.220	2150	.240	
			1140	3770	.260	3510	.290	3215	.310	2830	.335	
HD-2033-CW-4	20	33°	850	3120	.130	2700	.150	2040	.165	1610	.195	115.80
HD-2033-CCW-4	20	33°	1000	3660	.210	3330	.235	2850	.260	2300	.282	
			1140	4160	.315	3900	.340	3520	.360	3020	.390	

(continued next page...)

FAN BLADES

Heavy Duty Condenser Type - 4 Blade (determine rotation by facing air discharge side of prop.)(...continued)

Part Number	Dia. (in)	Pitch	RPM	Static Pressure .0 CFM	.0 H.P.	.10 CFM	.10 H.P.	.20 CFM	.20 H.P.	.30 CFM	.30 H.P.	LIST
HD-2227-CW-4	22	27°	850	4120	.210	3780	.230	3350	.250	2750	.280	130.60
HD-2227-CCW-4	22	27°	1000	4900	.340	4550	.360	4200	.390	3800	.410	
			1140	5550	.500	5300	.520	5000	.540	4700	.600	
HD-2233-CW-4	22	33°	850	4800	.300	4450	.320	3870	.360	3300	.380	136.70
HD-2233-CCW-4	22	33°	1000	5600	.470	5300	.440	4950	.520	4500	.560	
			1140	6500	.720	6150	.750	5800	.790	5450	.840	
HD-2427-CW-4	24	27°	850	5100	.265	4800	.283	4300	.320	3600	.360	135.90
HD-2427-CCW-4	24	27°	1000	6000	.440	5650	.470	5300	.495	4900	.520	
			1140	6900	.670	6600	.695	6350	.715	6000	.735	
HD-2433-CW-4	24	33°	850	6050	.360	5600	.400	5125	.420	4400	.460	151.00
HD-2433-CCW-4	24	33°	1000	7050	.590	6750	.610	6350	.650	5850	.700	
			1140	8150	.900	7850	.930	7500	.955	7050	1.00	
HD-2624-CW-4	26	24°	850	5815	.298	5520	.326	5100	.360	4470	.396	158.40
HD-2624-CCW-4	26	24°	1000	6840	.486	6620	.520	6300	.556	5900	.600	
			1140	7800	.720	7600	.760	7360	.800	7050	.848	
HD-2627-CW-4	26	27°	850	6550	.360	6200	.390	5730	.440	5075	.495	165.00
HD-2627-CCW-4	26	27°	1000	7705	.586	7400	.615	7050	.675	6620	.725	
			1140	8780	.860	8530	.908	8270	.956	7900	1.010	
HD-2633-CW-4	26	33°	850	7540	.534	7120	.573	6550	.627	5800	.660	168.10
HD-2633-CCW-4	26	33°	1000	8870	.869	8530	.925	8100	.960	7550	1.015	
			1140	10110	1.290	9820	1.352	9480	1.412	9030	1.460	
HD-3022-CW-4	30	22°	850	7653	.58							219.10
			1000	9137	.97							
HD-3027-CW-4*	30	28°	1140	10264	1.39							548.00

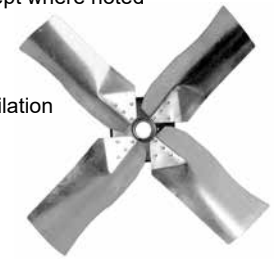
*HD-3027-CW-4 *needs a STB type hub, not a 3-hole as listed*

Features:

- High quality galvanized steel blades
- Hub welded on discharge side
- Zinc and dichromate plated steel spiders
- For use with split taper bushings except where noted (bushings sold separately)

Typical Applications:

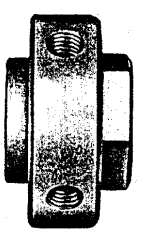
- Commercial air conditioning and ventilation
- Air handlers
- Cooling towers
- Large unit heaters



Part Number	Rot'n	Dia. (in)	Pitch	Max RPM	LIST
FBKH2604	CW	26	38	1140	556.00
FBKH2804	CW	28	38	1140	1,167.00
FBKH3004	CW	30	38	1140	1,040.00
FBKH3604	CW	36	38	850	1,209.00
FBKH4204	CW	42	38	850	
FBKH4804	CW	48	38	700	

Interchangeable Hubs

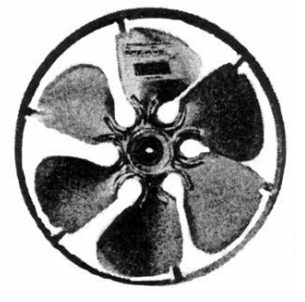
- Bore sizes to fit most field applications
- Fits all Lau propellers that use interchangeable hubs
- Simple bolt design
- Die-case zinc construction
- Hub has pre-tapped holes and mounting screws started



Part #	Bore	Set Screws	LIST
1/4-3-HOLE	1/4"	1	15.50
5/16-3-HOLE	5/16"	1	15.40
3/8-3-HOLE	3/8"	1	15.50
1/2-3-HOLE	1/2"	2	15.40
5/8-3-HOLE	5/8"	2	18.10
3/4-3-HOLE	3/4"	2	18.30

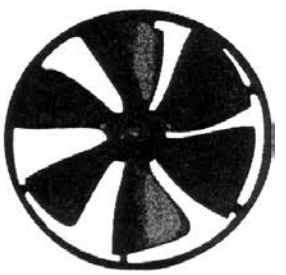
FAN BLADES

Slinger Ring 6-Blade Propellers



Aluminum Slinger Ring Propellers - 6 Blade
(rotation viewed from discharge side)

Part #	Outside Ring Diameter	Blade Diameter	Bore	Blade Depth	Rotation	Hub Loc.	Max RPM	Original Equipment Manufacturer	LIST
61-1068-01	14"	13"	1/2"	2.61"	CW	Intake	1500	McQuay	
61-1063-01	14"	13"	1/2"	3.19"	CCW	Intake	1500	Climatemaster	
61-1064-01	14"	13"	1/2"	3.91"	CCW	Intake	1500	"ICP, Slant-Fin, Zonaire, Islandaire"	92.80
60-7720-01	14-1/4"	13"	1/2"	2.50"	CW	Discharge	1500	Gibson	98.90
60-6571-01	14-1/4"	13"	1/2"	2.75"	CW	Intake	1500	Whirlpool	219.50
61-1067-01	14-1/4"	13"	1/2"	3.38"	CW	Intake	1500	Carrier - Also replaces 60-7721-01 (Gibson)	92.80
60-7722-01	15"	14"	1/2"	3.44"	CCW	Intake	1140		
61-1065-01	15-1/4"	14"	1/2"	3.19"	CW	Intake	1140	Cold Point	101.00
61-1066-01	15-1/4"	14"	1/2"	3.25"	CCW	Intake	1140	"Addison, York"	
60-7724-01	15-1/2"	14"	1/2"	2.50"	CW	Discharge	1140	G.E.	
60-6573-01	16"	14-3/4"	1/2"	3.75"	CW	Intake	1140	Whirlpool	



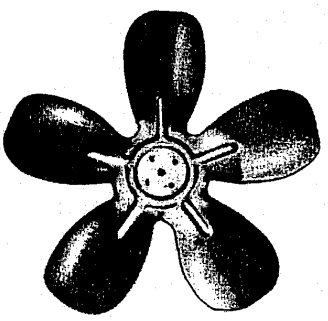
Plastic Slinger Ring Propellers - 6 Blade
(rotation viewed from discharge side)

Part #	Outside Ring Diameter	Blade Diameter	Bore	Blade Depth	Rotation	Hub Loc.	Max RPM	Original Equipment Manufacturer	LIST
61-0782-03	11-1/2"	10-3/4"	1/2"	3.25"	CW	Discharge	1750	Frigidaire	74.10
61-0782-09	12-15/32"	10-31/32"	1/2"	2.50"	CW	Intake	1750	"Friedrich, Frigidaire"	62.50
61-0782-04	13-1/2"	12-1/16"	1/2"	2.87"	CW	Intake	1550	Friedrich	
61-0782-05	14-1/4"	13"	1/2"	2.30"	CW	Discharge	1550	Frigidaire	76.90
61-0782-06	14-1/4"	13"	1/2"	2.78"	CW	Intake	1550	Friedrich	79.60
61-0782-07	15"	14"	1/2"	3.50"	CW	Discharge	1500	Friedrich	
61-0782-08	15-1/2"	14-1/2"	1/2"	4.80"	CW	Discharge	1500	Friedrich	79.50

Maximum operating temperature 150°F

FAN BLADES

Hubless Fan
will fit General Electric, Redmond and Morrill motors



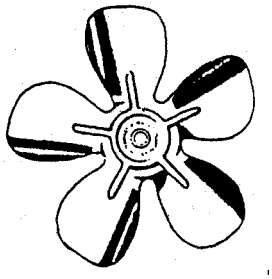
Part #	.0"SP CFM	.0625" SP CFM	.1" SP CFM	.125" SP CFM	LIST
OU631-CW OU631-CCW	120	105	90	0	12.00
OU720-CW OU720-CCW	150	120	100	85	10.60
OU731-CW OU731-CCW	200	165	120	100	9.90
OU820-CW OU820-CCW	260	230	200	175	10.20
OU831-CW OU831-CCW	325	290	250	215	10.60
OU920-CW OU920-CCW	350	315	280	245	16.40
OU931-CW OU931-CCW	435	380	340	290	13.90
OU1020-CW OU1020-CCW	440	395	350	300	17.00
OU1031-CW OU1031-CCW	680	630	590	560	16.60

OU Fan Hubs

Part #	LIST
1/4-2-HOLE	16.00
5/16-2-HOLE	15.50

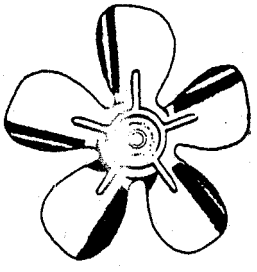
1/4" Bore Hub

Part #	Type	Dia.	Pitch	Rot.	Hub Location	LIST
FB172	Blower	5-1/2	27°	CW	Back	
FB175	Sucker	5-1/2	27°	CCW	Front	
S-7471	Blower	7	27°	CW	Back	15.60
S-7472	Sucker	7	27°	CCW	Front	35.70
S-7481	Blower	8	24°	CW	Back	13.60
S-7482	Sucker	8	24°	CCW	Front	13.60
S-7491	Blower	9	26°	CW	Back	51.90
S-7492	Sucker	9	26°	CCW	Front	35.20
S-7493	Blower	10	20°	CW	Back	15.20
S-7494	Sucker	10	20°	CCW	Front	15.20



5/16" Bore Hub

Part #	Type	Dia.	Pitch	Rot.	Hub Location	LIST
S-7551	Blower	5-1/2	27°	CW	Back	42.20
S-7571	Blower	7	27°	CW	Back	19.40
S-7572	Sucker	7	27°	CCW	Front	19.40
S-7581	Blower	8	24°	CW	Back	13.60
S-7582	Sucker	8	24°	CCW	Front	13.60
S-7591	Blower	9	26°	CW	Back	14.90
S-7592	Sucker	9	26°	CCW	Front	37.10
S-7593	Blower	10	20°	CW	Back	15.20
S-7594	Sucker	10	20°	CCW	Front	15.20
5140C		12	28°	CW	Front	28.20



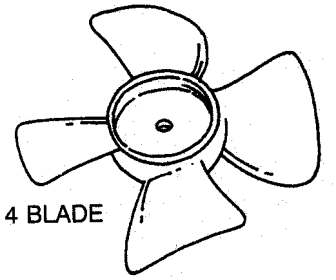
Hubless Fan Blades

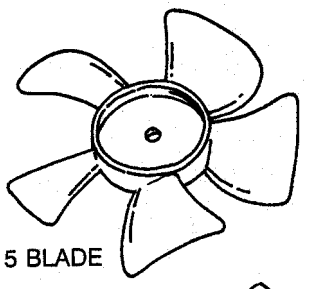
Part #	# of Blades	Fan Dia.	Fan Output (CFM)	LIST
S-7001	2	7-3/4	180	
S-7002	4	7-3/4	210	
S-7003	4	8-3/4	311 / 332	
S-7004	4	10	414 / 470	59.90

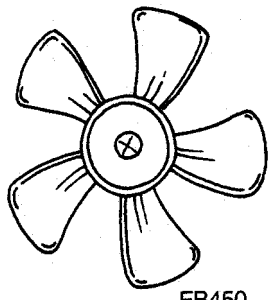
For Blower Fans, use G.E. CCW rotation motors and mount fan with side having stamped arrow toward motor. For Suction Fans, use G.E. CW rotation motors and mount fan with side having stamped arrow away from motor.

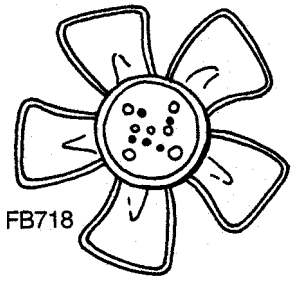
PLASTIC FAN BLADES

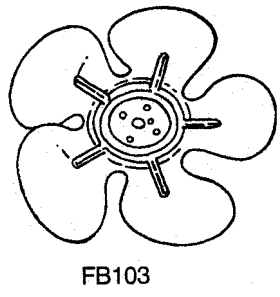
Part #	Diameter	Shaft	No. of Blades	Rot.	LIST
FB299	2-1/2"	3/16"	4	CW	5.60
FB301	3"	3/16"	4	CW	5.60
ACME-2313	3-1/2"	3/16"	4	CCW	7.60
FB350	3-1/2"	3/16"	4	CW	6.50
ACME-2402	4"	1/8"	5	CW	7.00
ACME-2403	4"	3/16"	5	CW	7.60
FB403	4"	1/8"	5	CCW	6.50
FB404	4"	3/16"	5	CCW	6.50
FB450	4-1/2"	HUB	5	CCW	6.50
FB501	5"	3/16"	5	CW	7.20
FB504	5"	3/16"	5	CCW	6.80
FB550	5-1/2"	3/16"	4	CCW	8.80
FB455	5-9/16"	3/16"	5	CCW	8.50
FB601	6"	3/16"	6	CW	9.90
FB604	6"	3/16"	4	CCW	10.10
FB650	6-1/2"	3/16"	5	CW	9.90
FB651	6-1/2"	1/4"	5	CW	10.10
FB660	6-5/8"	7/32"	5"-25DEG	CW	9.90
FB665	6-5/8"	7/32"	5"-12DEG	CW	9.90
4VEA009	7-3/4"	Hubless	30° Pitch		11.30
4VEA006	9"	Hubless	33° Pitch		25.00
4VEA007	10"	Hubless	28° Pitch		18.30





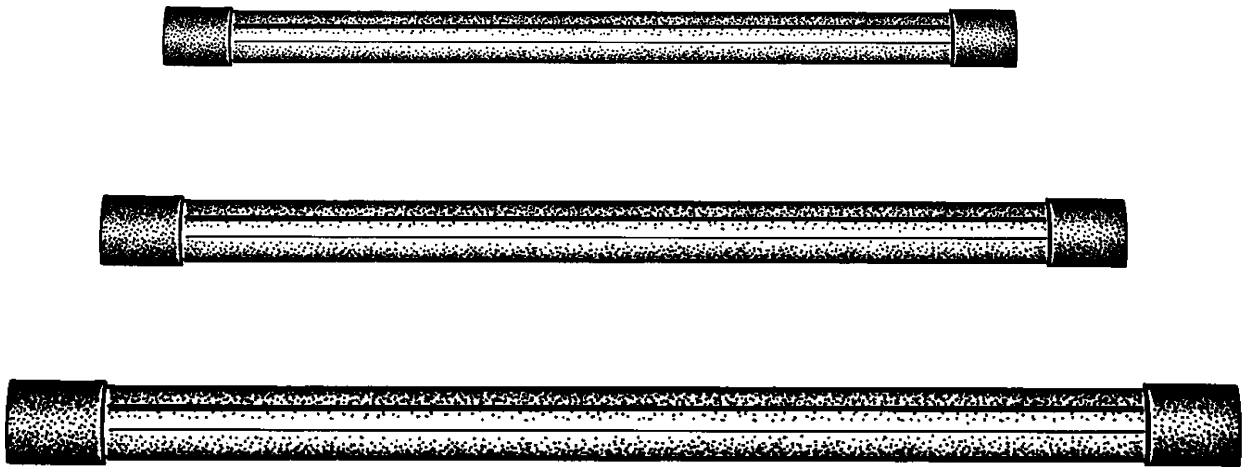






Rotation determined by facing air discharge

BLOWER SHAFTS



Features

- Sized to bearing manufacturers specifications
- Slabbed on pulley end
- Rust protected
- Individually wrapped
- Protective cap (both ends)
- Part number & size on every shaft

Part #	Diam.	Length	Reference #	LIST
38-2205-01	5/8"	20"	M90-255	45.70
61110	3/4"	11-5/8"	Lennox	
61212	3/4"	12-3/4"	8-5-495C, 2100002	36.70
61400	3/4"	14"	8-5-245C, 2100159	21.30
61550	3/4"	15-5/16"	G9, G12-9, 2100160	
61610	3/4"	16-5/8"	8-5-240C, G10, G110, 2100011, 2100161	23.70
61800	3/4"	18"	8-5-247C, 8-5-241C, 2100012	24.80
61920	3/4"	19-1/8"	G12, 2100168	73.40
62000	3/4"	20"	M90-256, RS620	26.40
62200	3/4"	22"	2100013	28.00
62400	3/4"	24"	8-5-243C	29.70
63600	3/4"	36"		121.10
82000	1"	20"	G15-72, 2100165, 2100078, 2100081, 2100076	117.30
82400	1"	25"	8-5-252C + 255C, M90-257, G15, 2100037, 55, 56, 2100166	98.40
83600	1"	36"	P-S-209, M90-270, 2100168, 2100052, 2100054	191.80

BEARINGS

Pillow Block Bearings



Part #	Shaft Dia.	LIST
VPS-210AH	5/8"	101.00
VPS-212AH	3/4"	110.40
VPS-216AH	1"	119.80
VPS-218AH	1-1/8"	144.50
VPS-219AH	1-3/16"	141.60
VPS-220AH	1-1/4"	
VPS-223AH	1-7/16"	166.90

Shaft / Thrust Collar
(includes hollow head (allen) set screws



Part #	Outer Dia.	Inside Dia.	LIST
2165	1-1/4"	3/4"	45.00
2166	1-1/2"	1"	35.50

packaged 2 per kit

Ball Bearings



Part #	Bore Size	OD	Replaces	LIST
4336-1	3/4"	1-13/16"	LRCR	32.20
4346-1	1"	2-1/4"	RCR	39.60
38-2590-01	1"	2-17/32"	RCSM-2PK	164.60

Sleeve Bearings (2 bearings & 2 sleeves)



Part #	Bore Size	OD	Replaces	Type	LIST
4036-2	3/4"	1-25/32	Delhi	Oil	76.40
4046-2	1"	2-1/2"	Delhi	Oil	116.10
4135-2	5/8"	1-7/8"	Lau	Sealed	110.40
4136-2	3/4"	1-13/16	Delhi	Sealed	45.00
4137-2	3/4"	1-13/16	Lau & Lennox	Sealed	47.90
4138-2	3/4"	1-7/8"	Torin	Sealed	44.20
4146-2	1"	2-1/2"	Delhi	Sealed	18.00
4147-2	1"	2-1/2"	Lau & Lennox	Sealed	94.80
4148-2	1"	2-1/2"	Torin	Sealed	100.50

CAST IRON FHP SHEAVES

Single Groove Variable Pitch for A/B Belts



- All sheaves are fitted with hollow head set screws and have keyway
- Any standard single groove sheave can be used as a companion sheave
- Made of close-grain cast iron with a lacquer finish
- Accurately machined and balanced

Part #	Bore Size	Outside Dia.	Pitch	LIST
1VL25-1/2	1/2	2.5	-	72.50
1VL25-5/8	5/8	2.5	-	72.50
1VL30-1/2	1/2	2.87	-	73.60
1VL30-5/8	5/8	2.87	-	87.60
1VL34-1/2	1/2	3.15	1.9-2.9	78.50
1VL34-5/8	5/8	3.15	1.9-2.9	78.50
1VL34-3/4	3/4	3.15	1.9-2.9	97.20
1VL40-1/2	1/2	3.75	2.4-3.4	81.50
1VL40-5/8	5/8	3.75	2.4-3.4	79.50
1VL40-3/4	3/4	3.75	2.4-3.4	98.40
1VL40-7/8	7/8	3.75	2.4-3.4	79.50
1VL44-1/2	1/2	4.15	2.8-3.8	88.00
1VL44-5/8	5/8	4.15	2.8-3.8	85.80
1VL44-3/4	3/4	4.15	2.8-3.8	106.20
1VL44-7/8	7/8	4.15	2.8-3.8	119.10

Part #	Bore Size	Outside Dia.	Pitch	LIST
1VP44-1-1/8	1-1/8	4.15		118.70
1VP50-5/8	5/8	4.75	3.4-4.4	103.30
1VP50-3/4	3/4	4.75	3.4-4.4	124.80
1VP50-7/8	7/8	4.75	3.4-4.4	144.30
1VP50-1-1/8	1-1/8	4.75	3.4-4.4	144.30
1VP56-5/8	5/8	5.35	4.0-5.0	150.50
1VP56-3/4	3/4	5.35	4.0-5.0	186.30
1VP56-7/8	7/8	5.35	4.0-5.0	194.30
1VP56-1-1/8	1-1/8	5.35	4.0-5.0	194.30
1VP62-5/8	5/8	5.95	4.6-5.6	243.60
1VP62-3/4	3/4	5.95	4.6-5.6	299.90
1VP62-7/8	7/8	5.95	4.6-5.6	237.60
1VP62-1-1/8	1-1/8	5.95	4.6-5.6	237.60

Double Groove Variable Pitch

Part #	Bore Size	Outside Dia.	Pitch	LIST
2VP42-1-1/8	1-1/8	4.15	-	215.80
2VP42-7/8	7/8	4.15	2.8-3.8	215.80
2VP56-1-1/8	1-1/8	5.35	4.0-5.0	292.70
2VP60-1-1/8	1-1/8	6.00		374.00
2VP60-1-3/8	1-3/8	6.00		
2VP68-1-3/8	1-3/8	6.70		414.00
2VP75-1-3/8	1-3/8	7.40		629.00

Part #	Description	LIST
22751	3/16" Key (6 pack)	3.80
22752	1/4" Key (6 pack)	5.60





Single Groove for A Belts

- Sheaves are equipped with square head set screws and have keyway
- Ideal small drives for attic fans, furnace blowers, air conditioning units or any light applications

Part #	Bore Size	Outside Dia.	Pitch	LIST
AK54-5/8	5/8"	5.25"	5"	77.10
AK54-3/4	3/4"	5.25"	5"	79.10
AK54-1	1"	5.25"	5"	79.10
AK64-5/8	5/8"	6.25"	6"	94.30
AK64-3/4	3/4"	6.25"	6"	90.70
AK64-1	1"	6.25"	6"	90.70
AK74-5/8	5/8"	7.25"	7"	155.70
AK74-3/4	3/4"	7.25"	7"	110.00
AK74-1	1"	7.25"	7"	107.30
AK84-5/8	5/8"	8.25"	8"	190.40

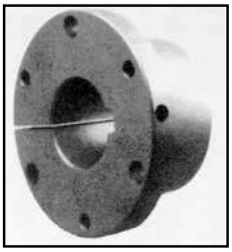
Part #	Bore Size	Outside Dia.	Pitch	LIST
AK84-3/4	3/4"	8.25"	8"	134.50
AK84-1	1"	8.25"	8"	131.20
AK94-3/4	3/4"	9.25"	9"	151.00
AK94-1	1"	9.25"	9"	145.20
AK104-3/4	3/4"	10.25"	10"	192.70
AK104-1	1"	10.25"	10"	155.70
AK114-3/4	3/4"	11.25"	11"	249.60
AK114-1	1"	11.25"	11"	206.60
AK124-3/4	3/4"	12.25"	12"	283.90
AK124-1	1"	12.25"	12"	274.50

CAST IRON FHP SHEAVES

Cast Iron Sheaves with Interchangeable Hubs

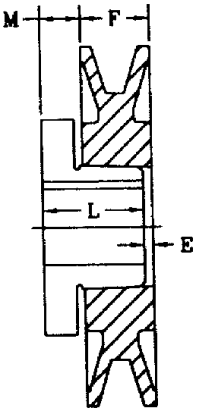
Part #	Bore Size	LIST
H-1/2	1/2"	26.20
H-5/8	5/8"	25.50
H-7/8	7/8"	25.50
H-1	1"	25.00
H-1-1/8	1-1/8"	25.00
H-1-1/2	1-1/2"	24.10
H-1-3/16	1-3/16"	24.10
H-1-5/16	1-5/16"	25.50
H-1-3/8	1-3/8"	25.00
H-1-7/16	1-7/16"	24.10
22751	3/16" Key Stock	3.80
22752	1/4" Key Stock	5.60

- Two-bolt design. Two 1/4-20 x 3/4" cap - screws provided
- Malleable iron construction
- For 1/2" through 1-3/8" bore ranges
- Packaged individually



Single Groove Bushing Type Sheave

Part #	Diameter			LIST
	O.D.	Datum "A"	Datum "B"	
BK52H	4.95	4.20	4.60	74.50
BK55H	5.25	4.50	4.90	76.00
BK57H	5.45	4.70	5.10	77.50
BK60H	5.75	5.00	5.40	76.50
BK62H	5.95	5.20	5.60	80.60
BK65H	6.25	5.50	5.90	86.00
BK67H	6.45	5.70	6.10	88.50
BK70H	6.75	6.00	6.40	91.50
BK72H	6.95	6.20	6.60	95.80
BK75H	7.25	6.50	6.90	102.30
BK77H	7.45	6.70	7.10	101.00
BK80H	7.75	7.00	7.40	102.80
BK85H	8.25	7.50	7.90	114.10
BK90H	8.75	8.00	8.40	121.40
BK95H	9.25	8.50	8.90	130.50
BK100H	9.75	9.00	9.40	135.60
BK105H	10.25	9.50	9.90	141.60
BK110H	10.75	10.00	10.40	149.00
BK115H	11.25	10.50	10.90	153.70
BK120H	11.75	11.00	11.40	164.90
BK130H	12.75	12.00	12.40	180.50



Double Groove Bushing Type Sheave

Part #	Diameter			LIST
	O.D.	Datum "A"	Datum "B"	
2BK55H	5.25	4.50	4.90	149.90
2BK57H	5.45	4.70	5.10	152.40
2BK60H	5.75	5.00	5.40	155.80
*2BK62H	5.95	5.20	5.60	157.90
2BK65H	6.25	5.50	5.90	170.20
2BK67H	6.45	5.70	6.10	173.20
2BK70H	6.75	6.00	6.40	177.80
2BK80H	7.75	7.00	7.40	206.40

*These sizes are furnished with special keys to fit standard depth keyseats.

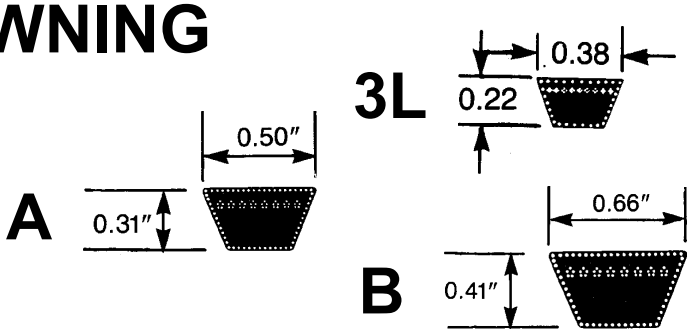
V-BELTS

BROWNING

Recommended for long dependable service and superior performance on heavy duty A, B, C, D and E section or multiple V-belt drives.

The V-belts are the No. 1 choice of industry for heavy duty conventional V-belt drives.
Part number is inside circumference of belt.

AX and BX Belts are also available, please ask your local branch for more information.



Part #	LIST
3L180	14.00
3L190	14.00
3L200	14.00
3L210	14.00
3L220	14.00
3L230	14.30
3L240	14.00
3L250	14.30
3L260	16.80
3L270	17.00
3L280	17.60
3L290	17.90
3L300	18.20
3L310	18.30
3L320	18.50
3L330	18.90
A24	15.00
A25	16.00
A26	16.30
A27	16.50
A28	16.80
A29	17.00
A30	17.30
A31	17.60
A32	17.90
A33	18.10
A34	18.50
A35	18.80
A36	19.10
A37	19.60
A38	20.00
A39	20.40

Part #	LIST
A40	20.60
A41	21.00
A42	21.50
A43	21.90
A44	22.10
A45	22.40
A46	22.50
A47	22.80
A48	23.00
A49	23.30
A50	23.50
A51	23.80
A52	24.00
A53	24.30
A54	24.60
A55	24.90
A56	25.20
A57	25.40
A58	25.80
A59	26.00
A60	26.20
A61	26.70
A62	26.90
A63	27.30
A64	27.50
A65	27.80
A66	28.10
A67	28.50
A68	28.80
A69	30.10
A70	30.00
A71	30.30

Part #	LIST
A72	31.20
A73	31.40
A74	31.60
A75	31.30
A76	32.60
A77	33.10
A78	33.60
A79	34.10
A80	34.60
A81	35.10
A82	35.70
A83	36.70
A84	37.20
A85	37.10
A86	37.70
A87	38.20
A88	38.70
A90	38.80
A92	41.20
A93	41.60
A96	42.30
A100	51.40
B28	22.30
B30	23.30
B31	23.90
B32	24.20
B33	24.70
B34	24.50
B35	25.00
B36	25.80
B37	26.70
B38	27.50

Part #	LIST
B39	28.10
B40	28.80
B41	29.40
B42	30.00
B43	30.60
B44	31.30
B45	31.90
B46	32.50
B47	33.00
B48	33.50
B49	34.00
B50	34.50
B51	35.00
B52	35.40
B53	35.70
B54	36.00
B55	36.20
B56	36.50
B57	36.80
B58	37.00
B59	37.30
B60	37.50
B61	38.00
B62	38.50
B63	39.00
B64	39.50
B65	40.00
B66	40.50
B67	40.90
B68	41.20
B69	41.80
B70	42.40

Part #	LIST
B71	42.90
B72	43.40
B73	43.90
B74	44.50
B75	45.00
B76	45.70
B77	46.30
B78	46.90
B79	47.50
B80	48.20
B81	48.80
B82	50.00
B83	50.40
B84	50.90
B85	51.30
B86	51.80
B87	52.30
B88	52.80
B89	53.30
B90	53.80
B91	54.50
B92	55.40
B93	56.30
B94	56.90
B95	57.50
B96	58.10
B97	58.80
B98	59.20
B99	61.20
B100	60.00

ADJUSTABLE V-BELTS

- Ideal temporary or permanent replacement for conventional rubber belts
- Easy snap & twist assembly

Part #	Width	Description	LIST
0418030	A	5 ft. sleeve	126.20
0418050	B	6 ft. sleeve	142.10



3-PHASE LINE VOLTAGE MONITORS

ICM

ICM450

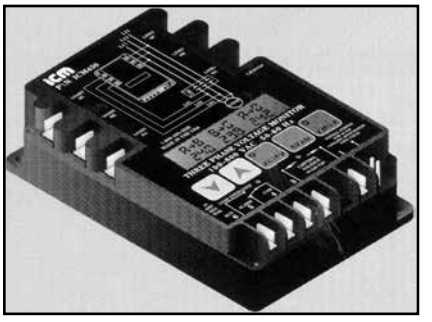
Features and Applications:

- Programmable - 25 fault memory storage
- Independent high/low voltage settings for dual voltage compressor applications
- Monitors/identifies front & back side faults
- High temperature LCD to 167°F
- 190-600 VAC operation
- Simultaneous voltage display - no scrolling
- Line voltage programmable
- Reset - auto or manual
- 7-step pushbutton setup
- Monitors: voltage unbalance, high/low voltage, phase loss, reversal, incorrect sequencing, rapid short cycling
- UL and CSA for building code compliance

Specifications
Input:
- Voltage: 190-600 VAC
- Voltage Unbalance: adj. 2-25%
- Control: 18-240 VAC
- Frequency: 50/60 Hz

Output:
- Relay, SPDT
  n.o.: 20 amps
  n.c.: 10 amps

Cross Reference:
- Diversified: AC-2020, AC-301, AC-302
- Motorsaver: 455
- SSAC: QLM/QLV
- Timemark: 265
- Wagner: WPC-800
- Watsco: EAC-800, EAC-8000



Part #	LIST
ICM450	481.00

ICM400

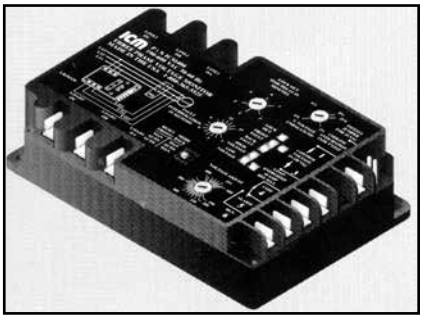
Features and Applications:

- Low cost, high performance protection
- Same as ICM450 without LCD display
- Monitors front and back sides of system
- 190-600 VAC operation
- Bright LED indicators
- Identifies front and back side faults
- Knob-adjustable features
- Reset - auto or manual
- Built-in short cycle protection
- Monitors: voltage unbalance, high/low voltage, phase loss, reversal, incorrect sequencing, rapid short cycling
- UL and CSA for building code compliance

Specifications
Input:
- Voltage: 190-600 VAC
- Voltage Unbalance: adj. 2-25%
- Control: 18-240 VAC
- Frequency: 50/60 Hz

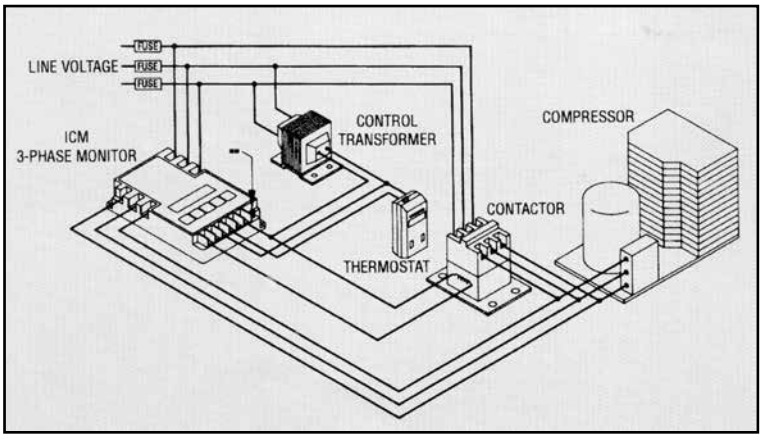
Output:
- Relay, SPDT
  n.o.: 20 amps
  n.c.: 10 amps

Cross Reference:
- Diversified: AC-2020, AC-301, AC-302
- Motorsaver: 455
- SSAC: QLM/QLV
- Timemark: 265
- Wagner: WPC-800
- Watsco: EAC-800, EAC-8000



Part #	LIST
ICM400	428.00

Typical System Diagram for ICM400 and ICM450 3-Phase Voltage Monitors



DELAY ON MAKE TIMERS

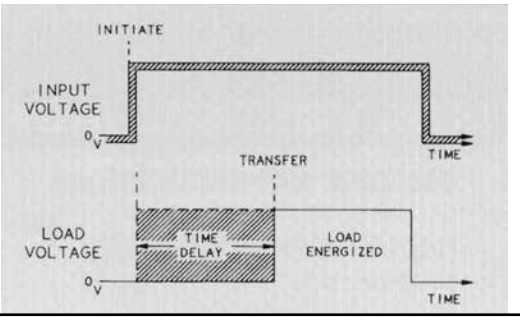
ICM

APPLICATION

"Delay ON"

General purpose "delay on make" timing function. Ideal for compressor staging and stagger-starting multiple units. Helps to reduce power surges in multiple compressor applications.

TIME DIAGRAM



MODE OF OPERATION

When power is applied to the input, the time delay begins. After the time delay is complete, the load energizes and remains energized as long as power is applied. The control is reset by removing power during or after the time delay period.

ICM102

Features and Applications:

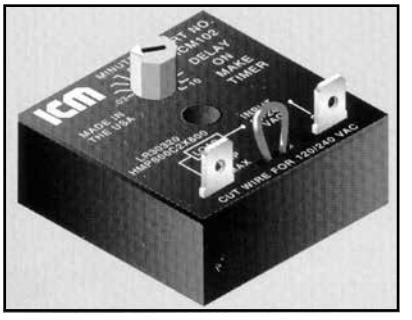
- Universal voltage operation
- Higher, 1.5 amp power rating
- Knob-adjustable time delays
- Works with anticipator-type thermostats
- One model replaces many in field
- Ideal for compressor staging
- Simple, 2 wire hookup
- Compact 2" x 2" package

Specifications

- 18-240 VAC
- 1.5 amps
- 15 amp inrush
- SPST, N.O.
- knob adjustable time delays range .1-600 sec. (10 min.)

Cross Reference:

- Diversified: AC-800
- Fixed volt: ASC-600/601
- Gemline: 1C310/1C213
- Hitech HI-820
- Mars 32391 / 32367
- Robertshaw 3310-068
- Supco: TD-68 D-69
- Watsco: EAC-705/706



Part #	LIST
ICM102	27.70

ICM103

Features and Applications:

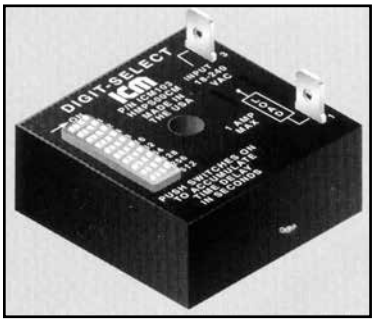
- Swtich settable time delays
- Precise digital timing
- Ideal for ice machine applications
- Universal voltage operation
- Compact 2" x 2" package
- Epoxy-encapsulated circuitry

Specifications

- 18-240 VAC
- 1 amp
- 10 amp inrush
- SPST, N.O.
- switch settable time delays range 1-1023 sec.

Cross Reference:

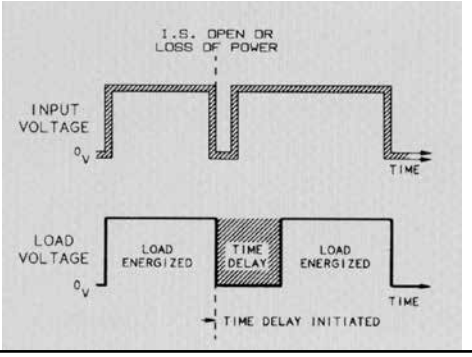
- Gemline: 1C310/1C213
- Hitech HI-820
- Mars 32394 / 32396
- Robertshaw 3310-068
- Supco: TMF-19, TMF-80
- Watsco: 7061



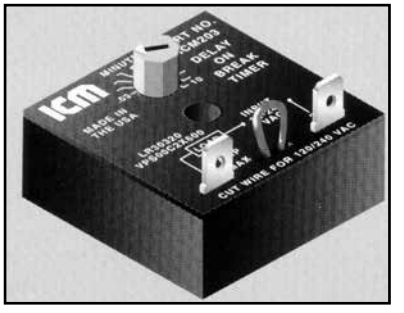
Part #	LIST
ICM103	44.10

DELAY ON BREAK TIMERS

ICM

APPLICATION	TIME DIAGRAM	MODE OF OPERATION
"Anti short-cycle" "OFF delay on break" Helps to protect air conditioning, refrigeration and heat pump equipment from damage which may be caused by the rapid short-cycling of compressors.		Upon application of power, the load is energized. When the thermostat opens or there is a loss of power, the load is de-energized and the delay period begins. The compressor will not start again during the delay period.

ICM203



Features and Applications:

- Universal voltage operation
- Higher, 1.5 amp power rating
- Compressor lockout/anti-short cycle timer
- Helps to protect compressors frm damage caused by rapid short cycling
- Simple 2 wire hookup
- Compact 2" x 2" package

Specifications

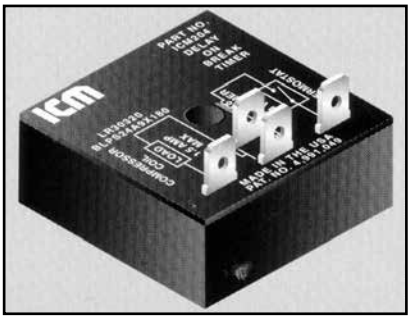
- 18-240 VAC
- 1.5 amps
- 15 amp inrush
- SPST, N.O.
- knob adjustable delays .03-10 min. (1.8-600 sec.)

Cross Reference:

- Diversified: AC-503, ASC-501, ASC-502
- Gemline: 1C320
- Mars 32392
- Robertshaw 3310-072
- Supco: TD-73
- Watsco: EAC-501-ADJ, EAC-501-ADJ-X

Part #	LIST
ICM203	27.70

ICM204 / ICM205 / ICM206



Features and Applications:

- Compressor lockout/anti-short cycle timer
- Integral low voltage brownout protection
- Eliminates relay chatter due to thermostat bounce or tampering
- Works with anticipator-type thermostats
- Patented: U.S. patent No. 4991049

Specifications

- 18-30 VAC
- 1.5 amps
- 15 amp inrush
- SPST, N.O.
- 204: 3 min. fixed time delay
  205: 5 min. fixed time delay
  206: 10 min. adjustable delay

Cross Reference:

- Gemline: 1C243
- Mars 32381 / 32382
- Robertshaw 3310-183, 3310-305
- Supco: TL243, TL245
- Watsco: EAC-426-180, EAC-426-300, EAC-426-ADJ

Part #	LIST
ICM204	50.10
ICM205	51.40
ICM206	32.80

LOCKOUT RELAYS

ICM

ICM220

Features and Applications:

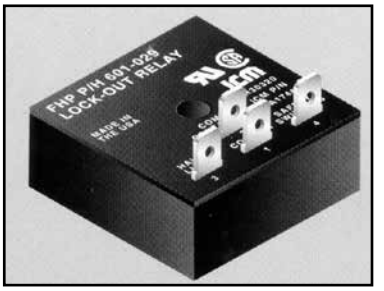
- Low cost lockout relay
- Helps eliminate nuisance lockouts due to impedance relay failure
- Ideal for use with safety/interlock switches
- Replaces impedance relays Series 84 & 93

Specifications

- 18-30 VAC
- Frequency: 50/60 Hz
- Power consumption: 2 watts max/lockout
- Relay: 1 form C
- Contacts: 2 amps max. @ 30VAC resistive

Cross Reference:

- Essex: Impedance Relays Series 84 & 93



Part #	LIST
ICM220	53.50

RANDOM START TIMERS

ICM150

Features and Applications:

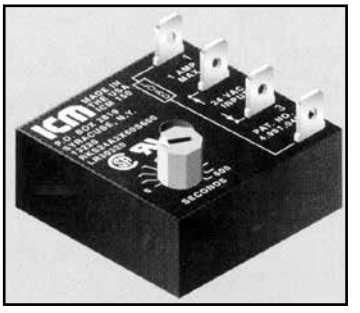
- Compressor lockout/anti-short cycle timer
- Integral random start capacity
- Adjustable initiation delay is ideal for stagger-starting multiple units
- No need to wait for 5 minute delay typical to delay on make timers
- Compact 2" x 2" package

Specifications

- 18-30 VAC
- 1 amp
- 10 amp inrush
- SPST, N.O.
- 6-600 sec. knob-adjustable time delay

Cross Reference:

- Diversified: ASC-200



Part #	LIST
ICM150	69.90

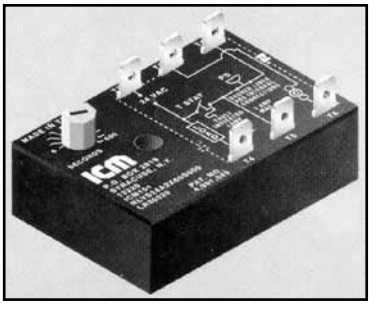
ICM151

Features and Applications:

- Compressor lockout/anti-short cycle timer with random start feature plus:
  - safety switch lockout
  - remote thermostat reset
  - LED fault indication
- Reduces nuisance lockouts/service calls

Specifications

- 18-30 VAC
- 1 amp
- 10 amp inrush
- SPST, N.O.
- 6-600 sec. knob-adjustable time delay



Part #	LIST
ICM151	101.10

BYPASS TIMERS

ICM

ICM175

Features and Applications:

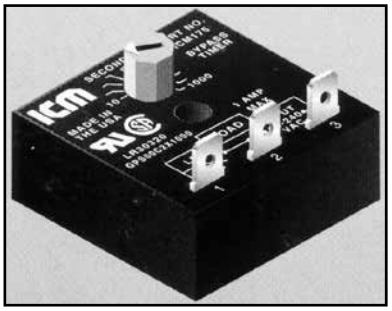
- Designed to bypass a low pressure switch or other device during startup
- Ideal for low ambient startups
- Integral component for "winter start" kits
- Helps to reduce nuisance lockouts
- Universal AC voltage operation
- Knob-adjustable time delays
- Epoxy-encapsulated circuitry

Specifications

- 18-240 VAC
- 1 amp
- 10 amp inrush
- knob-adjustable time delays: 10-1000 sec.

Cross Reference:

- Mars: 32395
- Supco: TDP68



Part #	LIST
ICM175	46.90

DUTY CYCLE CONTROLS

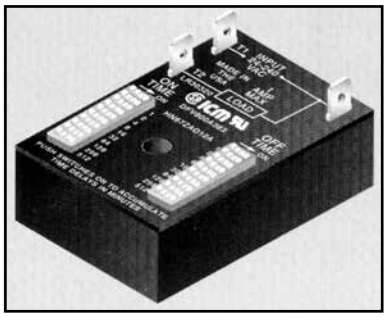
ICM305

Features and Applications:

- Reliable duty cycle timer ideally suited for defrost applications
- Suitable for process equipment or applications requiring intermittent delays
- Switch settable time delays
- Digital timing accuracy
- Recycle function melts frost on coils
- Epoxy-encapsulated for greater reliability

Specifications

- 18-240 VAC
- 1 amp
- 10 amp inrush
- Time delay: switch settable from: 1-1023 minutes in 1 min. intervals



Part #	LIST
ICM305	131.80

SINGLE PHASE LINE MONITORS

ICM491

Features and Applications:

- Low cost single phase motor protection
- Built-in anti-short cycle protection
- Detects high/low voltage conditions
- Helps prevent rapid system recycling
- LED indicator: green for normal conditions, red for fault
- Heavy duty SPDT, isolated relay output
- Interrogation delay prevents nuisance trips

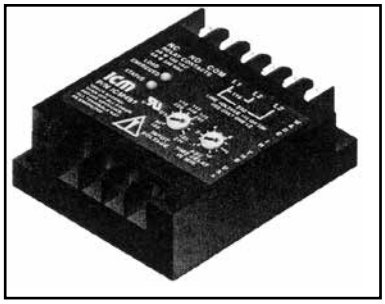
Specifications

Input:

- line: 95-270 VAC
- control: 18-240 VAC

Output: relay SPDT, n.c./n.o.: 6 amps

- Time delay: adj. 6-600 sec.

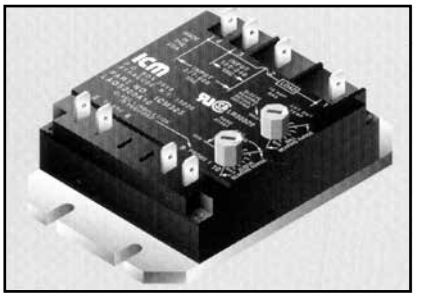


Part #	LIST
ICM491	138.40

HEAD PRESSURE CONTROLS

ICM

ICM325K2 70-100°F (21-38°C)
ICM325K3 95-120°F (35-49°C)



Features and Applications:

- Helps prevent evaporator freeze-ups, low pressure cut-outs and liquid-slugged compressors in low ambient conditions
- Controls head pressure by varying the amount of airflow through the condenser
- One model covers 120-600 VAC
- Features: hard start, low temperature cutoff, high temperature bypass, isolated 24 VAC supply

Specifications
Input:
- Control: 18-30 VAC

Output
- Triac
  max: 10 amps
  min: 100 ma
- Range: 120-600 VAC

Cross Reference:
One ICM model replaces:
- Hoffman: 800, 800A, 800AA, 814-50
- Ranco: E31 Series
- Johnson Controls: P66
- ACT: FM2000

Part #	LIST
ICM325K2	
ICM325K3	

ICM325H (120/480 VAC)



Features and Applications:

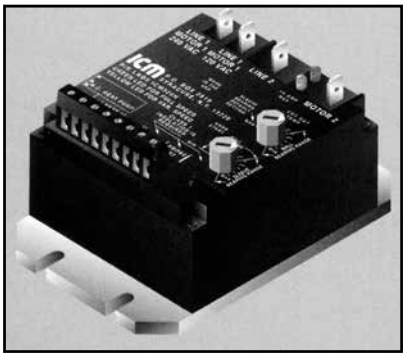
- Integral heat pump bypass circuitry allows electronic bypass of speed control during heat pump operation
- Eliminates overshoots common to on/off and pressure switch controls
- Helps prevent evaporator freeze-ups, low pressure cut-outs and liquid-slugged compressors in low ambient conditions
- One model covers 120-480 VAC
- Features: hard start, low temperature cutoff, high temperature bypass
- Requires 24 VAC supply
- Controls up to 3 refrigerant circuits
- Typical application: heat pumps or air conditioners

Specifications
Input:
- Frequency: 50/60 Hz
- Control: 18-30 VAC 1.8 VA Max
- Line Input: 120/480 VAC

Output:
- Type: Triac
  - Max: 10 amps
  - Min: 100 mA
- Controls sleeve and ball bearing motors

Part #	LIST
ICM325HN	337.00

ICM326H (120V or 240V)
ICM327H (480V)



Features and Applications:

- Built-in transformer eliminates cost, reduces installation time and simplifies wiring. Direct set up from line voltage
- Helps prevent evaporator freeze-ups, low pressure cut-outs and liquid-slugged compressors in low ambient conditions
- Features: hard start, low temperature cutoff, high temperature bypass, isolated 24 VAC supply is built into the control
- Ideal for heat pumps, line voltage air conditioning and refrigeration
- Controls sleeve and ball bearing motors

Specifications
Input:
- Frequency: 50/60 Hz
- Power consumption: 4VA @ 24 VAC

Output:
- Type: triac
- Output voltage:
  ICM326H: 120 or 208/240 VAC
  ICM327H: 480 VAC
- Output current:
  - Max: 10 amps
  - Min: 100 mA

Part #	LIST
ICM326H	468.00
ICM327H	408.00

POST-PURGE FAN DELAYS
DUAL ON / OFF TIMING

ICM

ICM251

Dual function fan delay timer to control circulating fan in A/C, heat pump and forced air systems; high power, relay output

Part #	LIST
ICM251	92.60



ICM254

Dual function fan delay timer to control circulating fan in A/C, heat pump and forced air systems

Part #	LIST
ICM254	73.80



ICM255

Open board, dual function fan delay timer to control circulating fan in A/C, heat pump and forced air systems; high power, relay output

Part #	LIST
ICM255	59.30



POST-PURGE FAN DELAYS
OFF DELAY ONLY

ICM253

Post-purge fan delay timer with adjustable 12-390-second time delay

Part #	LIST
ICM253	75.10



DEFROST CONTROLS

ICM

ICM300

Features and Applications:

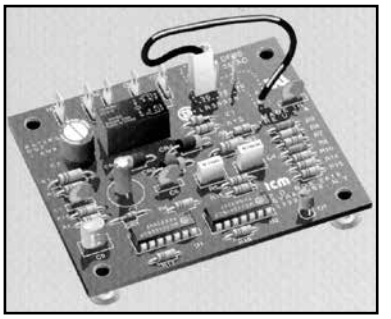
- Ultra low cost defrost
- Standard industry footprint: OEM type 621
- Time and temperature terminate
- Test pins reduce test time by 256x
- Recycle function melts frost on coils
- HOLD tracks compressor run times
- Stable pin post construction
- Conformally coated

Specifications

- 18-30 VAC
- Relay output
- Form: SPST, n.o. 2 amps
- Defrost: 10 min. fixed
- Interval times: pin-selectable 30/60/90 minutes

Cross Reference:

- Amana: C6431001
- Arco: 343214
- Coleman: 30130B3741
- Hamilton Standard: 621-5, -8, -9, -10, -110, 621-310-110
- HeilQuaker: HG1052757
- Janitrol: B12260-06
- Lennox: 33G950
- Ranco: DT2-1000
- Rheem/Rudd: 47-21776-02-00
- Snyder General: 1052757
- Weatherking: 840-4-5548



Part #	LIST
ICM300	88.40

ICM315

Features and Applications:

- Solid state replacement for E15 type controls
- Thermistor-type sensor probe is more stable than bulb-type sensors
- Less susceptible to breakage, easier to mount
- Test pins reduce test time by 256x
- Recycle function melts frost on coils
- HOLD tracks compressor run times
- Stable pin post construction
- 24, 120 or 240 VAC operation

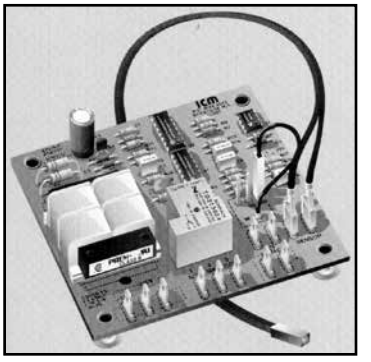
Specifications

- 24, 120 or 240 VAC
- Relay Output
- Form: SPST
  n.o.: 20 amps @ 240
  n.c.: 10 amps @ 240
- Defrost: 10 min. fixed
- Interval times: pin-selectable 30/45/90 minutes

Cross Reference:

Solid state replacement for:

- Ranco E15-256, E15-2501, E15-1501
- Avion: DFT100



Part #	LIST
ICM315	323.00

ICM320

Features and Applications:

- High performance, low cost defrost control
- Defrost Terminate Input: when open will terminate defrost period and reset all times
- Y terminal temporarily shuts off defrost cycle to track compressor run times
- 24 VAC operation
- Screw terminals and header connection
- Test pins reduce test time by 256x
- Recycle function melts frost on coils
- Stable pin post construction
- Conformally coated

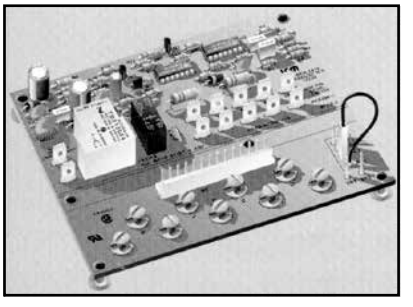
Specifications

- 24 VAC operation
- Relay output
- OF1 & OF2 normally closed relay contacts rated @ 240 VAC
- W2 and O normally open relay contacts are output rated for 24 VAC @ 2 amps
- Defrost: 10 min. fixed
- Interval times: pin-selectable 30/50/90 minutes

Cross Reference:

Low cost replacement for:

- Carrier: HK32FA006



Part #	LIST
ICM320	243.90

CAPACITORS

MARS

Higher voltages may be substituted for lower voltages in the same MFD rating.



125 V

Part #	Size	LIST
21-25-125V	A	17.10
25-30-125V	A	17.10
30-36-125V	A	17.10
43-56-125V	A	15.80
56-72-125V	A	16.10
72-88-125V	A	13.70
88-108-125V	A	13.40
108-130-125V	A	13.80
124-156-125V	A	13.90
145-175-125V	A	14.40
161-193-125V	A	14.60
189-227-125V	A	15.10
200-240-125V	A	17.40
216-259-125V	A	16.30
233-292-125V	A	16.70
270-324-125V	B	17.60
300-360-125V	D	22.30
324-388-125V	D	18.10
340-408-125V	D	23.70
378-440-125V	D	20.80
400-480-125V	D	22.50
460-552-125V	D	22.40
540-648-125V	D	23.90
590-708-125V	D	27.90
708-850-125V	G	39.60
829-995-125V	G	32.90
1000-1200-125V	G	53.30

250 V

Part #	Size	LIST
21-25-250V	A	14.50
25-30-250V	A	20.90
30-36-250V	A	20.90
36-43-250V	B	20.90
43-56-250V	B	20.90
56-72-250V	B	16.20
72-88-250V	D	19.50
88-108-250V	D	21.00
108-130-250V	D	24.30
124-156-250V	D	27.10
145-175-250V	F	27.60
161-193-250V	E	30.20
189-227-250V	G	34.90
216-259-250V	G	38.00
233-292-250V	G	27.90
270-324-250V	G	44.70

330 V

Part #	Size	LIST
21-25-330V	B	14.60
25-30-330V	B	23.50
30-36-330V	D	25.10
36-43-330V	D	26.80
43-56-330V	D	29.70
56-72-330V	D	33.20
72-88-330V	E	24.40
88-108-330V	F	25.10
108-130-330V	G	26.00
124-156-330V	G	26.70
145-175-330V	H	33.70
161-193-330V	H	35.40
189-227-330V	H	38.60
216-259-330V	H	40.20
270-324-330V	H	46.70

Code	Size (inches)
A	1-7/16 x 2-3/4
B	1-7/16 x 3-3/8
C	1-7/16 x 4-3/8
D	1-13/16 x 3-3/8
E	1-13/16 x 4-3/8
F	2-1/16 x 3-3/8
G	2-1/16 x 4-3/8
H	2-9/16 x 4-3/8
J	1-5/16 x 2-5/32
K	1-29/32 x 2-29/32
L	1-31/32 x 3-21/32

Run or Start Capacitor Accessories

Part #	Description	LIST
11201	resistor	11.70
11206	bracket 2-3/4	9.70
11207	bracket 3-3/8	10.50
11208	bracket 4-3/8	11.30
11210	on motor cap 1-7/16	

ALLTEMP

Part #	Description	LIST
11211	on motor cap 1-13/16	4.10
11212	on motor cap 2-1/16	4.80
11213	on motor cap 2-9/16	

CAPACITORS

The identified terminal should always be connected to the supply line on "R" terminal to prevent damage. Higher voltages may be submitted for lower voltages in the same MFD rating.



Dual Voltage 370/440V - Dual MFD Round / Oval

MFD	Round	Oval
10/5	10/5-370/440V-R	
15/3	15/3-370/440V-R	
15/5	15/5-370/440V-R	
15/10	15/10-370/440V-R	15/10-370/440V
20/5	20/5-370/440V-R	20/5-370/440V
20/15		20/15-370/440V
25/3	25/3-370	
25/4	25/4-370	
25/5	25/5-370/440V-R	25/5-370/440V
25/7.5	25/7.5-370/440V-R	
25/10	25/10-370/440V-R	25/10-370/440V
30/4	30/4-370	
30/5	30/5-370/440V-R	30/5-370/440V
35/4	35/4-370/440V-R	
35/5	35/5-370/440V-R	35/5-370/440V
35/7.5	35/7.5-370/440V-R	
35/10	35/10-370/440V-R	
40/5	40/5-370/440V-R	
40/7.5	40/7.5-370/440V-R	
40/10	40/10-370/440V-R	40/10-370/440V
45/4	45/4-370/440V-R	
45/5	45/5-370/440V-R	
45/7.5	45/7.5-370/440V-R	
50/5	50/5-370/440V-R	
50/7.5	50/7.5-370/440V-R	
50/10	50/10-370/440V-R	
55/5	55/5-370/440V-R	
55/7.5	55/7.5-370/440V-R	
55/10	55/10-370/440V-R	
60/5	60/5-370/440V-R	
60/7.5	60/7.5-370/440V-R	
60/10	60/10-370/440V-R	
80/5	80/5-370/440V-R	

Dual Voltage 370/440V - Single MFD Round / Oval

MFD	Round	Oval
2		2-370/440V
3		3-370/440V
4		4-370/440V
5	5-370/440V-R	5-370/440V
6	6-370/440V-R	6-370/440V
7.5	7.5-370/440V-R	7.5-370/440V
10	10-370/440V-R	10-370/440V
12.5	12.5-370/440V-R	12.5-370/440V
15	15-370/440V-R	15-370/440V
17.5	17.5-370/440V-R	17.5-370/440V
20	20-370/440V-R	20-370/440V
25	25-370/440V-R	25-370/440V
30	30-370/440V-R	30-370/440V
35	35-370/440V-R	35-370/440V
40	40-370/440V-R	40-370/440V
45	45-370/440V-R	45-370/440V
50	50-370/440V-R	50-370/440V
55	55-370/440V-R	
60	60-370/440V-R	
70	70-370/440V-R	
80	80-370/440V-R	

Run or Start Capacitor Accessories

Part #	Description	LIST
12204	bracket 1-5/16	5.70
12205	bracket 1-29/32	5.30
12206	bracket 1-31/32	5.30
12210	1 hole boot	5.70
12211	2 hole boot	4.40
12212	3 hole boot	21.70

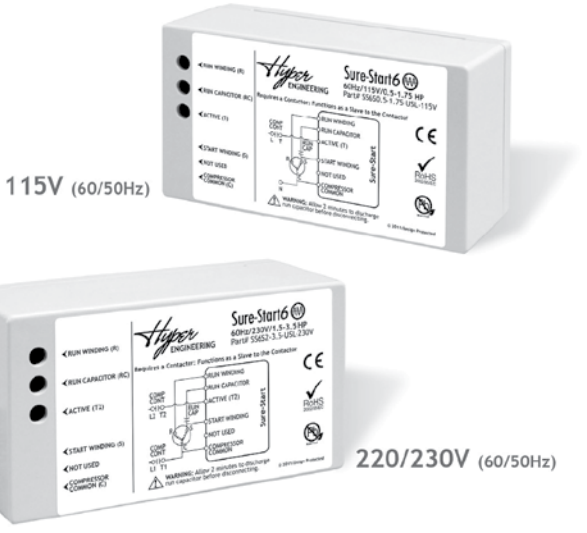
SOFT STARTERS

SURE-START

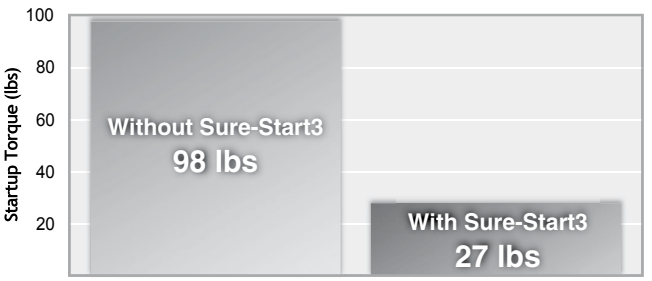
Sure-Start Soft Starters
- Sure-Start3 (Three Phase Soft Starters)
- Sure-Start6 (Single Phase Soft Starters)

Features:

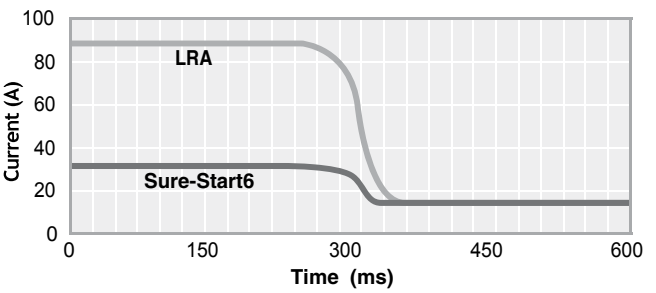
- Reduce light icker by lowering startup locked rotor amperage (LRA) up to 70%
- Diminish noisy compressor/motor startups allowing for smoother, quieter operation
- Automatically optimize in-rush current to the compressor/motor
- Reduce current stress, heat, and torque of the compressor/motor to extends the life
- Monitor low voltage sags to protect against equipment damage
- Are quick, easy, and ready to install in the field with wire leads and instruction



Typical Startup Torque Reduction



Sure-Start6 vs. Locked Rotor Amperage



Sure-Start3 (60/50Hz)

Part #	Voltage	HP Range	LIST
SS3S2-10-US-208/230V	208-230VAC	2-10	924.00
SS3S2-20-US-460V	460 VAC	2-20	924.00

Sure-Start6 (60/50Hz)

Part #	Voltage	HP Range	LIST
SS6S0.5-1.75-USL115V	115 VAC	covers all	924.00
SS6S2-3.5-USL-230V	230 VAC	1.5 to 3	924.00
SS6S3.5-7-USL-230V	230 VAC	3.5 to 7	924.00

HARD START KITS

ULTRA Series

2-wire Mechanical Potential Relay Hard Start

- OEM Approved Technology
- Voltage Sensing
- Instant Re-Start
- Easy 2-wire Installation
- 170-277 VAC
- 330 VAC Start Capacitor
- 2 Year Warranty

Part #	Application	Capacitator Size	Replaces Kickstart®	LIST
MPR5	1 to 3 hp	189-277µF	TO-5	93.20
MPR1	3.5 to 5 hp	270-324 µF	KS-1	102.20



3 Series

3-wire Mechanical Potential Relay Hard Start

- Voltage Sensing
- Instant Re-Start
- 35 Amp Relay Contacts
- 170-277 VAC
- 330 VAC Start Capacitor
- Includes EZ Snap Bracket for Quick Installation

Part #	Application	Capacitator Size	Replaces 5-2-1®	LIST
3W1	1 – 3 hp	88 – 108 µF	CSRU1	69.70
3W2	3.5 – 4.5 hp	189 – 227 µF	CSRU2	80.90
3W3	4 – 5 hp	270 – 324 µF	CSRU3	94.40



SPP E Class Series

Electronic Potential Relay Technology
Economical Potential Relay, with the comfort of a backup safety.

- Electronic Potential Relay
- Backup Electronic Timing Circuit to Protect the Compressor
- Voltage Sensing
- Instant Re-Start
- Easy 2-wire Installation
- Can be used on PSC and CSIR
- 170-277 VAC (except SPP4E, 90-130 VAC) Type Compressors

Part #	Application	Capacitator Size	LIST
SPP-4E	1 – 3 hp	88-106 µF	71.70
SPP-5E	1/3-2 hp	43-52 µF	67.20
SPP-6E	1/2 – 3 hp	88–106 µF	76.20
SPP-7E	1 – 4 hp	130–156 µF	85.20
SPP-8E	1 hp and up	189–227 µF	85.20
SPP-9E	1 hp and up	233-280 µF	130.10
SPP-10E	3 hp and up	270-324 µF	



SPP Super Boost Series

PTC Technology
The "Original" 2-wire Hard Start.

- Positive Temperature Coefficient Relay Technology (PTC)
- Field Proven Reliability
- Easy 2-wire Installation
- Most Economic
- 90-277 VAC

Part #	Increase in Torque	LIST
SPP	250%	22.20
SPP-5	300%	22.20
SPP-6	500%	31.20
SPP-7S	600%	62.70



*Kickstart® is a registered U.S. trademark of The Rectorseal Corporation.
*5-2-1® is a registered U.S. trademark of Five-Two-One, Inc.

HARD START KITS

ICM Rapid Start Series



Features:

- Differential voltage sensing
- Not effected by ambient temperature
- Recycles instantly (less than 1 second)

Part #	Description	Voltage	Max. Input Voltage	Range	LIST
ICM850	43 to 52 Mfd 330V Capacitor	90 to 277 VAC	390 VAC	Up to 1-1/2 HP	83.10
ICM860	88 to 106 Mfd 330V Capacitor	90 to 277 VAC	390 VAC	2 - 5 HP	83.10

REFRIGERATION RELAYS / OVERLOADS



URCO Series Ultimate Relay Capacitor Overload

Features/Benefits

- Replaces relay, capacitor and overload
- "Push-on" compressor terminals, and 1/4" capacitor terminals
- Designed for modern high efficiency compressors
- Helps older compressors to start and run cooler
- Easy mount clip for quick installation
- Prevents low voltage starting problems

Applications

- Domestic Refrigerator Compressors to 1/2 hp
- Light Commercial Refrigeration Compressors to 1/2 hp.
- Works on "RSIR", "CSIR", "PSC",& "CSR" compressors

3 N' 1 for High torque starts Run Capacitor Wiring for high efficiency systems

PART NO.	hp RATING	VOLTS	LIST
URCO210	1/3 to 1/2	115	47.20
URCO410	1/4 to 1/3	115	33.70
URCO810	1/12 to 1/5	115	33.70



URSC10/URSC20 Ultimate Relay Start Capacitor

Features/Benefits

- Replaces current-type relays
- Provides a boost for hard start and unbalanced systems
- No additional wires required

Applications

- One size for all compressors from 1/20 hp to 1/2 hp
- For domestic and commercial refrigeration systems and freezers
- Works on "RSIR", "CSIR", "PSC", & "CSR" compressors

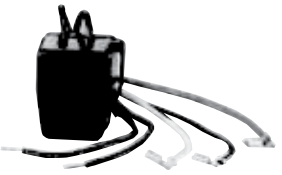
Replaces current-type relays

PART NO.	hp RATING	VOLTS	LIST
URSC10	1/20 to 1/2	120	40.20
URSC20	1/20 to 1/2	240	40.20

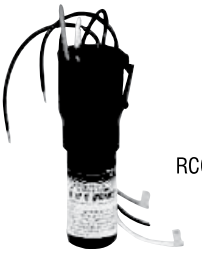
REFRIGERATION RELAYS / OVERLOADS

SUPCO


ICG


RO


RSC


RCO

ICG and PO Series Relays

Features/Benefits

- ICG Series features a "snap-on" bracket
- PO Series installs on compressors with "pin-type" terminals.
- Fastest cool down time of any solid state relays
- Can be used with and without start capacitor.

Applications

- One size for all compressors from 1/12 hp through 1/2 hp.
- Replaces all current type relays.

RO & PRO Series Relay and Overload Combinations

Features/Benefits

- RO Series features "snap-on" bracket
- PRO Series installs on "pin-type" terminal.
- Locked rotor protection eliminates start winding overheating
- Can be used with and without start capacitor motors from 1/4 to 1/3 hp.

Applications

- Select the right match to replace refrigerator compressor relay and overload units from 1/12 through 1/2 hp, 115 – 230 VAC.

RSC Series Relay and Start Capacitor Combination

Features/ Benefits

- Replaces current-type relays
- Provides a boost for hard start and unbalanced systems
- Prevents low voltage starting problems

Applications

- One size for all compressors from 1/12 hp through 1/2 hp.
- For domestic and commercial refrigeration systems and freezers

RCO Series 3 N' 1 Relay, Overload and Start Capacitor Combination

Features/Benefits

- Replaces relay, overload and provides a boost for hard start and unbalanced systems
- Prevents low voltage starting problems

Selection Table For Refrigeration Systems Without Run Capacitors

PART NO.	RELAY	OVERLOAD	START CAPACITOR	MOUNTING	hp RATING	VOLTAGE (VAC)	LIST
ICG1	*			Quick Connect	1/12 - 1/2	115	14.60
ICG-220	*			Quick Connect	1/12 - 1/2	230	15.70
PO115	*			Push - on	1/12 - 1/2	115	17.30
PO230	*			Push - on	1/12 - 1/2	230	19.80
RO81	*	*		Quick Connect	1/12 - 1/5	115	20.20
RO41	*	*		Quick Connect	1/4 - 1/3	115	20.20
RO82	*	*		Quick Connect	1/12 - 1/8	230	31.20
RO62	*	*		Quick Connect	1/6 - 1/5	230	
RO42	*	*		Quick Connect	1/4 - 1/3	230	31.20
PRO81	*	*		Push - on	1/12 - 1/5	115	20.20
PRO41	*	*		Push - on	1/4 - 1/3	115	20.20
PRO82	*	*		Push - on	1/12 - 1/8	230	
PRO62	*	*		Push - on	1/6 - 1/5	230	
PRO42	*	*		Push - on	1/4 - 1/3	230	33.70
PRO22	*	*		Push - on	1/2 - 2/3	230	
RCO810	*	*	*	Quick Connect	1/12 - 1/5	115	30.30
RCO410	*	*	*	Quick Connect	1/4 - 1/3	115	30.30
RCO210	*	*	*	Quick Connect	1/2	115	44.70
RCO820	*	*	*	Quick Connect	1/12 - 1/8	230	
RCO620	*	*	*	Quick Connect	1/6 - 1/5	230	44.70
RCO420	*	*	*	Quick Connect	1/4 - 1/3	230	44.70
RCO220	*	*	*	Quick Connect	1/2	230	44.70

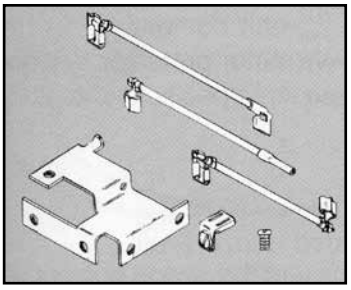
Applications

- Select the right match to replace refrigerator compressor relay and overload units from 1/12 through 1/2 hp, 115 – 230 VAC.
- For all capillary systems

CURRENT RELAYS

Part #	Max. Pick-Up	Min. Drop Out	LIST
27001	3.8	3.2	38.70
27002	5.2	4.4	36.10
27003	6.8	5.8	
27004	8.3	7.1	51.20
27005	10.5	8.7	31.90
27006	11.8	9.8	25.80
27007	13.8	11.5	
27008	15.1	12.6	30.90
27009	16.8	14.0	
27010	22.5	18.0	
27011	25.4	20.3	
27012	31.0	25.0	25.80
93104	bracket & lead kit		





POTENTIAL RELAYS

UMSR Universal Motor Starting Relay

Wire-for-Wire replacement for all standard potential relays.

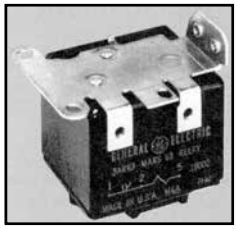
ICM's Universal Motor Starting Relay incorporates patented differential voltage sensing and a non-positional mounting configuration to offer a single replacement for all standard potential relays. Great way to reduce inventory. Ideal for A/C, commercial refrigeration, heat pump or any single-phase motor application up to 10 HP.

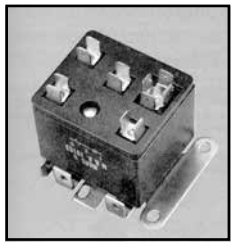
- replacement for all standard potential relays
- patented differential voltage setting
- no user adjustments required
- non-positional mounting configuration

Part #	LIST
UMSR50	83.10



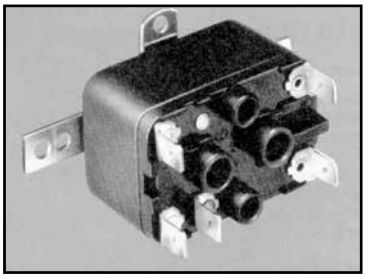
Std Duty Quick Connect Part #	LIST	H/D Screw Terminal Part #	LIST	Relay Type	Continuous Coil Voltage	Pick Up Min-Max	Drop Out Max.
		19002	129.80	63	200	139-153	55
19164	58.70	19003	141.60	64	432	260-275	120
19165	58.70	19004	136.40	65	332	168-182	90
		19005	141.60	66	432	215-225	120
		19006	147.00	67	457	295-315	125
		19007	155.20	68	502	325-345	135
		19008	136.40	69	375	180-195	105
		19009	134.60	70	253	285-305	77
19171	58.70	19010	147.00	71	420	212-232	121
		19550		Sump	130	111-134	40
		19551	144.60	Pump	332	244-270	90





GENERAL PURPOSE SWITCHING RELAYS

SPDT Fan Relays

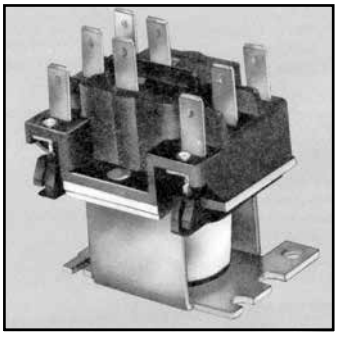


This series of relays are among the most popular relays used in air conditioning today. Quick-connect terminal.

Size: 2-3/8" x 1-5/8" x 1-1/2"
Inductive Rating 125/250 VAC: 15 amp inrush
Resistive Rating 125/250 VAC: 18 amp inrush
Full Load Amps: 12@ 120V; 8 @ 240V

Coil Voltage	Heavy Duty (SPNO-SPNC) Part #	LIST	Standard SPDT Part #	LIST
24	90380	26.00	90293	22.30
120	90382	35.90	90294	30.60
208/240	90384	17.00	90295	23.40

2-Pole Air Conditioning Relays



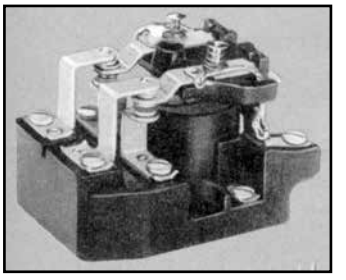
This series of switching relays are intended for many applications in air conditioning, refrigeration, and heating. Other uses include general purpose switching in appliances, fan controls and vending machines.

Terminals

Coil Voltage	Part # Power/Pilot	LIST	Part # Power/Pilot	LIST	Part # Power/Pilot	LIST
24	90340	18.80	90343	41.00	90346	40.90
120	90341	19.30	90344	40.90		
208/240	90342	19.30	90345	55.70	90348	50.90

Power resistive amps 15A @ 120/208/240V - 3/4 HP; FL Amps 12 @ 120V - 6 @ 208/240V
Pilot resistive amps 3A @ 120/208/240V - 1/10 HP

Relays for Motor Starting Circuits 25 Amp



Coil Voltage	Part # DPDT	LIST
24	43013	
120	43014	118.50
240	43015	

MAGNETIC LINE RELAYS

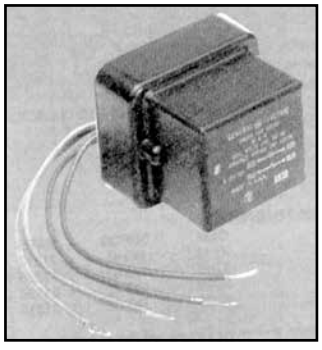


Features:

Used for remote control of heating and air conditioning systems and remote power switching of motors, power tools, fans and blowers.
18 FL amps.

Part #	Coil Voltage	Contact Arrangement	LIST
17004	120	SPDT	75.40
17006	240	SPDT	97.70
93001	terminal kit - converts screw to quick connect		9.00

TOTALLY ENCLOSED MAGNETIC LINE RELAYS



Features:

- designed for standard conduit box mounting for remote control of air conditioning and heating systems and remote power switching of motors, power tools, fans and blowers
- totally enclosed with heavy, impact resistant phenolic cover
- non-positional

Part #	Coil Voltage	Contact Arrangement	Max. Horsepower at 240 Volts		LIST
			NO	NC	
R8225A1017*	24	SPDT	1-1/2	3/4	191.80
17019*	120	SPDT	1-1/2	3/4	143.90
17020*	240	SPDT	1-1/2	3/4	

* SPDT relays may be used on SPST applications by eliminating use of yellow lead

RELAYS

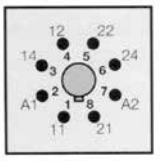
RELECO

Series C2/C3
General Purpose Relay, Octal Plug-In

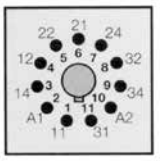
Part #	Contact	LED/Neon Indicator	Max. Switching Current (resistive)	Max. Switching Voltage	LIST
C2-A20X-24VAC	DPDT	yes	10	380	42.00
C2-A20X-120VAC	DPDT	yes	10	380	42.00
C2-A20X-240VAC	DPDT	yes	10	380	44.40
C3-A30X-24VAC	3PDT	yes	10	250	49.60
C3-A30X-120VAC	3PDT	yes	10	250	49.60
C3-A30X-240VAC	3PDT	yes	10	250	52.00



C2



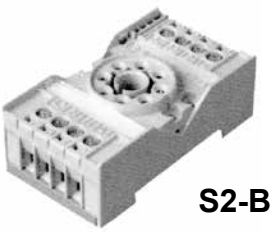
Bottom view
C2

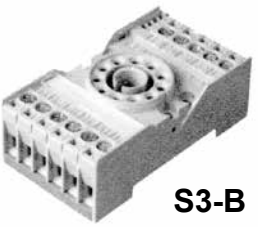


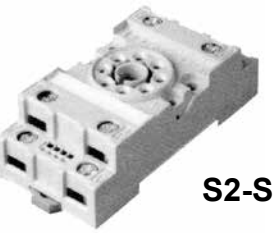
Bottom view
C3

Series S2/S3
Socket Base

Part #	Description	LIST
S2-B	8 pin - octal base	17.70
S2-S	8 pin - octal base	17.70
S3-B	11 pin base	19.20
S3-S	11 pin base	17.30


S2-B


S3-B


S2-S


S3-S

Series CT2/CT3
Time Cube, Octal Plug-In

Part #	Function	Time Range	LIST
CT2A30/L	Off-delay	0,2 sec...12 min	210.70
CT2E20/L	On-delay	0,2 sec...12 min	159.10
CT2E25/L	On-delay	0,2 sec...12 min	159.10
CT2-W30/H	On-delay	0,2 sec...12 min	
CT3E30/H	On-delay	0,2 sec...12 min	167.30



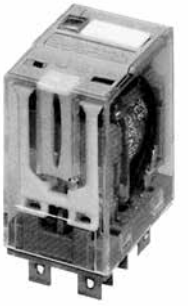
C2

RELAYS

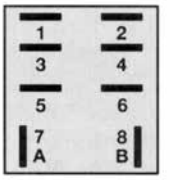
RELECO

Series C7/C9
Miniature Square Base Relay, Plug-In Mounting

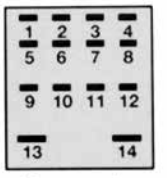
Part #	Contact	LED/Neon Indicator	Max. Switching Current (resistive)	Max. Switching Voltage	LIST
C7A20X-24VAC	DPDT	yes	10	250	30.90
C7A20X-120VAC	DPDT	yes	10	250	30.90
C9A41X-24VAC	4PDT	yes	3	250	33.80
C9A41X-120VAC	4PDT	yes	3	250	33.80



C7



Bottom view
C7



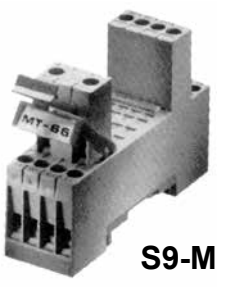
Bottom view
C9

Series S7/S9
Socket Base

Part #	LIST
S7-M	14.70
S9-M	18.80



S7-MP



S9-M

Series C5
Power Relay, 15 Amp Square Base, Plug-In, Flat Blade 4,8 x 0,5 mm, 3 Pole

Part #	Contact	LED/Neon Indicator	Max. Switching Current (resistive)	Max. Switching Voltage	LIST
C5A30X-24VAC	3PDT	yes	15	380	35.10
C5A30X-120AC	3PDT	yes	15	380	35.10
C5A30X-240AC	3PDT	yes	15	380	37.60





Bottom view

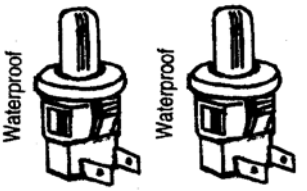
Socket Base

Part #	Description	LIST
CUS-12	11 pin, flat blade 4,8 x 0,5 mm Screws, 2 levels	16.60



ELECTRICAL ACCESSORIES

Fan & Light Switches





Part #	Description	LIST
ES18809	Fan SPST	10.60
ES18810	Light SPST	10.80
1301V	15a - 120V, 1P, silent, ivory	3.00

Air Conditioner Disconnect Switches

Non-Metallic Disconnects

- Non-fusible single phase non-metallic air conditioner disconnects
- Corrosion resistant, weather proof and maintenance free
- On/Off switch mechanism so there is no pull-out to lose



Part #	Description	LIST
P-065-NA1	60 amp non-fused, single phase	86.70

Metallic Disconnects

- A/C disconnect with on/off switch mechanism so there is no pullout to lose



Part #	Description	LIST
U065NA1	60 amp, 240V, 10 HP	40.30

Pullout Disconnect With GFCI Receptacle

- 60 Amp, Non-Fused
- Pullout Type
- 240 Volt, Single Phase



Part #	Description	LIST
80308	Pullout Disconnet Receptacle	231.80

NEMA 3R Disconnect Switches

"Suitable as Motor Disconnects"

CIRCUIT-LOCK® NEMA 3R Enclosures with Switch

SHARED FEATURES

All aluminum cover and base.

- Base is pre-drilled for rear surface mounting.

Rain tight drip shield top.

- Rolled seamless sides.

HUBBELL Advantage

- CIRCUIT-LOCK® NEMA Type 3R enclosures are "Suitable as Disconnect" when used with the 30 or 60 amp controller/disconnect.
- Front activated lever allows mounting in tight spaces.



HBL16R93D



HBL13R89D

Part #	Amp	Poles	HP Rating 120V AC	240V AC	480V AC	600V AC	LIST
HBL13R92D	30	2	2	5	10	15	170.30
HBL13R89D	30	3	3	7.5	15	20	235.40
HBL16R93D	60	3	—	10	25	30	342.00

AC Manual Toggle Controllers/Disconnects

30, 40, 50, 60 and 85A 600V AC

600V AC Manual Motor Controllers

Specifications

- **Electrical Performance**

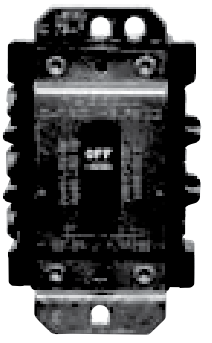
Dielectric Voltage	2,200V AC minimum for 1 minute
Electrical Life	6,000 Cycles at rated switch load
Max. Working Voltage	600V AC RMS
Short Circuit Withstand Rating as Motor Controller	All Switches 125A max. RK5 fuses

- **Mechanical**

Mechanical Life	10,000 minimum cycles

- **Listings**

UL 508	Industrial Control Equipment File #E70402
CSA-C22.2 No.14	Industrial Control Equipment File # LR-46186



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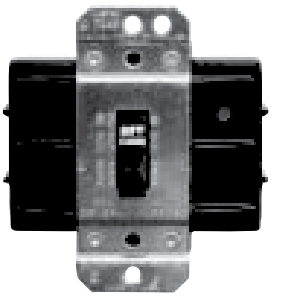


HBL7863D

Part #	Amp	Poles	Toggle Type	Wire	HP Rating 120V AC	240V AC	480V AC	600V AC	LIST
HBL7832D	30	2	Standard	—	2	5	10	15	135.30
HBL7810D	30	3	Standard	—	3	7.5	15	20	140.30
HBL7862D	60	2	Standard	—	—	10	15	20	396.00
HBL7863D	60	3	Standard	—	—	10	25	30	480.00

WIRE

Thermostat Wire

Part #	Description	LIST
18/2-PC-75M	CSA FT6, 60°C plenum thermostat wire 75m/roll 18 gauge	101.10
18/3-PC-75M		141.60
18/4-PC-75M		182.00
18/6-PC-75M		265.40
18/8-PC-75M		316.00



Part #	Description	LIST
18/2-SC-75M	CSA LVT shielded control wire - stranded - 75m/roll 18 gauge	139.40
18/3-SC-75M		190.10
18/8-SC-75M		695.00

TEW Wire

Stranded soft bare copper conductor, thermoplastic insulation. Internal wiring of electrical equipment and lighting fixtures.

	10 Ga	12 Ga	14 Ga	16 Ga	18 Ga
Cond. Amp	28	23	17	8	6
Black (B)	8010C-B	8012C-B	8014C-B	8016C-B	8018C-B
Blue (BL)			8014C-BL	8016C-BL	
Brown (BR)			8014C-BR		
Green (G)			8014C-G	8016C-G	
Red (R)	8010C-R	8012C-R	8014C-R	8016C-R	8018C-R
White (W)	8010C-W	8012C-W	8014C-W	8016C-W	8018C-W
Yellow (Y)			8014C-Y	8016C-Y	
LIST	**158.20**	**93.70**	**67.30**	**46.20**	**33.60**



GTF Fixture Wire

Lighting fixtures where temperatures do not exceed 125c.



Part #	Gauge	Conductor Amp	LIST
8134C-B	14	17	198.70
8134C-R	14	17	198.70
8134C-W	14	17	198.70

WIRE

Cabtire Wire Type SJ

Application: Power supply for tools and appliances where subjected to hard usage in damp or dry location.

Part #	Gauge	LIST
14-3	14/3	1.70ft

Shielded Cable

Part #	Description	LIST
12/3-BX	Aluminium Amour	2.50
14/2-BX		1.40
14/3-BX		2.00
10/3-TEC	Teck 600V PVC jacket, aluminum interlocking armour	4.60
14/3-TEC	Teck 600V PVC jacket, aluminum interlocking armour	3.10
TSRTK-050-2	1/2" Teck-Seal Cable Connector	32.20

600V Copper





TECK 600V Copper Multi Conductor

Air Conditioning Whips

Pre-assembled whips for outdoor use for connection of air conditioners, heat pumps or other equipment. Flexible liquid tight PVC conduit with THHN conductors.

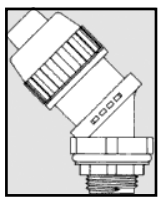
Part #	Description	Cond. Size	LIST
6500	1/2" x 6' PVC fitting	10 str.	40.40
6750	3/4" x 6' PVC fitting	8 str.	55.90



Liquid Tight Connectors

Lets you feed conductors quickly and easily... and then swivels into the position you desire for installation.

Part #	Description	LIST
PS0509NGY	1/2" SwivelLok connector	20.40
PS0759NGY	3/4" SwivelLok connector	32.00
19019	1/2" 0 to 90° connector	10.60
19020	3/4" 0 to 90° connector	13.90





Nonmetallic Flexible Conduits

Part #	Size	LIST
8431	1/2"	1.70/ft
8432	3/4"	2.30/ft



Nonmetallic Fittings

Part #	Size	LIST
88403	1/2" straight	3.10
88405	3/4" straight	4.70



ELECTRICAL ACCESSORIES

Tattle-Tale Control Monitor

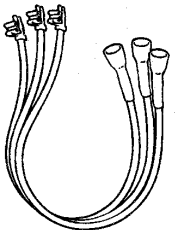
Part #	Description	LIST
TT-24	24 volt AC or DC	15.20
TT-120	120 volt AC or DC	18.00
TT-240	240 volt AC or DC	19.30
TC-007	24-460 VAC or DC	164.50



Compressor Stake On Repair Kit

- Wires are permanently attached
- Stainless steel screws
- Standard factory 600 volt, 65 strand wire
- Set of three colour coded wires

Part #	Description	LIST
QT2812	brass stake on, 12 gauge, 3 wire	137.50
QT2810	brass stake on, 10 gauge, 3 wire	140.60



Reducing Washers

Part #	Description	LIST
RW0705	3/4" x 1/2" (100/pk)	0.30
RW1005	1" x 1/2" (100/pk)	0.40



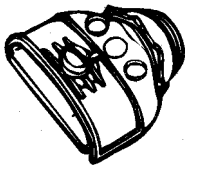
Cable Strain Relief

Part #	Description	LIST
KPK-M20-MVP-EX	Cable Strain Relief	15.80



Electrical Fittings - BX/Romex/Armored-carded

Part #	Description	LIST
85175	3/8" arm./flex. duplex connector	4.50



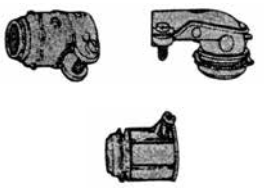
Electrical Romex (NM Cable) Fittings

Part #	Description	LIST
NMC038	3/8" (1/2" K.O.) Romex conn.	1.80



BX & Greenfield Connectors

Part #	Description	LIST
SQ90038	3/8" 90° squeeze connector	2.10
SQ050	1/2" squeeze connectors	4.70
SQ90050	1/2" 90° squeeze connector	3.90
SKZ050	1/2" box conn., (set screw type)	1.60



ELECTRICAL ACCESSORIES

Standard Steel Utility Box (4" x 2-1/8" handy boxes)

Part #	Description	LIST
2020	2-1/8"D, 1/2" K.O.'s handy box	10.10



Steel Electrical Boxes & Extension Rings

Part #	Description	LIST
52171K	4" square box 2-1/8" deep, 1/2" & 3/4" K.O.'s	12.10
53151K	4" square extension 1-1/2" deep, 1/2" & 3/4" K.O.'s	11.00



52171K



53151K

Steel Electrical Box Covers

Part #	Description	LIST
52C6	blank 1/2" K.O. in center (4" square box)	3.20
8361	one toggle switch (4" square box)	8.40
8365	one duplex receptacle (4" square box)	7.30
8367	two toggle switch (4" square box)	9.10
8375	1 switch & 1 duplex receptacle (4" square box)	9.10
8371	two duplex receptacle (4" square box)	7.60
20C1	duplex receptacle (handy box)	4.40
20C5	toggle switch (handy box)	5.50
20C4	blank (handy box)	5.30
54C6	4" octagon Blank-K.O.	2.20
54C94	toggle switch (4" octagon box)	4.50



52C6



8361



8365



8367



8375



8371



20C1



20C5



20C4



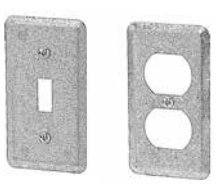
54C6



54C94

Wallplates

Part #	Description	LIST
NP1I	single toggle, plastic, ivory	0.90
NP8I	duplex receptacle, plastic, ivory	0.90



ELECTRICAL CONNECTORS

Female Flag



Width	Part #	QTY	LIST
22-18AWG			
.250	2375N-15	50	33.00
.250	2375CS	100	37.60
16-14AWG			
.250	2475N-15	50	33.00
.205	2471CS	100	31.10
.250	2475CS	100	38.20
.250	2775BP	6	4.30

Rings



Spades



SAE	Part #	QTY	LIST	Part #	QTY	LIST
Stud Size 22-18AWG						
#6				1723CS	100	22.20
#8	1704CS	100	22.10	1724CS	100	22.10
#10	1705CS	100	22.10	1725CS	100	22.20
Stud Size 16-14AWG						
#6	1803CS	100	20.40	1823CS	100	22.40
#8	1804CS	100	20.50	1824CS	100	22.40
#10	1805CS	100	20.30	1825CS	100	22.40
1/4"	1806CP	100	26.20			
Stud Size 12-10AWG						
#6	1903-15	50	20.00	1923-15	50	28.40
#8	1904-15	50	22.80	1925CP	100	25.40
#10	1905CP	100	30.40			
1/4"	1906-15	50	28.80			



Male Quick Connect

Female Quick Connect

Width	Part #	QTY	LIST	Part #	QTY	LIST
Stud Size 22-18AWG						
.110	1750CS	100	48.40	1749CS	100	22.10
.250	1756CS	100	22.20	1755CS	100	22.10
Stud Size 16-14AWG						
.187	1852CS	100	31.30	1851CS	100	21.00
				1853CS	100	33.10
.250	1856CS	100	21.20	1855CS	100	21.00
Stud Size 12-10AWG						
.250	1956CP	100	45.10	1955CP	100	19.00

Closed End

PART #	QTY	LIST
16-14AWG		
1266CS	100	17.10
12-10AWG		
1366-15	50	17.20



Butt Connectors

PART #	QTY	LIST
22-18AWG		
1700CS	100	20.10
16-14AWG		
1800CP	100	20.10
12-10AWG		
1900CP	100	26.20



Bullet & Receptacles Connectors

DIA	PART #	QTY	LIST
16-14AWG			
.157	1268-15	50	21.90
.157	1858-15	50	16.60



Piggyback Disconnects

PART #	QTY	LIST
22-18 Gauge		
1760-15	50	12.80



Receptacles & Adapters



PART #	QTY	LIST
Volkswagon adapter brass double male tabs with single female receptacle .250 (50pc)		
1591-15	50	23.10
Brass double male tabs with single female receptacle .250 (100pc)		
1595CS	100	77.00
8GA. .250 side adapter (50pc)		
2567-15	50	37.40
Volkswagon adapter brass double male tabs with single female receptacle .250 converts 1 male tab to 2 male tabs (5pc)		
1594-BP	5	4.30
Volkswagon adapter brass open-end piggyback slip-on with .250 male tab & female receptacle		
1597CS	100	69.30

ELECTRICAL CONNECTORS

Grommets



Part#	A	B	QTY	LIST
6115PK	1/8	1/4	25	7.40
6116PK	3/16	5/16	25	9.00
6117-14	1/4	3/8	25	9.80
6118-14	5/16	7/16	25	10.50
6119-14	3/8	1/2	25	10.50
6120-14	1/2	5/8	25	18.00
6121-14	25/64	21/32	25	26.20
6122-14	5/8	7/8	25	28.70
6123-14	11/16	1	25	15.20
6124-14	3/4	1-1/16	25	18.40
6127-34	1	1-3/8	25	71.60

Terminal & Tools Kit



Part #	Includes	LIST
31502-91	195 pc Vinyl Terminals 22-18GA to 12-10GA with 465T-E Crimp Tool	107.70

Terminal Kit



Part #	Includes	LIST
31803-91	435 pc Vinyl Connectors & Terminals 22-18GA to 12-10GA	153.10

O-Ring Kit



Part #	Includes	LIST
150	Assort O-Ring 407 pc. Plastic Case. 32 sizes.	59.90

ZipTape Wire Marker Dispenser





Part #	Descriptions	LIST
7086E	Pre-cut wire markers never have to be torn off. Pull down on the liner and lift off the marker. Compact in size and easy to reload with refill marker rolls. Legend 0 through 9. Size: 0.25" x 1.25"	105.10
44-102	Wire Marker Book	58.10

Zebra Gators

ZG002



ZG003



ZG004



Part #	Descriptions	LIST
ZG-002	The SMALL set includes 10 jumpers and is often used for low-voltage control/ manipulation.	77.20
ZG-003	The MEDIUM set has 8 jumpers and can be used for motors and medium loads, inductive and resistive.	96.80
ZG-004	The LARGE set has 4 heavy-duty jumpers with heavy-jawed clamps that can carry power to heavier loads, like heat strips and compressors.	83.00

Magnetic Jumper 20" Leads

A powerful low-voltage magnetic jumper, the device eliminates popping-off the terminals. It is made specifically for recessed terminals in thermostats, controls boards, senors, switches, alarm panels, etc. It has a 30 vac/vdc, 5-A maximum.



PART #	LIST
MAG1YL	30.40

Test Leads

All weather test leads - 36" length



PART #	LIST
FTL3	

ELECTRICAL CONNECTORS

Wire-Nut Wire Connectors



- Shell rated for 105ºC
- Fire-retardant polypropelene shell

Part #	Colour	Wire Combination Range (Inches)	Quantity	LIST
30-071	Gray	300V #22 to #16 AWG Min.2 #22 Max. 2 #16	Box of 100	24.20
30-072	Blue	300V #22 to #14 AWG Min.2 #22 Max. 3 #16	Box of 100	26.00
30-073	Orange	600V #22 to #14 AWG w/1 #20 Min.1 #18 w/1 #20 Max. 4 #16 w/1 #20	Box of 100	26.90
30-073J	Orange		Jar of 300	80.60
30-074	Yellow	600V #18 to #12 AWG Min.2 #18 Max. 4 #14 w/1 #18	Box of 100	30.20
30-074J	Yellow		Jar of 175	52.90
30-076	Red	600V #18 to #10 AWG Min.2 #14 Max. 4 #14 w/1 #18	Box of 100	51.10
30-176J	Red		Jar of 150	51.10

High Temperature Wire-Nut Connectors



- Thermoplastic shell rated for 150ºC
- Fire-retardant shell
- Shell Colour Black

Part #	Wire Combination Range (Inches)	Quantity	LIST
30-051	300V #22 to #16 AWG Min.2 #22 Str Max. 2 #16	Box of 100	16.10
30-052	300V #22 to #14 AWG Min.2 #22 Max. 3 #16	Box of 100	18.30
30-053	600V #22 to #14 AWG Min.1 #18 w/1 #20 Max. 4 #16 w/1#20	Box of 100	21.00
30-059	600V #22 to #12 AWG Min.2 #20 Max. 3 #14	Box of 100	37.10

Canadian Wire Connector Kit

- Convenient and durable carrying case
- A variety of connectors to fit a large range of wire sizes No. 6 AWG - 26 AWG

PART #	LIST
30-2088	136.90



Can-Twist Wire Connectors

- Exceptional wire range capacity
- Hexagonal shape allows connectors to be applied with standard nutdriver
- Shell rated for 105ºC



Part #	Colour	Wire Combination Range (Inches)	Quantity	LIST
30-107J	Blue	600V #22 thru #8 AWG Min.3 #22 Max. 3 #10	Jar of 175	40.60
30-141	Tan	600V #22 thru #8 AWG Min.3 #22 Max. 3 #10	Box of 50	41.20
30-207	Blue	One size fits all	100	26.00
30-207XT	Black	150 °C Min. 3#22 Max. 4#11	100	32.30

WeatherProof® Wire Connectors

Part #	Colour	Wire Combination Range (Inches)	Quantity	LIST
30-1161	Blue	Weather Proof Min.2 #20 Max. 2 #14	25	65.70
30-1162	Blue	Weather Proof Min.2 #18 Max. 3 #10	20	64.40
30-1163	Blue	Weather Proof Min.3 #14 Max. 3 #10	20	64.40

ELECTRICAL CONNECTORS, CORDS AND TROUBLE LAMPS

WAGO 221 Series LEVER-NUTS® Conductor Wire Nuts

- Connect any combination of solid, stranded and flexible copper wires faster and more reliably
- Minimize space consumption in the junction box – by 40% compared to 222 Series
- Visually inspect for proper strip length and complete wire insertion through its transparent housing
- Operate comfortably and with lower operating forces by using familiar orange levers



221-412
2-conductor connector

Part #	Description	LIST
221-412	2 conductor Wire Nut 100PK	67.30
221-413	3 conductor Wire Nut 50PK	42.10
221-415	5 conductor Wire Nut 25PK	32.30



221-413
3-conductor connector



221-415
5-conductor connector

Trouble Lamps

Incandescent



Part #	Description	Wire GA/COND	Wire Type	Cord Length	LIST
05857	work lamp outlet handle	16/3	SJED	10 m/25 ft	67.90

Fluorescent



Part #	Description	Wire GA/COND	Cord Length	Watts	LIST
L1921	work lamp	16/3	25 ft	26	78.10

Polarsolar Extension Cords



MEDIUM DUTY

Part #	Description	LIST
01287	25 ft., single outlet lighted, 16 gauge wire	51.00

HEAVY DUTY

Part #	Description	LIST
01488	50 ft., single outlet lighted, 14 gauge wire	89.80

CONTRACTOR DUTY

Part #	Description	LIST
01688	50 ft., single outlet lighted, 12 gauge wire	133.40
01689	100 ft., single outlet lighted, 12 gauge wire	282.20
25890002	100 ft., single outlet lighted, 12 gauge wire	168.20

FUSES
BUSS

Type ABC Ceramic Body
- Ceramic / 250 Volt
- Time-lag
- 1/4" x 1-1/4"



Type AGC Glass Body
- Fast-acting glass / 250 Volt
- 1/4" x 1-1/4"



Type FNM Time Delay Midget
- 250/125/32 volt
- Dual-element / time delay
- 13/32" x 1-1/2"



Type FNQ Time Delay Midget
- 500 volt
- Time-delay
- 1/4" x 1-1/4"



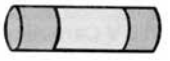
Type AGX Glass Body
- 250 volt
- Non-time delay
- 1/4" x 1" fuse



Type ATC Flat Blade
- 32 volt
- Non-time delay



Type BBS Non-Time Delay
- 600 volt
- Non-time delay
- 13/32" x 1-3/8"



Type C Glass Body
- Glass body / 250 volt



Type FNQ-R UL Class CC
- 600 volt / time delay



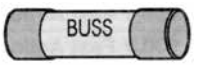
Type FRN-R UL Class RK5
- 250 volt
- Dual element / time delay



Type FRS-R UL Class RK5
- 600 volt
- Dual element / time delay



Type GDA Fast Acting Ceramic
- 250 volt
- Fast-acting



Type GLQ Glass Body
- 300 volt
- Non-time delay
- Integral one piece fuse & installation knob



Bolt-in Mounting for 1/4" x 1-1/4" Fuses
- Voltage rating: 300 volt

S-8201-1 Single pole 1/4" quick connect UL20A CSA 16A
S-8201-3 Three pole 1/4" quick connect UL20A CSA 16A

FUSES

BUSS

Type GMA Fast Acting Glass Body
- 125 volt
- 5mm x 20mm



Type GLR Glass Body
- 300 volt
- Non-time delay
- Integral one piece fuse & installation knob



Type GMQ Dual Element
- 300 volt
- Dual element / time delay
- Integral one piece fuse & installation knob



Type KTK Fast Acting Midget
- 600 volt
- Non-time delay
- 13/32" x 1-1/2"



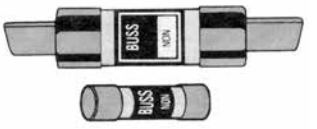
Type KTK-R UL Class CC Midget
- 600 volt
- Non-time delay
- 13/32" x 1-1/2"



Type MDL Time Delay
- 250 / 32 volt
- Time delay
- 1/4" x 1-1/4"



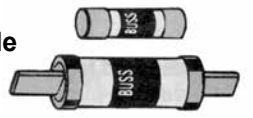
Type NON General Purpose
- 250 volt
- One time



Type NOS General Purpose
- 600 volt
- One time
- Non-current limiting



Type REN UL Class H Renewable
- 250 volt
- Time-lag



Type SC UL Class G
- 300 volt
- Time-lag



Type S Dual Element Plug
- 125 volt
- Time delay / dual element

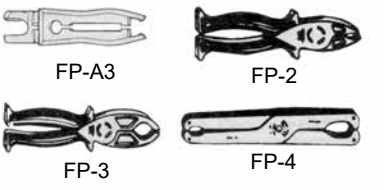


Type T Dual Element Plug
- 125 volt
- Time delay/dual element



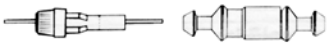
Fuse Pullers

FP-A3 for 1/4" & ATC fuses
FP-2 for 13/32" to 13/16" fuses
FP-3 for 1" to 1-3/4" fuses
FP-4 for 1-3/4" to 2-1/2" fuses



Fuse Holders

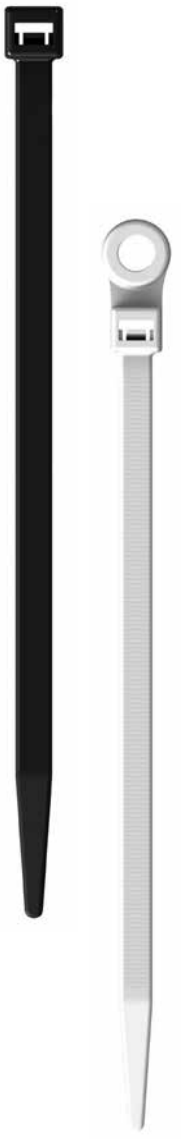
HHB 1/4" in-line fuseholder
HRK 1/4" in-line fuseholder w/leads



CABLE TIES

Wire Ties

Part #	Length (in)	Colour	Qty/Pack	Tensile Strength	LIST
CT4-18C9	4.0	Natural	100	18 lb	5.30
CT6-40C0W	6.0	UV Black	100	40 lb	10.60
CT8-50C9	8.0	Natural	100	50 lb	10.90
CT8-50C0W	8.0	UV Black	100	50 lb	11.80
CT11-50C9	11.0	Natural	100	50 lb	19.40
CT11-50C0W	11.0	UV Black	100	50 lb	21.10
CT14-50C9	14.5	Natural	100	50 lb	23.60
CT14-50C0W	14.5	UV Black	100	50 lb	25.20
7070-PK	28.0	White	25	120 lb	55.40



Screw Mount Cable Ties

Part #	Length (in)	Colour	Qty/Pack	LIST
CTM6-40C9	6.0	Natural	100	17.50
CTM6-40C0W	6.0	UV Black	100	20.20
CTM8-50C9	8.0	Natural	100	19.50
CTM8-50C0W	8.0	UV Black	100	23.20
CTM11-50C9	11.0	Natural	100	38.30
CTM11-50C0W	11.0	UV Black	100	42.80
CTM14-50C9	14.5	Natural	100	46.20
CTM14-50C0W	14.5	UV Black	100	50.70

Cold Weather Cable Ties -40°F Rated

Part #	Descriptions	LIST
7295-34	Cable Ties 7.5" 25PK	7.80



CABLE TIES

Natural Nylon Cable Clamps

Part #	Nom. Clamp Dia. (in)	Closed Dia. (in)	LIST
7118HN-C	.125	.115	23.90
7119HN-C	.187	.172	23.90
7120HN-C	.250	.234	22.90
7121HN-C	.312	.297	23.50
7122HN-C	.375	.359	24.10
7124HN-C	.500	.484	26.30
7126HN-C	.625	.609	35.90
7128HN-C	.750	.734	44.00
7130HN-C	1.00	.984	60.30

Vinyl & Rubber Insulated Clamps

Part #	I.D.	PC	LIST
7314-PK	1/4"	20	20.90
7315-PK	3/8"	20	22.60
7316-PK	1/2"	20	23.20
7317-PK	5/8"	20	33.40
7318-PK	3/4"	20	36.50
7319-PK	7/8"	17	35.30
7321-PK	1-1/8"	10	23.90

Manual Cable Tie Tension & Cutting Tool

Manual Twist Cut



Part #	Descriptions	LIST
801-31	Plastic, use with 18-50 lb Cable Ties	67.40

Cable Tie Removal Tool

Safety guards slide behind the strap to prevent the sharp blades from contacting the bundled items.



Part #	Descriptions	LIST
802-11	Cable Tie Removal Tool	146.30

Automatic Cable Tie Tension & Cutting Tool

Automatic Cut



Part #	Descriptions	LIST
803-31	Metal, use with 18-50 lb Cable Ties	134.10

Manual Cable Tie Tension & Cutting Tool

Manual Twist Cut



Part #	Descriptions	LIST
804-31	Metal, use with 120-175 lb Cable Ties	134.10

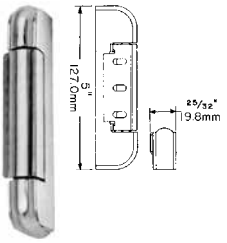
REFRIGERATION HARDWARE

KASON

Edgemount Hinges

214

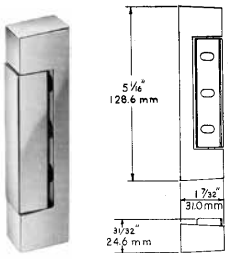
Adjustable hinge, seats close to the refrigerator door, requires a minimum jamb-width, for right or left-hand doors
Offsets: 7/8", 1-1/8", 1-3/8"



Part #	LIST
214-7/8	150.50 ea
214-1-1/8	151.50 ea
214-1-3/8	157.80 ea

1216

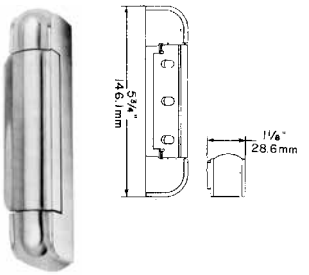
Contemporary styled non-rise adjustable hinge ideally suited for underbar equipment and standard reach-in refrigerators.
Offsets: 1-1/8"



Part #	LIST
1216-1-1/8	95.80 ea

217

Adjustable hinge for right or left-hand door. Offsets can be easily adjusted to compensate for gasket compression. Offsets: 7/8", 1-1/8", 1-3/8"



Part #	LIST
217-7/8	159.90 ea
217-1-1/8	162.30 ea
217-1-3/8	170.30 ea

Edgemount Cam-Lift Hinges

1267

Self-closing, cam-lift hinge for right or left-hand doors. A self-lubricating Zytel cam design causes door to close automatically or stay open at 93° angle whe desired.
Offsets: 1-5/8" to 2-3/8"



Part #	LIST
1267	94.60 ea

Power Spring Conversion Kits

Converts the non-rise hinge into a self-closing hinge.

Part #	LIST
R42-2800	20.60 ea

Cam-Lift Hinges

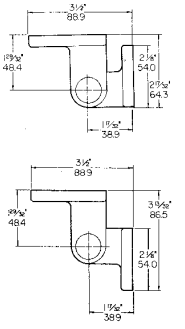
1398

Dwell stop keeps door in open position beyond 90° opening. Fully reversible for right or left-hand doors

Offsets: 2-1/2" to 3-1/2"

Part #	LIST
1398-2-1/2	583.00 ea
1398-3-1/2	441.00 ea





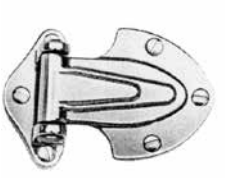
Surface Mount Hinges

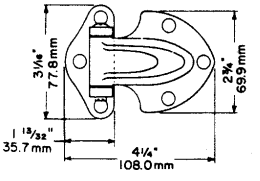
139

Narrow flange hinge for small service doors.

Offsets: Flush, 1/4", 3/8", 5/8", 3/4", 7/8", 1", 1-1/8"

Part #	LIST
139-1-1/8	429.00 ea





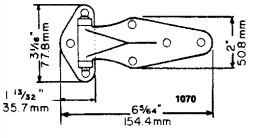
1070

Narrow flange hinge.

Offsets: Die-cast: Flush, 1/8", 1/4", 3/8", 5/8", 3/4", 7/8", 1", 1-1/8"

Part #	LIST
1070-7/8	192.30 ea
1070-1-1/8	167.00 ea

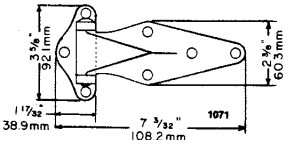




1071

Narrow flange hinge; enlarged version of 1070. Offsets: Die-cast: 7/8", 1-1/8"

Part #	LIST
1071-7/8	184.90 ea
1071-1-1/8	349.00 ea



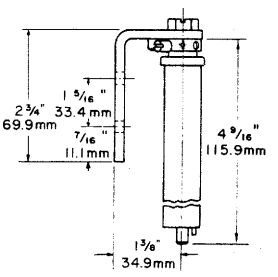
Pivot Hinges

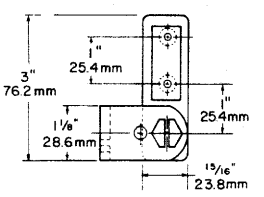
Designed for reach-in and pass-through doors. When ordering, specify R (right) or L (left).

1522L - left
1522R - right
Top hinge. Self-closing spring assembly. Use with all bottom hinges or intermediate for two doors.

Part #	LIST
1522L	170.40 ea
1522R	170.40 ea

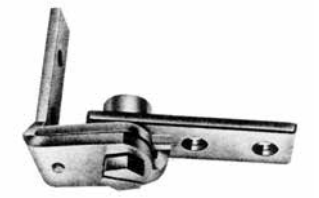


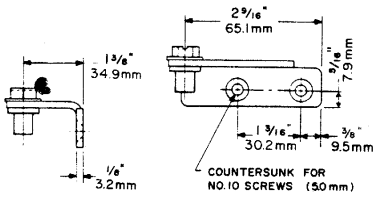


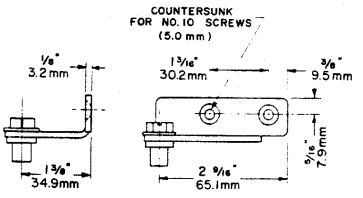


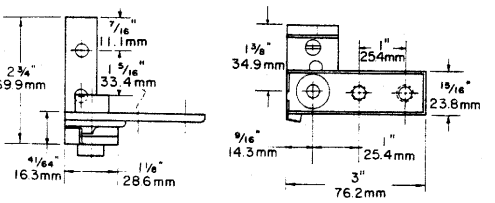












1510 (pictured)
Mounts upper left or lower right

1511
Mounts upper right or lower left

Part #	LIST
1510	82.00 ea
1511	82.80 ea

1530 (pictured)
Mounts upper left or lower right

1531
Mounts upper right or lower left

Part #	LIST
1530	81.20 ea

1521L - left
1521R - right
Bottom hinge, features dwell stop.

Part #	LIST
1521L	173.00 ea
1521R	173.00 ea

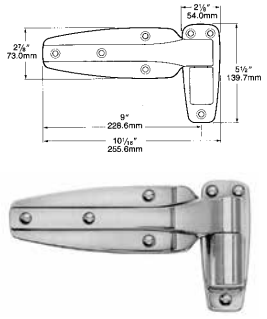
REFRIGERATION HARDWARE

KASON

Reversible Cam-Lift Hinges

1245

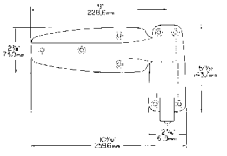
Surface mounted, cam-lift hinge.
Offsets: Flush, 1/8", 1/4", 1-1/8", 1-1/4", 1-3/8", 1-1/2", 1-5/8", 1-3/4", 1-7/8", 2".



Part #	LIST
1245-FLUSH	283.60
1245-1-1/8	287.60
1245-1-1/4-BC	287.60
1245-1-3/8	290.50
1245-1-1/2	292.10
1245-1-5/8	300.00
1245-1-3/4	303.00
1245-1-7/8	303.00
1245-2	305.00

1248

Spring assisted, surface mounted, cam-lift hinge.
Offsets: Flush, 1/8", 1/4", 1-1/8", 1-1/4", 1-3/8", 1-1/2", 1-5/8", 1-3/4", 1-7/8", 2".

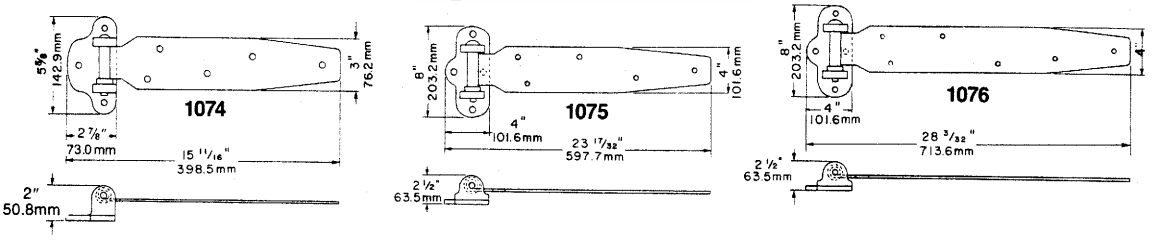




Part #	LIST
1248-FLUSH-CHR	308.00
1248-1-1/4	338.00
1248-1-3/8	339.00
1248-1-1/2-CHR	327.00
1248-1-5/8-CHR	325.00
1248-1-3/4-CHR	327.00

Intermediate & Heavy Duty Hinges





1074

Intermediate hinge
Offsets: Flush, 1-1/8"

Part #	LIST
1074-FLUSH	331.00
1074-1-1/8	331.00

1075

Intermediate hinge
Offsets: Flush, 1-1/8", 1-1/4", 1-3/8"

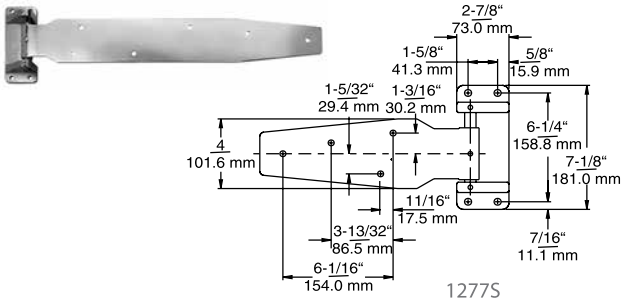
Part #	LIST
1075-FLUSH	498.00
1075-1-1/8	556.00
1075-1-1/4	567.00
1075-1-3/8	305.00

1076

Heavy-duty hinge
Offsets: 1-1/8", 1-1/4", 1-3/8"

Part #	LIST
1076-1-1/8	694.00
1076-1-1/4	700.00
1076-1-3/8	698.00

Reversible Cam-Rise Hinges



1277

Heavy-duty hinge
Strap Length: 21"

Part #	LIST
1277-FLUSH	479.00
1277-1-1/4	473.00
1277-1-3/8	475.00

1277L

Heavy-duty hinge
Strap Length: 26"

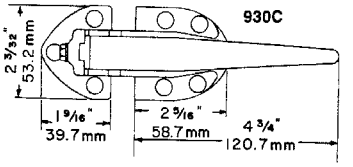
Part #	LIST
1277L-1-1/8	509.00
1277L-1-1/4	466.00
1277L-1-3/8	470.00

REFRIGERATION HARDWARE

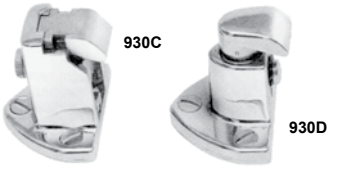
Surface Mount Latches

930 Series
Trigger-action latch for use with right or left-hand doors.





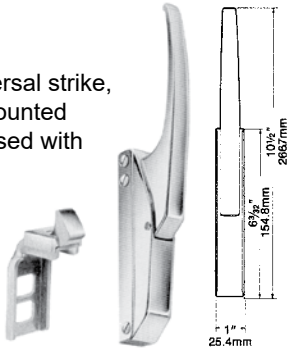
Part #	Description	LIST
930C-L-S	Latch with adjustable micrometer strike	483.00
930D-L-S	Latch with micro-turn strike for adjustments	486.00



Edgemount Mechanical Latches

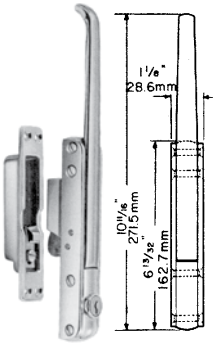
173C
Two-way adjustable latch with universal strike, edge-mounted body and surface mounted strike, for right or left-hand doors, used with all standard gaskets.
Cylinder-locking, straight handle.

Part #	LIST
173C-L-S	291.00



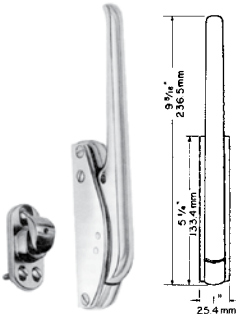
531C
Trigger action latch with two-way adjustable strike mounts flush with surface of door; eliminates all hazards of protruding hardware. Powerful action provides positive airtight closure.

Part #	LIST
531C-L-S	859.00



533D
Powerful, smooth acting with padlock provision and patented MICROturn two-way adjustable strike.

Part #	LIST
533D-L-S	228.10



538C
Powerful, smooth acting with padlock provision and patented MICROturn two-way adjustable strike. Cylinder-locking

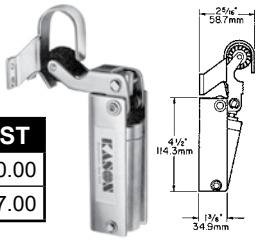
Part #	LIST
538C-L-S	307.00



Door Closers

1092

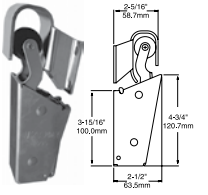
Part #	Description	LIST
1092-FLUSH	Closer w/Flush Hook	340.00
1092-1-1/8	Closer w/1-1/8" Offset Hook	387.00



1095

Part #	Description	LIST
1095*	Use 1094H Hook	237.90

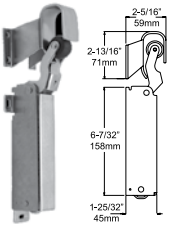
**Less Hook*



1094

Part #	Description	LIST
1094000013*	Closer, Concealed Mounting	237.80
1094H-F	Hook for 1094 Flush	43.70
1094H-1-1/8	Hook for 1094 1-1/8" Offset	43.70

**Less Hook*



Foot Treadle

Part #	Description	LIST
W50-1000	Hands-Free Door Operation, reversible for right or left hand door swing	107.00



KASON

Intermediate & Heavy Duty Latches

K52

Bolt action, walk-in cooler latch, designed for medium sized doors.
Offsets: Adjustable from 1/8" below to 5/16" above flush, 3/4" to 1-3/8".
(For inside release handle, see #481B)

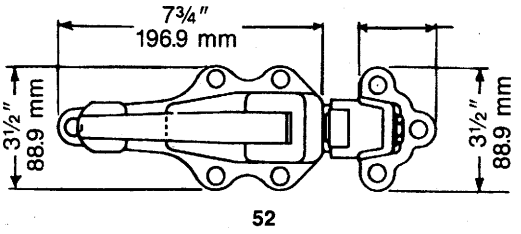
Part #	LIST
K52-L-S	916.00

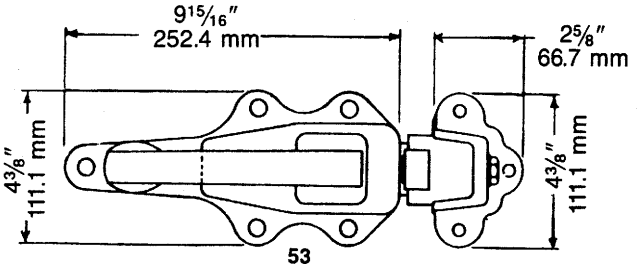


K53

Bolt action latch designed for large walk-in doors.
Offsets: Adjustable 1/4" below to 1/8" above flush, 15/16" to 1-5/8". (For inside release handle, see #481B)

Part #	LIST
K53-L-S	1,507.00

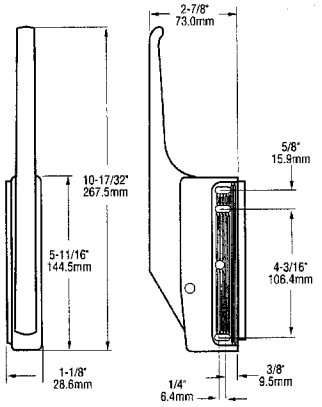




Edgemount Magnetic Latches

170 Offset Latch

High tech glass reinforced composite handle offers strength and low heat conduction.

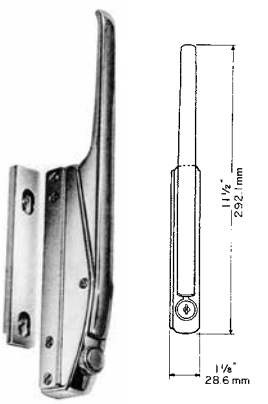


Part #	LIST
170S-L	514.00

171C

A powerful magnetic force assures positive, air-tight closure of refrigerator and freezer doors. With tamper proof cylinder lock.

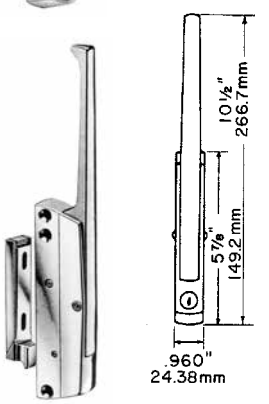
Part #	LIST
171C-L-S	302.00



172C

A combination of powerful magnetic force plus a mechanical locking design assures the ultimate in positive locking and sealing and permits easy latch release with finger tip pressure. Cylinder-locking, straight handle.

Part #	LIST
172C-L-S	296.00



REFRIGERATION HARDWARE

KASON

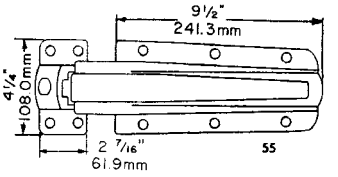
Safeguard Latches

K55

Mechanically designed to provide easy action for opening and closing doors. Latch releases from inside or outside with minimum pressure or pull.
Offsets: Adjustable from flush to 3/16",
3/4" to 1-1/8", 1-1/8" to 1-5/8", 1-3/8" to 1-7/8".

Part #	LIST
K55-L-S	1,986.00



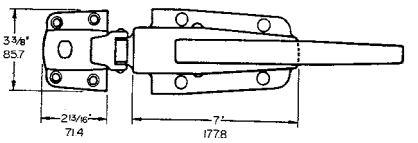


K56

Safeguard latch offers the ultimate in protection against accidental entrapment and provides your employees with an extra margin of safety.
Light, 27lb spring pressure.
(for inside release handle, see #481A)

Part #	LIST
K56L-L	441.00
K56-S-FLUSH	235.90
K56-S-3/4	236.50
K56-S-1-3/4	244.80





K58

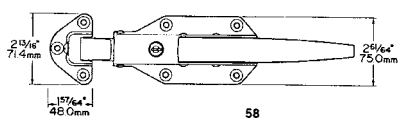
Safeguard latch with radial tongue that rolls into closed position.
Offsets: Adjustable from 1/8" below flush to 1/4" above flush, 3/4" to 1-1/2" above flush, 1-3/4" to 2-1/2" above flush.
(for inside release handle, see #481C)

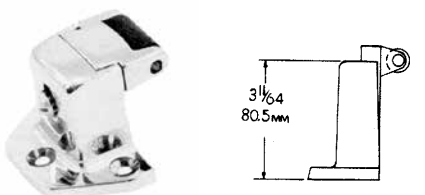
K59

Roller strike assembly
(only for K58)

Part #	LIST
K58L-L	276.00
K59-S-FLUSH	89.50
K59-S-3/4	92.70
K59-S-1-3/4	109.40







REFRIGERATION HARDWARE

Inside Release Door Handles

481A, B, C

Inside release handle. Steel rod & flange, safety-glow plastic knob
Use with latch #:
481A - #56 481B - #52 & 53 481C - #58

Part #	LIST
481A,B,C	41.20



489A

Recessed inside release handle. Plastic recessed housing, steel rod and flange, safety-glow plastic knob.
Use with latch #:
489A - #56 & #58

Part #	LIST
489A	92.60



Vapor Proof Lights

Vapor proof light fixtures are fully gasketed and enclosed to reduce the effects of temperature extremes.



Part #	Description	LIST
L1706	Southwire - With glass globe and wire guard	63.00

Part #	Description	LIST
6416-1010-6401	Kason - Replacement glass lens	17.90
L10-X008	Kason - Polycarbonate lens	34.50
6492-1014-6213	Kason - Replacement wire guard	20.60

Heated Ventilator Ports

W88

Heated vents prevent freeze-ups and reduce cooler condensation. Two-way valve unit allows air flow in dual directions, compensates for expansion and contraction during refrigeration cycles.

Part #	Description	LIST
W88-1010	4" - 115V	212.10
W88-1010-6000	6" - 115V	210.00
W88-2010-4	non-heated	134.10



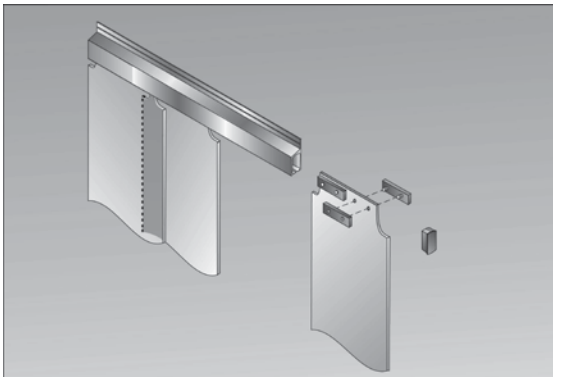
DOOR CURTAIN

Tuf-Flex Door Curtain

Complete mounting hardware and installation instructions are provided for standard wall mounting.
Custom size available on special order.

Part #	Door Width Height	Curtain Width Height	Material Gauge	LIST
CL400	43" 52" 84"	56" x 90"	.08	432.00
CL500	53" 61" 84"	68" x 90"	.08	531.00
CL680	66" 72" 96"	80" x 102"	.08	791.00
CL880	90" 96" 96"	104" x 102"	.08	792.00





KASON Vinyl Strip Curtains

- Quick, easy mounting and strip replacement.
- Wall mounted system for a wide range of applications.
- Join together for wider door size.

Part #	Door Width	LIST
402LA6063884	38" x 84"	259.30
402SD8084490	44" x 90"	396.00

Roll Stock

USDA material is made of compounds that meet federal requirements for incidental contact with meat, poultry, and dairy products. This product is recommended for indoor and outdoor applications, in temperatures ranging from –40°F to 140°F.



Part #	Alt #	Strip Width	Strip Thickness	Feet per Roll	LIST
401LSM606400	606	6"	.06	300	2.20/ft
401SM8080300	808	8"	.08	300	3.40/ft
402SM6060100	902SM6060100	6"	.06	100	5.90/ft
402SM8080100	902SM8080300	8"	.08	100	3.40/ft

GASKETS FOR COMMERCIAL REFRIGERATION

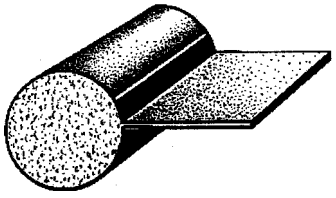
Foamedge Gaskets

Soft flexible polyurethane foam core covered with a thin vinyl sheeting
Applications: insulating, sound proofing, shock absorber, light seal, dirt seal

- Use Foamedge on partitions, swinging doors, sliding doors, exhaust fans, light fixtures, hoods, covers
- Foamedge is a soft, flexible polyurethane foam core, clad in a resilient vinyl cover
- Versatile, effective insulation - soundproofing sealer
- Installs easily with tacker or screws
- Available in 25 ft. or 100 ft. rolls

Foamedge - Temperature Range +20° to +250°F

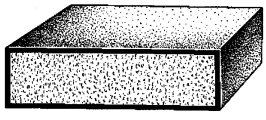
Part #	Cushion Diameter	Flange Width	LIST
3705-10	3/8"	1/2"	7.50
V1212	1/2"	1/2"	9.30
V5858	5/8"	5/8"	13.10
7507-10	3/4"	3/4"	8.50



SEALING STRIPS

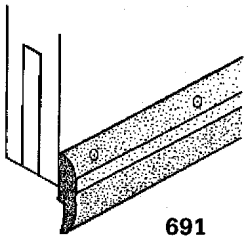
Closed Cell Sealing Strips

For heavy duty sealing of cold storage and other commercial refrigerator door applications.



Part #	Thickness	Width	LIST
3810	3/8"	1"	8.80 (ft)

Door Sill Gaskets



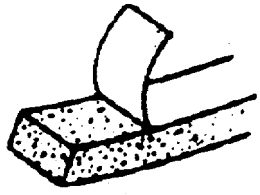
691

Part #	Strip Width	Material	LIST
691	1-1/2"	vinyl	13.30 (ft)

SEALING STRIPS

Closed Cell Foam Tape

Part #	Description	LIST
CCNEOPSA 1/4x3/8 x 25	1/4" x 3/8" x 9.8'	27.30
CCNEOPSA-1/4X3/4X25	1/4" x 3/4" x 25'	37.60
CCNEOPSA1/2X1X20	1/2" x 1" x 20'	61.40
CCNEOPSA1/2X1-1/2X20	1/2" x 1-1/2" x 20'	79.80
CCNEOPSA5/16X1/2X25	5/16" x 1/2" x 25'	36.00
CCNEOPSA5/16X3/4X25	5/16" x 3/4" x 25'	38.30
CCNEOPSA-3/4X3/4x12.5	3/4" x 3/4" x 12.5'	38.50
CCNEOPSA1X2X12.5	1 x 2 x 12.5'	115.50



Loctite Super Weatherstrip Adhesive

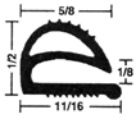
Fast drying, strong, waterproof weatherstrip adhesive.

Part #	Description	LIST
30537	yellow	27.10

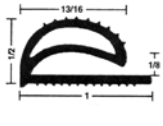


Compression Gaskets

Part #	Cushion Height	LIST
6387	1/2" (ft)	1.30

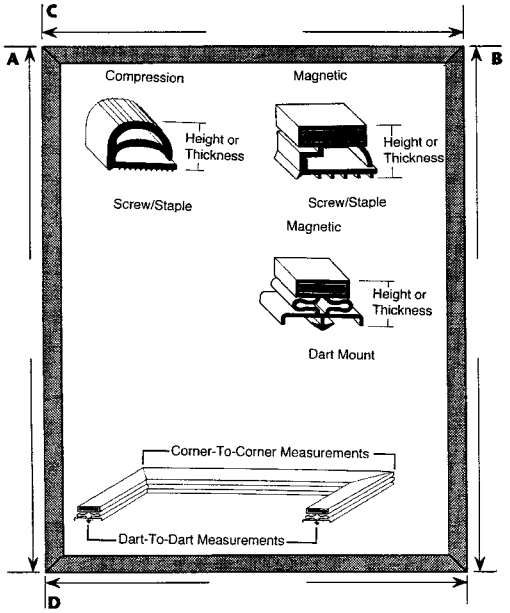


Part #	Cushion Height	LIST
6662	1/2" (ft)	2.40



DOOR GASKETS - MADE TO ORDER

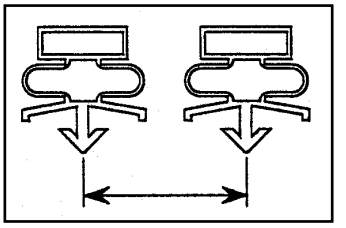
Order Information



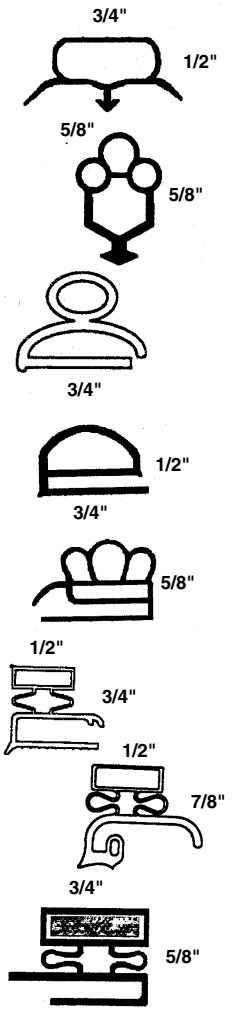
Magents on sides: ☐ A ☐ B ☐ C ☐ D ☐ All ☐ None

Note: Please ensure your measurements are correct. The finished product is determined by the dimensions you supply.

When ordering dart type, you must specify dimensions centre to centre of the dart. See illustration below. If dimensions on the dart type gasket has been measured corner to corner please specify.



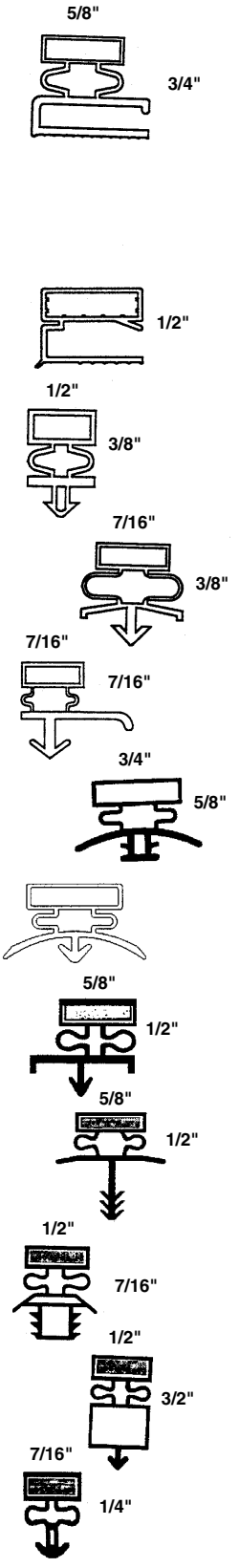
Sure Seal	Exact	Description
RKG-LSP	–	dart fits 1/8" channel - used on Foster, Vollrath, MKE
RKG-BCD	–	dart fits 1/8" channel for 1/2" offset - used on Coldstream
RKG-COM	–	compression type gasket
RKG-DLP	P10433	flange style for universal application
RKG-BCF	–	flange style, black for 1/2" offset. Used on Coldstream
RKG-WW	P2099	domestic applications, all major brands & some commercial applications
RKG-UFG (A)(B)(C)(D)	P2319	universal flange style. one profile is used to create 4 different profile depending on flange requirements. Bel Par, Coldstream, Continental, Delfield, Randell, Stay Cold



DOOR GASKETS - MADE TO ORDER

Order Information on previous page

Sure Seal	Exact	Description
RKG-GFM	P2319	used mainly in the food service industry and is common to quest metal products
RKG-CLK		Grey, Compression Gasket used on Coldmatic doors
RKG-LP	P10698	low profile gasket used extensively in back bar applications, Grey
RKG-MD		similar to gaskets commonly found on Coldstream, Cornelius, Raetone, Traulsen, True, reach-in coolers & freezers fits 1/8" channel
RKG-NK	P2778	used on a variety of equipment including Beverage Air, Migoli, Universal-Nolan, Nova Kool, etc.
RKG-SKG	AVAIL.	used primarily on Silver King - Norris equipment - fits 3/16" channel
RKG-FTR	P3265	used primarily on Foster, Coldmatic fits 1/4" channel
RKG-GMD	–	used on Beverage Air, Elliott-Williams, Foster, Perlick and Utility
RKG-CRP	P2209	fits 1/8" channel - used on Beverage Air, Diamond, Duke, Jordan, Kelvinator, Met Tec, McCall, Raetone, Star Metal, Superior, True
RKG-BLY	AVAIL.	fits 1/8" channel used on Bally coolers & freezers
RKG-CLM	P3201	fits 5/16" channel used on Traulsen reach in coolers & freezers
RKG-TRU	8108A	fits 1/8" channel used on True reach in coolers & freezers
RKG-ANT	P2553	fits 1/8" channel - used on Anthony, Coldstream, Glenn Air, Hussman, Leer, Randell glass doors
RKG-PHP	–	Universal Door Sweep



CONDENSATE PANS

Commercial Refrigeration Condensate Evaporator Pans



Features/Benefits

- Corrosion resistant stainless steel construction.
- Made from top quality materials and components for longer more durable use.
- Positive evaporation
- Space saving
- High limit safety and float switch operation

Part #	Capacity QT	Watts	Volts	Dimensions L x W x H	Dissipation Rate Per Day	LIST
CP801	1-3/4	400	120	10 x 7 x 2-1/2	3 Gallon	366.00
CP802	2-1/2	800	120	13 x 7 x 2-1/2	6 Gallon	383.00
CP802-240	2-1/2	800	240	13 x 7 x 2-1/2	6 Gallon	406.00
CP804	4-1/2	1000	120	13 x 7 x 4	10 Gallon	404.00
CP804-240	4-1/2	1000	240	13 x 7 x 4	10 Gallon	427.00
CP804HD	7-1/2	1000	120	13 x 10 x 4	6 Gallon	440.00
CP804HD-240	7-1/2	1000	240	13 x 10 x 4	6 Gallon	460.00
CP807	7-1/2	1000	120	13 x 10 x 4	10 Gallon	427.00
CP807-240	7-1/2	1000	240	13 x 10 x 4	10 Gallon	449.00
CP815	15	1440	120	21 x 13 x 4	12 Gallon	580.00
CP815-240	15	1500	240	21 x 13 x 4	12 Gallon	602.00
CP816	7	500	120	13 x 10 x 4	4.5 Gallon	427.00
CP817	7	1000	208	13 x 10 x 4	8 Gallon	440.00
CP818	7	1000	208	13 x 10 x 4	8 Gallon	440.00
CP819	7	1500	120	13 x 10 x 4	12 Gallon	427.00
CP820	7	1500	208	13 x 10 x 4	12 Gallon	445.00
CP821	15	1500	208	21 x 13 x 4	12 Gallon	580.00

Condensate Pan



Part #	Cap.	Volts	Watts	Evap. Rate	Size	LIST
660A	50 oz	117	190	6 oz / hr	12-1/4 x 4-3/4 x 3	349.00
70CSA220	50 oz	220	190	6 oz / hr	12-1/4 x 4-3/4 x 3	315.00

30-OS, 31 & 75 Condensate Pans

Standard cast aluminum condensate drains complete with long life heating element and mounting legs.

- Designed for continuous use.

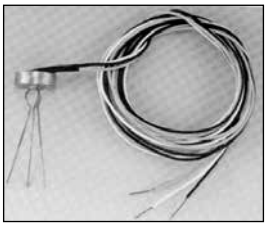




Part #	Cap.	Volts	Watts	Evap. Rate	Size	LIST
30-0S	38 oz	120	160	8 oz / hr	10 x 4 x 2-7/8	134.60
75	75 oz	120	320	14 oz / hr	10 x 9 x 2-3/4	351.00
75-220	75 oz	220	320	14 oz / hr	10 x 9 x 2-3/4	351.00

Universal Drain Heaters

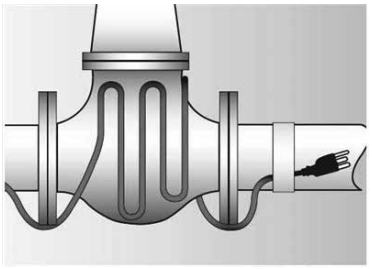
Designed for use in heating drains.



Part #	Volts	Watts	LIST
SH250	120	3	40.20

PIPE HEATING CABLE

"Self Regulating" Heating Tape



- Won't burn out
- Won't overheat
- OK to overlap
- OK to insulate
- OK for plastic
- No thermostat required
- Cut to desired length
- Higher efficiency

Protect Pipes
Keep Wet Areas from Freezing
With WinterGard Wet for tracing air conditioner drain pans to prevent freezing or gut tracing freezer drain lines to prevent backup problems

Thermawire (steel braided)

Part #	Watts/ft	Power	LIST
TW6-1C	6	120 V	11.30/ft
TW6-2C	6	240 V	11.90/ft

Thermawire (steel braided & outer jacket)

Part #	Watts/ft	Power	LIST
TW6-1CR	6	120 V	13.60/ft
TW6-2CR	6	240 V	15.60/ft

Installation Accessories

Part #	Watts/ft	LIST
FGK-P-RS	Termination Kit	19.80
TW-GFI-CS	GFIC Connection Kit	214.20



TW-GFI-CS

Non-Automatic Heat Tapes

Pipe heating cable eliminates freezing problems



Heat Tape

115 Volt

Part #	Description	LIST
HB-01	3.28' length, 23 watts	73.40
HB-02	6.56' length, 46 watts	77.90
HB-03	9.84' length, 69 watts	84.20
HB-04	13.12' length, 92 watts	90.90
HB-05	16.41' length, 115 watts	97.60
HB-06	19.69' length, 138 watts	101.90
HB-07	22.97' length, 161 watts	108.40
HB-09	29.53' length, 207 watts	117.20
HB-12	39.37' length, 275 watts	161.90
HB-18	59.06' length, 414 watts	230.30
HB-24	78.74' length, 551 watts	301.00

240 Volt

Part #	Description	LIST
HB-02-2	6.56' length, 46 watts	81.80
HB-04-2	13.12' length, 92 watts	90.40
HB-06-2	19.69' length, 138 watts	107.60
HB-08-2	26.25' length, 184 watts	133.00
HB-10-2	32.81' length, 230 watts	163.40
HB-12-2	39.37' length, 275 watts	193.20
HB-14-2	45.93' length, 321 watts	222.90

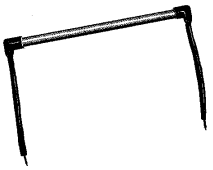
Pipe Freeze Protection Cable

Self Regulating at 5 watts/foot-120 volt with plug

Part #	Description	LIST
STW51-6	6' length	160.70
STW51-12	12' length	187.40
STW51-18	18' length	246.30
STW51-24	24' length	316.00
STW51-50	50' length	519.00

HEATERS

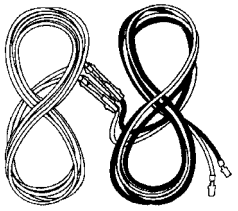
Radiant Defrost Heaters



Part #	Length	Watts	Volts	LIST
SH261	21"	550	115	
SH263	21-5/8"	625	115	
SH265	10-11/16"	625	115	
SH266	22-9/16"	525	115	
SH267	22-7/8"	500	115	
SH270	24-1/4"	550	115	

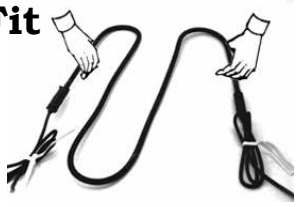
Door Heaters

For commercial refrigeration application to prevent moisture and eliminate frost build-up on door and cabinet fronts.



Part #	Length	Watts/Ft.	Volts	LIST
SH281	36-1/2'	3	120	55.30
SH282	18'	3	120	44.00
SH283	36'	3	220	44.00
SH284	18'	3	220	47.20

Flexible Bend-to-Fit Defrost Heaters

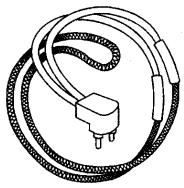


For evaporator coils & condensate drain pans in commercial refrigeration. Bend and shape easily with hands at jobsite. Quickly replace almost any defrost heater. Measure length of original and order a similar length. Heaters constructed of .250 diameter incoloy. Heaters can be linked together to create additional length.

Part #	Watts	Volts	Sheath Length	Heated Length	LIST
2045	300	120	45"	31"	207.00
2068	450	120	68"	54"	230.50
2091	675	240	91"	77"	257.90
2105	850	240	105"	91"	296.90
2118	1000	240	118"	104"	313.00
2150	1350	240	150"	136"	344.00
2188	1250	240	188"	174"	367.00
2216	1500	240	216"	202"	422.00

Flexible Braided Aluminum Heaters

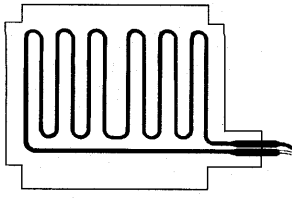
Designed for use in heating drain troughs, drain tubes and drain pans.



Part #	Length	Leads	Watts	Volts	LIST
SH201	18	23"	15	115	35.70
SH202	29	23"	45	115	44.70
SH203	44	23"	55	115	44.70
SH205	56	23"	65	115	
SH207	86	23"	110	115	48.50

Aluminum Foil Heaters

Provided with pressure sensitive adhesive backing for easy installation.



Part #	Size L x W	Watts	Volts	LIST
SH222	24" x 1-1/4"	10	115	28.50
SH223	14-1/2" x 5-1/2"	10	115	
SH224	27-1/2" x 5-1/2"	65	115	58.20
SH226	10-1/2" x 10-1/2"	40	115	44.70

Flexible Drain Line Heaters



To prevent freezing in commercial refrigeration condensate drain lines and other applications. Aluminium braided heaters keep drains clear of ice. Waterproof silicone sleeve protects heater. The sleeve is stiff but easily flexible.

- Durable Metal Braid
- Silicone Construction
- Designed For Waterproof Low Wattage Heat

Part #	Length	Watts	Volts	Leads	LIST
SH500	9"	11	120	18"	46.10
SH502	13"	15	120	18"	46.10
SH503	13"	15	240	18"	46.10
SH504	21"	25	120	18"	46.10
SH505	21"	25	240	18"	46.10

CRANKCASE HEATERS

CH Series Compressor Heaters



Part #	Volts	Watts	Girth Dim. Min.	Girth Dim. Max.	LIST
CH-100-3	480	50	30-3/16"	37"	49.90
CH-100-6*	575	50	30-3/16"	37"	74.20
CH-101	240	54	27-7/16"	34-1/4"	47.10
CH-101-3	480	54	27-7/16"	34-1/4"	47.10
CH-102	240	60	25-3/4"	32-9/16"	47.10
CH-102-2	120	60	25-3/4"	32-9/16"	49.90
CH-102-6*	575	60	25-3/4"	32-9/16"	71.50
CH-103	240	45	24-3/4"	31-9/16"	47.10
CH-104	240	75	41-1/2"	48-5/16"	49.90
CH-104-6*	575	75	41-1/2"	48-5/16"	78.00
CH-197	240	25	13-3/4"	20-9/16"	49.90
CH-1972*	120	25	13-3/4"	20-9/16"	

** Special Order*

Self-Regulating Crankcase Heaters



Features:
- Energy efficient
- Convenient , easy to install
- Protection against costly compressor burnout
- Fits all crankcases with circumference smaller than 49 inches
- Self regulating makes it safe to overlap without burnout & prevents over-heating of oil

Part #	Power	Output at 0°F	Output at 60°F	LIST
SRCCH-1	120V	60 W	35 W	144.60
SRCCH-2	240V	60 W	35 W	144.60

AIR & WATER CLEANSERS

Kon-Trole

Kon-Trole cleans scum and other accumulations in condensate drain pans and humidifiers, eliminating plugged condensate drains and pans, stopped up humidifier pans and odor. They are safe, non-toxic, non-corrosive, completely soluble and do not form any deposit in the pan or drain.



Part #	Description	LIST
PT-153	6 tablets per card, 1 tablet per 3 tons each mo.	22.50

Humi-Tabs

Controls humidifier odors and scale. Use Humi-Tabs and eliminate most of the extra maintenance and odor problems caused by plugging drains and dirty reservoirs. Humi-Tabs clean sludge, scum and other accumulations in the humidifier thus preventing stopped up humidifier pads.



Part #	Description	LIST
PT-156	Humi-Tabs - 4 tablets per card	11.40

Odor Neutralizer

ClenAir's unique odor neutralizing formula removes odors quickly and permanently.



Part #	Description	LIST
61001	1/2 lb. Tub	22.40

Kleen-Air Odor Absorber

By simply opening the lift spout, one 8 ounce bottle of Kleen-Air will absorb and remove all kinds of odors for ONE FULL YEAR.



Part #	Size	LIST
KA12	8 oz	6.70

ClenAir Liquid Formula

Liquid ClenAir is a fast acting deodorizing product. Eliminates odors via an oxidation process while leaving a fresh scent.



Part #	Description	LIST
61030	Unscented Spray 16oz.	27.10

PIPE AND THREAD SEALERS

LOCTITE

Loctite Threadlocking 242



Loctite product 242 is a single component anaerobic threadlocking material, which is thixotropic and develops medium strength. The product cures when confined in the absence of air between close fitting metal surfaces and is particularly suitable for less active substrates such as stainless steel and plated surfaces.
TYPICAL APPLICATIONS:
Prevents loosening and leakage of threaded fasteners. Particularly suitable for applications such as pump or motor mounting bolts, engine rocker nuts or equipment housing screws, where disassembly with hand tools is required for servicing.

Part #	Description	LIST
38621	10 ml bottle	19.00

Loctite Threadlocking Activator 7649



Loctite Activator 7649 is used where increased cure speed of Loctite anaerobic products is required. It is especially recommended for applications with passive metals or inert surfaces and with large bond gaps. Activator 7649 can also be used when cure temperatures are below room temperature. Use of activator is particularly recommended for cure conditions below 15°C.

Part #	Description	LIST
38611	4.5 oz. aerosol Primer N.	49.00

Loctite Threadlocking 262



Loctite product 262 is a single component anaerobic threadlocking material, which is thixotropic and develops medium to high strength. The product cures when confined in the absence of air between close fitting metal surfaces.
TYPICAL APPLICATIONS:
Prevents loosening and leakage of threaded fasteners. Product is particularly lubricating (low K value) for easy assembly. Particularly suitable for heavy duty applications where resistance to heavy shock, vibration and stress levels is required.

Part #	Description	LIST
38637	10 ml bottle	19.00

PIPE AND THREAD SEALERS

LOCTITE

Loctite Refrigerant Sealant 554



Provides maximum solvent resistance on threaded fittings and pipe up to 2" in diameter. It is recommended for refrigeration systems and service with strong chemicals. The sealant is used in place of specialty nonhardening compounds, litharge, glycerine, and sealing tape. Refrigerant sealant is not for slip fitted tube joints. 554 has excellent solvent resistance and withstands temperatures to 300°F (149°C)

Part #	Description	LIST
25882	10 ml bottle	37.60

Loctite 565 Thread Locker



Loctite product 565 is a high performance curing sealant for tapered pipe threads. The product is a creamy paste-like anaerobic compound that cures when confined in the absence of air and between close fitting metal surfaces. The high lubricating properties of this compound prevent galling on stainless steel, aluminum and all other metal pipe threads and fittings.

TYPICAL APPLICATIONS:
Recommended for sealing metal tapered pipe threads and fittings (up to 5 cm (2") National Pipe Thread (NPT)) for industrial applications in the chemical processing, petroleum refining, pulp/paper, waste treatment, textile, utilities/power generation, marine, automotive, industrial equipment, gas compression and distribution industries. It is also recommended for industrial plant fluid power systems.

Part #	Description	LIST
38635	6 ml. tube	42.70

Loctite 518



518 is a single component, medium strength, thixotropic, anaerobic sealant which cures rapidly and develops medium strength. The product cures when confined in the absence of air between close fitting metal surfaces.

TYPICAL APPLICATIONS:
Seals close fitting joints between rigid metal faces and flanges. Provides resistance to low pressures immediately after assembly of flanges. Typically used as a form-in-place gasket on rigid flanged connections

Part #	Description	LIST
38638	50 ml. tube	40.20

Loctite Product PST 564 Thread Sealant



Loctite Product 564 Is a single component, industrial grade, anaerobic pipe sealant formulated specifically for fast, reliable curing on metal, tapered pipe threads and fittings. The lubricating properties of this creamy, paste-like compound facilitate proper assembly and torque tightening of piping system components. Product 564 cures rapidly to secure and seal fittings for high pressure operation (up to 10000 psi with stainless steel fittings). The controlled strength characteristics allow even larger pipe sizes, such as those found in the gas utility lines, to be disassembled quickly and easily.

TYPICAL APPLICATIONS:
Recommended for sealing and easy removal of metal tapered pipe threads and fittings and for industrial applications in the chemical processing, petroleum refining, pulp/paper , waste treatment, textile, utilities/power generation, marine, automotive, industrial equipment and gas compression industries.

Part #	Description	LIST
28754	50 ml tube	54.50

Loctite Thread Sealant with Teflon

Loctite Thread Sealant with Teflon is a smooth, white paste with added lubricity of Teflon for general purpose metal pipe sealing. This product withstands temperatures ranging from -60°F to 300°F

FEATURES:
- Non-hardening for easy disassembly
- Works to 300°F
- Outperforms Teflon tape and doesn't shred
- No measuring or mixing
- Clean, white appearance

TYPICAL APPLICATIONS:
Lubricating and sealing threaded pipe, pipe fittings and flanges. Ideal for water pipes.

Part #	Description	LIST
1527514	0.25 pt. brush can	51.60

PIPE AND THREAD SEALERS

Nylog





- Never hardens and always remains viscous and high tack from -40 to 350°F
- Treated gasket materials will not dry, crack or become heat fixed to adjoining metals
- Assembly lubricant for coating bearings, seals, pistons, rings, TXV's, unloaders, actuators, springs, valves, valve caps, valve packings and other internal system mechanisms.

Red Label Nylog should be used with CFC or HCFC refrigeration systems containing either mineral or alkylbenzene as the bulk lubricant. Blue Label Nylog can be used universally or specifically with an HFC bound synthetic oil system.

Part #	Description	LIST
RT200R	Refrigeration grade mineral & alkylbenzene	21.90
RT201B	Synthetic refrigeration oil, POE, PAG	23.50

X-Pando



- Non-toxic pipe joint compounds for flanged or threaded joints
- Expands as it sets
- Replaces all types of "Pipe Dope". Corrects pitted flange faces or worn threads
- Withstands deflection, high temperature and pressure
- For most pipes (except aluminum)

Part #	Description	LIST
X-PANDO-14OZ	14 oz	47.70

Liqui-Vac High Vacuum Sealant



A real time-saver in servicing cooling systems, Liqui-Vac is the only liquid sealant with the capacity of sealing high vacuum connections. It will positively seal high vacuum leaks around threads, through flared connections, face joints, wherever metal joins metal. Sets up quickly, but remains flexible for easy disconnection. Is resistant to most solvents, can seal to 1 micron, and withstands temperatures from -100° F to +325° F.

Part #	LIST
4036-4-OZ	56.60

PIPE AND THREAD SEALERS

Loctite Thread Treatment Sticks



268 High Strength Threadlocker Stick

- Eliminates loosening from vibration, shock, and thermal expansion
- Prevents rust & corrosion while sealing and protecting threads
- Requires localized heat and hand tools for removal

Part #	LIST
38136	38.20



PST® 561 Thread Sealant Stick with Teflon®

- Immediate low pressure sealing to 100 psi
- Protects threaded areas from rust and corrosion
- Provides exceptional fluid compatibility and chemical resistance
- Eases disassembly
- Seals all types of metal tapered threads and fittings to NPT specs

Part #	LIST
38133	32.90



C5-A® Copper Anti-Seize Stick

- Protects metal parts in high heat environments up to 1800°F
- Prevents rust, corrosion, seizing, and eases disassembly
- Reduces friction and wear to critical parts
- Buttery texture ideal for both coarse and fine threads
- Exceptional lubrication properties

Part #	LIST
38137	18.30



Silver Grade Anti-Seize Stick

- Protects metal parts in high heat environments up to 1600°F
- Prevents rust, corrosion, seizing, and eases disassembly
- Reduces friction and wear to critical parts
- Buttery texture ideal for both coarse and fine threads
- Exceptional lubrication properties

Part #	LIST
38138	18.30



QuickStix™ 548™ Gasket Eliminator™

- Designed for rigid flange assemblies
- Forms a flexible, solvent resistant seal
- Offers excellent oil resistance on rigid flange sealing
- Seals up to 300 degrees F (149 degrees C)
- Fills gaps to 0.010”

Part #	LIST
39151	58.50

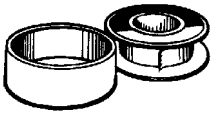


QuickStix™ 534™ Hi-Tack Gasket Dressing

- Allows a precut gasket to be positioned holding it in place for assembly
- Holds aggressively yet still allows for repositioning of the cut gasket
- Seals up to 300 degrees F (149 degrees C)
- Offers added control and ease of use
- Solvent free and low odor

Part #	LIST
39156	30.10

Teflon Tapes



Part #	Description	Size	LIST
TEFLON-TAPE	Pipe compound in tape form	1/2" x 480"	1.40
GT260	Specifically formulated for use on Natural, LP & Synthetic gases	1/2" x 260"	5.80
PINK-TEFLON-TAPE	High density teflon tape - pink	1/2" x 6m	3.50

LA-CO Teflon Cord

Use as packing for faucets, valves, pumps, etc.; also as gasket between flanges



Part #	Description	LIST
45090	3/32" x 50' Teflon Cord	85.60

ADHESIVES AND EPOXY

Loctite Quick Gel



Fast curing, single component gel cyanoacrylate adhesive. It is specifically formulated for difficult to bond substrates. The gel consistency prevents adhesive flow even on vertical surfaces.

TYPICAL APPLICATIONS:
Rapid bonding of a wide range of metal, plastic or elastomeric materials, particularly suited for bonding porous or absorbent materials such as wood, paper, leather or fabric.

Part #	Description	LIST
38615	3 gm tube	12.30

Nu-Calgon Spray-n-Bond



A wide web spray adhesive formulated specifically for insulation and duct liner applications. Ideal for porous surfaces, it is waterproof, flexible, transparent, non-staining, and it can be used for both temporary or permanent bonds.

Part #	Description	LIST
4369-75	12 oz can	23.60

Loctite Contact Adhesive



A yellow, viscous liquid contact cement for all types of weatherstripping and general purpose bonding.

FEATURES:

- Fast, high strength bonds
- Works on all types of weatherstripping, porous and non-porous surfaces
- Bonds rubber, metal wood, gasketing materials and fabric backed vinyl upholstery

Part #	Description	LIST
30537	5 fl. oz. tube	27.10

ADHESIVES AND EPOXY

Loctite Fixmaster® Fast Cure Epoxy Mixer Cups

Premeasured epoxy mixer cups. Bonds in 5-15 minutes. Excellent chemical resistance. Fills porosities and can be used to build up worn parts. Ideal for bonding glass, hard plastics, rubber, and metal.

Part #	Description	LIST
39088	.12 fl. oz. cups, 4 pk, Grey	53.70

JB Weld & Water Weld





Part #	Description	LIST
8265-S	Cold Weld Compound	17.20
8277	Water-Weld Epoxy Stick	19.80
50176F	Kwikweld Syringe	19.20
50172F	Marine Epoxy Syringe	22.60

QuikCopper®

QuikCopper Epoxy Putty Stick is a hand-kneadable, fast-setting, copper-reinforced polymer compound for permanent repairs to copper, brass, bronze and other non-ferrous metals.



Part #	LIST
462570	22.70

LA-CO Heat-Seal Stik Epoxy Sealer

- 3/8 oz.
- One part epoxy
- Pressures to 450 PSI
- Fast, repairs completed in 90 seconds
- Use on aluminum, copper & other metals, glass & ceramics
- Stick melts, seals & cures in one operation
- Ideal for use on refrigeration systems



Part #	LIST
11577	66.40

Fire Stop Sealant

For sealing around pipe and wiring penetrations through fire-rated walls and floors. Light Grey.

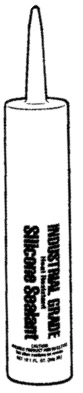
Part #	Description	LIST
66640	300 ml.	30.00



ADHESIVES AND EPOXY

Kason Silicone Adhesive

For general purpose glazing and sealing applications.
Interior or exterior use. Mildew resistant.



Part #	Description	LIST
3700-WHITE	White	17.60
3700-CLEAR	Clear	17.60
3700-ALLUMINUM	Aluminum	17.60
3700-BLACK	Black	17.60

Loctite Superflex Silicone Adhesive Sealant

General purpose, one-part silicone adhesive sealants cure at room temperature to form a tough rubber seal. Will not slump in overhead or vertical applications. Formulated to withstand extreme temperature cycling, U.V. light and ozone.



Part #	Description	LIST
59575	Clear Silicone 300ml cartridge	35.80
59475	White Silicone 300ml cartridge	37.10

Loctite High Temperature RTV Silicone Adhesive

High temperature silicone makes gaskets that resist 600°F (316°C) intermittently. Resists aging, weather and thermal cycling without shrinking, cracking, hardening. Fills gaps to .25". Seals ducting in furnaces, ovens, boilers, and exhaust stacks.



Part #	Description	LIST
59675	Red, 300 ml cartridge	39.50
40465	Red, 7.25 oz self-dispensing	62.70
18581	Gray, 300 ml cartridge	71.90

CHEMICALS

Thawzone

Thawzone chemically "dries" all refrigerants (R-12, R-22, R-134a etc.) methyl chloride and methylene chloride. Thawzone frees frozen systems due to moisture in 5 minutes. It prevents refreezing, does not leave any residue, does not contain any dissolved solids or methanol, and works with or without solid dryers.



Part #	Description	LIST
H17004	4 oz plastic jar	25.90

Silica Gel

Non-corrosive and non-toxic. Has a tremendous number of sub-microscopic pores which attract water vapor condense it and hold it. Turns pink with moisture.



Part #	Description	LIST
550	Silica gel 8-20 mesh, 6.4 lb bottle	55.20

Drain Solve

Drain Solve is an alkaline-based drain opener which removes grease, hair, vegetable and other organic matter. It is no-fuming, and it will clean and clear drains quickly.



Part #	Description	LIST
4165-24	1 quart bottle	23.40
4165-08	1 gal	74.80

SPRAY PAINT

Spray Paint

Part #	Description	LIST
80340	Blue Spray Paint	27.90
80350	Dark Gray Spray Paint	28.00
80365	Yellow Spray Paint	28.00
80395	Gray Primer Spray	27.90
80400	Red Oxide Primer	28.00
80465	Aluminum Spray Paint	28.10

Part #	Description	LIST
81200	Orange Inverted Marking Paint	21.90
81988	White Gloss Spray Paint	28.10
81989	Black Gloss Spray Paint	28.10
81991	BLack Flat Spray Paint	28.10
81997	White Inverted Marking Paint	



HAND CLEANERS

Orange Lotion Hand Cleaner Pumice Formula

Quickly removes ground-in grease and grime without abrading skin like coarser pumice hand cleaners.



Part #	Description	LIST
61203	440 ml squeeze bottle	18.10
61201	3.5 L bottle with pump	100.90

Orange Lotion Hand Cleaner Smooth Formula

Smooth Lotion is ideal for those who prefer a hand cleaner without pumice or have extra sensitive skin.



Part #	Description	LIST
61202	440 ml squeeze bottle	18.70
23218	3.5 L bottle with pump	43.60

Heavy Duty Hand Cleaning Wipes



Part #	Description	LIST
58310	50 - pop-up cannister	27.40
91371	75 - bucket	52.00
4185-75	75 - Great Wipes	52.00

WIPERS

ToolBox Interfold Wiper



- Works like cloth and is a low lint wiper
- Perfect for medium-duty wet or dry wiping applications

Part #	Description	Dimensions	Quantity	LIST
05280T	White	8.5" x 16.5"	126 sheets / box	30.50

Kimberly-Clark WYPALL L20 Wipers



WYPALL L20, 4 ply tissue, POP-UP Box. Textured side for cleaning power. Contains no binders or glues. Multi-ply capacity for large spills.

Part #	Colour	Dimensions	Put-Up	LIST
47044	White	9.1" x 16.8"	88 / box	23.20

Polo Wiping Rags



Polo Fleece wipers... All cloths completely laundered and sterilized. Highly absorbant, very soft, cotton/polyester mix

Part #	Description	LIST
WIPING-RAG	10lb box	20.00

COIL AND CONDENSER CLEANERS

NU-CALGON
Green Select



Design for the Environment
U.S. EPA
Recognized for Safer Chemistry
www.epa.gov/dfe

Cal-Green™

Cal-Green has been recognized by the EPA's Design for the Environment program, which tests and identifies products that are safer for the environment. Cal-Green is a plant-based, natural condenser cleaner that is powerful enough to remove dirt, grease, and grime but environmentally safe for use around people, plants, animals, and aquatic life. This non-foaming, non-toxic concentrate is perfect for cleaning residential or commercial systems and restores their efficiency while being environmentally responsible.

Part #	Size	LIST
4190-08	1 Gallon	69.80

Evap-Green™

Evap-Green is also part of the EPA's Design for the Environment program which tests and identifies products that are safer for the environment This no rinse product is perfect for numerous heating and air conditioning applications such as evaporator coils, roof top units, window units, metal filters, fan blades, and more. By using Evap Green, a natural plant based formulation, the coil is being cleaned with the most environmentally friendly product available. It is also safe to be used around people, plants, animals, and aquatic life.

Part #	Size	LIST
4191-08	1 Gallon	65.20

Nu-Calgon's Coil Cleaner Selection Guide

	NU-BRITE® 4291-18	NU-BRITE® 4291-08 (1 gal) 4291-05 (2.5 gal) 4291-01 (55 gal)	FOAM-BRITE® 4178-08 (1 gal) 4178-05 (2.5 gal) 4178-01 (55 gal)	ALKA-BRITE® PLUS 4120-08 (1 gal)	CAL-BRITE® 4133-08 (1 gal)	SPECIAL HD CALCLEAN® 4143-08 (1 gal) 4143-06 (2.5 gal) 4143-01 (55 gal)	CALCLEAN® 4081-75	CALCLEAN® 4135-08 (1 gal) 4135-06 (2.5 gal) 4135-01 (55 gal)	NU-BLAST® 4290-75	TRICLEAN 2X 4372-24 (1 qt)
EQUIPMENT USED ON										
Condenser Coils	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Evaporator Coils	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Permanent Filters	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Electronic Air Filters	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Small Condenser Coils	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Small Evaporator Coils	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Fan Blades, Motors, Etc.	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Microchannel Coils	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
FORMULATED TO REMOVE										
Greasy Dirt & Oil	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Cooking Grease	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Lint, Dust, Dirt & Grime	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Tobacco Tars	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Oxide (Corrosion) Deposits	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Cottonwood/ Bugs	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
FEATURES & BENEFITS										
Product Type		Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Acidic	Alkaline	Alkaline
Foaming	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Brightening	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Degreasing	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Disinfectant	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Non-Rinsing	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Coil Protection	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Biodegradable	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
USDA Authorized	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
EPA Registered	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
NSF Registered	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

	EVAP POW'R®-C 4168-08 (1 gal) 4168-05 (2.5 gal) 4168-01 (55 gal)	EVAP FOAM® NO RINSE 4171-75	EVAP-FRESH® NO RINSE 4166-75	EVAP-FRESH® NO RINSE 4166-08 (1 gal)	TRI-POW'R® HD 4371-88 (1 gal) 4371-81 (55 gal)	GREEN CLEAN 4186-24 (1 qt) 4186-08 (1 gal) 4186-01 (55 gal)	CAL-GREEN™ 4190-08 (1 gal) 4190-01 (55 gal)	EVAP-GREEN™ 4191-08 (1 gal) 4191-01 (55 gal)	CAL-BLAST® 4132-20	CAL-SHIELD® 4148-32 (1 qt) 4148-08 (1 gal)
EQUIPMENT USED ON										
Condenser Coils	✔	✔			✔	✔			✔	✔
Evaporator Coils	✔	✔	✔		✔	✔			✔	✔
Permanent Filters	✔	✔	✔		✔	✔			✔	✔
Electronic Air Filters	✔	✔	✔		✔	✔			✔	✔
Small Condenser Coils	✔	✔			✔	✔			✔	✔
Small Evaporator Coils	✔	✔	✔		✔	✔			✔	✔
Fan Blades, Motors, Etc.	✔	✔	✔		✔	✔			✔	✔
Microchannel Coils	✔	✔	✔		✔	✔			✔	✔
FORMULATED TO REMOVE										
Greasy Dirt & Oil	✔	✔	✔		✔	✔			✔	✔
Cooking Grease	✔	✔	✔		✔	✔			✔	✔
Lint, Dust, Dirt & Grime	✔	✔	✔		✔	✔			✔	✔
Tobacco Tars	✔	✔	✔		✔	✔			✔	✔
Oxide (Corrosion) Deposits	✔	✔	✔		✔	✔			✔	✔
Cottonwood/ Bugs	✔	✔	✔		✔	✔			✔	✔
FEATURES & BENEFITS										
Product Type	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Solvent	Solvent	Alkaline	Alkaline	Protectant
Foaming	✔	✔	✔			✔			✔	✔
Brightening	✔	✔	✔			✔			✔	✔
Degreasing	✔	✔	✔		✔	✔			✔	✔
Disinfectant	✔	✔	✔			✔			✔	✔
Non-Rinsing	✔	✔	✔		✔*	✔*			✔	✔
Coil Protection	✔	✔	✔			✔			✔	✔
Biodegradable	✔	✔	✔		✔	✔			✔	✔
USDA Authorized	✔	✔	✔		✔	✔			✔	✔
EPA Registered	✔	✔	✔		✔	✔			✔	✔
NSF Registered	✔	✔	✔		✔	✔			✔	✔

* Dilution ratios for no rinse applications: Tri-Pow'r HD= 10:1, CalClean Special HD= 40:1, CalClean= 10:1

COIL AND CONDENSER CLEANERS

NU-CALGON



Nu-Brite®

Nu-Brite is the most effective coil cleaner available today. It foams, brightens, and is an equally effective yet safer alternative to HF acid-based products. It produces a high volume of foam that cleans more effectively than acids, particularly in removing grease. Biodegradable. USDA Approved.

Part #	Size	LIST
4891-08	1 Gallon	68.10
4291-05	2.5 Gallons	173.50
4291-18	18 Ounce Can	26.30

Blackhawk

Blackhawk is an expanding foam, non-fragrance coil cleaner for HVAC/R applications. The product's expanding foam permeates deep within the coil then liquefies to quickly remove grease, grime, and other oily surfaces. Blackhawk's heavy-duty formulation is powerful, yet safe and problem-free in food processing areas – produces no objectionable fumes.



Part #	Size	LIST
4127-75	18 Ounce Can	24.20



CalClean®

An alkaline detergent formulated for cleaning evaporator coils, air-cooled condenser coils, metal filters, fan blades, and other surfaces soiled with grease, dust and dirt. Biodegradable. USDA Approved.

Part #	Size	LIST
4820-08	1 Gallon	85.90
4135-06	2.5 Gallons	215.40
4081-75	20 Ounce	31.00



Special HD CalClean®

The best cleaner available. Specifically formulated to remove tobacco tars from electronic air cleaners as well as the most stubborn deposits from finned coils. Biodegradable. USDA Approved.

CalClean HD Electronic Cell Cleaner

A ready-to-use formulation, ideal for electronic air cleaners.

Part #	Size	LIST
4823-08	1 Gallon	91.50
4143-06	2.5 Gallons	226.20



Foam-Brite®

The ultimate in foaming alkaline cleaners. It provides for excellent cleaning and brightening, and at the same time provides tremendous foaming to push dirt and grime out of the coil. Can easily be used in place of the more dangerous HF acid-based products. Biodegradable.

Part #	Size	LIST
4178-08	1 Gallon	68.90
4178-05	2.5 Gallons	174.90



Alka-Brite® Plus

A non-acid, alkaline based product for brightening and cleaning air cooled condensers. It contains the best available detergents to quickly penetrate and remove oxidation, and its foaming action helps to lift greasy soils out of the coil. Biodegradable.

Part #	Size	LIST
4120-08	1 Gallon	70.00



Cal-Brite®

Cal-Brite is a low pH cleaner developed for cleaning evaporator coils, air-cooled condensers and other finned cooling and heating coils. It is based upon glycolic acid and other ingredients, including the unique surfactant, Merpol®. It provides moderate foaming and brightening and is safe for use indoors as well as outdoors.

Part #	Size	LIST
4133-08	1 Gallon	88.80

COIL AND CONDENSER CLEANERS

NU-CALGON



Evap Pow'r ®

A no rinse product formulated for cleaning evaporator coils. It is metal-safe,and it cleans and emulsifies even the most stubborn soils and deposits.Evap Pow'r-C is the concentrate while Evap Pow'r-RTU is the ready-to-use formulation. Biodegradable. USDA Approved.

Part #	Size	LIST
4168-08	1 Gallon	61.20



Green Clean

A pleasantly scented, all-purpose cleaner designed for the rapid removal of grease and other heavy soils. It can be used right out of the bottle or diluted for milder jobs. Biodegradable.

Part #	Size	LIST
4186-24	1 Quart Spray Bottle	39.40
4186-08	1 Gallon	72.50



TriCkean 2x

TriClean 2x is equipped to assist in the annual cleaning of outdoor of residential or light commercial air conditioning or heat pump coils. The concentrated formula is tailored to its integrated sprayer packaging, resulting in time savings of sprayer preparation/clean-up or the cost of sprayer maintenance from usage wear.

Part #	Size	LIST
4372-24	Quart Sprayer w Hose Connector	66.00



Evap Foam® No Rinse

Evap Foam No Rinse is a high performing, heavy duty detergent. It is formulated with special surfactants and alkaline cleaners that have been developed into a foaming, no-rinse product. Evap Foam is ideal for use on most coils, but it is particularly suited for use on cooling or evaporator coils. The aerosol can be sprayed either right side up or upside down.

Part #	Size	LIST
4171-75	18 ounce can	30.60



Tri-Pow'r ® HD

An outstanding general purpose coil cleaner, providing detergency and degreasing as well as deodorizing capability. Its positive emulsion technology is very effective against oily grime as it converts the deposits into a more fluid or liquid form that can be easily rinsed away. It is non-acid, non-toxic, and biodegradable.

Part #	Size	LIST
4371-88	1 Gallon	50.00



Nu-Blast® Condenser Coil Cleaner

A no-rinse condenser coil cleaner in a convenient aerosol package. Double action of high pressure blast and solvent cleaning restores design efficiency of condenser coils. It is non-flammable and non-conductive. No rinse required... cleaning solvent evaporates completely. Use with adequate ventilation.

Part #	Size	LIST
4290-75	18 ounce can	44.70



Cal-Shield®

Cal-Shield is a synergistic liquid formulation based upon DuPont's Teflon® fluoro-additives. It is specifically designed for application on air-cooled condensers, evaporator coils, and other finned heating and cooling coils where it forms a micro-thin or molecular film of Teflon. Once applied, Cal-Shield will shield and protect the coil from adverse conditions within the operating environment.

Part #	Size	LIST
4148-08	1 Gallon	
4148-32	1 Quart Spray Bottle	97.20



Cal-Blast Condenser Coil Cleaner

Cal-Blast condenser coil cleaner quickly dissolves those stubborn, resistive deposits and oils that are found to plug coils, particularly those located in kitchens. It contains a quick-drying solvent with a pleasant scent! The high dielectric strength and non-flammable formula in Cal-Blast is great for most applications and will not short out electrical equipment

Part #	Size	LIST
4132-20	20 ounce can	38.40

SPRAYERS
NU-CALGON



Coil Gun®

A different approach to coil cleaning - a "hose-end" sprayer that features 5 different mix ratio settings designed for coil cleaners. Utilizes a 2 quart capacity bottle and includes a foam wand as well as "quick disconnect" capability.

Part #	LIST
4774-0	237.60



No. 50P Poly Sprayer

The No. 50P is constructed of high-density translucent polyethylene. It has a half gallon (3 pint) capacity. The nozzle is adjustable and the flow rate is controlled by a thumb lever. It comes with a 7˝ polyethylene pump.

Part #	LIST
4770-0	117.80



No. 100P Cal-Shield® Poly Sprayer

This sprayer is constructed of high-density translucent polyethylene. It has a funnel top for easy chemical pouring and a 1 gallon working capacity. It comes with a 8˝ polypropylene pump, brass handle and extension tube with adjustable nozzle, a wear-resistant hose, and a pressure relief valve. It is highly recommended that this sprayer be dedicated to Cal-Shield applications.

Part #	LIST
4770-2	212.30



No. 220CP Poly Sprayer

The No. 220CP Poly Sprayer is constructed of high-density translucent polyethylene with a funnel-top that provides easy chemical pouring. This 2 gallon capacity sprayer features an easy fill level indicator and comes with an 8˝ pump and a high resin plastic adjustable nozzle with three feet of hose.

Part #	LIST
4771-3	185.80



No. 200P Poly Sprayer, Water Pressurizing

The No. 200P Poly Sprayer is constructed of high-density translucent polyethylene. It has a 2 gallon working capacity, funnel top, pump handle, and equipped with all-brass hardware. No pumping is required. Pressurize the sprayer with water through a "quick disconnect" fitting.

Part #	LIST
4771-2	340.00



No. 300P Poly Sprayer

The No. 300P Poly Sprayer is constructed of high-density translucent polyethylene. It has a funnel-top and a 3.5 gallon capacity (3 gallon working capacity). It comes with a 10˝ Celcon pump, brass extension tube with adjustable nozzle, and five feet of vinyl hose.

Part #	LIST
4772-0	296.10



Multi-Purpose Sprayer

A 24 ounce capacity sprayer. It is ideal for small cleaning jobs, such as window units and water coolers.

Part #	LIST
4768-W3	22.50

ICE MACHINE CLEANER AND WATER TREATMENT PRODUCTS

NU-CALGON

Nickel-Safe Ice Machine Cleaner



The original Nickel-Safe Ice Machine Cleaner. It is a food-grade citric-phosphoric acid product for removing scale deposits from ice machines having nickel-plated or tin-plated evaporators, and it is acceptable for use in all ice machines containing nickel. It mixes to form a green solution which makes rinsing easier. USDA Approved.

Part #	Size	LIST
4841-AB	16 fl oz	29.80
4841-08	1 Gallon	180.80

Liquid Ice Machine Cleaner



Liquid Ice Machine Cleaner is a food-grade phosphoric acid that is fast acting, yet safe to use. It has been formulated to remove scale deposits from ice machines and coffee urns. It does not give off any harsh fumes or contain chlorine or chlorides that would attack stainless steel.

Part #	Size	LIST
4834-C7	8 fl oz	25.90
4834-08	1 Gallon	228.90

EQUIPMENT SCALE REMOVAL

NU-CALGON



Liquid Scale Dissolver

A hydrochloric (muriatic) acid formulated to remove calcium scales from cooling towers and other water-cooled equipment. It contains low-foaming corrosion inhibitors and a built-in pH color indicator. pH test paper is also included. USDA Approved.

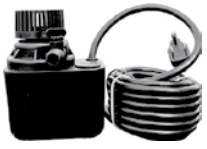
Part #	Size	LIST
4845-K8	1 Gallon	76.20
4845-PB	5 Gallons	275.10



Season Treat (Micromet Plates)

This patented Micromet® Plate product is contained in a unique flow-through package. The package design makes it simple to treat small cooling towers and evaporative condensers. Simply unwrap the package and place it in the sump. One canister treats up to 10 tons for scale (5 tons for corrosion) for 5 to 6 months.

Part #	Size	LIST
4364-88	1 Canister	486.00



No. 31-TX1 Acid Pump

Compact submersible pump designed for circulating strong acids and cleaning solutions. All parts are constructed of acid-resistant materials.

Part #	LIST
4603-0	629.00



HK-31 Hose Kit

An accessory item available for use with the No. 31-TX Acid Pump. Kit includes two 1/2 inch tubing adapters, two 10 foot sections of 1/2 inch clear plastic tubing and three hose clamps.

Part #	LIST
4604-0	177.00



Eco-Lyme Descaler

Eco-Lyme is a specially formulated new age descaler providing performance of traditional high strength descalers in removing scale and corrosion deposits. It's the only product in the HVAC/R Industry that provides performance comparable to hydrochloric acid but safer on metals, odorless, low-foaming, and is 100% biodegradable. Eco-Lyme will quickly and safely remove scale and/or corrosion deposits from copper, steel, iron, aluminum, brass, wood, rubber and plastic equipment. Care must be exercised with galvanized surfaces.

Part #	Size	LIST
4167-08	1 gallon	58.70
4167-05	5 gallon	267.80



Season Start® "Imperial Grade" Scale Remover

A powdered sulfamic acid formulation that contains the best inhibitors available for protecting all metals including galvanized metal. It is the best and the safest dry acid cleaner available. It contains a built-in pH color indicator as well as wetting and anti-foaming agents. USDA Approved.

Part #	Size	LIST
4360-88	10 lbs	277.50
4360-84	50 lbs	1,230.00

COOLING TOWER WATER TREATMENT PRODUCTS

NU-CALGON

No. 340 Liquid Scale Inhibitor



A unique inhibitor that is extremely effective in hard or highly alkaline water. No. 340 Liquid Scale Inhibitor is stable and does not form any orthophosphate sludge. It is most effective at treatment levels between 10 and 15 parts per million (about 1 gallon of No. 340 per 100,000 gallons of water). A feed rate of 1/2 gallon per month is recommended for each 30 tons and 1 gallon per minute bleed-off. A constant, accurate feed is acomplished with the No. 215 Drip Feeder on systems up to 60 tons. For larger systems, a No. 1075 Drip Feeder or CMS Feed Pump should be used.

Part #	Size	LIST
4340-08	4 liter bottle	293.80

WATER TREATMENT

Glycol Refractometer



- Measures the ice point of glycol and the operation stat of battery charging liquid
- Compensation temperature range 10° to 30°C
- Included accessories: cleaning cloth, one dropper, mini screwdriver, distilled water, soft pouch, hard carrying case

Function	Range	Minimum Scale
Ethylen & Propylene Glycol	0 to -50°C	5°C
Battery Fluid	1.15 to 1.30 sg	0.01 sg

Part #	LIST
61301	393.00

WATER TREATMENT

NU-CALGON

Evap-Treat®



Used in evaporative coolers or "swamp coolers" to prevent scale and corrosion. Place it in the cooler sump and it will last all season long, thereby increasing pad life. Utilizes 6R Micromet®, a food-grade NSF-certified polyphosphate.

Part #	Size	LIST
4173-04	Up to 6,500 cfm	66.90
4173-06	Up to 10,000 cfm	78.50

Humidi-Treat™



Humidi-Treat is designed for humidifiers using up to 25 gallons per day and will inhibit scale for one season. Install Humidi-Treat on the water line that supplies water directly to the humidifier.

Part #	LIST
4190-02	69.10

GLYCOL

Freez-Kontr'l®

A complete heat transfer fluid and anti-freeze based upon non-toxic propylene glycol. It is formulated to provide corrosion protection and freeze protection for chilled water, hydronic, and other closed systems. Safe to use where contact with potable water is possible.



Part #	Size	LIST
4188-07	1 Gallon Bottle	
4188-05	5 Gallon Pail	
4188-02	55 Gallon Drum	



Freez-Therm®

An inhibited heat transfer fluid and anti-freeze based upon ethylene glycol. It can be used in chilled water, hydronic, and other closed systems for both freeze point suppression and corrosion inhibition. An uninhibited version is also available in drums on special order.

Part #	Size	LIST
4189-07	1 Gallon	
4189-05	5 Gallons	

Closed Systems & Steam Boilers



Ty-Ion® B20

A liquid nitrite-borax corrosion inhibitor and dispersant for closed recirculating systems. It combines corrosion inhibitors, a unique copolymer dispersant, and a color indicator to facilitate leak detection, into a complete treatment for hot and chilled water closed systems containing ferrous and non-ferrous metal components.

Part #	Size	LIST
7537-05	5 Gallons	607.00



Ty-Ion® B14A

An all-in-one boiler treatment product that controls scale, corrosion, and condensate line corrosion in low pressure, low make-up steam heating boilers where 90% or more of the condensate is returned. It is chromate-free and contains a color indicator for visual determination of treatment residual. Its balanced formulation provides an energy efficient way of heating.

Part #	Size	LIST
7519-05	5 Gallons	765.00

SPECIALTY PRODUCTS



Pneu-flush®

A flushing and cleaning system specifically designed for pneumatic control air lines. It utilizes DuPont® Vertrel® XM, a premier ozone-safe HFC cleaning solvent. Pneu-Flush works quickly and easily to clean and purge the compressed air lines in HVAC control and other pneumatic systems.

Part #	Description	LIST
4298-01	Pneu-Flush Canister	917.00
4300-89	Injection Tool	101.00

(Injection Valve Fits Rx11-flush®, Zerol® Ice, and A/C Re-New as well)



Degreasing Solvent ef

A degreasing solvent that is ozone-safe and environmentally friendly. It is a volatile solvent that provides effective degreasing and cleaning as well as controlled drying with absolutely no residue. It has a dielectric strength in excess of 26,000 volts.

Part #	Description	LIST
4162-07	1 Gallon	118.10
4083-75	17 Ounce Can	38.20



R_X11-flush®

R_X11-flush is an ozone-safe solvent engineered specifically for flushing refrigeration and air conditioning systems and line sets. It is strong enough to rinse away particulates, sludge, carbon residues, acids, oils, and water after burnouts. R_X11-flush is ideal for flushing line sets on R-410A conversions, works fast, and is easy to use.

Part #	Description	LIST
4300-09	Rx11-flush 1 lb. Canister	168.30
4300-11	Rx11-flush 2 lb. Canister	323.00
4300-10	Start-up Kit (2+1)	743.00
4300-15	Rx11-flush 13 lb. Canister	1,912.00
4300-30	Rx11-flush Liquid 19.5 oz Canister	168.30

R_X11-flush® Accessories

The R_X11-flush product family also includes various support tools. This includes the Injection Valve for hooking up to a charging hose for flushing and the Flushing Tool for facilitating line set flushing. In addition, the R_X11-flush Gun with a built-in flushing attachment and the R_X11-flush Hose (24″) are available.

Part #	Description	LIST
4300-50	Flushing Tool	36.00
4300-51	Rx11-Flush Gun	95.90
4300-52	Rx11-Flush Hose (24")	70.60
4300-89	Injection Access Valve	101.00

(Injection Valve Fits Pneu-flush®, Zerol®Ice, and A/C Re-New as well)



Flushing Tool



R_X11-flush Gun



R_X11-flush Hose



Injection Valve

LIQUID LEAK DETECTORS



Cal-Blue® Plus Gas Leak Detector

Cal-Blue Plus is a complete gas leak detector, freeze protected to 5˚F. Its high viscosity formula enables it to remain in contact with the applied surface for an extended period of time, thereby allowing it to detect the smallest of leaks. It is also non-corrosive to metal, and it will not affect ultraviolet or "black lights." Suitable for all refrigerants, natural gas, and oxygen.

Part #	Description	LIST
4182-53	6 Ounce Bottle W/Dauber	16.70
4182-24	1 Quart Spray Bottle	29.60
4182-08	1 Gallon Bottle	79.40



Cal-Blue® LT Gas Leak Detector

The same high quality formulation as regular Cal-Blue Plus, but has added freeze-protection to -20˚F. It is the ideal detector for geographical areas that may experience very cold temperatures.

Part #	Description	LIST
4183-24	1 Quart Spray Bottle	43.50
4183-08	1 Gallon Bottle	113.60



Fluorescent Gas Leak Detector

A fluorescent formulation that provides improved visibility and long lasting bubbles. It is non-corrosive to metals and is freeze protected to 5˚F. Suitable for high and low temperature applications. Can be used for most refrigerants, natural gas and oxygen systems. USDA Approved.

Part #	Description	LIST
4184-53	8 Ounce Bottle W/ Dauber	18.10
4184-24	1 Quart Spray Bottle	43.30
4184-08	1 Gallon Bottle	87.60



Gas Leak Detector

A high viscosity liquid that forms bubbles when daubed on a gas leak. Non-corrosive, non-staining, harmless to skin. Detects any type of gas leak such as air, compressed air, carbon dioxide, nitrogen, natural gas, and refrigerant gases. Freeze-protection to -20˚F. Six ounce plastic bottles have dauber in cap. USDA Approved.

Part #	Description	LIST
4832-C9	6 Ounce Bottle W/ Dauber	24.10

Trace

A red dye internal tracer type leak detector for use with mineral oil base refrigerant lubricants and hydraulic systems. Leaks shown as intense red stains. Trace is nonvolatile, will not sludge oil or deposit gum. Trace is soluble in the lubricant and liquid refrigerant and travels with the lubricant. Oil separators will remove Trace and should be bypassed. Trace passes through solid dryers, but the colour intensity may be reduced.

Part #	Size	LIST
H20004	4 oz bottle	25.90

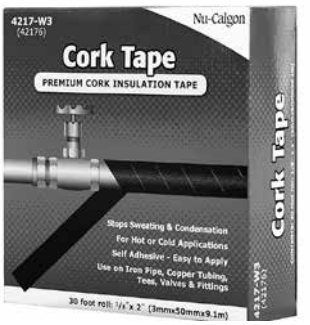


INSULATION PRODUCTS

NU-CALGON

Cork Tape

Cork Insulation Tape has been developed specifically for the air conditioning, refrigeration industry. Through detailed research and extensive testing, this tape has been formulated and manufactured to meet specific Nu-Calgon Wholesaler Inc. specifications as an insulating material for preventing sweating and condensation on refrigerant lines, cold pipes and other commercial refrigeration and air conditioning systems. It also can serve as an excellent insulator on hot pipes, and can be used as gasketing material and as sound-deadening material. It can also be used for wrapping valves, tees, and fittings, and can be applied at temperatures as low as -30°F.



Part #	Size	LIST
4217-W3	2" x 1/8" x 30' roll	50.50

Foam Tape

Foam Insulation Tape is formulated from the hightest quality elastomeric thermal insulation material. It is manufactured in accordance with selected specifications to meet the needs of today's air conditioning, refrigeration applications. Its closed cell construction seals out air, retarding heat transfer and providing complete insulation. It can be used on cold water pipes, chilled water and refrigerant lines to prevent sweating and condensation. Foam Tape can also be used on hot water lines for better insulation against heat loss. Keeps cold lines cold... and hot lines hot. Can be overlapped or edges can be butted.



Part #	Size	LIST
4218-W3	2" x 1/8" x 30' roll	45.90
4218-12	Dispenser Pack	45.90

Insulation Sealing Slugs

Sealing Slugs compound is formulated and manufactured for use in many sealing, insulating, and general maintenance applications. It has excellent adhesion capability and is non-staining, non-hardening and uneffected by wide variations in temperature... and excellent thumbing grade. It is packaged in 2 lb. boxes, each box contains two one pound bars.



Part #	Size	LIST
4216-92	2 lb. box	32.90

Insulating Sealing Cords

Insulation Sealing Cords are non-staining sealers formulated from the highest quality raw materials. They are water-resistant, dust-resistant and white in colour with excellent insulation value. They are available in a preshaped extruded size, 3/8", with serrated release paper.



Part #	Size	LIST
4216-27	3/8" x 25' roll	38.50

SEALERS AND INSULATION MATERIALS

Duct Seal™ 321

For Indoor/Outdoor applications - water base



Duct-Seal 321 in an all purpose industrial grade duct sealant for all types of metal duct, glass fiber duct board, and flex duct, as well as duct fabric and flexible tubing runouts. It includes UV inhibitors for extended outdoor exposure and built-in fiber reinforcement for added strength. This non-toxic water based product is solvent free and is suitable for residential use.

Part #	Description	LIST
S1-304156	One gallon pail	59.50
S1-304159	11 oz. tube	7.30

Sure-Grip™ 404

For Indoor/Outdoor applications - solvent base



Sure-Grip 404 is a fiber-free, solvent based, synthetic rubber duct sealant. Its exceptional strength, fast drying time and unmatched flexibility make it ideal for those applications requiring a solvent based sealant. Sure-Grip's low-viscosity, no-drip, no-string formulation allows fast application for labor savings and extended coverage for lower installed cost.

Part #	Description	LIST
S1-302009	One gallon pail	103.70

BLACK FLASH Flashing Cement Compound

BLACK FLASH Flashing Cement Compound is an all-weather compound made of only the highest quality, tough plastic asphalt oils with long-fiber. Can be applied to damp surface; never pulls away from the joint. Won't crack at any temperature.

Part #	Description	LIST
BF1	Black Flash Compond, 1-GAL	92.30
BFC	Black Flash Compond, Cartridge	19.20



BFC



BF1

SEALERS AND INSULATION MATERIALS

Thermal Mastic

A heat-conducting compound that increases heat transfer up to 4 times the rate obtained with mechanical mounting only. Can be used wherever rapid heat transmission is desired; between coils and liners, between liquid and suction line heat exchangers and between lines and thermal control bulbs of expansion valves and in bulb wells of thermostatic control devices.



Part #	Description	LIST
Q77-1000	8 oz tube	46.70
Q77-1240	1 gallon	285.30
Q77-1250	5 gallon	1,021.00

Nu-Calgon Pan-Spray

The quick and easy-to-use product for sealing all kinds of leaks. Pan-Spray dispenses a white, waterprooof and rubberized coating that won't chip, crack, flake or peel, and it is ideal for sealing out rust and corrosion. It can be applied when the surface is wet.



Part #	Description	LIST
4296-50	16 ounce can (White)	64.90
4296-51	16 ounce can (Black)	64.90

INDUSTRIAL LUBRICANTS

Food-Grade Silicone

Food Grade Silicone sprays a perfect non-stick surface on ice machine surfaces, vending machines, coin slots, slicing machines, dairy machinery, and other food processing and packaging equipment. An excellent lubricant that prevents binding and sticking. Contains ingredients approved by the F.D.A. for food contact use. USDA Approved.



Part #	Description	LIST
4084-03	11 ounce can	51.00

Loctite White Lithium Grease

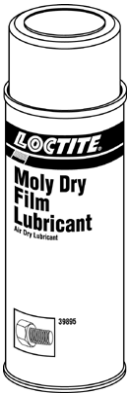
A liquid aerosol lubricating paste designed to reduce friction between load bearing moving metal surfaces and/or the combination of metal and plastic surfaces. This product protects metal surfaces from corrosion.



Part #	Description	LIST
1906122	10.75 oz net wt. aerosol	20.80

INDUSTRIAL LUBRICANTS

Loctite Moly Dry Film



A molybdenum-disulfide based solid film lubricant. It is a heavy-duty lubricant used for general plant maintenance, metal working trade, machinery manufacturers and manufacturers of military and commercial jet engines. In aerosol form, it is an easy-to-use maintenance lubricant. For continuous use in sliding friction, at temperatures from -29 to +398°C (-20 to +750°F). For anti-seize lubrication. Moly dry film functions from -29 to +1315°C (-20 to +2400°F)

Part #	Description	LIST
1786074	12 oz. aerosol	66.20

Super Lube Synthetic Based Lube with Teflon



3oz tube. With PTFE. Lubricant contains no petroleum products, is not subject to oxidation and is effective from -10 to 500°F. Completely odorless, non-toxic, non-corrosive. Will not harm or stain plastics, paint, cloth or rubber.

Part #	Description	LIST
82325	3 oz. Super Lube	30.60

Di-electric Grease



Conductive Grease Maximize electrical conductivity. Prevent power loss.

Part #	Description	LIST
30536	.33 oz.	13.70

Synthetic Lubricant Grease



NLGI Grade 2, Color White, Temp Range Continuous Up to 400°F

Part #	Description	LIST
36782	14 oz. Cart	37.70

INDUSTRIAL LUBRICANTS

Rust Buster



Quickly loosens rusted bolts, screws, shafts, piping, and all types of "frozen" connections and assemblies

Part #	Description	LIST
CR-1	Rust Buster	6.00

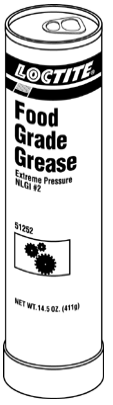
Zoom Spout Oiler



All purpose oiler with a 1/4" telescoping spout. Perfect lubricant for general industrial use. Contains four ounces of finest quality carbon free, rust and oxidation inhibited lubricating oil.

Part #	Description	LIST
CO-1	Zoom Spout Oiler	5.60

Loctite Food Grade Grease



An exceptionally fine, white lubricating grease used at temperatures from -29 to +232°C (20 to +450°F)

SPECIAL FEATURE:
- Grease lubricant for equipment in food processing plants

Part #	Size	LIST
51252	14.5 oz net wt. cartridge	46.00

Multi-Purpose Grease



A complex grease formulated to provide exceptional protection and performance. Lubricates from -40°C to 200°C

Part #	Description	LIST
0969-81	400g	15.20
4410181	400g	14.30

INDUSTRIAL CORROSION INHIBITORS / COATINGS

Loctite Maxi-Coat

A petroleum based compound, which prevents corrosion. It gives heavy-duty, thick film protection in outdoor conditions. Maxi-Coat doesn't melt in direct sunlight and withstands salt spray as well as other severe corrosion environments.

Part #	Size	LIST
51211	12 oz. aerosol	35.10



Loctite Cold Galvanizing Compound

A gray, liquid aerosol compound containing 92% zinc in the dried film. Electrochemically bonds zinc to iron and steel to protect against rust and corrosion creepage. Formulated for severe conditions - highly resistant to salt corrosion and water.

Part #	Size	LIST
82039	15 oz net wt. aerosol	32.70



V-Belt Dressing

V-Belt Dressing is specially formulated to penetrate and extend modern V-Belt life. It is specially formulated and designed to maintain V-Belt efficiency and performance under today's increasing performance requirements. It keeps belts pliable, prevents slippage and does away with squealing and chattering. USDA Approved.

Part #	Size	LIST
4086-03	16 ounce can	55.40



Heresite Air-Dry Phenolic Coating

- For those small touch-up jobs such as Solder Joints, Fin Tube Coil touch up, Fans, Duct Work, Copper Tubing, etc.
- 1 year Shelf Life
- Protects against fumes of Dilute Acids, Dilute Alkalies, Solvents and Inorganic Salts and More
- Minimum amount of surface preparation needed
- When thoroughly aged, it produces a hard corrosion resistant film
- Recommended for mildly corrosive fumes, salt atmosphere and high humidity

Part #	Description	LIST
VR-554T	Aerosol Coating	112.00



CLEANERS

Chisel Gasket Remover

Lifts of baked-on gaskets, gasket cements, formed-in-place gaskets, carbon deposits, dried oil, grease and paint on any type of metal in minutes. Also suitable for use on wood.



Chisel Gasket Remover is ideal for removing:

- baked on gaskets and gasket cements from any type of metal surface
- Chemical formed-in-place gaskets, including RTV

Part #	Description	LIST
79040	18 oz. net wt. aerosol can	45.60

Multi-Purpose Glass Cleaner

An aerosol product made with an original "no streak, non-running, orange scent formula" that quickly deodorizes and cleans window film.



Part #	Description	LIST
C23319	18.75 oz. net wt. aerosol	27.30

SMOKE TESTERS

Smoke Test

- An easy-to-use aerosol spray that simulates smoke to provide a true, functional test for smoke detectors
- Extends reach up to 6 feet, allowing testing to be done while standing safely on the floor.
- Leaves no harmful residue



Part #	Size	LIST
72105	71g	36.40

Smoke Emitters

- Same density as surrounding air - no need to compensate for natural rise & fall of smoke
- Non toxic, leaves no visible residue
- Non explosive, chemical reaction
- Oil free smoke will not damage decorations or equipment
- Smoke emitted at a constant rate

APPLICATIONS:

- Leak testing of ductwork
- Heat-exchanges
- Air balancing
- Negative air pressure testing and much more



HT102



HT103



S210

Part #	Description	LIST
S210	Smoke Match - 20 sec 20 cubic ft., 25-pack	56.90
HT-102	Smoke Cartridge - 45 sec 150 cubic ft.	12.20
HT-103	Smoke Cartridge - 90 sec 600 cubic ft.	15.60
HT-105	Smoke Bomb - 240 sec 2500 cubic ft.	59.60

TAPE

Cold Weather Electrical Tape

Thick black tape provides a higher dielectric strength per turn
-18°C to 80°C

Part #	Description	LIST
ELECT-TAPE	3/4" x 66'	4.60



PVC Insulating Tape

Part #	Description	LIST
3466-1E	3/4" x 66' - Blue	4.80
3466-3E	3/4" x 66' - Green	4.80
3466-4E	3/4" x 66' - Orange	4.80

Part #	Description	LIST
3466-5E	3/4" x 66' - Red	4.80
3466-6E	3/4" x 66' - White	4.80
3466-7E	3/4" x 66' - Yellow	4.80



Brush-On Electrical Tape

It sticks to metal, rubber, forming a tough, flexible coating in just 5 minutes.
Coats, seals and insulates.

Part #	Description	LIST
9040-35	liquid electrical tape	33.10



Cloth Duct Tape

High tack, excellent strength. Superior performance in sealing air handling systems. Heavy cloth content for easier tearing and additional strength.

Part #	Description	LIST
DUCT-TAPE	2" x 60 yd - silver	21.00
223-2-BLACK (WHITE)	2" x 60 yd - black or white	21.80



Aluminum Foil Tape

Excellent for preventing heating and cooling losses.

Part #	Description	LIST
C-441	2" x 50 yd aluminum foil tape	20.90
361-21	Aluminum foil - No liner	25.00



Foil Scrim Kraft Tape

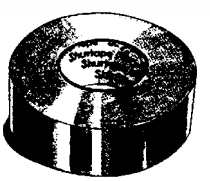
Non-tearable, diamond patterned.3'.

Part #	Description	LIST
338-3-0	3" x 50 yd foil scrim kraft tape	30.60



Insulation Joint Tape / Pipe Wrap

Part #	Description	LIST
583-01	2" x 36 yards - black	12.30



High Temperature Flue Pipe Tape

2 mil aluminum foil high temperature tape, rated to 450°F.
For use on most flue and chimney pipe applications.

Part #	Description	LIST
3243-3	3" x 50 yd roll	126.40



ACETYLENE - TORCHES & ACCESSORIES

TURBOTORCH

	Part #	Description	LIST
	0386-0835 (PL-8A-DLX-B)	Acetylene self light torch - complet kit • AR-B (CGA-200) regulator • G4 Handle • PL-8A Tip • Soft Solders to 2" (50mm) •Silver Solders to 1" (30mm) • "MC" Tank Connections • AH-12 Hose • Instruction Manual	796.00
	0386-0335 (X-3B)	Soft solders to 3". Silver solders to 1-1/2". Will bronze braze light to medium gauge steel. Ideally suited for person requiring flexibility in work. Kit includes: AR-B regulator, AH-12 hose, G-4 handle with adjustable valve and quick disconnect, A-3 and A-11 tips. Fits "B" tanks. (CGA-520)	1,077.00
	0386-0336 (X-4B)	Soft solders to 3-1/2". Silver solders to 2". Will bronze braze medium to heavy gauge steel. Suited for heavier silver soldering and brazing jobs requiring hot concentrated flame. Kit includes: AR-B regulator, AH-12 hose, G-4 handle with adjustable valve and quick disconnect, A-5 and A-14 tips. Fits "B" tank. (CGA-520)	1,116.00
	0386-0725 (AR-B) 0386-0726 (AR-MC)	Adjustable regulator contents gauge. Fits "B" (CGA-520) tank and 3/8"-24 L.H. hose nut Adjustable regulator contents gauge. Fits "MC" (CGA-200) tank and 3/8"-24 L.H. hose nut	338.00 380.00
	0386-1090 (AH12 (12 ft)) 0386-1091 (AH24 (24 ft))	3/16" acetylene hoses with 3/8"-24 L.H. nuts. Fits G-4; AR-B and AR-MC pressure regulators	157.30 270.00
	0386-0308 (G-4)	Handle with adjustable valve and quick disconnect. Fits A-2 through A-32 acetylene tips including MSA-8 Multi-Swirl	264.90
	0386-0500 (SA)	Snappy adapter screws into Sof-Flame or other threaded handle adapting it to accept Turbotorch tips	149.70

ACETYLENE - TORCHES & ACCESSORIES

TURBOTORCH

	Part #	Description	LIST
	0386-0100 (A-2)	Size of flame: 3/16". For soft soldering 1/8" to 1/2", silver soldering 1/8" to 1/4". Uses 2.0 cu ft. fuel/hr	204.30
	0386-0101 (A-3)	Size of flame: 1/4". For soft soldering 1/4" to 1", silver soldering 1/8" to 1/2". Uses 3.4 cu ft. fuel/hr	221.40
	0386-0102 (A-5)	Size of flame: 5/16". For soft soldering 3/4" to 1-1/2", silver soldering 1/4" to 3/4". Uses 5.8 cu ft. fuel/hr	261.20
	0386-0103 (A-8)	Size of flame: 3/8". For soft soldering 1" to 2", silver soldering 1/2" to 1". Uses 9.2 cu ft. fuel/hr	286.50
	0386-0104 (A-11)	Size of flame: 7/16". For soft soldering 1-1/2" to 3", silver soldering 3/4" to 1-1/2". Uses 11.0 cu ft. fuel/hr	302.00
	0386-0105 (A-14)	Size of flame: 1/2". For soft soldering 2" to 3-1/2", silver soldering 1" to 2". Uses 14.5 cu ft. fuel/hr	373.00
	0386-0106 (A-32)	Size of flame: 3/4". For soft soldering over 4", silver soldering 1-1/2" to 4". Uses 29.5 cu ft. fuel/hr. Use with large tank only	532.00
	0386-0365 (MSA-8)	Multi Swirl size of flame: 3/8". For soft soldering 3" silver braze to 7/8". Uses 9.2 cu ft. fuel/hr. Wide range applications with quiet operation (QUIET TIP)	347.00

MAPP & PROPANE TORCHES

TURBOTORCH

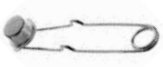
	Part #	Description	LIST
	0386-1299 (TX500)	Self-light hand torch with two tips (TX-503 and TX-504) for propane and mapp gas	389.00
	0386-1293 (TX504)	Extreme Self Lighting Torch	351.00
	0386-0403 (STK-9)	Dual gas kit contains STK-R pressure regulator & ST-3 large tip	254.80

ACETYLENE - SOFT-FLAME

	Part #	Description	LIST
	0386-0090 (WSF-4)	Soft solders to 1". Kit includes: AR-B regulator, WA-400 handle, W-4 tip. AH-12 hose. Fits "B" cylinder (CGA-520)	473.00
	0386-0112 (S-3)	Soft solders to 1/2". Operates at 2-10 psi. Uses 1.3-2.8 scfh	74.40
	0386-0113 (S-4)	Soft solders to 1". Operates at 2-10 psi. Uses 3.3-7.2 scfh	83.30
	0386-0114 (S-5)	Soft solders to 1-1/2". Operates at 2-10 psi. Uses 5.1-11.1 scfh	98.10
	0386-0115 (S-6)	Soft solders to 4". Operates at 2-10 psi. Uses 6.7-14.4 scfh	120.00
	0386-0410 (WA-400)	Rear valve handle "A" 3/8" - 24 L.H. connection fits W-3 thru W-6 Sof-Flame tips and other industry standard tips	173.20

ACCESSORIES / SPARE PARTS

TURBOTORCH

	Part #	Description	LIST
	0386-1226	Key wrench for "B" and "MC" tank	11.60
	0386-0505 (MC-T)	Adapter to connect acetylene "B" (CGA-520) regulator to "MC" (CGA-200) acetylene cylinder	167.10
	0386-0503 (BTMCR)	Adapter to connect "MC" (CGA-200) regulator to a "B" (CGA-520) cylinder	126.70
	0386-1200 (AG-1)	Fuel gauge for acetylene regulator	131.00
	0384-0947	Portable Tote Torch Kit (Less Tank)	1,142.00
	1423-0024	F-1 Lighter Flints	10.10
	1423-0061	L-1 Round File Spark Lighter	12.30

OXY-ACETYLENE PORTABLE TOTE

TURBOTORCH



Key Applications:

- HVAC
- REFRIGERATION
- MAINTENANCE AND REPAIR

- **Oxygen & Acetylene or Acetylene only (tip + adaptor provided)**

— With Tank

Part #	LIST
0384-0958	2,715.00

— Without Tank

Part #	LIST
0384-0957	1,693.00

Includes:

Oxygen Regulator, Fuel Regulator, Handle, Cutting Attachment, Cutting Tip, Multiple Brazing Nozzles, Air Fuel Tip, Glasses, Striker, Hose (12.5', "Dual", A 3/16" size), Tank Key*, Adapter, Check Valves, Tote Case, Oxygen Cylinder*(Type "R" 20 cu. ft), Fuel Cylinder*(Type "MC" 10 cu. ft)

* Not included in TTV-J-ACP

*****Tank contents not included in price.**

TANK TOTES



Turbo Tote
Only For "MC"
& R Cylinders

Part #	LIST
1421-0084	165.40



fits "B" tank

Part #	LIST
1421-0016 (TT-150B)	218.40



"B" Tanktote Sleeve

- **Heavy Duty Ballistic Nylon**
- **Flame Retardant**

Includes:
- Hose Wrap - 12.5' or 25' Hose
- Tip & Handle Storage
- Accessory Storage

Part #	LIST
331942	254.50



Heavy duty steel construction fits "MC" tank or MT-1 MAPP tank. Easy storage of tips, handle, hose and striker.

Part #	LIST
1421-0035 (TT-MC)	305.00



Heavy duty steel construction fits "B" tank. Storage for tips, hose, handle and striker.

Part #	LIST
1421-0034 (TT-B)	305.00



Carrying stand for (1) "B" tank with utility tray and air/fuel handle holder

Part #	LIST
502	124.10

NITROGEN PURGING

Nitrogen Purge Kit

- A complete kit to pressure check and purge lines before brazing
- Includes nitrogen regulator, turbo tornado, 1/2" cone plug, 3/4" cone plug, needle tip, CO2 adapter, 36" x 1/4" hose, 72" x 1/4" hose and blow gun



Part #	Description	LIST
0386-1370	Nitrogen Purge Kit	921.00

Nitrogen Regulator

- Forged brass body with easy to read 2" gauges
- 1/4" flare outlet fittings accept standard refrigeration hoses
- CGA-580 insert gas inlet connection fits all nitrogen tanks
- Gauge content: 4,000 PSIG, 800 PSIG delivery



Part #	Description	LIST
0386-0857	Nitrogen Regulator	434.00
0781-3652	Nitrogen Pressure Flow Regulator	436.00

Nitrogen Flowmeter

- Low-pressure nitrogen gas must be flowing through the copper lines when brazing to eliminate scale and oxidation that can cause blockage in a system
- A nitrogen flowmeter has a float ball that rises in the flowmeter tube indicating low-pressure flow of nitrogen when purging copper lines during the brazing process
- 1/4" flare outlet connection; attaches directly to any nitrogen regulator with a 1/4" male flare outlet fitting



Part #	Description	LIST
0386-0849	Nitrogen Flowmeter	200.30

Braze-Rite Adapter

- Quickly connects to manifold gauge hose and slips easily and securely into pipe
- Allows for bleed of nitrogen through pipe being brazed to keep pipes clean and oxide-free
- Stepped to fit 3/8", 1/2", 5/8", 3/4", 7/8" amd 1-1/8" pipe



Part #	Description	LIST
BRZ1000	Braze-Rite Adapter	89.30

NITROGEN PURGING
DIVERSITECH

Drain Kat™ Mini Kit

The Drain Kat™ is refillable, nitrogen or CO2 mini drain cleaning kit. Featuring a small cylinder that holds 9 cubic feet of nitrogen or 2-1/2 pounds of CO2. The cylinder includes an integral mounted regulator for quick and easy adjustments of discharge pressure. Get exactly the amount of pressure you need with a quick adjustment on the regulator.



Part #	Description	LIST
MBK-6	Drain Kat™ mini kit for nitrogen or CO2 and accessory fitting kit	1,146.00

Drain Gun™

Clears condensate drains with a SWOOSH! A portable tool designed to blow out drain lines instantly. Equipped with a tapered fitting to work on 3/8 in. - 3/4 in. drain openings.



GG-1



GGC-12

Part #	Description	LIST
GG-1	Drain Gun	131.60
GGC-12	Drain Gun Cartridges (Pack of 12)	86.80

REGULATORS

CO2 Regulators



Part #	CGA Inlet	Outlet Connection	Gauge(s)	Gauge(s) Delivery	Delivery PSIG	Gas Type	LIST
R1363	CGA320	1/4” SAE Flare (M)	Dual (1-1/2″)	G84D: 300 / G82D: 4000	5-175	CO2	263.10

SOLDERING GASES & AIDS

Acetylene, Propane, Oxygen, Nitrogen and CO2

Gas	Capacity
B-CONTENTS	40 cu. ft.
MC-CONTENTS	10 cu. ft.
R-CONTENTS	20 cu. ft.
PT-1 PROPANE	throw away cylinder
MPT-1 MAPP	throw away cylinder
N88-CONTENTS	Nitrogen 88 cu. ft.
CO2-CONTENTS	20 cu. ft.



MC Tank



B Tank



MAPP



PROPANE

SOLDERING - BRAZING & FLUX

Sil-Fos-15

15% silver content. For non-ferrous metals only. A copper-rich alloy that is self-fluxing on copper because of its phosphor content. Starts to melt at 1185°F, and is completely liquid and free-flowing at 1300°F. Ideally suited for joints where close tolerances cannot be maintained or where large fillets are specified. Can be used on copper-base alloys as well as on copper.

Part #	Chemical make up %	Melting Range		Size	LIST
		Solidus F/C	Liquidus F/C		
31896	CU-80 AG-15 P-5	1190/640	1480/804	24 stick	219.10

Sil-Fos-5

5% silver content. For non-ferrous metals only. Similar to Sil-Fos, but lower silver content. Has less tendency to form large fillets.

Part #	Chemical make up %	Melting Range		Size	LIST
		Solidus F/C	Liquidus F/C		
31894	CU-59 ZN-39	1595	1620	24 stick	90.30

Braze-452 "Silver Solder"

Cadmium free alloy. Excellent general purpose, non-toxic brazing alloy, for joining malleable iron or brass.

Part #	Chemical make up %	Melting Range		Size	LIST
		Solidus F/C	Liquidus F/C		
HH45	CU-27 AG-45 ZN-25 SN-3	1190/640	1260/680	30 g	50.00

Stay-Brite & Stay-Brite 8

Stay-Brite and Stay-Brite 8 silver bearing solders often used throughout the refrigeration/air conditioning industry instead of brazing alloys. Both Stay-Brite and Stay-Brite 8 produce an overall component with greater strength than a brazed component whose base metals are weakened by annealment from high brazing heat. Stay-Brite solders bond with all of the ferrous and non-ferrous alloys. Joints soldered with Stay-Brite solders exhibit considerably higher-than-necessary elongation for sound, dissimilar metal joints and vibration applications.
Stay-Brite 8 is especially effective in filling loosely fitted couplings.



Part #	Chemical make up %	Melting Range		Size	LIST
		Solidus F/C	Liquidus F/C		
10001	TIN-96 AG-4	430/221	430/221		
10009	TIN-94 AG-6	430/221	535/279		196.90

Bridgit

Lead-free solder widely used in plumbing applications where lead bearing solders are prohibited. Contains: nickel, making joints tremendously strong. Wide plastic range makes Bridgit an excellent alloy for large diameter fittings and ill-fitted or non-concentric pipes.

Part #	Melting Range		LIST
	Solidus F/C	Liquidus F/C	
16000	460/238	630/332	



SOLDERING - BRAZING & FLUX

50/50 - 60/40 Wire Solder

These tin/lead solders can join copper and most copper alloys, lead, nickel alloys and steel. Tin/lead solders are not recommended for joints subject to high stress or vibration in the cooling industry due to lack of sufficient elongation properties.

Part #	Chemical make up %	Melting Range		Size	LIST
		Solidus F/C	Liquidus F/C		
50/50	TIN-50 LEAD-50	360/182	420/216	1 lb	77.50
60/40	TIN-60 LEAD-40	360/182	375/191		49.50

Note: it is illegal to use lead solders in both public and private potable water systems.

95/5 Wire Solder

Tin/antimony solder are well-suited for applications where moderately elevated temperature is a factor. With higher electrical conductivity and high fluidity, 95/5 is recommended for lead-free installations of small-diameter, tight-fitting connections. Not recommended for use on brass.

Part #	Chemical make up %	Melting Range		LIST
		Solidus F/C	Liquidus F/C	
95/5	TIN-95 ANTIMONY-5	452/233	464/240	71.20

SOLDERING TOOLS

Refrigeration Wire Brushes

Part #	Description	LIST
924	1/4" OD	12.60
925	3/8" OD	9.90
926	1/2" OD	9.30
927	5/8" OD	8.70
928	3/4" OD	18.20
929	7/8" OD	18.90

Part #	Description	LIST
931	1-1/8" OD	9.80
932	1-3/8" OD	10.60
934	1-5/8" OD	20.40
935	2-1/8" OD	26.40
78819	1/2 & 3/4 two-in-one brush	64.50
78820	5/8 & 7/8 two-in-one brush	66.40



Cleaning Abrasive Cloth & Pads

Part #	Description	LIST
WP10A	waterproof sandcloth 1-1/2" x 10 yd – Blue Jean Backing	
JA010	waterproof sandcloth 1-1/2" x 10 yd	
JA025	waterproof sandcloth 1-1/2" x 25 yd	
OM5	open mesh cloth 1-1/2" x 5 yd	18.20
OM25	open mesh cloth 1-1/2" x 25 yd	104.70
SP10	abrasive pad 10/pk 2" x 6"	16.80
SP60	abrasive pad 10/pk 6" x 9"	21.80







SOLDERING - BRAZING & FLUX

Bronze Flow



A bronze brazing alloy used for joining of steel to steel or cast iron. Repairs to steel pipe, leaking pipe fittings. Brazing of steel to copper or brass.

Part #	Chemical make up %	Melting Range		Size	LIST
		Solidus F/C	Liquidus F/C		
BF-1	CU-59 ZN-39	1595	1620	1 lb	

Nicsil-Flow



NS-1

A low fuming nickel-silver brazing alloy. For fabrication and repair of most metals. Effective with stainless and nickel alloys including chrome plate. Also works with brass, bronze and copper alloys or regular iron and steel.

Part #	Chemical make up %	Melting Range		Size	LIST
		Solidus F/C	Liquidus F/C		
NS-1	CU-48 NI-10 ZN-41	1665	1680	1 lb	

Wildon Channel Flux





ZA-1

ChannelFlux ZA-1 Repair Kit

Part #	Description	LIST
ZA-1	Channel Flux Repair Kit	62.00

Aluma-Weld

Aluminum brazing kit for repair of aluminum. For joining aluminum to aluminum - aluminum to copper - aluminum to steel. Contains: aluminum rod 0.3 ounces; brazing flux 0.4 ounces. A high grade aluminum alloy rod which has excellent affinity to virtually all aluminum products regardless of shape or thickness - even anodized aluminum.

Part #	Description	LIST
HH822-PACK	Aluminum - 822 Flux Core solder	47.90

Fos-Flow-7

Equivalent to 2%-15% silver content brazing alloys. Medium temperature brazing alloy. Self-fluxing on copper. Ideally suited for air conditioning, plumbing & electrical connectors.

Part #	Chemical make up %	Melting Range		Size	LIST
		Solidus F/C	Liquidus F/C		
SF-1	CU-93 P-7	1310/710	1400/793	1 lb	

SOLDERING - BRAZING & FLUX

Liquid Soldering Flux

For virtually all metals other than aluminum, magnesium or titanium.



Part #	Description	LIST
97000	4 oz spout cap liquid	11.60
97001	16 oz - pint liquid	51.60

Clean-N-Brite Flux

It is a powerful general purpose flux that protects your parts up to 1600°F (871°C).



Part #	Description	LIST
97020	4 oz brushcap	16.70

White Brazing Flux

For use with silver brazing alloys on all metals other than aluminum, magnesium or titanium. Effective to 1600°F



Part #	Description	LIST
97030	7 oz brushcap	11.60

Bridgit - Flux Paste

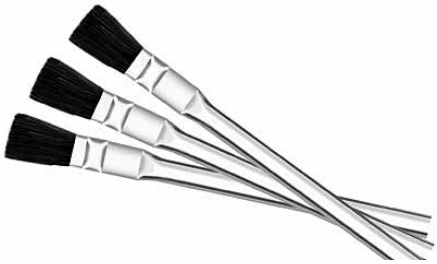
Burn-resistant paste flux for use with Bridgit and most common wire solders. Stays active to 800°F, will not burn, thus reducing black carbon formation that can cause voids and leaks.



Part #	Description	LIST
40057	4 oz brushcap	11.50

Acid Brushes

Acid brushes are ideal for thread sealant, flux and paste solders.



Part #	Description	LIST
C33804	small (1/4" wide), 12/pk	10.30
C33808	medium (1/2" wide), 10/pk	11.00

SOLDERING AIDS

Thermo-Trap

The industry's original heat absorbing paste designed to isolate heat encountered in soldering, welding, and brazing, thereby preventing damage to nearby heat sensitive controls, or fittings. USDA approved. Biodegradable. Available in paste as well as gel.



Part #	Description	LIST
4371-36	11 oz. tube (Paste)	39.10
4371-32	1 quart spray bottle	61.50
4371-53	4 fluid ounce spray bottle	30.30

Hot Dam

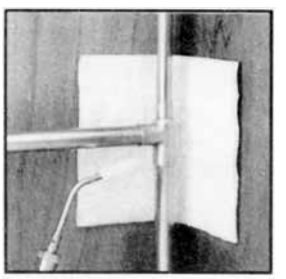
Stop heat transfer on any metal surface. Whether it is hot or cold the reusable Hot Dam protects valve seats, fittings, etc. Easily molds to any shape without drip or residue, and when the job is done it is easy to remove and reuse over and over.



Part #	LIST
9000	80.30

Flame-Gard

Flame-Gard is made from extra heavy duty, premium grade material that provides superior surface protection against heat/flame damage when soldering and brazing in confined areas. Heavy-gauge aluminum backing allows shaping for a specific contour.



Part #	LIST
FLAME-GARD912	44.80

Premium Heat Shield

- Durable fabric (8" x 12")
- Re-useable
- Center-cut design
- No toxic smoke, made of non-asbestos, noncermic materials



Part #	LIST
0386-0561	150.00

FLASHLIGHTS

Milwaukee Flashlights

M18™ TRUEVIEW LED HP Flood Light
- 18V



Part #	LIST
2360-20	476.00

M18™ LED Flood Light
- 18V
- 1000 lumens



Part #	LIST
2361-20	304.00

M12™ LED Work Light
- 12V



Part #	LIST
49-24-0146	126.10

M18™ LED Work Light
- 18V



Part #	LIST
2735-20	166.20

M12™ LED Stick Light (Bare Tool)
- 12V



Part #	LIST
2351-20	154.60

TRUEVIEW™ M18™ LED HP Flood Light
- 18V



Part #	LIST
2352-20	171.40

M12™ LED Lantern/ Flood Light
- 12V



Part #	LIST
2362-20	170.40

ALLTEMP Flashlights

M12™ LED Work Light
- 12V



Part #	LIST
2363-20	213.00

Pivoting Mini Flashlight
- 18 LED face
- 3 LED top



Part #	LIST
111115	44.40

Clipstrip™ Pocket Camo LED Light
- 140 LUMENS



Part #	LIST
111116	35.60

Pivot LED Front Work Light
- 240 Lumens



Part #	LIST
111114	59.70

FLASHLIGHTS & BATTERIES

Fenix E20 LED Flashlight - No shake



- (2) AA Batteries
- 265 Lumens Maximum
- Tail Switch

Part #	LIST
E20	105.70

Fenix E25 LED Flashlight



- (2) AA Batteries
- 350 Lumens Maximum
- With dual switches which work independently

Part #	LIST
E25UE	131.10

Fenix LD22 LED Flashlight

- Anti-roll, slip-resistant body design made of durable aircraft-grade aluminum
- Utilizes a Cree XP-G2(R5) LED with a lifespan of 50,000 hours.
- Powered by 2, AA (Ni-MH/Alkaline) batteries.
- 300 Lumens Maximum



Part #	LIST
LD22	149.00

Duracell Pocket /Thermometer Batteries

Part #	LIST
D303/357BPK	7.30
D384/392BPK	3.60
D309/393BPK	5.40
DL2025BPK	9.70
DL2032BPK	9.70



Duracell Industrial Alkaline Batteries



Part #	Description	LIST
PC1300	D cell 1.5V	6.10
PC1400	C cell 1.5V	6.10
PC1500	AA 1.5V	2.50
PC2400	AAA 1.5V	3.10
QU1604	9V	12.30
PL123	3V	5.80
1209	6V lantern spring terminal	15.00

Rayovac-Pro Alkaline Batteries



Part #	Description	LIST
AL-AAA-8	AAA Batteries 8/PK	7.80
AL-AAA-18F	AAA Batteries 18/PK	17.50
AL-AA-24F	AAA Batteries 24/PK	21.80
AL-C-6	C Batteries 6/PK	9.90
AL-D-6	D Batteries 6/PK	13.10
AL-9V-6	9V Batteries 6/PK	19.70

TOOLS

Magnetic Retrieving Tool

Part #	Description	LIST
2593	Tool - Pocket Telescopic extends from 5-7/8" to 25-9/16"	16.40



Telescopic Inspection Mirror

Part #	Description	LIST
M-1	1-1/4" circular - extends 6-1/4" to 18-1/4"	19.60
M-2	2-1/4" circular - extends 10" to 14"	22.30
M-3	2-1/8" x 3-1/2" rectangular - extends 11-1/4" to 15-1/4"	20.20
M-2R	Replacement head for M-2	13.50
M-3R	Replacement head for M-3	13.90



Single Flint Striker



Part #	LIST
1423-0061	12.30

Triple Flint Lighter



Part #	LIST
0386-0297	47.70

Flexible BBQ Lighter

Flexible Stem. Indoor and outdoor use. Windproof frame. Refillable.



Part #	LIST
185001	6.40

Bernzomatic Flexible Utility Lighter

The lighter features an adjustable windproof flame for indoor and outdoor use, and a comfortable ergonomic design for easy grip. Includes a large window to easily gauge fuel levels and can be easily refilled with a Bernzomatic 5.5 oz. butane cylinder.



Part #	LIST
328643	20.90

FORM HOLDERS

SAUNDERS



A-HOLDER

Keeps Forms and Information Safe & Sound

Part #	LIST
10017	76.90



REDI-RITE

Portable Writing Surface & Storage Clipboard

Part #	LIST
11017	84.60



TUFF WRITER

Opens Like A Book

Part #	LIST
45300	98.40



SNAPAK

Portfolio Style Storage System for Maximum Versatility

Part #	LIST
SN8512	94.60

TOOL TOTES

VETO PRO PAC

TECH LC



A number of changeshave been made to tailor the bag to accommodate HVAC service technicians tools and work routines.

Part #	L x W x H	LIST
TECH-LC	13.5"x9.5"x19"	704.00

LC



57 pockets capable of handling 75 hand tools.

Part #	L x W x H	LIST
LC	13.5"x9.5"x12"	597.00

MC



- 20 interior and exterior pockets
- 2 large and 5 small D-Rings
- Meters and compact cordless drill/ driver compartment

Part #	L x W x H	LIST
MC	10”X8”X12.5”	413.00

LT



The LT is a rugged laptop bag designed to organize and store a laptop and other business accessories on the jobsite.

- Holds Laptop

Part #	L x W x H	LIST
TECH-LT	16.5"x7"x15"	936.00

XLT



The XLT is a rugged laptop/tool bag designed to organize and store a laptop, business accessories and hand tools in the field.

- Holds Laptop

Part #	L x W x H	LIST
XLT	16.5"x9.5"x20.25"	1,017.00

TECH-XL



- 80 interior and exterior pockets
- 4 large and 5 small D-Rings
- Holds Laptop

Part #	L x W x H	LIST
TECH-XL	16.5”x 9.5”x 20.75”	760.00

XL



Handle100 hand tools.67 pockets

Part #	L x W x H	LIST
XL	16.5"x9.5"x14"	686.00

XXL-F



Part #	L x W x H	LIST
XXL-F	25.5"x9.5"x17"	866.00

OT-LC



A compact top-in loading .

Part #	L x W x H	LIST
OT-LC	13.5"x9.5"x12"	726.00

TOOL TOTES

VETO PRO PAC

MB

The MB is a clip-on me to hold a small selectio of tools and one or two meters. When not in use it can clip onto any model Veto bags tape clip or D-Rings.



Part #	L x W x H	LIST
MB	8"x3"x9"	193.70

TP3

The TP3 is a clip-on di which holds a meter a tools. It clip's onto any bag's tape clip or D-Ri



Part #	L x W x H	LIST
TP3	5.5"x4.75"x9.5"	193.70

TP4

4 pocket Tool Pouch, the big brother of the TP3

- 20 interior and exterior pockets



Part #	L x W x H	LIST
TP4	4.75"x7"x9.5"	246.00

Tool Backpacks

Veto Tech Pac



With 56 pockets inside and out, the Tech Pac has ample room for hand tools, meters, parts boxes, cordless drills and impact drivers.

Part #	L x W x H	LIST
TECH-PAC-1	14.25" x 9.875" x18.125"	961.00

Milwaukee Contractor Bag



- Tough, water resistant 600 denier material
- Durable zipper closure
- Shoulder strap or dual handle straps for easy carrying
- Ideal for tool and accessory storage

Part #	L x W x H	LIST
48-55-3490	17" x 9" x10"	58.90

Milwaukee Jobsite Backpack





- 35 Pockets for organizing tools
- Impact Resistant Molded Base
- 1680 Ballistic Material
- Laptop Sleeve - Holds Laptops up to 15.6"
- 48 Total pockets 2 External pockets
- Impact resistant base
- 1680D ballistic material
- 2x more padding

Part #	L x W x H	LIST
48-22-8200	10"x16"x20"	253.90
48-22-8201	9.44"x18"x20.4"	424.00

KLEIN

Tradesman Pro™ Organizers



8-inch Tote

Part #	LIST
554158-14	222.60



10-inch Tote

Part #	LIST
5541610-14	278.80



Shoulder Pouch

Part #	LIST
55419SP-14	180.80

PLIERS / STRIPPERS / CUTTERS / CRIMPERS

Klein High Leverage NE Type Side Cutters

Part #	Length	LIST
D213-9NE	9-1/4	115.10



Klein High Leverage Diagonal Cutters with Angled Head

Part #	Length	LIST
D248-8	8	97.00



Klein High Leverage Diagonal Cutters

Part #	Length	LIST
D228-8	8	93.20



Klein Midget Standard Diagonal Cutters with Tapered Nose

Part #	Length	LIST
D245-5	5	106.80



Klein High Leverage Diagonal Cutters with Tapered Nose

Part #	Length	LIST
D220-7	7-11/16	105.30



Klein Standard Long-Nose

Part #	Length	LIST
D301-6C	6-5/8	83.10



Klein Midget Tapered-Nose Diagonal Cutters with Midget Jaw

Part #	Length	LIST
D295-4C	4-3/16	134.70



Klein Pump Pliers

Part #	Length	LIST
D502-10	10"	81.60
D502-12	12"	100.80



Klein Standard Long-Nose with Side Cutters

Part #	Length	LIST
D203-6	6-5/8	79.80
D203-7	7-1/8	84.50
D203-8	8-5/16	104.40



Klein Wire Strippers-Cutters

Part #	Length	LIST
11055	7-1/8"	71.40
11057	7-1/8"	74.80



KNIPEX Hightech Water Pumps Pliers

Part #	Length	LIST
87-01-250-SBA	10"	115.60
87-01-300-SBA	12"	160.40



Klein Multi-Purpose Wire Stripper-Cutter

Part #	Length	LIST
1011	6"	47.80



Klein Automatic Wire Stripper

Part #	Description	LIST
11063W	Cuts and strips 8-22 AWG wire	105.60



Klein Long-Nose All Purpose Tool

Part #	Length	LIST
1010	8-1/4"	80.10



Klein Crimper for Insulated and Non-Insulated Terminals & Connectors

Part #	Length	LIST
1005	9-3/4"	102.00



Klein All-Purpose Electrician's Tool

Part #	Length	LIST
1001	8-3/4"	90.30



KLEIN TOOLS

Klein Ratcheting Crimper

- Crimps insulated terminals onto 10-22 AWG stranded copper wire
- Adjustable compound action design puts more crimping power into each squeeze



Part #	Length	LIST
3005CR	9"	75.10

Klein Forged Steel Wire Crimper, Cutter, Stripper

- Includes a dedicated crimper with a wire stripper and two cutters
- Strips 10-18 AWG stranded wire
- Crimps 10-22 AWG insulated and non-insulated terminals and connectors



Part #	Length	LIST
2005N	9"	109.50

Klein Portable Rechargeable Battery

- 10050 mAh capacity battery; up to 18W of total power
- USB Type-A with high speed charging powered by Qualcomm® Quick Charge™ 3.0 Technology
- USB Type-C with Input and Output capable of up to 15watts



Part #	Length	LIST
KTB1	2.5"	130.20

Klein Portable Jobsite Rechargeable Battery

- 13400 mAh capacity battery; up to 28W of total power
- USB Type-A with high speed charging powered by Qualcomm® Quick Charge™ 3.0 Technology
- USB Type-A with 12.5W maximum output



Part #	Length	LIST
KTB2	3.5"	165.00

Klein Rechargeable Personal Worklight

- Versatile Rechargeable Personal Worklight stands, hooks, hangs, and mounts magnetically
- High: 460 Lumens for 9 hours / Low: 175 Lumens for 16 hours
- Able to charge smartphones and other small devices via USB-A



Part #	Length	LIST
56403	2.07"	122.10

Klein 8-in-1 Insulated Interchangeable Screwdriver Set

- Interchangeable Insulated Screwdriver Set with an insulated handle, 5 interchangeable insulated blades, and a carrying pouch
- Includes tip sizes: two #2 Phillips, two 1/4-Inch Slotted, one #1 Phillips, one #1 Square, one #2 Square, and one 3/16-Inch Slotted
- Securely and easily release the blade with a quick twist of the lock collar



Part #	Length	LIST
32288	3.5"	150.40

HAND TOOLS

MILWAUKEE

FASTBACK™ UTILITY KNIFE
48-22-1901



LIST
25.60

11-IN-1 SCREW DRIVER W/ SQUARE BIT
48-22-2761



LIST
28.20

6 in 1 WIRE PLIER GEN II
48-22-3079



LIST
78.20

9" LINESMAN PLIER
48-22-6100



LIST
67.60

10" STRAIGHT-JAW PLIER
48-22-6310



LIST
40.30

10" V-JAW PLIERS
48-22-6210



LIST
49.50

LEFT CUTTING SHEARS
48-22-4510



LIST
33.30

UPRIGHT RIGHT CUTTING SHEARS
48-22-4521



LIST
59.50

RIGHT CUTTING PLIERS
48-22-4520



LIST
33.30

STRAIGHT CUTTING SHEARS
48-22-4530



LIST
33.30

PEX/PVC CUTTER
48-22-4202



LIST
60.00

VOLTAGE TESTER LED LITE, AUDIBLE
2202-20



LIST
45.50

BULLDOG SHEARS
48-22-4500



LIST
41.00

PACKOUT™ LARGE TOOL BOX
48-22-8425



LIST
297.20

PACKOUT™ ROLLING TOOL BOX
48-22-8426



LIST
439.00

PACKOUT™ ORGANIZER
48-22-8430



LIST
174.70

PACKOUT™ COMPACT ORGANIZER
48-22-8435



LIST
118.10

WRENCHES

Reversible Gear Ratcheting Wrench

This 15° offset ratcheting wrench with a compact head design. The small lever switches direction without sacrificing the overall compact head design.



Part #	Description	LIST
9533N	Rev. ratcheting wrench, SAE, 8 pc. set	334.00
9620N	Rev. ratcheting wrench, metric, 12 pc. set	526.00

Flex Head GearWrench Ratcheting Wrench

With a 180° tilt, this GearWrench can reach into the tightest places.



Part #	Description	LIST
9700	SAE, 7 piece set - 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4"	376.00

Combination Wrenches



Part #	Size	Length	Box End	LIST
CW-1/4	1/4	3-15/16	6 Point	4.30
CW-5/16	5/16	4-3/4		4.70
CW-3/8	3/8	5-1/4		5.10
CW-7/16	7/16	5-13/16		5.50
CW-1/2	1/2	6-1/2	12 Point	6.40
CW-9/16	9/16	7-3/16		7.30
CW-5/8	5/8	8		7.80
CW-3/4	3/4	9-5/8		9.90
CW-13/16	13/16	10-9/16		10.80

Torque Wrench

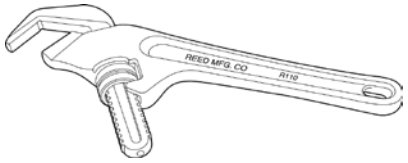
Ensures accurate tightness of fittings, especially R410A. Kit in a blow molded case includes sizes: 17, 22, 24, 26, 27 and 29mm.



Part #	LIST
70078	185.20

R110 REED Hex Wrench

This hex wrench works for hex-shaped fittings without damage from teeth.



Part #	LIST
R110	119.70

Milwaukee Aluminum Pipe Wrench



Part #	Size (in.)	Pipe Capacity (in.)	LIST
48-22-7210	10	1-1/2	105.10
48-22-7212	12	2	117.10
48-22-7214	14	2	129.90
48-22-7218	18	2-1/2	169.80
48-22-7224	24	3	263.00

Imported Aluminum Pipe Wrench



Part #	Description	LIST
70013	14"	85.60
70014	18"	102.80
70015	24"	152.10

Adjustable -Extra-Capacity Design Plastic-Dipped Handles



Part #	Length	Capacity	LIST
D507-6	6"	15/16"	88.80
D507-8	8"	1-1/8"	96.80
D507-10	10"	1-5/16"	122.60
D507-12	12"	1-1/2"	175.80

WRENCHES

Fully-Reversible Ratcheting Offset Box Wrenches

Part #	Description	LIST
68234	1/4 " x 5/16"	47.20
68236	3/8" x 7/16"	51.80
68238	1/2" x 9/16"	65.90



Hex Key Adapter

Part #	Description	LIST
T2-HKA	3/16" and 5/16"	26.60



Fully-Reversible Ratcheting Refrigeration Wrenches

Part #	Socket Sizes	LIST
68309	3/16" & 1/4" sq. x 1/2" & 9/16" hex	75.60
68310	3/16" & 5/16" sq. x 1/4" & 3/8" sq.	60.80



Imperial Ratcheting Wrench

Part #	Description	LIST
127C	1/4", 3/8", 3/16" & 5/16"	38.00



QuadBox™ Ratcheting Wrench SAE

Part #	Description	LIST
85201	5/16" x 3/8" & 7/16" x 1/2"	93.20
85202	9/16" x 5/8" & 11/16" x 3/4"	111.20



Service Wrench

Part #	Description	LIST
T21125U	3/8" square end and 1/2" square end	53.40



HEX-KEY WRENCHES

Part #	Description	LIST
10937	13 pc. set (.050 - 3/8") ball drive	50.60
69637	13 pc. set (.050 - 3/8") ball drive - extra long	84.00



Part #	Description	LIST
10995	9 pc. set (1.5 - 10mm) ball drive	69.00



Part #	Description	LIST
12137	13 pc. set (.050 - 3/8")	29.10



Part #	Description	LIST
12132	8 pc. set (.050 - 5/32")	13.10
12199	9 pc. set (1.5mm - 10mm)	27.50



Part #	Description	LIST
15390	10 pc. set (3/32 - 3/8") w/stand	195.80



Part #	Description	LIST
15305	3/32" Hex 9" T-Handle	14.50
15306	7/64" Hex 9" T-Handle	15.40
15307	1/8" Hex 9" T-Handle	16.30
15308	9/64" Hex 9" T-Handle	16.70
15309	5/32" Hex 9" T-Handle	17.30
15310	3/16" Hex 9" T-Handle	17.60
15311	7/32" Hex 9" T-Handle	20.70
15312	1/4" Hex 9" T-Handle	21.20
15313	5/16" Hex 9" T-Handle	31.10

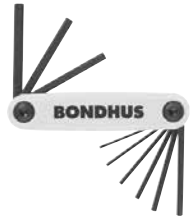
Part #	Description	LIST
12585	5 pc. hex set (3/16 - 3/8")	27.80



Part #	Description	LIST
12587	7 pc. hex set (2 - 8mm)	21.80



Part #	Description	LIST
12589	9 pc. hex set (5/64 - 1/4")	19.60



Part #	Description	LIST
12591	9 pc. hex set (.050 - 3/16")	16.00



Part #	Description	LIST
12592	7 pc. hex set (1.5 - 6mm)	15.80



Part #	Description	LIST
12632	8 pc. star set (T6 - T25)	39.30



Part #	Description	LIST
12634	8 pc. star set (T9 - T40)	38.80



Part #	Description	LIST
70550	Folding Hex Key Set11 Fractional Inch-Sized Keys	43.70



TAPE MEASURES

Milwaukee Magnetic Tape Measures









Part #	Description	LIST
48-22-0316	16' Magnetic Tape Measure	42.10
48-22-0317	5M/16' Magnetic Tape Measure	51.60
48-22-0325	25 Magnetic Tape Measure	49.70
48-22-0326	25 Magnetic Tape Measure	49.70
48-22-7225	8M/26' Magnetic Tape Measure	60.20

Compact Billet Torpedo Level

The Milwaukee Billet Torpedo level features AMPLIFIED RARE EARTH MAGNETS for over 2X the holding power of leading competitors. The MAXIMIZED VIEWING AREA ensures that the user can make a fast and accurate readings of 1/8" and 1/4" per foot in any position.



Part #	LIST
48-22-5107	89.10

SCREWDRIVERS

Klein Heavy-Duty Round-Shank, Keystone-Tip



Part #	Shank Tip Width x Shank Length	LIST
602-3	7/32 x 3	32.30
602-4	1/4 x 4	34.30
602-6	5/16 x 6	42.00
602-8	3/8 x 8	55.20
602-10	3/8 x 10	65.10

Klein Round Shank, Cabinet-Tip



Part #	Shank Tip Width x Shank Length	LIST
601-4	3/16 x 4	28.10
601-6	3/16 x 6	29.10
601-8	3/16 x 8	33.50
601-10	3/16 x 10	38.40

Klein Round Shank, Square-Recess Tip



Part #	Shank	Point Size	Colour Code	For Screw Sizes	LIST
660	4"	No. 0	Yellow	3 & 4	31.60
661	4"	No. 1	Green	5,6,7	31.60
662	4"	No. 2	Red	8,9,10	30.80
663	4"	No. 3	Black	12 & 14	31.60
668	8"	No. 1	Green	5,6,7	26.00
666	8"	No. 2	Red	8,9,10	35.70
667	8"	No. 3	Black	12 & 14	35.70

Klein Multi Bit Screwdrivers





Part #	Point Size	LIST
32527	11-in-1 Screwdriver/Nut Driver - Schrader	65.10
32535	10-Fold 10-in-1 Screwdriver/Nut Driver	94.40

Hilmor Multi Bit Screwdriver



Part #	Point Size	LIST
1839053	9 IN 1 Multi-Tool	37.90

Klein Heavy-Duty Round-Shank, Cabinet-Tip



Part #	Shank Tip Width x Shank Length	LIST
605-4	1/4 x 4	31.60
605-6	1/4 X 6	34.70
605-8	1/4 x 8	40.40

Klein Round Shank, Special Profilated Phillips-Tip



Part #	Point Size	Shank Length	LIST
603-1	No. 2	1-1/2	27.20
603-3	No. 1	3	27.40
603-4	No. 2	4	29.90
603-10	No. 2	10	40.00

Klein Pocket Screwdrivers



Part #	Description	LIST
32613	3-in-1 HVAC Pocket Screwdriver	42.40
32614	4-in-1 Electronics Pocket Screwdriver	42.40

Milwaukee Multi Bit Screwdrivers



Part #	Point Size	LIST
48-22-2761	11in1 Screwdriver SQ	28.20
48-22-2132	9-in-1 Square Drive Multi-bit Driver	39.10
48-22-2133	9-in-1 Torx Drive Multi-Bit Screwdriver	41.10
48-22-2134	9-in-1 SAE Hex/Key Drive Multi-Bit Screwdriver	41.10
48-22-2322	9-in-1 Square Drive Ratcheting Multi-Bit Screwdriver	50.90

Picquic Multi Bit Screwdrivers





Part #	Point Size	LIST
98880	8 IN 1 including 1/4 & 5/16 Nut Driver	44.00
91002	Multi Bit Stubby	26.40

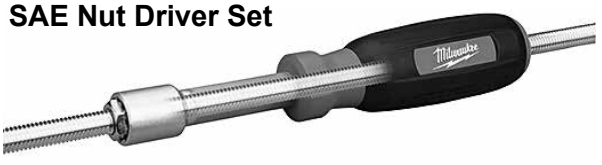
Tamperproof Multidriver



Part #	Point Size	LIST
151TP	15 IN 1 Tamperproof Multidriver	74.50

NUT DRIVERS

7 PC Magnetic HollowCore™ SAE Nut Driver Set



HollowCore™ Unlimited Depth - Ideal for long bolts or threaded rod applications

Part #	Description	LIST
48-22-2507	7 PC Magnetic Nut Driver Set	159.20

2 Piece Magnetic Tip Nut Driver Sets



Part #	Description	LIST
630M	Set contains: 630-1/4M, 630-5/16M	67.80
646M	Set contains: 646-1/4M, 646-5/16M	77.20

7-Piece Nut Driver Set - 3" Shafts

Part #	Description	LIST
631	7-Piece Nut Driver Set - 3" Shafts	190.00

7-Piece Hollow-Shaft* Magnetic Tip Nut Driver Set - 3" Shafts

Part #	Description	LIST
631M	7-Piece Hollow-Shaft* Magnetic Tip Nut Driver Set - 3" Shafts	264.50



7-Piece Nut Driver Set - 6" Shafts

Part #	Description	LIST
647	7-Piece Nut Driver Set - 6" Shafts	206.90

7-Piece Hollow-Shaft* Magnetic Tip Nut Driver Set - 6" Shafts

Part #	Description	LIST
647M	7-Piece Hollow-Shaft* Magnetic Tip Nut-Driver Set - 6" Shafts	286.60



Hollow-Shaft Nut Drivers - 3" Shafts



Part #	Hex Size	LIST
630-1/4	1/4"	27.40
630-5/16	5/16"	27.70
630-11/32	11/32"	27.60
630-3/8	3/8"	28.60
630-7/16	7/16"	31.20

Hollow-Shaft Nut Drivers - 6" Shafts



Part #	Hex Size	LIST
646-3/16	3/16"	28.60
646-1/4	1/4"	29.00
646-5/16	5/16"	29.20
646-11/32	11/32"	29.80
646-3/8	3/8"	30.00
646-7/16	7/16"	34.40
646-1/2	1/2"	36.60
646-9/16	9/16"	46.90
646-5/8	5/8"	49.70

POWER TOOLS

MILWAUKEE®

115v Power Tools (Corded)

1610-1

1/2" Compact Drill



1676-6

1/2 in. Hole-Hawg® Drill



1680-21

1/2" Super Hawg™ w/ Carrying Case



3107-6

1/2" D-Handle Right Angle Drill Kit



6130-33

7 Amp 4-1/2" Small Angle Grinder



6242-6

Compact Band Saw



6390-21

TILT-LOK™ 7-1/4" Circular Saw with Case



6519-31

Sawzall® Recip Saw Kit



6852-20

18 Gauge Shear



8975-6

Dual Temperature Heat Gun



Rotary Hammer Drills

2605-22

M18™ Cordless Lithium-Ion 7/8" SDS Plus Rotary Hammer Kit



5263-21

5/8" SDS Plus Rotary Hammer Kit



5268-21

1-1/8" SDS Plus Rotary Hammer Kit



5262-21

7/8" SDS Plus Rotary Hammer Kit



5426-21

1-3/4" SDS-Max Rotary Hammer



Heated Gear

302B-21
M12™ Heated Hoodie Kit (Kit include charger and battery)



202B-21
M12™ Heated Jacket Kit (Kit include charger and battery)



303-21
M12™ Heated AXIS™ Vest Kit



POWER TOOLS

MILWAUKEE®

M12™ Cordless Tools

2504-22

M12 FUEL™ 1/2" Hammer Drill Kit
(Bare tool 2504-20)



2420-22

M12™ Cordless Lithium-Ion Hackzall® Recip Saw
(Bare tool 2420-20)



2426-20

M12™ Cordless Lithium-Ion Multi-Tool



2553-20

M12 FUEL™ 1/4" Hex Impact Driver



2456-20

M12™ Cordless Lithium-Ion 1/4" Ratchet



2457-20

M12™ Cordless Lithium-Ion 3/8" Ratchet



2458-20

M12™ Cordless Lithium-Ion Palm Nailer (Bare Tool)



2460-21

M12™ Cordless Lithium-Ion Rotary Tool
(Bare tool 2460-20)



2470-21

M12™ Cordless Lithium-Ion PVC Shear Kit
(Bare tool 2470-20)



2471-21

M12™ Cordless Lithium-Ion Copper Tubing Cutter
(Bare tool 2471-20)



2494-22

M12™ Cordless Lithium-Ion 2-Tool Combo Kit
(Drill Driver and Impact Driver)



2590-20

M12™ Cordless Lithium-Ion Radio



49-24-0146

M12™ Cordless LED Work Light



2429-20

M12™ Sub-Compact Band Saw



2554-20

M12 FUEL™ 3/8" Stubby Impact Wrench



M12™ Batteries

48-11-2401

M12™ REDLITHIUM™ CP1.5 Battery Pack



48-11-2420

M12™ REDLITHIUM™ CP2.0 Battery



48-11-2440

M12™ REDLITHIUM™ XC 4.0 Extended Capacity Battery Pack



48-11-2460

M12™ REDLITHIUM™ XC6.0 Battery



M12™ Chargers

48-59-1810

M18™ / M12™ Vehicle Charger



48-59-1812

M18™ / M12™ Multi-Voltage Charger



48-59-2411

M12™ REDLITHIUM™ 12V Lithium-Ion Battery with Charger



Please contact your local branch for more information and pricing

POWER TOOLS

MILWAUKEE®

M18™ Cordless Tools

0880-20

M18™ Cordless Lithium-Ion Wet/Dry Vacuum



2803-22

M18 FUEL™ 1/2" Drill/Driver Kit
(Bare tool 2803-20)



2902-22

M18™ 1/2" Compact Brushless Hammer Drill Kit
(Bare tool 2902-20)



2804-22

M18™ FUEL 1/2" Hammer Drill Kit
(Bare tool 2804-20)



2720-22

M18 FUEL™ SAWZALL® Reciprocating Saw Kit
(Bare tool 2720-20)



2782-20

M18 FUEL™ Metal Cutting Circular Saw



2625-21

M18™ Cordless Lithium-Ion Hackzall® Recip Saw Kit
(Bare tool 2625-20)



2872-20

M18™ Brushless Threaded Rod Cutter



2853-20

M18 FUEL™ 1/4" Hex Impact Driver



2606-20

M18™ Compact 1/2" Drill Driver



2691-22

M18™ Cordless LITHIUM-ION 2-Tool Combo Kit
(Hammer Drill and Impact Driver)



2997-22

M18™ Lithium-Ion Brushless Cordless Hammer Drill & Impact Driver Kit



M18™ Batteries

2735-20

M18™ Cordless LED Work Light



2767-20

M18 FUEL™ 1/2" High Torque Impact Wrench with Friction Ring



48-11-1820

M18™ REDLITHIUM™ CP2.0 Battery



48-11-1840

M18™ REDLITHIUM™ XC 4.0 Extended Capacity Battery Pack



48-11-1850

M18™ REDLITHIUM™ XC5.0 Extended Capacity Battery Pack



48-11-1890

M18™ REDLITHIUM™ HIGH DEMAND™ 9.0 Battery Pack



M18™ Chargers

48-59-1850

M18™ REDLITHIUM™ XC5.0 Starter Kit



48-59-1806

M18™ Six Pack Sequential Charger



48-59-1810

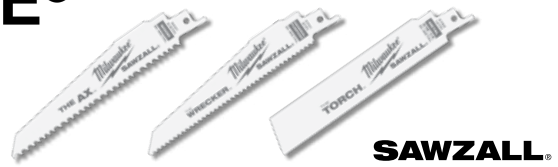
M18™ / M12™ Vehicle Charger



POWER TOOL ACCESSORIES

MILWAUKEE®





SHOCKWAVE™ DRILL & DRIVING BITS		LIST
49-66-4502	1/4X1 7/8 IMPCT MAG NTDVR	7.40
49-66-4503	5/16X1 7/8 IMPCT MAG NUTD	7.80
49-66-4505	3/8X1 7/8 IMPCT MAG NUTDR	8.70
49-66-4506	7/16X1 7/8 IMPCT MAG NTDVR	13.60
49-66-4522	3PK 1/4X1 7/8 IMPCT MAG NTDVR	21.30
49-66-4523	3PK 5/16X1 7/8 IMPCT MAG NTDVR	22.40
49-66-4525	3PK 3/8X1 7/8 IMPCT MAG NTDVR	25.20
49-66-4526	3PK 7/16X1 7/8 IMPCT MAG NTDVR	39.50
49-66-4532	1/4X2 9/16 IMPCT MAG NTDVR	8.80
49-66-4533	5/16X2 9/16 IMPCT MAG NTDV	9.60
49-66-4535	3/8X2 9/16 IMPCT MAG NTDVR	10.00
49-66-4536	7/16X2 9/16 IMPCT MAG NTDV	16.50
48-32-4411	2PK 1IN IMPCT BIT PH1	4.40
48-32-4412	2PK 1IN IMPCT BIT PH2	4.40
48-32-4413	2PK 1IN IMPCT BIT PH3	4.40
48-32-4421	2PK 1IN IMPCT BIT SQ1	4.40
48-32-4422	2PK 1IN IMPCT BIT SQ2	4.40
48-32-4444	2PK 1IN IMPCTBIT PH2 RDCDIA	4.50
48-32-4462	1PK 2IN PWR IMPCT BIT PH2	5.00
48-32-4463	2IN PWR IMPCT BIT PH3	5.00
48-32-4471	2IN PWR IMPCT BIT SQ1	5.00
48-32-4472	2IN PWR IMPCT BIT SQ2	5.00
48-32-4473	2IN PWR IMPCT BIT SQ3	5.00
48-32-4483	2IN PWR IMPCT BIT TX15	5.00
48-32-4484	2IN PWR IMPCT BIT TX20	5.00
48-32-4485	2IN PWR IMPCT BIT TX25	5.00
48-32-4487	2IN PWR IMPCT BIT TX30	5.00
48-32-4503	3IN IMPCT MAG BIT HLDR	16.50
48-32-4562	3 5IN PWR IMPCT BIT PH2	7.30
48-32-4572	3 5IN PWR IMPCT BIT SQ2	7.30
48-32-4601	5PK 1IN IMPCT BIT PH2	8.90
48-32-4602	5PK 2IN PWR IMPCT BIT PH2	15.60
48-32-4605	5PK 1IN IMPCT BIT SQ2	10.70
48-32-4606	5PK SQ RECESS 2 2 PWR BIT	15.60
48-32-4802	2 PHILLIPS 6 PWR BIT	11.40
48-32-4805	SQ2 6 POWER BIT	11.40
49-66-4561	3PC 1 7/8IN MAG NUT DR SET	26.50
49-66-4562	4PC 1 7/8IN MAG NUT DR SET	41.60
49-66-4419	8PC 3/8IN IMP SCKT DR DEEP	132.80
48-03-4405	3/8 SQ TO 1/4 HEX IMPCT ADAPT	45.50
48-03-4410	1/2 SQ TO 1/4 HEX IMPCT ADAPT	47.40
48-32-5030	1/4 X 2IN SOCKET ADAPTER	8.00
48-32-5031	3/8 X 2IN SOCKET ADAPTER	10.40
48-32-5032	1/2 X 2IN SOCKET ADAPTER	13.60

SAWZALL® BLADES		LIST
48-00-1600	FLUSH CUT SAWZALL BLADE 1PK	69.20
48-00-1630	DUCTWORK SAWZALL BLADE 5PK	50.30
48-00-1640	DRYWALL ACCESS BLADE	15.10
48-00-4182	ICE HARDENED BLADE 14T 6L 5PK - METAL	46.40
48-00-4184	ICE HARDENED BLADE 18T 6L 5PK - METAL	46.40
48-00-4787	ICE HARDENED 14T9L TORCH 5PK - METAL	81.90
48-00-4788	ICE HARDENED 18T9L TORCH 5PK - METAL	81.90
48-00-5021	SUPER SAWZALL 5T 6L AX 5pk - WOOD	48.40
48-00-5026	SUPER SAWZALL 5T 9L AX 5pk	64.30
48-00-5027	SUPER SAWZALL 5T 12L AX 5pk	73.90
48-00-5035	SUPER SAWZALL 5T6L 5pk - WOOD	43.20
48-00-5036	SUPER SAWZALL 5T9L 5pk	56.60
48-00-5037	SUPER SAWZALL 5T12L 5pk	64.10
48-00-5093	SUPER SAWZALL BL 8/12T 8L 5PK- MULTI	46.40
48-00-5182	SUPER SAWZALL BL 14T 6L 5PK - METAL	36.20
48-00-5184	SUPER SAWZALL BL 18T 6L 5PK	36.20
48-00-5186	SUPER SAWZALL BL 24T 6L 5PK	36.20
48-00-5187	SUPER SAWZALL BL 14T 9L 5PK	44.30
48-00-5188	SUPER SAWZALL BL 18T 9L 5PK	44.30
48-00-5782	SUPER SAWZALL 14T 6L TORCH 5pk	49.70
48-00-5784	SUPER SAWZALL 18T 6L TORCH 5PK	49.70
48-00-5787	SUPER SAWZALL 14T 9L TORCH 5PK	66.00
48-00-5788	SUPER SAWZALL 18T 9L TORCH 5PK	66.00
49-22-3329	12 PC SAWZALL BLADE SET	98.30
49-22-1131	14 PC ICE HARDENED BLADE SET	141.40
49-22-1145	9 PC SAWZALL BLADE SET	69.40
49-22-3310	10 PC SAWZALL BLADE SET	72.50

POWER TOOL ACCESSORIES

MILWAUKEE®





HOLE SAWS		LIST
49-22-4175	15 GENERAL KIT	390.00
49-56-0023	3/4	20.30
49-56-0032	7/8	20.30
49-56-0043	1	20.40
49-56-0052	1 1/8	20.40
49-56-0062	1 1/4	20.40
49-56-0072	1 3/8	21.50
49-56-0082	1 1/2	21.50
49-56-0092	1 5/8	21.50
49-56-0102	1 3/4	27.00
49-56-0117	2	27.00
49-56-0127	2 1/8	32.30
49-56-0132	2 1/4	32.30
49-56-0142	2 3/8	32.30
49-56-0147	2 1/2	35.50
49-56-0158	2 5/8	35.50
49-56-0163	2 3/4	35.50
49-56-0173	3	37.80
49-56-0177	3 1/8	37.80
49-56-0183	3 1/4	37.80
49-56-0193	3 1/2	40.50
49-56-0197	3 5/8	44.50
49-56-0213	4	55.90
49-56-0217	4 1/8	59.70
49-56-0223	4 1/4	79.10
49-56-0233	4 1/2	109.70
49-56-0237	4 3/4	121.80
49-56-0243	5	135.20
49-56-0253	6	139.30
49-56-7010	3/8 HOLE SAW ARBOR	23.80
49-56-8000	4IN PILOT BIT SKINCARDED	9.70
49-56-8010	5IN PILOT BIT SKINCARDED	9.70

BIG HAWG™ HOLE CUTTERS		LIST
49-56-9210	2 1/8	86.80
49-56-9220	2 9/16	88.90
49-56-9230	3"	118.10
49-56-9240	3 5/8	120.50
49-56-9255	4 1/4	
49-56-9265	4 5/8	190.50
49-56-9270	5 1/4	222.20
49-56-9275	6 1/4	206.30
49-56-9280	7PC KIT	321.00
48-56-9300	CENTER SPADE BIT	11.20
49-56-9305	ARBOR	55.40
48-09-5055	FILE	34.20



SDS+ CARBIDE CORE BITS

CORE BODY W/GUIDE PLATE & CENTERING PIN*		LIST
48-20-5005	1" Depth: 3-3/16	113.50
48-20-5010	1-1/8" Depth: 3-3/16	122.70
48-20-5015	1-1/4" Depth: 3-3/16	207.70
48-20-5020	1-3/8" Depth: 3-3/16	154.40
48-20-5025	1-1/2" Depth: 3-3/16	168.40
48-20-5030	1-3/4" Depth: 2-13/16	189.50
48-20-5035	2" Depth: 2-13/16	289.60
48-20-5040	2-1/2" Depth: 2-13/16	201.20
48-20-5045	3" Depth: 2-13/16	276.20
48-20-5050	3-1/2" Depth: 2-13/16	332.00
48-20-5055	4" Depth: 2-13/16	497.00

*Guide plate and centering pin not included with 1" & 1-1/8" diameter core bits



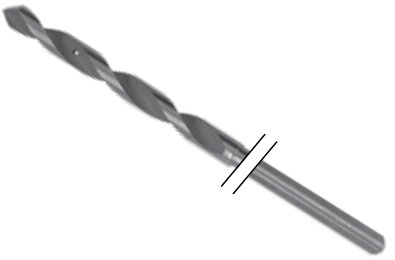
SDS+ ADAPTER SHANK		LIST
48-03-3545	8"	97.20
48-03-3555	8"	97.20
48-03-3551	12"	110.80
48-03-3561	12"	110.80

POWER TOOL ACCESSORIES

MILWAUKEE®



BLACK OXIDE DRILL BITS		LIST
48-89-2710	2PK 1/16IN	4.60
48-89-2711	2PK 5/64IN	4.60
48-89-2712	2PK 3/32IN	4.70
48-89-2713	2PK 7/64IN	4.80
48-89-2714	2PK 1/8IN	4.80
48-89-2715	9/64IN	3.10
48-89-2716	5/32IN	3.20
48-89-2717	11/64IN	3.30
48-89-2718	3/16IN	3.80
48-89-2719	13/64IN	4.20
48-89-2720	7/32IN	4.50
48-89-2721	15/64IN	4.80
48-89-2722	1/4IN	5.10
48-89-2723	17/64IN	6.10
48-89-2724	9/32IN	6.90
48-89-2725	19/64IN	7.40
48-89-2726	5/16IN	7.50
48-89-2727	21/64IN	8.50
48-89-2728	11/32IN	9.40
48-89-2729	23/64IN	10.50
48-89-2730	3/8IN	10.50
48-89-2731	25/64IN	16.60
48-89-2732	13/32IN	16.90
48-89-2733	27/64IN	18.10
48-89-2734	7/16IN	19.40
48-89-2735	29/64IN	20.40
48-89-2736	15/32IN	23.20
48-89-2737	31/64IN	24.00
48-89-2738	1/2IN	24.60
48-89-2803	15 PC KIT	67.00



BELLHANGER BITS		LIST
48-13-7137	3/8IN 12L	36.30
48-13-7125	1/4IN 18L	31.50
48-13-7237	3/8IN 18L	40.50



STEP DRILL BITS		LIST
48-89-9201	1/8" - 1/2"	75.10
48-89-9202	3/16" - 1/2"	91.80
48-89-9203	1/4" - 3/4"	130.30
48-89-9204	3/16" - 7/8"	118.00
48-89-9205	1/4" - 1-3/8"	170.50
48-89-9206	3/8" - 1/2"	85.20
48-89-9207	7/8"	143.50
48-89-9208	1/2" - 1"	155.40
48-89-9209	7/8" - 1-1/8"	137.70
48-89-9211	7/8" - 1-7/32"	205.50
48-89-9212	7/8" - 1-3/8"	160.70
48-89-9221	3PC SET	301.00
48-89-9223	4PC SET	442.00



SHIP AUGER BITS		LIST
48-13-5750	3/4 X 18 IN	80.80
48-13-5870	7/8 X 18 IN	91.00
48-13-6000	1 X 18 IN	98.00
48-13-6120	1 1/8 IN	125.70
48-13-6250	1 1/4 IN	145.90



SDS+ BITS		LIST
48-20-7065	3/4 X 10 X 12	61.80
48-20-7072	7/8 X 10 X 12	85.70
48-20-7410	3/16 X 2 X 4 1/2	10.90
48-20-7411	3/16 X 4 X 6	11.60
48-20-7430	1/4 X 2 X 4 1/2	10.60
48-20-7431	1/4 X 4 X 6	11.60
48-20-7441	5/16 X 4 X 6	15.40
48-20-7451	3/8 X 4 X 6	14.30
48-20-7454	3/8 X 10 X 12	29.30
48-20-7471	1/2 X 4 X 6	18.70
48-20-7474	1/2 X 10 X 12	28.60
48-20-7490	5 PC KIT	67.10
48-20-7602	5/8 X 6 X 8	32.90
48-20-7604	5/8 X 10 X 12	49.30



HAMMER DRILL BITS		LIST
48-20-8801	5/32 X 4 X 6 2PK	17.70
48-20-8806	3/16 X 4 X 6 2PK	18.80
48-20-8811	1/4 X 4 X 6	12.80
48-20-8816	5/16 X 4 X 6	13.90
48-20-8821	3/8 X4 X 6	15.90
48-20-8830	1/2 X 4 X 6	21.30
48-20-8831	1/2 X 10 X 12	34.60

BLADES & HACKSAWS

MILWAUKEE®

Hacksaw Blades



- Longer life: Bi-metal construction lasts longer than high-speed steel and carbon blades
- Convenient: Fits most 12" hack saw frames

Part #	Length	Teeth per inch	Pack Qty	LIST
48-43-0610	12"	18	10	60.30
48-43-0620	12"	24	10	60.30
48-43-0630	12"	30	10	60.30

12" High Tension Hacksaw



- Reinforced Metal Frame - Durable frame supports higher tension
- Internal Blade Storage - Stores up to six extra blades
- Overmolded Handle - Ensures secure grip and user comfort

Part #	Description	LIST
48-22-0050	12" High Tension Hacksaw	86.40

Milwaukee Saws

- Heavy duty aluminum handle
- Complete with 6" Lenox reciprocating blade
- Blade folds away safely
- Locks in 3 positions
- Comfortable hand grip
- Hanging hole in handle
- Accepts reciprocating blades using 1/2" tang
- Cuts in hard-to-get-at places
- Fits in your pocket
- Saves time



48-22-0305



48-22-0012



48-22-0304



48-22-0218

Part #	Description	LIST
48-22-0305	Folding Jab Saw	40.40
48-22-0304	Rasping Jab Saw	22.50
48-22-0012	Compact Hack Saw	30.70
48-22-0218	18" PVC/ABS Saw	58.30

SHEET METAL TOOLS

HILMOR

SNIPS

LONG BLADE LIFE
Precision-formed blades for Aviation and Bulldog Snips
Bi-Metal blades for Offset Snips

ULTIMATE SPRING DURABILITY
Reinforced Chrome Silicone valve-quality wire lasts for a lifetime

COMFORTABLE GRIPS
Over-molded handles won't slip or twist

Part #	LIST
1891133	65.20
1891134	66.90
1891135	64.90
1891137	87.20
1891138	81.70



1891133 AVIATION SNIP - LEFT



1891134 AVIATION SNIP - RIGHT



1891135 AVIATION SNIP - STRAIGHT



1891137 OFFSET SNIP - LEFT



1891138 OFFSET SNIP - RIGHT

HVAC TOOLS

ULTIMATE SPRING DURABILITY
Reinforced Chrome Silicone valve-quality wire lasts for a lifetime

COMFORTABLE GRIPS
Over-molded handles won't slip or twist

Part #	LIST
1891187	93.20
1891185	118.40
1891180	98.90



1891187 C5 5 BLADE CRIMPER



1891180 N2 V NOTCHER



1891185 S2 3" SEAMER

TUBE CUTTERS

MILWAUKEE

1/2" Mini Copper Tubing Cutter

- 1/8" - 5/8" Cut Capacity
- Proprietary Adjustment Mechanism
- Chrome Rollers Easy Grip Knob

Part #	LIST
48-22-4250	39.90



1" Mini Copper Tubing Cutter

- 1/8" - 1-1/8" Cut Capacity
- Proprietary Adjustment Mechanism
- Chrome Rollers
- Easy Grip Knob
- Extra Blade Included

Part #	LIST
48-22-4251	64.50



1-1/2" Constant Swing Copper Tubing Cutter

- 1/8" - 1-5/8" Cut Capacity
- 4 Roller Design
- Chrome Rollers
- Smooth Adjustment Mechanism
- On-Board Reamer

Part #	LIST
48-22-4252	147.30



M12™ Cordless Lithium-Ion Copper Tubing Cutter Kit

- Powerful 500-RPM motor: Cuts up to 10X faster than conventional cutters
- Automatically adjusts from 3/8” to 1” tubing and rotates to cut in confined spaces
- Water-resistant sealed head and unibody construction: Deliver exceptional durability
- REDLITHIUM™ Battery Technology
- Onboard Battery Fuel Gauge: Displays remaining runtime



Part #	LIST
2471-21	472.00

Tubing Cutter

- Double-Ground V-Shaped Blade (Patent Pending) - Cleaner Cuts on 1" rubber and plastic tubing/PEX-a tubing
- All Metal Core (Patent Pending) - Durable Frame
- Rework Groove - Correct mistakes quickly and effectively
- Locking Mechanism - One handed locking and remains locked while in pouch (Patent Pending)
- Rust Protection - Increases tool life by reducing corrosion



Part #	LIST
48-22-4202	60.00

2 PC Replacement Cutter Wheels

Part #	Description	LIST
48-22-4256	Replacement Cutter Wheels 2PK	27.60



TUBE CUTTERS
HILMOR / MILWAUKEE

Tube Cutters

Part #	Description	Tube Diameter Range (in)	LIST
1885381	Copper Cutting	1/8” to 5/8”	49.50
1885382	Copper Cutting	1/8” to 1”	105.10
1885383	Copper Cutting	1/8” to 1-1/8”	88.40
1885384	Copper Cutting	1/8” to 1-3/8”	172.30
1885385	Copper Cutting	1/8” to 1-3/4”	254.20
48-22-4253	2-1/2" Quick Adjust Copper Tubing Cutter	1/2" - 2-5/8"	240.90



1885381



1885384

Part #	Description	LIST
1885387	Copper Cutting Wheels* (2-Pack)	47.40
1885386	Small Copper Cutting Wheels** (2-Pack)	44.20
21024TCD	Replacement Deburrer fits 21011 & 21012 TC (1-Pack)	35.40

*Fits Prod. No. 1885383, 1885384, 1885385, 21013
** Fits Prod. No. 1885381, 1885382



48-22-4253



1885387

Close Quarters Tubing Cutter

For 1/4" to 2 3/8" (6–59mm) O.D. non-ferrous tube and plastic pipe and tube.



Part #	Description	LIST
4991	Close Quarters Tubing Cutter	625.00
8038	Replacement Cutter Wheel	58.60

TUBE BENDERS, LEVER TYPE

Ratchet Benders

Part #	Descriptions	LIST
1839032	Compact Bender Kit 1/4 in to 7/8 in, universal crossbar and color-coded materials, allow for bending with one hand, tube materials: soft copper, steel, brass, aluminum	553.00
70070	Ratchet Cooper Tubing Tube Bender	554.00



1839032


70070

Single Size Tube Benders

Open size design slips over tube at any point. Makes smooth short radius bends up to 180°. Calibrated to show angle of bend. Wide hook grips tubing securely. New fixed hook tube benders furnished for 1/4" to 1/2" O.D. sizes have easy 90° start.

Bending Range:

Part #	Tube O.D. (inches)	Nominal Size (inches)	Radius to Center of Tube (inches)	LIST
364-FHB-04	1/4*	1/8	9/16	231.10
364-FHB-06	3/8*	1/4	15/16	260.50
364-FHB-08	1/2*	3/8	1-1/2	371.00
364-FHA-10	5/8	1/2	2-1/4	578.00
364-FHA-12	3/4	5/8	3	757.00
364-FHA-14	7/8	3/4	3	853.00

* Swivel handle may be repositioned to regain leverage for bends greater than 90°, eliminating bender twisting and handle crossing. Enclosed swivel mechanism provides extended life. Ideal for bending stainless steel, as well as other tubing.

style furnished for 1/4" through 1/2" OD tubing

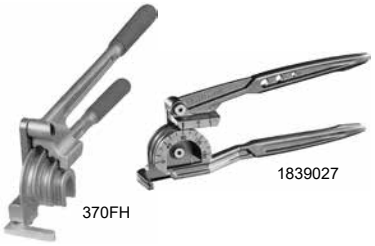


style furnished for 7/8" OD tubing



Triple Head Tube Benders

Part #	Descriptions	LIST
367FH	For 1/8", 3/16", and 1/4" (3, 4 & 6mm) O.D. tubing. 9/16" radius to center of tube.	94.80
368FH	For 1/4", 5/16" and 3/8" (6 & 8mm) O.D. tubing. 15/16" radius to center of tube.	112.20
370FH	For 1/4", 3/8", and 1/2" O.D. tubing.	173.70
1839027	hilmor Tri-Tube Bender 1/4", 3/8", 1/2"	118.40


370FH

1839027

TUBE BENDERS, SPRING TYPE

For 1/4" to 3/4" O.D. tubing. Tools allow hand bending of soft tubing to any shape without collapsing walls. Special spring steel, nickel finished. End belled for quick tube removal.

Part #	Tube O.D. (inches)	Length (inches)	LIST
102F-04	1/4	10	10.30
102F-05	5/16	10	10.30
102F-06	3/8	10	12.30
102F-08	1/2	12	14.10
102F-10	5/8	12	14.30
102F-12	3/4	12	17.40
102F-14	7/8	12	18.20



45° FLARING TOOLS

Orbital Flare

- Precise Flares - An off-center mounted cone spins on an axis to effectively produce quality flares
- No Cracked Tubes - A clutch mechanism stops the flaring when the job is done
- Simple Setup - A clothespin-inspired, spring-loaded block grips the tube securely
- Easy to Position - A tube-stop arrow slides to set correct height and positioning, while ball detects allow for easy flaring cone alignment



Part #	Description	LIST
1838952	Tube sizes (O.D.): 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4"	395.00



Part #	Description	LIST
195FC-SP	For 3/16", 1/4", 5/16", 3/8", 7/16", 1/2" and 5/8" O.D. tubing, (1/8", 1/4", 3/8" and 1/2" nom.). Self-centering yoke with swivel-type, hard chrome-finished flaring cone forms better flares with less effort. Design of yoke permits flaring where there is little space between nut and tube end.	240.20

Rol-Air Flaring Tool



Part #	Description	LIST
500-FC-SP	For flaring and burnishing 3/16", 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. tubing, (1/8", 1/4", 3/8" and 1/2" nom.). Flares rolled out above die bar by super-smooth faceted cone. Automatically burnishes flare face. Slip-on yoke permits use in tight quarters. Heat treated dies grip tubing without scoring.	271.20

Grabber Rol-Air Flaring Tool



Part #	Description	LIST
525-F-SP	Flares and burnishes 3/16" to 5/8" (5 to 16mm) O.D. tubing. Unique, self-adjusting, tube holding mechanism permits use in tight quarters. Faceted, hard chrome finished cone rolls out and burnishes perfect 45° flare above the tube holding mechanism.	



Part #	Description	LIST
93FB	For 3/16", 1/4", 5/16", 3/8" and 1/2" O.D. tubing. Recommended for Bundy, GM and other brazed or welded soft steel tubing (wall thickness to .035"). Also makes single or double flares in soft copper or aluminum tubing. Forges steel yoke; swivel-type hard chrome-finished flaring cone.	217.90

TUBING TOOL KITS

45° Flaring and Swaging Tool

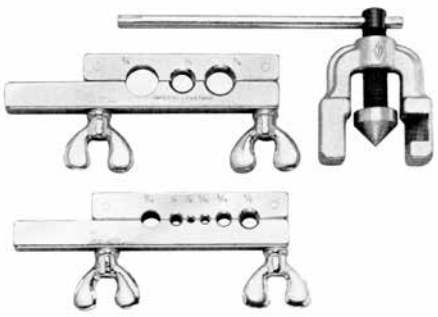
Part #	Description	LIST
275FS	For 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 5/8" and 3/4" O.D. tubing, (1/8", 1/4", 3/8", 1/2" and 5/8" nom.). Includes five swage adapters for 3/16", 1/4",5/16", 3/8", 1/2" and 3/4" O.D. tubing, (1/8", 1/4", 3/8", 1/2" and 5/8" nom.) Flares or swages. Converts quickly. Screw-type-feed. Ideal close quarters tool. Swivel-type swaging adapters and spreader cone are hard chrome-finished for easy operation. Self-centering, slip-on forged steel yoke. In plastic kit.	474.00



45° Flaring Kits

Compact kits contain two flaring bars and one yoke. Self-centering forged steel yoke has slip-on feature. Swivel-type flaring cone reduces effort required. Positive clamping action of flaring bars eliminates tube movement. In plastic case.

Part #	Description	LIST
375FS	For 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 5/8", and 3/4" O.D. tubing, (1/8", 1/4", 3/8", 1/2" and 5/8" nom.).	316.00



Hilmor Compact Swage Tool

It has the power to swage 1-5/8" tubing and the control to swage 5/16" tubing without a crack. With its small, pistol-shape design, it can fit in the smallest of spaces.

Part #	Description	LIST
1839015	Kit Contents: 3/8", 1/2", 5/8", 3/4" and 7/8" Expander Heads.	1,388.00



Hilmor Quick-Engage Flare and Swage Kit

- Push down the yoke to engage the tube
- Spring-loaded block holds the tube
- Tube-stop arrow easily identifies the correct height

Part #	Description	LIST
1838947	Kit Contents: 3/16", 1/4" 5/16", 3/8", 1/2", 5/8" and 3/4" tube sizes	458.00



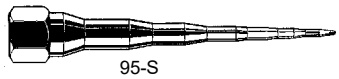
SWAGING TOOLS
IMPERIAL

Punch-Type Swaging Tools

Use these tools for making tubing connections without fittings. Enlarge end of tube, insert another tube, solder like a sweat fitting.

Swaging Punches:

Part #	O.D. Size (in)	Nominal Size (in)	LIST
93S-03	3/16		16.30
93S-04	1/4	1/8	17.40
93S-05	5/16		22.20
93S-06	3/8	1/4	24.60
93S-08	1/2	3/8	33.20
93S-10	5/8	1/2	31.60
93S-12	3/4	5/8	39.60
93S-14	7/8	3/4	40.50
94S	1/2	3/8	49.00
95-S	3/16, 1/4, 5/16, 3/8, 1/2, 5/8	6 in 1	57.00


95-S


93-S


94-S

Swaging Punch Kit

Part #	Description	LIST
193-S	Contains four swaging punches - 1/4", 3/8", 1/2" and 5/8" O.D., (1/8", 1/4", 3/8" and 1/2" nom.) in vinyl case.	94.80
195SA	Contains flaring bar and four swaging punches - 1/4", 3/8", 1/2" and 5/8" O.D., (1/8", 1/4", 3/8" and 1/2" nom.) in steel kit.	347.00


193-S


195-SA

TESTING AND SERVICE TOOLS

Pinch off Tool

Part #	Description	LIST
105-FF-SP	1/4", 3/8" and 1/2" O.D. Temporarily closes soft copper, aluminum or steel tubing so no liquid or gas passes sealed part. Opens tubing and rounds it back to shape.	113.70
T21294	Plier type Pinch off tool fits 1/8" to 5/8" OD.	51.90



Tubing Test Plugs

1/4" to 1-5/8" O.D. For temporary shut-off of tubing without pinching it off or installing a valve. Especially handy for plumbing, heating, refrigeration and instrumentation when trouble-shooting for leaks. Synthetic rubber expander seals tube and holds pressure to 100 psi.

Part #	Tube O.D. (inches)	Nominal Size (inches)	Weight (oz)	LIST
140F-04	1/4	1/8	1/2	26.80
140F-06	3/8	1/4	3/4	26.80
140F-08	1/2	3/8	1	29.10
140F-10	5/8	1/2	1-1/2	34.80
140F-12	3/4	5/8	2	34.80
140F-14	7/8	3/4	3	52.10
140F-18	1-1/8	1	4	63.30
142F	1/2, 5/8 & 7/8	3/8, 1/2 & 3/4	9	104.20



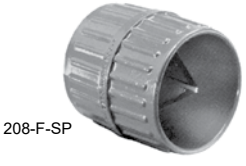
DEBURRING TOOLS

Inner / Outer Reamer and Deburring Tool

Ream both inside and outside edges of tube with three hollow ground tool steel cutters. Fit comfortably in hand.



RB1000



208-F-SP



48-22-4255



NG8150

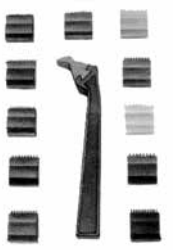


#5-10 Deburr Replacement Blade

Part #	Description	LIST
208-F-SP	Reamer for copper, aluminum and brass tubing. Blue finish. Weight: 10oz.	75.80
RB1000	Noga pocket deburring tool, includes 12mm hexagonal aluminum painted handle and S-10 blade.	37.40
48-22-4255	Reaming Pen provides easy deburring of copper tubing and PVC	22.70
NG8150	Noga S Promo Set - includes 1 handle and 10 S-10 blades	64.60
S-10	Replacement blade	6.20

FIN TOOLS & BRUSHES

Multi-Head Fin Tool



Part #	Description	LIST
T-100	Kit (1 handle and 6 heads: 8, 9, 10, 11, 12, 14)	25.10

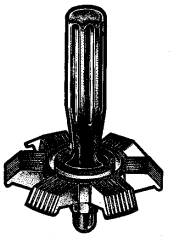
Fin Tool

All metal long lasting fin straightener. Straightens and cleans condenser and evaporator fins. One tool for all units.



Part #	Description	LIST
T20353	Fin Tool with heavy duty bicycle handle	37.90

Fin Combs



Part #	Description	LIST
T20351	Cleans 8, 9, 10, 12, 14 & 15 fins per inch	34.60

Wire Brushes



Part #	Description	LIST
81234	Shoe handle style Tempered Steel Wire , 10" long hardwood block, 4 x 16	15.50
73834	Mini Welder's Brush - stainless steel	16.80
73836	Mini Welder's Brush - brass	16.30

Fin Whisk Brush



Part #	Description	LIST
B-26	A plastic handled whisk for cleaning condenser and evaporator fins.	6.20

SuperComb

The new easier to grip, easier to use tool for straightening condenser and evaporator fins. Strong, durable, heavy duty nylon.



Part #	Description	LIST
T-408	8 and 10 FPI - orange	10.60
T-409	9 and 15 FPI - yellow	10.80
T-411	11 and 13 FPI - blue	10.60
T-412	12 and 14 FPI - green	10.90
T-417	16 and 17 FPI - lime	10.80
T-418	18 and 20 FPI - red	10.60
T-400	Set of 6 - includes 1 each: T-408, T-409, T-411, T-410, T-417 , T-418	40.40

TUBE CLEANERS & BRUSHES

Condenser Tube & Heat Exchanger Brushes



Condenser tube and heat exchanger brushes are available in two bristle materials: stainless steel and brass. Bristle sizes are graduated from 0.006" on small diameter brushes to 0.012" on larger sizes to provide consistent cleaning power. There are not OD threads on 3/8" brushes. Shank length is 2". Adapters are also available to accommodate other standard thread sizes.

Part #	Materials	Brush Dia.	Brush Length	Overall Length	Wire Size	LIST
65145	Stainless	1/2"	4 1/2"	7 1/2"	0.008	59.20
65155	Stainless	5/8"	4 1/2"	7 1/2"	0.008	48.60
65185	Stainless	1"	4 1/2"	7 1/2"	0.010	
65260	Brass	1/2"	4 1/2"	7 1/2"	0.008	53.20
65270	Brass	5/8"	4 1/2"	7 1/2"	0.008	57.30
65300	Brass	1"	4 1/2"	7 1/2"	0.010	59.60

Extension Rod for Condenser Tube Brushes



Part #	Description	LIST
65001	T-handle 1/2" x 3" with 5/16-18 male female thread	19.30
65002	36" steel extension rod	108.50
65003	Brush adapter to comp. rod (5/16-18 male brush to 12-24 female rod	25.20
65004	Rod adapter to comp. brush (5/16-18 female rod to 12-24 male brush)	24.10
65006	T-handle for steel extension rods.	18.30
65010	24" fibre lass ext. rod 5/16-18 1/8" NPT	57.70
65015	36" fibre lass ext. rod 5/16-18 1/8" NPT	58.20
65016	48" fibre lass ext. rod 5/16-18 1/8" NPT	61.10

CAPILLARY TUBE TOOLS

Complete Cap-Check Outfit

Contains 1003 & 1101 c/w extended base & carrying case.

Part #	LIST
5101	1,935.00



Cap-Check Chaser Kit

- Cleans out plugged tubes
- c/w 10 spools of wire (for 10 most popular cap sizes), cap tube gauge,
  sizing tools, filer/reamer and metal case
- Sizes: .028, .031, .036, .039, .042, .046, .050, .055, .064, and .070

Part #	LIST
1101	276.40



Capillary Tube Gauges

- Measures I.D. & O.D. for all capillary tube sizes

Part #	LIST
A10971	96.00



J/B Cap Tube Cutter

- Sturdy design results in no collapsing of the tube, clean cuts, and no chips.

Part #	LIST
A10973	25.30



SERVICE MANIFOLDS

800 Series 4-Valve Manifolds



- 4-Valve Efficiency
  Vacuum, low side, high side & refrigerant lines are individually connected & controlled. No need to switch charging lines.
- 4-Times Faster Evacuation
  3/8" vacuum port & oversize internal passages evacuate systems four times faster than ordinary manifolds. 3/8" port has greater area than combined inlets of high & low side lines.
- Unique Deep Draw Vacuum Valve Design
- With hoses and ball valve & sight glass hoses

Part #	Refrigerant	Charging Lines	Manifold Port Connections	LIST
846CSC	R-410A ,R-22, R404A	3-60” w/Low Loss Ball Valve Shut-Off, 1-60” 3/8” VAC Line	1/4" & 3/8" SAE	1,089.00

Brass 4 Valve Ball Valve Manifold



Ball valve manifold, glow-in-the-dark 3-1/8" gauges for r-22, r-404a, r-410a. Features four valves that operate with an internal metering ball valve that can do finite openings perfect for charging in liquid form. No liquid charging adapter necessary. Sturdy brass construction with hose holders that swivel to the front or back for greater flexibility

Part #	LIST
26225	448.00
26225L	532.00

4 Valve 3/8" Bore Aluminum Manifold



- 3-1/8" Glow-In-The-Dark Gauges
- R22, R-404A, R410A
- JB Full Flow Design For Faster Evacuation

Part #	LIST
25225	407.00

Part #	Description	LIST
CCLS4-60	Set of four 60" Kobra High Pressure Hoses	377.00
CCLE4-60	Set of four Secure Seal Hoses	296.90

SERVICE MANIFOLDS

Standard Brass Two Valve Manifold



- Standard 2-1/2" Gauges
- R22, R-404A, R410A with Boots
- Includes Set Of Three 60" Kobra CCLE High Presure Hoses
- Free Floating Dual O-ring Sealing System And Stem Seats That Full Retract Result In Fast Evacuation And Charging

Part #	LIST
M2-5-410AB	292.60

2 Valve Aluminum Zeppelin Manifold



- 3-1/8" Glow-In-The-Dark Gauges
- R22, R-404A, R410A
- Includes Set Of Three 60" Kobra CCLE High Pressure Hoses

Part #	LIST
24233	343.00

MULTIPLE REFRIGERANT MANIFOLDS

SPORLAN

Sporlan Wireless Smart Service Tool Kit



The Kit was developed to make HVAC/R diagnostic readings faster, easier, and more accurate. The SMART Service Tools are compact, convenient, and can be used with most refrigerants and oils. The kit includes lightweight wireless sensors that conveniently sync with the SMART Service Tool app via Apple iPhone®4S or newer, iPod® touch, and iPad®3 or newer (including Air and Mini). Sporlan will also develop the app for Android by the Spring of 2015. This enables you to read a system's real-time pressure and temperature without using cumbersome hoses or manifold gauges.

The Kit includes:

- Low Pressure Sensor (1)
- High Pressure Sensor (1)
- Temperature Sensors (2)
- Batteries (1 in each sensor and 4 spare)
- 1/8" MPT x 1/4" SAE adapters (2)
- Instructions

Part #	LIST
953495	1,531.00

YELLOW JACKET

Yellow Jacket 41 Series 2-Valve Manifolds



- Gauges feature both temperature and pressure arcs. Bold easy-to-read dial
- Flutterless Technology. Surge protector helps minimize needle pulsation
- Metal hand wheels and piston with proven double "O" ring seal for long reliable service
- 1-1/2 turns of metal handles for full flow
- Forged solid brass body is precision machined and designed for maximum flow

Part #	Description	LIST
41212	no hose - R-12 / R-502 / R-22	216.30
41312	no hose - R-134a / R-404A / R-507	196.50
41712	no hose - R-410A	192.30

Titan Charging Manifolds 4-Valve



Fast flow with full size bores in lightweight compact manifolds precision machined from an aluminum bar for rugged use.
Has 3-1/8" red & blue gauges.

Part #	Description	LIST
49932	no hose - R-134a / R-404A / R-407C	487.00

DIGITAL REFRIGERATION ANALYZER

SMAN™ 4-Port Refrigerant Manifold with Micron Gauge



- Extra rugged design
- Stores up to 9 jobs internally
- View wireless probe and scale readings on manifold
- Measurements can be viewed on mobile devices up to 350 feet away when connected to the Job Link® System app

Part #	LIST
SM480V	1,812.00

P51-870 Titan Digital Manifold



- Displays vapor and liquid saturation temperatures
- System superheat and subcooling calculations
- On board data logging; export to your computer through USB or to your phone via the ManTooth app
- Pressure hold mode displays rate of change for both vacuum and positive pressure measurements
- 4-way TITAN valve block
- blends not currently on the Refprop database.

Part #	LIST
40870	1,992.00

DMG2-5 - 2-Valve Digital Manifold



- Preprogrammed with 80+ refrigerants.
- Simultaneous calculation of superheat and subcool.
- Robust transducer design.
- Sturdy body designed for resiliency.
- Heavy duty K-TYPE Thermal Couples included.
- Simple and Accessible data display.

Part #	LIST
DMG2-5	1,698.00

Refrigeration System Analyzers

Testo 550 - Digital manifold kit with Bluetooth



- Includes two temperature clamp probes (two channel NTC temperature inputs) and service case
- Bluetooth / app integration for monitoring, generating reports, and sending reports and invoices via email
- Large 2-line backlit display
- Rugged housing with 5 year warranty with registration for reliable service

Testo 557 - 4-Valve digital manifold kit with Bluetooth and external vacuum gauge



- External vacuum probe for faster and more reliable system evacuation
- Bluetooth / app integration for monitoring, report generation, and sending reports and invoices via email
- Accurate, simultaneous superheat / subcooling measurements
- Rugged housing with 5 year warranty (upon registration) for reliable testing

Clamp probe (NTC) - For pipes from ¼" to 1 1/3"



- Precision NTC temperature sensor
- Collet for quick attachment
- Measuring range: -40 to +125 °C

Part #	Description	LIST
0563-1550	Testo 550 - Digital manifold kit with Bluetooth	1,194.00
0563-1557	Testo 557 4-Valve System Analyzer Kit w/ Vacuum Gauge	1,824.00
0613-5505	Pipe Clamp Probe	189.00

VACUUM GAUGES

INFICON Pilot Plus Vacuum Gauge

Works throughout the entire evacuation process of air conditioning or refrigeration systems. Its easy-to-read digital display accurately shows the vacuum level at every stage in the evacuation cycle, from atmosphere down to one micron.

Features:
- First and only HVAC/R vacuum gauge to use Pirani sensor technology for more precise readings
- Accurate readings from atmosphere (760,000 microns) down to one micron
- Digital display in microns, Pascal, Torr, or millibars



Part #	LIST
710-202-G1	694.00

Ritchie Yellow Jacket LCD Vacuum Gauge 69075

The 69075 senses the full range from atmospheric pressure down to 1 micron.

Thermocouple Sensor Features:
- No adjustments or warm-up. Stays calibrated after on/off switching and long evacuations
- Automatic battery compensation
- Automatic ambient temperature compensation

LCD Gauge Features:
- Normal handling and jarring will not affect the LCD reading
- Rugged molded case protects electronic circuitry and sensor
- Precision circuitry controls sensor and translates sensor input into micron readings on the easy-to-read LCD



Part #	LIST
69075	1,114.00

J/B Digital Vacuum Gauge with Case

- Solid State design – No adjustment needed for temperature
- 9 volt battery (not included)
- Accurate display from 25 - 12000 microns



Part #	LIST
DV-24N	503.00

VACUUM GAUGES

Fieldpiece SVG3 Digital Micron Vacuum Gauge



- Schrader depressor to minimize leaks by reducing connections
- Rate calculator to indicate how fast pressure is rising or falling
- Micron, mmHg, mbar, mTorr ,Torr, Pascals
- Alarms and stopwatch
- Units of measure: microns (µm) of mercury, mmHg, mbar, mTorr, Torr, and Pascals

Part #	LIST
SVG3	497.00

Super Vak-Check II Model 14571

A thermistor vacuum gauge designed especially for refrigeration and air conditioning service. It automatically compensates for changes in ambient temperature and permits continuous monitoring during evacuation. Compact, lightweight, easy to use and read directly in microns on a large easy to read meter.

Features:
- AC/battery operated
- range: atmospher to 10 microns
- ambient temperature compensated
- complete with model 4510 sensor
- accuracy: 200-1000 microns ±5%
- power: 110AC or 2 "D" cell batteries (not included)

Part #	LIST
14571	1,231.00



Fluke PV350 Digital Pressure Vacuum Module

Features:
- Digital pressure and vacuum measurements in a single module
- Measures HVAC/R, hydraulic and pneumatic pressures to 500 psig/3447kPa
- Measures to 29.9" Hg/76cm Hg
- Compatible with most popular DMMs
- Solid state transducer sealed in 316 stainless steel is compatible with a wide variety of liquids and gases
- Works with Fluke 12, 27, or 80 Series to record Min/Max values
- Displays results in English (psig or "Hg) or metric (kPa or cm Hg)

Part #	LIST
PV350	1,663.00



Standard Equipment:
The PV350 digital pressure/vacuum module comes with a 1/4" male pipe thread connector and a 1/4" female pipe thread to 1/4" flare male adapter; 8-foot, 1/4" diameter PVC cable; 9V battery (installed); and manual.

REFRIGERANT GAUGES

YELLOW JACKET

Yellow Jacket Manifold Gauges





Gases	Size	Type	Color	F/C	Scale	Accuracy	Part #	LIST
410A								
	2-1/2"	Steel	Hi Side	C/F	Kgcm^2/PSI	3-2-3	49035	53.20
	2-1/2"	Steel	Lo Side	C/F	Kgcm^2/PSI	3-2-3	49036	53.20
12/22/502								
	2-1/2"	Steel	Hi Side	F	PSI	3-2-3	49001	60.50
	2-1/2"	Steel	Lo Side	F	PSI	3-2-3	49002	60.50
	2-1/2"	Brass	Hi Side	F	PSI	1%	49067	116.90
	3-1/8"	Liquid	Lo Side	F	PSI	3-2-3	49512	178.10
134a/404A/507								
	2-1/2"	Steel	Hi Side	F	PSI	3-2-3	49051	53.20
	2-1/2"	Steel	Lo Side	F	PSI	3-2-3	49052	53.20
134a/404A/407C								
	2-1/2"	Steel	Hi Side	C	Bar/PSI	3-2-3	49063	67.50
	2-1/2"	Steel	Lo Side	C	Bar/PSI	3-2-3	49064	67.50
	3-1/8"	Steel	Hi Side	F	PSI	1%	49151	70.50
	3-1/8"	Steel	Lo Side	F	PSI	1%	49152	70.50
22/134a/404A								
	2-1/2"	Brass	Hi Side	F	PSI	1%	49067	116.90
	2-1/2"	Brass	Lo Side	F	PSI	1%	49068	116.90
	2-1/2"	Steel	Hi Side	F	PSI	3-2-3	49015	53.20
	2-1/2"	Steel	Lo Side	F	PSI	3-2-3	49016	53.20
	3-1/8"	Steel	Hi Side	F	PSI	1%	49105	80.20
	3-1/8"	Steel	Lo Side	F	PSI	1%	49106	80.20
22/404A/410A								
	3-1/8"	Steel	Hi Side	F	PSI	1%	49137	70.50
	3-1/8"	Steel	Lo Side	F	PSI	1%	49138	70.50

Protective Gauge Boots



- Rubber boots slip easily around gauges to cushion and protect them from impact.
- Fits 2-1/2” and 3-1/8” gauges.
- Color coded red or blue to match gauge.

Part #	Description	LIST
49090	Protective Boot Set 2-1/2"	45.70
49190	Protective Boot Set 3-1/2"	49.80
49010	Replacement Crystal 2-1/2"	12.40
49100	Replacement Crystal 3-1/2"	16.40

GAUGES

WINTERS

	ECONOMY PRESSURE			QUALITY					AMMONIA				
DIAL SIZE	2-1/2"	4"	4-1/2"	2-1/2"	2-1/2"	2-1/2"	4"	2-1/2"	2-1/2"	2-1/2"	4"	4"	4"
CONNECTION	BOTTOM	BOTTOM	BOTTOM	BOTTOM	BACK	BACK	BOTTOM	BACK	BOTTOM	BOTTOM	BOTTOM	BOTTOM	BOTTOM
NPT	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
	DRY	DRY	DRY	LQD.FILL	LQD.FILL	LQD.FILL	LQD.FILL	LQD.FILL	DRY	LQD.FILL	DRY	LQD.FILL	LQD.FILL
					FRONT FLANGE	BACK FLANGE	BACK FLANGE						BACK FLANGE
30"		PEM221		PFQ801									
30"-0-150 PSI"		PEM222		PFQ792	PFQ892-25FF	PFQ892-25BF	PFQ705-4BF	PAM1699	PAM1750G	PAM1695	PAM1701G	PAM1701G	PAM1701G-4BF
30"-0-300 PSI"				PFQ795			PFQ707-4BF	PAM1702G	PAM1751G	PAM1696	PAM1702G	PAM1702G	PAM1702G-4BF
0-30	PEM212			PFQ802	PFQ902								
0-60	PEM213		PFQ803										
0-100	PEM214	PEM223		PFQ804	PFQ904								
0-160	PEM215	PEM224		PFQ805	PFQ905		PFQ712-4BF						
0-200	PEM216	PEM225		PFQ806	PFQ906								
0-300	PEM217		PCT326	PFQ807	PFQ907	PFQ907-25FF	PFQ714-4BF						
0-400				PFQ817	PFQ917								
0-600	PEM218			PFQ808	PFQ908	PFQ908-25FF	PFQ716-4BF						
0-2000				PFQ810									

Pressure and Temperature Kit PTK1500

PTC SERIES

PFQ SERIES (Liquid Filled)

AMMONIA SERIES (Liquid Filled)

PAM SERIES

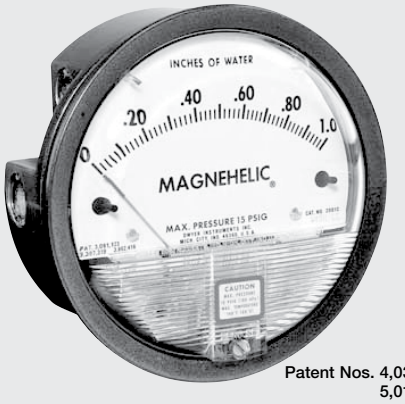
PEM SERIES

MAGNEHELIC DIFFERENTIAL PRESSURE GAUGES

DWYER

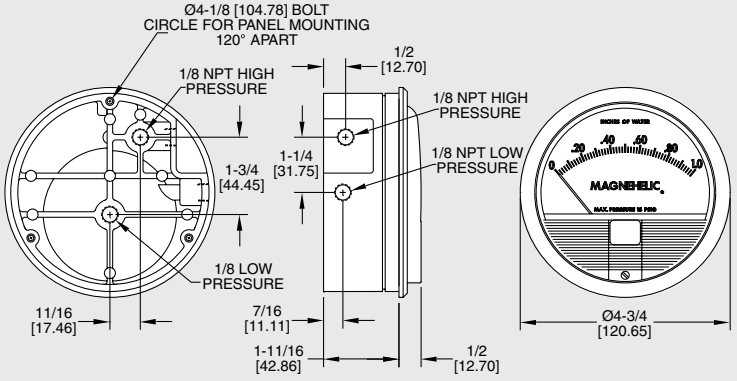
Magnehelic Gauges

- Measures positive, negative or differential air, or compatible gas pressure
- Shock resistant, diaphragm-activated mechanism provides reliability and accuracy
- Uses pilot tubes to measure air velocity and static pressure tips to measure static pressure



Patent Nos. 4,030,365
5,012,678

Standard Magnehelic® Pressure Gauge has a large, easy-to-read 4" dial.



Dimensions, Standard Series 2000 Magnehelic® Pressure Gauges. (Slightly different on medium and high pressure models)

Dual Scale English/Metric Models			
Part #	**Range, IN. W.C.**	**Range, Pa or kPa**	**LIST**
2000-0D	0-0.5	0-125 Pa	276.00
2001D	0-1.0	0-250 Pa	276.00
2002D	0-2.0	0-500 Pa	262.20
2003D	0-3.0	0-750 Pa	276.00
2006D	0-6.0	0-1.5 kPa	376.00
2008D	0-8.0	0-2.0 kPa	300.00
2010D	0-10	0-2.5 kPa	276.00

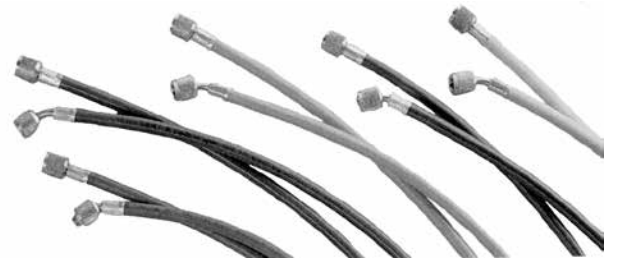
Please check your local branch for more models and pricing.

CHARGING HOSES

YELLOW JACKET

Yellow Jacket Plus II 1/4" Charging Hoses with new double barrier protection

Length	Plus II Hoses - standard 1/4" fittings				LIST 3-Pak
	Yellow	Blue	Red	3-Pak	
36"	21036	21236	21636	21983	167.20
48"	21048	21248	21648	21984	193.20
60"	21060	21260	21660	21985	207.90
72"	21072	21272	21672	21986	234.90
96"	21096	21296			101.20
12'	21112				139.00
50'	21150				498.00
100'	21200				969.00



SealRight Fittings -

- Immediately traps refrigerant in the hose when disconnected, helping meet non-venting regulations and prevent finger burns

45° SealRight fitting at one end				LIST 3-Pak
Yellow	Blue	Red	3-Pak	
22036	22236	22636	22983	220.20
			22984	246.30
22060	22260	22660	22985	258.30
22072	22272	22672	22986	285.20
22096			22988	357.00
22112				156.70

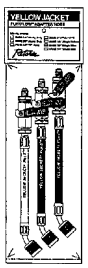
FlexFlow Valve -

- Zero restriction for maximum refrigerant flow - ideal as recovery hose
- Flexible length of hose between valve and fitting makes access easier to tight areas

FlexFlow valve 6" from angle end 3-Pak	LIST
25983	346.00
25984	372.00
25985	398.00
25986	426.00

Yellow Jacket Premium 6" FlexFlow Adapter Hoses

An easy way to retrofit existing Plus II hoses with FlexFlow capabilities. Flexible hose between valve and fitting provides convenient handling in tight areas.



Length	Description	LIST
25002	1/4" yellow FlexFlow adapter	87.10
25202	1/4" blue FlexFlow adapter	89.70
25602	1/4" red FlexFlow adapter	89.70
25980	3-pak: 25002, 25202, 25602	261.20
26002	3/8" heavy duty FlexFlow adapter	124.20

Yellow Jacket Plus II Heavy Duty Charging Hose

- 900 psi working pressure; 3500 psi burst
- Pulls 75 micron vacuum or better on 36" hose



Length	HCA Hose Str. x Angle	LIST
36"	15036	80.90
48"	15048	91.80
60"	15060	99.60
72"	15072	110.90

Heavy Duty Plus II 3/8" Combination Charging / Hi-Vacuum Hose

Pull a vacuum much faster with this 5/16" I.D. heavy duty hose than with the 1/4" hose.

- Working pressure 500 psi; 2000 psi burst

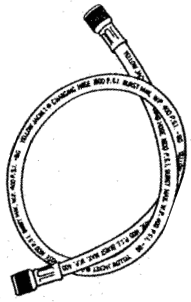


Length	3/8" fl. str. x 3/8" fl. str.	LIST
36"	15636	114.30
48"	15648	130.80
60"	15660	141.00
72"	15672	156.30
96"	15696	196.60
25'	15725	469.00
50'	15750	869.00
100'	15799	1,670.00

CHARGING HOSES

YELLOW JACKET

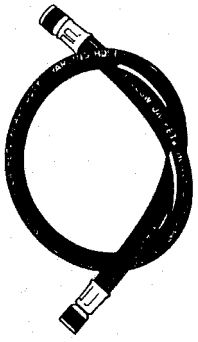
3/8" Standard "B" Charging Hose



- Working pressure 400 psi; 1600 psi burst

Length	3/8" fl. str. x 3/8" fl. str.	LIST
36"	14536	96.00
48"	14548	107.70
60"	14560	118.20
72"	14572	129.50
96"	14596	152.60

Heavy Duty Plus II 1/2" and 5/8" Combination Charging / Hi-Vacuum Hose

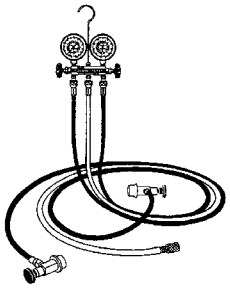


- 500 psi working pressure; 2000 psi burst. 1/2" and 5/8" I.D. hose

Length	"C" 1/2" fl. x 1/2" fl.	LIST	"D" 5/8" fl. x 5/8" fl.	LIST
48"	15848	193.20		
60"	15860	216.30	16060	228.60
72"	15872	239.90		
96"	15896	280.90		

Black only. Longer lengths available.

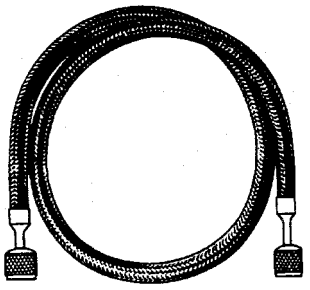
Automotive Manifold Hoses for 134a Systems



Plus II hose wih Acme fittings

Length	Yellow 1/2" fe. Acme x 1/2"fe. Acme	Red 1/2" fe. Acme x 14mm male	Blue 1/2" fe. Acme x 14mm male	LIST 1/2	LIST 14mm
36"	27436	27636	27236	79.00	63.40
60"	27460	27660	27260	97.90	82.00
72"	27472	27672	27272	107.30	91.50

Yellow Jacket Stainless Steel Hi-Vacuum Hose with brass quick coupler



Length	3/8" Str. x 45° 3/8" I.D.	LIST
36"	81736	433.00
48"	81748	484.00

Other lengths available.

Length	1/2" Str. x Str. 1/2" I.D.	LIST
60"	81860	534.00

Cylinder Valve Hoses with finger tight drum fitting

Length	UPC #	LIST
72"	18072	101.90

Cylinder Valve Adapter

Finger tight adapters fit 125 and 145 lb. cylinders

UPC #	Description	LIST
19105	3/4" NPS finger tight cylinder adapter with 1/4" male flare	50.80
19106	3/4" NPS finger tight cylinder adapter with 3/8" male flare	64.10

REFRIGERATION OILS

C-3, C-4, C-5 Mineral Refrigeration Oils



These are mineral naphthenic lubricants manufactured by Calumet
C-3 (R015) = 150 SUS C-4 (R030) = 300 SUS C-5 (R050) = 500 SUS
These are specifically designed for today's high performance air conditioning and refrigeration compressors. Use of these oils will insure continued efficient operation, providing the important properties required from an efficient refrigeration oil.

Part #	Size	LIST
4303-07	C-3 1 gallon	81.30
4304-07	C-4 1 gallon	81.30
4305-07	C-5 1 gallon	81.30

Zerol Alkylbenzene Refrigeration Oil



Zerol Refrigeration Oil is a high-quality, synthetic alkylbenzene refrigeration oil.
Zerol 150 = 150 SUS Zerol 200TD = 200 SUS Zerol 300 = 300 SUS
Zerol Refrigeration Oil is recommended for use in all refrigeration and air conditioning applications using CFC and HCFC refrigerants. It is highly recommended by refrigerant and compressor manufacturers for use with R401A, R401B, and R402A. It provides many distinct advantages: excellent miscibility, excellent thermal stability, compatibility with mineral oils, and it is an excellent clean-up / flushing oil.

Part #	Size	LIST
4308-07	Zerol 200TD -1 gal.	160.70
4310-07	Zerol 150 - 1 gal.	155.50
4311-07	Zerol 300 - 1 gal.	201.70

Polyol Ester Oil

Polyol ester oil is OEM approved by many compressor manufacturers. On all products the numbers 22, 32, 46, 68, 100, 220 refer to the viscosity of the oil. The letter following the number designates the following:

CF = Copeland formulation
S = Standard solubility
H = High solubility
22 N = Special designation - McQuay
HP = Special for Carrier Internally Geared Chillers



Part #	Emkarate Grade	Size	LIST
4314-66	RL-3MAF (Copeland)	gallon	269.20
4314-46	RL32H (Carrier, D/B, McQuay)	gallon	295.20
4316-46	RL68H (Carrier, York)	gallon	316.00
4317-66	RL100E (Carlyle, Sabroe)	gallon	321.00

ACID TEST KITS

Nu-Calgon Phase III Refrigeration Oil Test Kit



Disposable test kit that provides proof-positive that acid level in refrigeration oil is safe or unsafe. It can be used on mineral oils, alkylbenzene oils and polyol esters. Phase separation makes it easy to see change in colour of acid indicator (even if a leak detection dye has been added to the oil). Just two bottles to work with. No glass to break open. Simple. Safe. Accurate.

Part #	Size	LIST
4320-W8	1 each	56.70

Nu-Calgon Rx-Acid Scavenger



A better, more convenient way to neutralize or "scavenge" acid in refrigeration, air conditioning systems...after burnouts or during normal on-going system maintenance. Normal dosage rate is 2 fl. oz. of Rx-Acid Scavenger for every one gallon of system oil...50% less than other acid neutralizing products. This "low treat" feature means far less material has to be added to the system. In addition, the Rx-Acid Scavenger can be used with all lubricants...mineral, alkylbenzene and polyol ester. This means only one product in the tool box or on the truck for all acid neutralizing needs.

Part #	LIST
4301-02	77.70
4301-05	77.70

Sporlan TA-1

Designed to Test Mineral, Alkylbenzene and POE Lubricants

- **Thoroughly field proven**
- **Takes the guesswork out service of work**

Part #	LIST
TA-1	46.60



TA-1

Design Benefits

- **Builds Customer Confidence –** Show the test results of the acid test kit to customers, or perform the test in their presence. In this way they realize you are using the most up-to-date scientific method for system maintenance. Showing customers the test results will also help to convince them to spend the money necessary to do a proper clean-up job. Customers who are thoroughly confident of your abilities will be more interested in establishing preventive maintenance programs.
- **Accurate and Reliable –** Using a simple, scientific method, you can precisely measure the amount of acid in a lubricant sample taken from a contaminated system. The test procedure has been proven by extensive field experience.
- **Convenient -** The TA-1 has pre-measured solutions supplied in bottles with screw caps for easy handling. Kit may be used on the job site, or a lubricant sample can be saved and tested in the presence of the equipment owner.
- **Lubricant Sample Used for Test –** Since lubricant is the scavenger, it gives the best indication of acid in the system. Less than an ounce of lubricant is required.
- **Quick to Use –** Once the lubricant sample is obtained...it will take only minutes to perform the test. Simply mix the solutions and lubricant to be tested. Shake, and the resulting color tells the complete story.

The TA-1 is normally used on a “pass or fail” basis

For complete information see your Sporlan Wholesaler, our website at www.sporlan.com, or write Sporlan and request Bulletin 40-10.

REFRIGERANT LEAK SEALANT

Nu-Calgon A/C EasySeal

A/C EasySeal is designed to prevent as well as repair leaks anywhere in the system, including condensers, evaporators, copper lines, and soldered joints. It is easily injected into the system, traveling with the refrigerant, searching for leaks. The fact that A/C EasySeal travels with the refrigerant is very important to its ability to find leaks faster, using less sealant than those sealants designed to mix and travel with the systems oil.



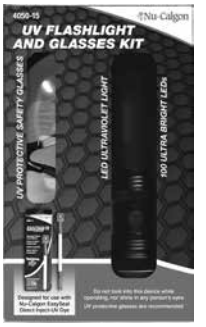
- Prevents refrigerant leaks and seals existing leaks in air conditioning and refrigeration systems permanently
- Eliminates expensive leak search and repair
- Travels with refrigerant to find leaks fast
- Utilizes a reusable hose



Part #	Description	LIST
4050-01	1.25 oz. Can	131.70
4050-02	2-Pack Kit	394.00
4050-06	3 oz. Can	172.30

Nu-Calgon EasySeal Direct Inject

EasySeal Direct Inject is a new generation of sealants. Its patent pending injection method makes it easier to install than other sealants. With this new injection system, pumping down the unit is a thing of the past. And now the industry's leading refrigeration sealant has been combined with UV leak detection dye to give you EasySeal Direct Inject-UV. This product is designed to seal leaks and also show where larger leaks are with the use of a UV light



4050-15



4050-08

- Concentrated formula means less material in system.
- Clear tube so you can see the sealant go in.
- No need to pump down R-410A units.
- Perfect for split systems, heat pumps, microchannel coils, packaged units, and mini splits.
- No injection hose or caulk gun needed.
- One time use.

Part #	Description	LIST
4050-05	Inject-SS	138.90
4050-08	Direct Inject	180.30
4050-11	Direct Inject - UV Dye	183.90
4050-12	Direct Inject - UV Dye 6PK	996.00
4050-15	UV Leak Detection Kit	100.70

Nu-Calgon A/C EasyDry

A/C EasyDry eliminates moisture in the system

- Treats up to 5 ton systems
- Compatible with all oils and refrigerants
- Prevents acid from forming
- Compliments the system's drier

Part #	Description	LIST
4051-06	3 oz. Can	169.70
4051-99	Piercing Valve & Hose	48.40



Moisture is a problem for any system and a concern of all technicians. If it is not removed, acids as well as corrosion and other problems can trouble the system and the compressor.

Diversitech Flex Inject Sealant

With no tools or gauges required, the Flex Inject sealant works by traveling through the system with the oil and refrigerant fixing leaks immediately. Flex Inject works with all compressors, heat pumps, condensers, and other system components and it will not plug up manifold gauges, metering devices, thermostatic expansion valves (TXVs), pistons or cause cap tube blockages. It meets the ASHRAE ARI 700 refrigerant standard and is compatible with any refrigerant including R-410A with no pump downs or recoveries required. Flex Inject is suitable for use in aluminum and copper coils and is microchannel friendly.



Part #	Description	LIST
995	Flex Inject Sealant Total with UV dye for systems up to 6 tons.	205.30

REFRACTOMETER, REFRIGERANT TESTER, OIL ADDITIVE

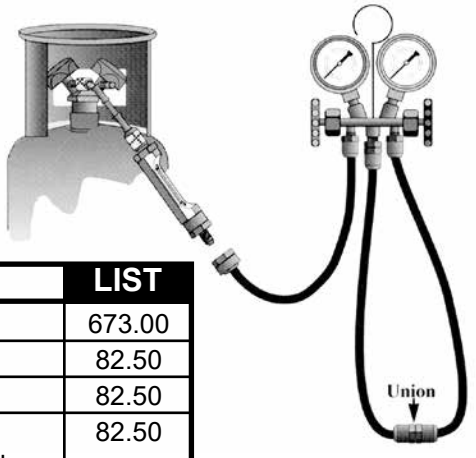
Nu-Calgon Oil Refractometer



A precision optical instrument that allows for the rapid and accurate determination of the refractive index of liquid solutions. It will specifically assist in determining the percent residual of oil remaining in a refrigeration system when converting it to a new refrigeration oil. Such retrofits require converting the mineral oil to a polyol ester (POE) or polyalkylene glycol (PAG), and alkylbenzene lubricant (Zerol) to a POE, or a mineral oil to an alkylbenzene.

Part #	LIST
4815-0	860.00

Checkmate Contamination Detector Kit



- Simple ready to use
- Quick, accurate test results
- Detector tubes calibrated to ARI standards
- The proper and correct method for checking refrigerant gas purity

Part #	Description	LIST
RT700K	Starter Kit (3 Acid tubes, 3 Moisture tubes, 1 metering unit, 1 case)	673.00
RT750A	Detector Tube - Testing for Acidic "Refrigerant Gas"	82.50
RT751M	Detector Tube - Moisture Analysis "Refrigerant Gas"	82.50
RT752C	Detector Tube - The Easy Oil Test - Determining the level of Compressor Oil Contamination in Mineral, AB, PAG or POE oils	82.50

Supco "88" Oil Additive

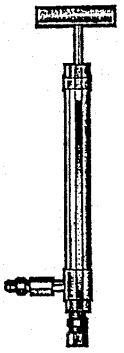


The only formula approved and accepted by the Refrigeration industry. Supco "88" is a special oil additive formula designed to be added to refrigeration oils. Compatible with all refrigerants and acts as a special agent. It is "liquid dynamite" and ready for action in every compressor and motor. Supco "88" is used in hermetic, belt driven and automotive compressors. Supco "88" is also used for expansion valves, capillaries, autos, trucks, lawn mowers, inboard and outboard engines and is a powerful penetrating oil.

Part #	Size	LIST
S-8	16 oz.	30.40

OIL PUMPS

Change Oil Pump



- Removes oil from compressor, marine engines and other equipment
- Pumping capacity is 10 strokes per quart
- Suction tube is 5/16" x 15" but lengths up to 60" can be used
- Not designed to operate under pressure

Part #	LIST
1751	500.00

Ritchie Max-Flow Deluxe Oil Pump



Improved for added reliability and a more powerful stroke, the Max-Flow deluxe oil pump is a high capacity unit for quick charging. Pumps 3.8 oz per stroke.

- Foot stand base provides support and leverage while pumping against the high pressure of a running compressor
- Fits all size oil containers
- Operating unit in reverse with adapter hose accessory removes oil from equipment quickly and efficiently

Part #	LIST
77930	456.00

J/B Max-Flow Combination Oil Pump



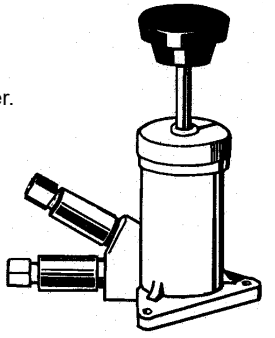
- Designed to pump oil into the system while unit is operating without shutting down for charging.
- The universal tapered rubber adapter is designed to fit all 1, 2-1/2, and 5 gallon containers without additional adapters.
- Works against 200 psi of pressure and is compatible with all oil types including synthetic, mineral, and polyolester.
- Pumps 2.6 ouces (78 ml) per stroke.

Part #	LIST
T30251	270.80

CanVerter

Remove oil from hermetics in minutes with the CanVerter. Easy to operate. Simple - Durable - Inexpensive. Can be used to remove and add oil. Retrofitting to HFC & HCFC's has been made easy with CanVerter.

Now even the smallest refrigeration system can be converted with ease to the new refrigerants. CanVerter eliminates the need to remove the compressor from the system when retrofitting.



Part #	LIST
4814-0	340.00

RECOVERY UNITS

FIELDPIECE

MR45 - Digital Recovery Machine

Smart, variable speed one horsepower motor

- Protects from voltage drop (runs as low as 95 VAC)
- Single dial self purge
- Twice the RPMs (3,000) and twice the horsepower (1HP) with DC Motor
- Extra large condenser cools faster, especially on hot days
- Only 22 lbs
- Water resistance to withstand direct rain
- Easy access ports
- Long life and low friction with ceramic cylinders
- Dual cylinder compressor
- Easy hose connections and built in power cord storage
- Large backlit display with status messages



Part #	Description	LIST
MR45	Fieldpiece Digital Recovery Machine	2,709.00

RECOVERY UNITS

INFICON

Vortex Dual Refrigerant Recovery Machine



REFRIGERANTS:
Recovers commonly used CFCs, HCFCs, and HFCs including blends such as R410A. Safe for use with A2L refrigerants like R32 and R1234yf.
WEIGHT: 29.75 lb. (13.5 kg)
HIGH-PRESSURE SHUT-OFF: 550 psi
COMPRESSOR: 1 HP dual piston

Representative Refrigerant	Category	Push-Pull Rate	Liquid Rate	Vapor Rate
R134a	III	7.57	2.49	0.22
R22	IV	11.81	3.64	0.29
R410A	V	11.33	4.80	0.29

- Dual head compressor for industry-leading recovery rates
- 1 HP motor delivers high torque and power
- Brazed aluminum micro channel condenser provides greater heat transfer
- Smaller overall package than previous generation Vortex AC
- Includes carrying strap and filter/dryer
- Large 2 in. (5 cm) replaceable gauges
- Simple two valve operation
- Industry-leading three year replacement warranty

Part #	Description	LIST
714-202-G1	Base unit 115 volt operation. Includes shoulder strap, 6 foot power cord, and user manual.	2,194.00

YELLOW JACKET

95762 Refrigerant Recovery System



- Fast recovery of Class II, III, IV and V refrigerants including R-410A.
- Patented single valve control for easy changeover from liquid to vapor to purge.
- Lightweight case designed for easy carrying.
- Automatic stop at 15” of vacuum and automatic restart if pressure rises.
- CPR valve to regulate refrigerant input and protect the life of the compressor, and your investment.
- Auto purge to clear residual refrigerant for quick change from one refrigerant to another. Auto purge clears residual refrigerant for quick change from one refrigerant to another.
- Oil-less compressor to eliminate oil maintenance.
- 3 year compressor warranty.

Recovery Ratings per UL* ARI - 740-98 Vacuum Level: 15 inHg						
	Lbs./min			Kg./hr.		
	Vapor	Push/Pull	Liquid	Vapor	Push/Pull	Liquid
R-12	0.37	12.81	1.98	10.2	348.6	54
R-22	0.37	12.81	1.98	10.2	348.6	54
R-500	0.37	12.81	1.98	10.2	348.6	54
R-502	0.66	12.9	2.65	18	351	72
R-134a	0.37	12.81	1.98	10.2	348.6	54
R-410A	0.42	11.6	1.68	11.4	315.6	45.6

*UL and ARI tests are only one way to evaluate recovery speed, and rates are a “level field” comparison method. In other testing conditions, units can exhibit much higher rates.

Specifications - RecoverXLT	
Capabilities	Vapor, liquid, push/pull
Compressor	1/2 hp, oil-less
Weight	32.6 lbs. (14.78 kg)
Size	19.3 x 12.4 x 12.5” (490 x 315 x 317 mm)
Refrigerants	12, 22, 134a, 407C, 410A, 500, 502, HP, MP, Blends
Electrical	115/60 Hz
Overfill shut-off	Standard on 95762
Warranty	3 years compressor; 1 year parts and labor

Part #	Description	LIST
95762	RecoverXLT Refrigerant Recovery Machine with Tank Overfill Switch (TOS)	3,926.00

RECOVERY UNITS

BACHARACH

ECO-2020 Refrigerant Recovery Unit

Features:
- The fastest AHRI-certified unit in its class
- Powerful, quiet-running 1 HP compressor
- Simple one-knob, three-step operation
- Recovers refrigerant from a typical residential system in under 5 minutes



Compatible Refrigerants (per AHRI standard 740-98)[1][2]	• Category III: R-12, R-134a, R-401C, R-406A, R-500 • Category IV: R-22, R-401A, R-401B, R-402B, R-407C, R-407D, R-408A, R-409A, R-411A, R-411B, R-412A, R-502, R-509 • Category V: R-402A, R-404A, R-407A, R-407B, R-410A, R-507
Power	110-120 VAC/60 Hz or 220-240 VAC/50-60 Hz
Compressor	2-cylinder, oil-less, air-cooled
Motor	1 HP (AC motor)
Recovery Rate	R-22: 0.55/6.35/11.40 lbs/min (0.25/2.88/5.17 kg/min) R-134a: 0.46/4.52/10.89 lbs/min (0.21/2.05/4.94 kg/min) R-410A: 0.55/5.71/15.85 lbs/min (0.25/2.59/7.19 kg/min)
Display	3 status LEDs (complete, high pressure and 80% OFP)
Weight	28.5 lbs. (12.9 kg)
Dimensions	16.1 x 10.3 x 13.8 in. (41.0 x 26.0 x 35.0 cm)

[1] The ECO-2020™ is also compatible with other non-flammable refrigerants not listed above. Consult manual for details.
[2] Never use the ECO-2020™ to pump anything flammable, explosive or corrosive. Consult manual for details.

Part #	LIST
2020-8000	2,730.00
2020-8001	2,853.00

APPION

G5Twin Refrigerant Recovery Machine

Features:
- Compact and lightweight: Weighs only 24 lbs
- Twin Cylinders and Twin Condensers for ultra fast recovery
- Refrigerant-Isolated Crankcase, eliminating bearing contamination
- Pumps R410A liquid and vapor
- 7-inch 10-blade turbine fan @ 3000 rpm blasts 600 cfm of cooling air over the twin heads and condensers
- Operates up to 50°F cooler for maximum reliability and speed even in high ambient conditions
- Recovery Rates of 0.62 lbs./minute vapor and 10.36 lbs./minute of liquid (ARI 740-98 Ratings R22)



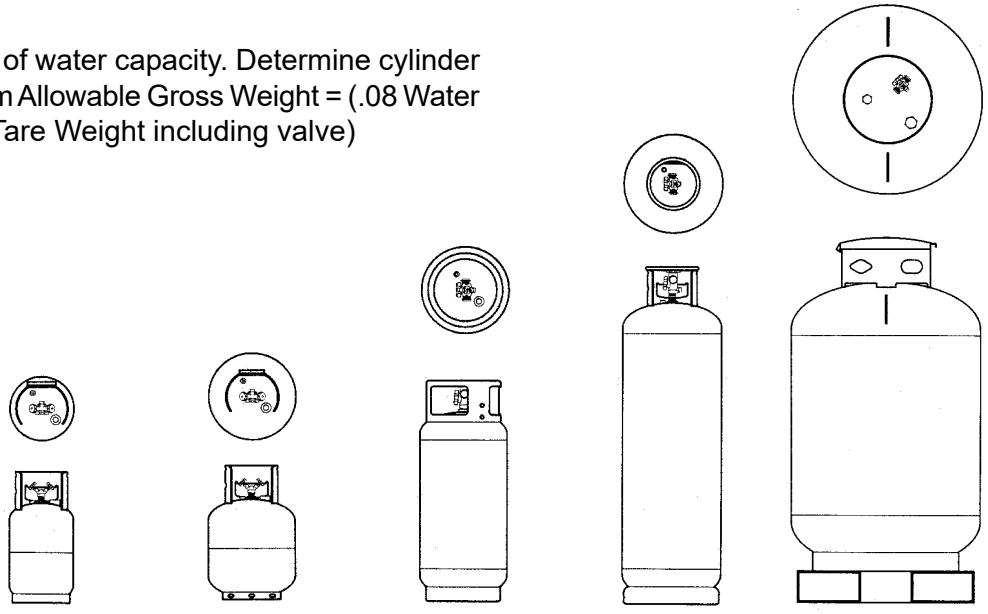
Compatible Refrigerants (per AHRI standard 740-98)	For use with all class III, IV, and V refrigerants: R-12, R-134a, R-401C, R-406A, R-500, R-401A, R-409A, R-401B, R-412A, R411A, R-407D, R-22, R-411B, R-502, R-407A, R-402A, R-408A, R-509, R-407A, R-404A, R-402A, R-507, R-407B, R-410A
Power	115 VAC, 60 Hz, 10 Amps
Recovery Rate	0.62 lbs./minute vapor 10.36 lbs./minute of liquid (ARI 740-98 Ratings R22)
Dimensions	13.75 x 9.4 x 10.3 in.

Part #	LIST
G5TWIN	2,246.00

CFC REFRIGERANT RECOVERY CYLINDERS

To Convert to Refrigerant Capacity:

Refrigerant fill weight is 80% of water capacity. Determine cylinder fill weight as follows: Maximum Allowable Gross Weight = (.08 Water Capacity Weight + Cylinder Tare Weight including valve)



	*T-30-400	*T-50-400	*T-100-400	T-200-260	T-1000-260
Water Capacity, lbs.	26.2	47.7	92	239	1000
Cylinder Diameter	9-1/16	12-3/8	12	14-3/4	30
Overall Length (OL)	17-11/16	18-3/4	30-3/16	49	58-1/4
Tare Weight (lbs)	13.7	25.5	44.8	86	342
Spec.	DOT-4BA400	DOT-4BA400	DOT-4BA350	DOT-4BW260	DOT-4BA350
LIST	269.70	331.00	726.00	1,122.00	3,020.00

† Have working pressure of 400lbs. * **400 PSI Pressure Rated for R410A Use**

Electronic Tank Heater Blanket

Refrigerant Tank Heater Blanket speeds up recharging time. Assures total discharge of refrigerant from 30 lb and 50 lb tanks. Heats tanks to 125˚F.



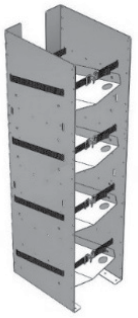


Part #	LIST
98250	413.00

VEHICLE RACKS AND EQUIPMENT

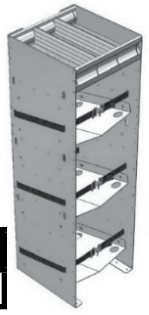
Tank transportation units for service vehicles

- Refrigerant unit for 4 small tanks 14”D x 10.5”W x 43”H
- Heavy duty, lightweight aluminum



Part #	LIST
6007	999.00

- Refrigerant unit for 3 large tanks – 14”D x 13”W x 43”H
- Heavy duty, lightweight aluminum



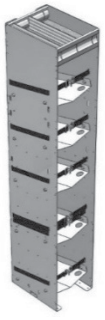
Part #	LIST
6008	1,016.00

- Refrigerant unit for 3 large and 2 small tanks – 14”D x 13”W x 62.5”H
- Heavy duty, lightweight aluminum



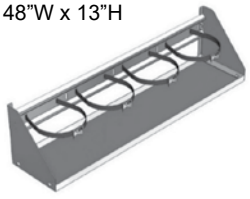
Part #	LIST
6003	1,508.00

- Refrigerant unit for 5 small tanks – 14”D x 10.5”W x 62.5”H
- Heavy duty, lightweight aluminum



Part #	LIST
6002	1,399.00

- Horizontal refrigerant tank holder 12.5”D x 48”W x 13”H – Aluminum
- Holds 4 tanks side by side



Part #	LIST
6020	1,035.00

- 2 level adjustable tank holder
- Aluminum



Part #	LIST
6010	549.00

- Aluminum B-Tank holder c/w strap and hood



Part #	LIST
6086	103.70

- Aluminum Nitrogen tank holder c/w straps and hood



Part #	LIST
6088	148.80

Vehicle Security Locks

- High Security Stainless Steel Tufloc - set of 2 keyed alike.
- c/w stainless steel installation hardware.



Part #	LIST
50-3-KA2	1,019.00

Service Van Equipment

- Transport tube door and mount kit – cast aluminum. Complete with stainless steel hardware and straps. For 6” dia. pipe (pipe not included)



Part #	LIST
6079	413.00

LORDCO

Hockey Puck Door Lock



Part #	LIST
THPXL	85.50

LORDCO

Internal Shackle - HASP



Part #	LIST
THSP2C	69.40

VACUUM PUMPS

J/B Vacuum Pumps

- 2-Year Warranty



Part #	CFM	# of Stages	Ultimate Vacuum	Pump Speed	Motor	Voltage	LIST
DV-6E	6	2	25 microns	1725	1/2 HP	115 volt, 60 HZ	1,044.00
DV-200N	7	2	25 microns	1725	1/2 HP	115 volt, 60 HZ	1,475.00
DV-285N	10	2	25 microns	1725	1/2 HP	115 volt, 60 HZ	2,033.00

Inficon Vacuum Pumps



Part #	CFM	# of Stages	Ultimate Vacuum	Motor	Voltage	LIST
700-100-P1	5	2	15 microns	1/2 HP	110/220V	682.00

Yellow Jacket Vacuum Pumps

- Two stage design
- High efficiency
- Vacuum indicator gauge
- Heavy duty torque motor
- Gas ballast
- Low operating temperature
- Large oil reservoir



Part #	CFM	# of Stages	Factory Micron Rating	Intake Fitting	Oil Capacity	Motor	Voltage	LIST
93560	6	2	15	1/4 x 1/2" MFL	27 oz.	1/2 HP	115V 60 Hz	1,731.00
93580	8	2	15	1/4 x 1/2" MFL	32 oz.	1/2 HP	115V 60 Hz	1,876.00
SuperEvac Pump For Ammonia Systems								
93530	8	2	15	1/2" Male Pipe	43 oz.	1/2 HP	115V 60 Hz	4,423.00

Nu-Calgon Vacuum Pump Oil

Vacuum pump oil is a quality blend of high-grade lubricants, providing for a multi-viscosity oil that performs at the deepest vacuum. It cleans and lubricates to minimize wear and provide surface protection.



Part #	Size	LIST
4383-34	Pint	**18.80**
4383-24	Quart	**29.40**
4383-07	Gallon	**81.40**

J/B Vacuum Pump Oil

Black Gold Vacuum Pump Oil is extremely pure and non-detergent. It is hydro processed, meaning it goes through a series of catalytic steps rendering the oil extremely refined, more viscous, and more stable.



Part #	Description	LIST
DVO-12	12-Quart	**24.30**
DVO-24	24-Quart	**74.80**
DV-T1	Tank oil caddy	**86.60**

Appion TZMGLN Micron-Dry Oil

- Hydrophobic formulation repels moisture and dirt
- Synthetic blend improves vacuum pump performance



Part #	Description	LIST
TZMGLN	1 Gallon	**118.20**

Fieldpiece Vacuum Pump Oil

- For use with VP55 and VP85 Vacumum Pumps
- Highly refined and optimized for top performance



Part #	Description	LIST
OIL32	1 Quart	**26.90**

REFRIGERANT SCALES

INFICON Wey-TEK Refrigerant Charging Scales

Wireless w/ app

- 115 kg / 250 lb. capacity
- Display: User-provided smart phone, Android or iOS or optional handpiece
- User-programmable alarm mode to indicate when target charge reached
- Up to 90 hours of battery life from 4 “AA” alkaline batteries (included)
- Measures in kg, lb./oz., oz., or lb.
- Automatic and manual zero
- 0.25 oz. (10 g) resolution
- Wireless and app-based versions work via Bluetooth
- 2 year replacement warranty



719-203-G1

Part #	Description	LIST
719-202-G1	Wey-TEK HD Wireless Base Model	620.00
719-203-G1	Wey-TEK HD Wireless Base with Optional Handpiece	818.00

Wey-TEK features a weighing platform constructed of two sturdy metal plates. It provides the durability that enables you to take it anywhere you would take your toolbox. Moreover, Wey-TEK comes with a plastic carrying case for even greater protection and convenience.

- Measures in lb./oz., kg, or lb.
- Large LCD for easy viewing, even in direct sunlight



Part #	Description	LIST
713-202-G1	Wey-TEK scale 220 lb. (100 kg)	582.00

Fieldpiece Wireless Scale

The platform is made of thick aluminum to maintain accuracy over the life of the product. Rubber pad and bumpers cushion both the tank and the scale itself. A new wireless protocol sends platform measurements to both the included remote display and the Fieldpiece Job LinkTM mobile system app (available Fall 2017). Platform electronics are sealed to block the occasional moisture seen from rain and splashing.



Part #	LIST
SRS3	883.00

Thermal Charge-Check

- Allows you to measure out precise quantities of refrigerant.
- Carry small quantities of refrigerant to the job.
- Plastic liquid level indicators.

HFC-134a Models with 1/4" SAE fittings				
Model #	Capacity	Graduation	Description	LIST
U7001	16oz. / 450g	1/8oz. / 5g	No Case	687.00
U7002	16oz. / 450g	1/8oz. / 5g	With Case	1,066.00
U7006	80oz. / 450g	1oz. / 25g	With Case	1,556.00


U7002

REFRIGERANT LEAK DETECTORS

INFICON

D-TEK Stratus



D-TEK Stratus combines the excellent leak detection of D-TEK Select and the cloud hunting capability of a large portable monitor all in one hand-held unit. Quickly locate the area containing the leak using the large, easy-to-read LCD display, and then pinpoint the leak with one instrument! D-TEK Stratus is the next big thing in refrigerant leak detection.

FEATURES

- Sensitivity of 0.03 oz./year (1 g/year)
- Innovative cloud hunting mode with ppm readout helps locate leaks faster than ever
- Cloud hunting and pinpoint modes is like having two leak detectors in one
- New lithium ion battery- Quick charge capability- Easy field replacement
- Detects all CFCs, HCFCs, HFCs, and HFO
- All new, redesigned infrared sensor
- Automatic and manual zero modes
- Sensitivity will not degrade over time

Part #	Description	LIST
724-202-G1	D-TEK Stratus Leak Detector	2,603.00
724-702-G1	D-TEK Stratus Battery	173.50
721-610-G1	D-TEK Stratus Charging Cradle	173.50

TEK-Mate



FEATURES

- Heated diode sensor.
- Variable-intensity audible signal and single flashing LED.
- Automatic background compensation for changing background “noise.”
- Uses 2 (D) alkaline batteries
- 2-year Warranty

Part #	Description	LIST
705-202-G1	TEK-Mate	558.00
703-020-G1	Sensor	130.10
705-600-G1	Filter Kit	46.30

D-TEK Select



FEATURES

- Infrared absorption sensor.
- 0.10 oz. (3 g)/year sensitivity
- Infrared cell cannot be overloaded or “poisoned” by exposure to large amounts of refrigerant.
- Selective to refrigerants only; will not react to smoke, humidity, airflow or temperature changes.
- High-efficiency air sampling pump
- Runs on NiMH batteries or AC adapter
- 2-year Warranty

Part #	LIST
712-202-G1	1,326.00

Whisper Ultrasonic Leak Detector



Whisper Ultrasonic Leak Detector allows the user to check for pressure and vacuum leaks where other sniffer style leak detectors can't go. With the unique internal noise control circuitry, the technician can operate Whisper in high noise environments. The ergonomic design gives the user the convenience of one-hand operation and carries a two-year replacement warranty.

- Detects pressure and vacuum leaks for all gases
- Laser pointer makes it easier to pinpoint the leak
- Only technology to detect pressurized nitrogen leaks

Part #	LIST
711-202-G1	682.00

REFRIGERANT LEAK DETECTORS

RLD-H10PRO-1 Leak Detector

The H10 Pro detector senses all CFC, HCFC, and HFC refrigerants and blends, such as R12, R22, R134a, R404a, R410a, R502, and R507 among others. The RLD-H10PRO is self-powered with a rechargeable battery and provides both manual and automatic compensation for background levels of refrigerant.



- positive ion emission heated diode sensor provides the most sensitivity available today, while still detecting all halogenated refrigerant gases
- rechargeable battery with low and full charge LEDs enhances portability - no external power required
- high quality air pump supplies constant airflow to the sensor so it responds quickly to leaks; also helps the sensor recover quickly after exposure to a refrigerant so the leak can be verified

Part #	LIST
3015-8004	1,753.00

Accessories

Part #	Description	LIST
3015-0326	14 inch flexible probe extension	171.60
3015-5812	120 VAC power supply adaptor	97.70
3015-0895	Cigarette lighter adaptor	134.60
3015-0784	Tuneup kit: includes sensor, 100 filters, three airflow balls, three rubber probe tips, and leak vial	147.80
3015-0486	Replacement sensor	451.00

Part #	Description	LIST
3015-0781	Maintenance kit: includes 100 filters, three airflow balls, three rubber probe tips, and leak vial	610.00
3015-0864	Replacement leak vial	97.70
3015-0103	Replacement for RLD-H10PRO internal battery	192.70

COMBUSTION ANALYZER

BACHARACH



PCA®400 - Portable Combustion and Emissions Analyzer

- 4.3 inch color touch screen with enhanced viewing options to easily see readings
- Bluetooth® wireless technology allows for live streaming of data to any phone, PC or tablet
- Rugged all-in-one probe connection for durability and easy setup
- Optional NOx and SO2 sensors with Viton probe tubing for emissions testing
- Dilution mode protects sensors and allows for use in harsh conditions
- Runs on rechargeable Lithium-Ion battery pack or 4 'AA' batteries

Part #	Description	LIST
2410-1112	PCA 400 w/ O2, CO, 12 in. probe with 7.5 ft. standard tubing and standard case and Bluetooth® printer	8,067.00



Fyrite® INSIGHT® - Combustion Analyzer

- 5-in-1 residential combustion analyzer
- Perform combustion efficiency for 8 specific fuels
- Test Carbon Monoxide (CO) ambient conditions
- Measure Carbon Monoxide (CO) in flue gas and calculate free air
- Dual-channel digital thermometer
- Digital Manometer
- Factory calibrated plug-n-play B-Smart® CO sensor
- Optional PC-based reporting package w/printer

Part #	Description	LIST
24-8518	W/Reporting Kit	4,876.00

TESTO

Testo 300 Series Flue Gas Analyzer Kit



The testo 300 flue gas analyzer is ideal for the most important measurements involving heating systems. It combines decades of experience in measuring technology with contemporary smart-touch operation, robust construction and e-mailing of reports. The testo 300 enables easy measurement of flue gas, draught, pressure, ambient CO and differential temperature.

- Intuitive measurement menus and the fast-response Smart-Touch display ensure easy operation – as on your smartphone
- Including O2 and CO sensor up to 4,000 ppm
- Large 5-inch HD display – see all the system's measuring values at a glance

Part #	Description	LIST
0564-3002-83	testo 300 analyzer kit with printer	6,268.00
0564-3004-79	testo 300 longlife analyzer kit	7,717.00

ULTRAVIOLET LEAK DETECTION SYSTEM

SPECTROLINE

EZ-Ject™ Complete Kit

The revolutionary way to add fluorescent dyes into air conditioning and refrigeration systems — without the use of additional refrigerant, manifold and additional hoses

- No pouring and no refrigerant required for injection.
- One calibrated cartridge provides exact dosing for multiple systems.
- Easily overcomes system pressure. Inject dye with a turn of the handle.



Part #	LIST
SPE-HVLEZE	553.00

EZ-Ject™ Fluorescent Dye Injection Kit

- (2) SPE-EZ5E 0.5 oz (15 ml) universal/POE dye cartridges
- EZ-50 EZ-Ject™ dye injector assembly
- EZ-25 8 in (20 cm) EZ-Ject™ hose assembly with low-loss fitting & check valve
- 128186 R-410a adapter



Part #	LIST
SPE-EZ100E-CS	334.00

EZ-Ject™ Complete Kit

- 0.5 oz (15 ml) universal/POE dye cartridge



Part #	LIST
SPE-EZ5E-CS	50.00

BigEZ™ Fluorescent Dye Cartridge in Clamshell

- 4 oz (118 ml) universal/POE dye cartridge



Part #	LIST
SPE-BEZ5E-4CS	428.00

GLO-STICK® 2E Fluorescent Dye Capsule

- 0.5 oz (15 ml) universal/POE dye capsule



Part #	LIST
SPE-GS2E-CS	43.10

Ritchie Micro LED UV Leak Detector

Use these high visibility lamps to spot leaks on all A/C systems. Individual reflectors surround each of five LEDs recessed for protection in the stainless steel head.
69790 features 3 UV and 2 blue bulbs
A/C for detection at greater distances.

69789



Part #	Description	LIST
69789	Micro UV LED and dye kit for ACR	482.00

Ritchie New Universal A/C Disposable Injectors

Universal disposable 1 oz. applicator for fast economical dispensing. Universal dye for all common refrigerants and oils. Two 1/2 oz. applications for regular split system or four 1/4 oz. applications for small appliances or auto A/C.

Part #	Description	LIST
69727	1 oz. (30 ml) injector – single	72.20

COMBUSTIBLE GAS LEAK DETECTOR

INFICON GAS-Mate

The combustible gas leak detector with high sensitivity and low price.

- Detects natural gas, propane, isobutane, ammonia, hydrogen forming gas (95/5), and more
- Sensitive to 5 ppm methane, R290 (propane), and R600a (isobutane) Small sensor and probe tip permit leak checking in tighter places
- Runs continuously for 60 hours on two alkaline "D" cells
- Auto zeroing for ignoring background gas levels in leak test area
- Maximum set-point and adjustable sensitivity help you pinpoint leaks fast
- Variable audio alarm and flashing LED indicate leak strength
- 3 year replacement warranty



Part #	LIST
718-202-G1	595.00

GAS & REFRIGERANT DETECTORS

HONEYWELL ANALYTICS

E3Point

Toxic/combustible gas monitor that makes a commercial operation run more intelligently to protect people, property and the bottom line. E3Point is capable of detecting the widest range of toxic and combustible gases found in commercial building spaces and outbuildings, including CO, NO2, O2, H2, H2S, CH4 and C3H8.



It can be used as a standalone unit with single or dual-gas detection (i.e. using a remote sensor) or deployed as a networkable device (interoperable with BACnet, Modbus or other Building Automation System); E3Point also functions with existing controller-based gas monitoring systems and wired-wireless gas monitoring system components.

Features:

- Standalone, standalone with remote (dual gas mode) or network versions available
- Saves energy through Demand Control Ventilation
- Advanced sensing technology detects CO, NO2, O2, H2, H2S, CH4, C3H3

IAQPoint2

Put money in your pocket and fresh air comfort in your building by using demand-controlled ventilation and triple monitoring.



Features:

- Monitor CO2 or VOCs, temperature and humidity
- Menu-driven, customizable, easy-to-navigate display
- Green attributes such as obtaining LEED credits

Quick Specs:

- Response time: T90 < 60 seconds
- Calibration: None required
- Dimensions: 3.0 (w) x 4.6 (h) x 1.5 (d) in. (11.8 x 7.7 x 3.7 cm)

Note: Manning VL - Vent Line Leak Detector, accessories for E3Point are also available, please contact local branch for details.

GAS & REFRIGERANT DETECTORS
HONEYWELL ANALYTICS

301C Controller



Designed for simple installation and operation, the 301C continuously monitors and controls toxic gases, combustible gases and oxygen hazards. Using an addressable RS-485 Modbus communication protocol, the 301C uses daisy chain wiring requiring only 2 pairs of wires to connect up to 96 transmitters on the 3 input channels. This simplifies installation, in turn lowering costs. The 301C's zoning and averaging abilities significantly reduce operational and maintenance costs.

Features:

- User friendly with zero maintenance
- Low installation costs
- Automatic quick self-test and warm-up

301EM Expansion Module



301EM Expansion Module acts as a controller for up to twenty remote refrigerant sensors and detects a wide variety of gases.

Features:

- Easy to read LCD display
- Auto-diagnostic capabilities
- Convenient stand-alone or network operation

Quick Specs:

- Power requirement: 22-27 VAC, 29-38 VDC, 2A max @ 29 VDC
- Size: 11 (H) x 8 (W) x 2.7 (D) in. (28 x 20.3 x 7cm)
- Weight: 2.25 lbs. (1.02 kg)

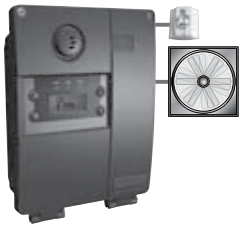
Note: Accessories for 301C Controller are available, please contact local branch for details.

Flexible Applications

E3Point integrates easily with your building's analog or digital infrastructure as a standalone unit or network addressable device. Here are five installation examples to make E3Point work for you.

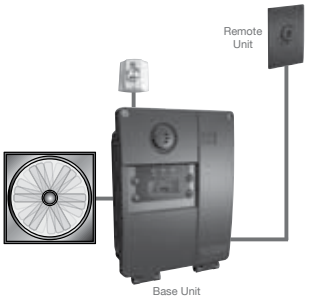
E³Point Standalone Single-Sensor Operation

A low-cost application for buildings with minimal gas monitoring requirements typical of a small facility. Offers easy installation, commissioning and operaton. Two on-board relays can activate fan or strobe.

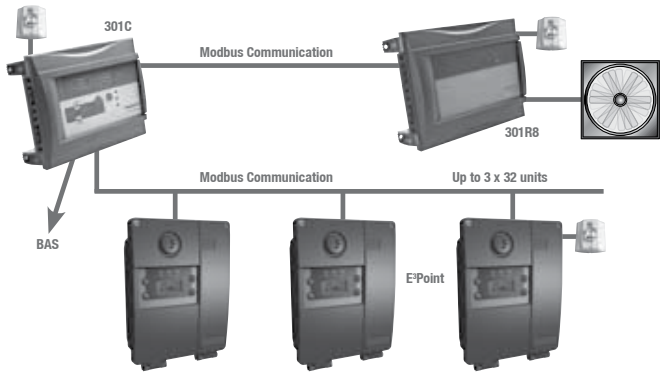


E³Point Standalone Dual-Gas Sensor Operation

Economical application adds option of a second (remote) sensor for dual gas monitoring. Two on-board relays can activate ventilation or strobes.

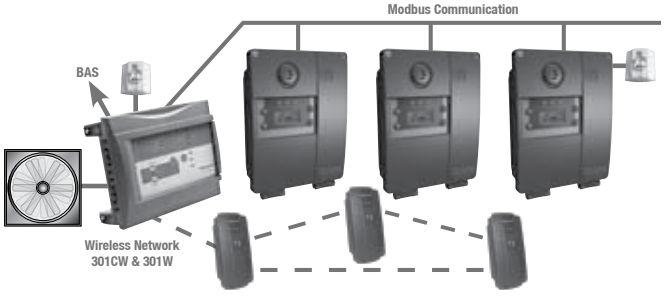


E³Point/Modbus Configuration



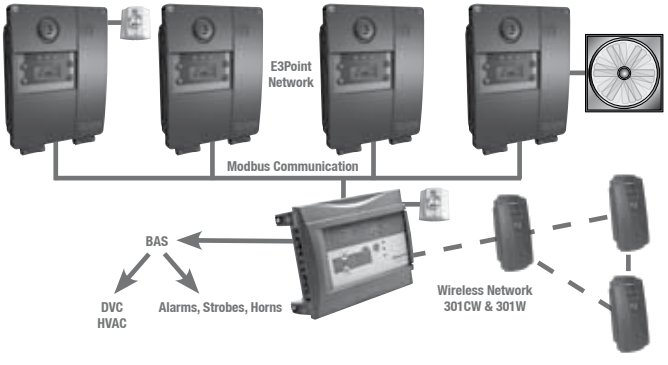
Supports Modbus protocol to daisy-chain E³Point detectors, providing up to 96 points of monitoring on a serial bus. Excellent option for controller-based (VA301C) installations common in larger applications. A relay output is provided as an option for activating ventilation directly (e.g. when fan is located in close proximity to detector).

E³Point/Wired-Wireless Hybrid Configuration



E³Point offers a perfect solution for applications that require a hybrid wireless/wired system. In this configuration, E³Point outputs signals to a controller (301CW) that also accepts signals from a wireless gas detector (301W). This scheme offers great flexibility and installation cost savings for retrofit projects. It easily handles difficult installation challenges, such as those posed by obstructions. A relay output is provided when it is desirable to activate fan/ventilation directly (e.g. when fan is located in close proximity to detector).

E³Point/BACnet (MS-TP) Configuration



E³Point outputs directly to BACnet or other BAS. Alarms, strobes and horns are activated through BAS with link to DCV/HVAC controls. This system design supports new and retrofit installations for large buildings, and can couple with a controller to effectively integrate wired and wireless system components. A relay output is provided as an option for activating ventilation directly (e.g. when fan is located in close proximity to detector).

DATA LOGGER / RECORDER
ACR

Product Overview



SmartButton
Small and affordable data logger in the ACR Systems lineup. User configurable software, over 2000 readings, 1-year warranty. Typical battery life 10 years. -10 to 85°C

Starter Kit includes: 1 button, software, reader, interface & S-port adapter.

Part #	Description	LIST
01-0182	ACR SmartButton starter kit	380.00
01-0180	ACR SmartButton	179.10





ACR Jr.
Easy to use, low cost data logger. 2 minute fixed sample rate, up to 31,000 readings, 5-year battery, and plugs directly into the serial port of your computer. -40 to 85°C.

Part #	Description	LIST
01-0192	ACR Jr. Temp. Logger -40 to 85°C. 1 reading every 2 min. for 44 days (sample rate). Software incl.	529.00



Nautilus 85/135
Single-channel, waterproof logger with 8-bit resolution, over 244,000 readings, user configurable sample rate and a 10-year battery (Nautilus 85).
Nautilus 85 measures -40 to 85°C.
Nautilus 135 measures 10 to 135°C



Owl Loggers
Single-channel, user configurable with TrendReader software, over 32,000 readings, 10-year batter, and optical alarming.



SmartReader Loggers
8-bit multi-channel loggers, user configurable with TrendReader software, over 32,000 readings, 10-year battery, network capable, and alarm dial-out/remote access by modem.



SmartReader Plus Loggers
Extra accuracy from 12-bit resolution, user configurable with TrendReader software, fast sampling up to 25/per second, up to 1,000,000 readings, 10-year battery, network capable, and alarm dial-out/remote access by modem.



IAQ Logger
Specialized 8-bit logger for indoor air quality applications. Monitors and records temperature, relative humidity, and CO2 using Telaire 7001 (sold separately). User configurable using TrendReader software, over 32,000 readings, and a 10-year battery.



PowerWatch
Voltage disturbance recorder for monitoring power quality parameters. Continuously monitors 120V or 240V outlets for surges, sags, frequency variations, and outages. Optically isolated communication interface allows easy download of over 4000 events. User configurable using Power-Watch software. 10-year battery.

DATA LOGGER-ALARM
LOGGERFLEX

Bun Hygro: Temperature and Relative Humidity Logger-Alarm



Key Features:

- Wireless Wi-Fi Connection
- Real-Time Temperature & Humidity Alarm
- Automatic Food Safe Inspection Reports

Usages:

- Regular & Walk-In Fridges
- Food & Drug Storage
- Green & Poultry Houses

Part #	LIST
BUN-HYDRO	419.00

Bun Thermo-X: Temperature Logger-Alarm



Key Features:

- Waterproof External Sensor
- Wireless Wi-Fi Connection
- Real-Time Temperature & Humidity Alarm
- Automatic Food Safe Inspection Reports

Usages:

- Freezer Temperature Recorder-Alarm
- Concrete Pouring
- HVAC & Boiler Monitoring

Part #	LIST
BUN-THERMOX	436.00

Bun Multi: Multi-Parameter Logger-Alarm



Key Features:

- AC Current | Pressure | Temperature Alarm
- Wireless Wi-Fi Connection
- Access Online To All The Records

Part #	LIST
BUN-MULTI	542.00

Usages:

- Monitoring HVAC Systems
- Monitoring Electro Motors' Health & Performance
- Monitoring Hydraulic & Pneumatic Systems' Health & Performance

Bun Flood: Flood and Leakage Detector



Key Features:

- Text Message & Email Alarm
- Wireless Wi-Fi Connection
- Audible Alarm
- 1.5 m (5 ft.) Sensor Cable
- 90 cm (3 ft.) Non-Sensor Cable

Usages:

- Engine Rooms
- Property Management
- Pipe Burst Detection

Part #	LIST
BUN-FLOOD	405.00

TEMPERATURE LOGGER / RECORDER

SUPCO

CR87B Series
Temperature Recorders



The SUPCO CR87B TEMPERATURE RECORDER with remote sensor employs advanced microcontroller design that enables this versatile instrument to accurately measure and record temperatures in air, gas, liquids, powders, solids, and semi-solids. Recordings can be made from any distance up to 100 feet away by using an optional long length thermocouple wire. (see accessories) Two selector switches located on the face panel allow for the recording of 3 different temperature ranges at 4 different recording speeds.

Specifications:

Temp. scale selectable ..... (Farenheit model) -40° to +30°F, -20° to +50°F, +50° to +120°F
Temp. scale selectable ..... (Celsius model) -40° to 0°C, -30° to +10°C, +10° to +50°C
Ambient operating temp. range ..... +32°F to 120°F (0°C to +49°C)
Relative humidity ..... 96% max.
Temperature accuracy ..... +/- 1°C or 1.8°F
Chart diameter ..... 6 inches
Chart speed selectable ..... 6 hours, 24 hours, 7 days
Chart rotation mode ..... selectable, single turn or continuous
Chart drive ..... 120 VAC
Temperature probe ..... 15' long type J thermocouple w/4" Stainless steel submersible tip
Case size ..... 9-1/4" x 7-1/4" x 2-3/4"
Weight ..... 4 lbs., 7 oz.
Battery back-up life ..... 48 hours - 8 AA alkaline batteries (not included)

Part #	Description	LIST
CR-87B	Fahrenheit	1,128.00
CR-87BC	Celsius	1,258.00

Recording Charts for CR87B Recorders

Standard 6" diameter recording charts are available for Fahrenheit and Celsius recorders

Part No.	Rec. Time	Temp. Range
CR87-1	24 HRS	-40° to 30°F
CR87-2	24 HRS	-20° to 50°F
CR87-3	24 HRS	50° to 120°F
CR87-4	6 HRS	-40° to 30°F
CR87-5	6 HRS	-20° to 50°F
CR87-6	6 HRS	50° to 120°F
CR87-7	7 DAYS	-40° to 30°F
CR87-8	7 DAYS	-20° to 50°F
CR87-9	7 DAYS	50° to 120°F
CR87-10	24 HRS	-40° to 0°C
CR87-11	24 HRS	-30° to 10°C
CR87-12	24 HRS	10° to 50°C
CR87-13	6 HRS	-40° to 0°C
CR87-14	6 HRS	-30° to 10°C
CR87-15	6 HRS	10° to 50°C
CR87-16	7 DAYS	-40° to 0°C
CR87-17	7 DAYS	-30° to 10°C
CR87-18	7 DAYS	10° to 50°C

Charts are packaged in quantities of 60 per box
For replacement pens specify.....CR PEN (black)
For replacement probe specify... CR PROBE

SL Series
Mini Data Loggers

Measures Temperature, Humidity and Dew Point simultaneously



Features / Benefits

- Windows™ 98SE, ME, 2000, XP and above compatible software (included) Not compatible with Windows™95 or NT
- PC, delayed start or push button recording control
- Temperature and Humidity alarm with visual indication on demand
- User selectable stop on memory full or memory rollover for continuous recording
- Real time monitoring
- View graph and text simultaneously
- Can calibrate through software
- Displays temperature in °F or °C
- USB Interface standard

Part #	LIST
SL300TH	305.00

SL Specifications

	SL300TH
Sample Point Capacity:	43,344 for Temperature only. 21,672 for Temperature, Humidity and Dew Point
Sample Rate:	1 second to 18 hours
Alarms	High and low Temperature and Humidity alarms w/visual indication on demand
Temperature Range:	-40°F to 160°F (-40°C to 70°C)
Temperature Accuracy:	+/- 1°F (+0.5°C)
Temperature Resolution:	0.01°F or 0.01°C
Relative Humidity Range:	0% to 99% RH, non condensing
Relative Humidity Accuracy:	+/-2% RH from 10% to 90% RH
Relative Humidity Resolution:	0.01% RH
Calibration	Single point offset calibration available through software For both Temperature and Humidity
Time Accuracy:	+/- 100 ppm @ 75°F
Dimensions:	3" x 1.6" x 0.6" (7.6cm x 4.0cm x 1.5cm)
Weight:	1.0 oz (28g)
Power Source:	3 V (CR2035) Lithium battery (Included)
Battery Life:	6 years typical

TEMPERATURE ALARMS

SUPCO

TA2 Single Set Point Temperature Alarm



- Adjustable alarm temperature range from -10°F to +80°F (-25°C to +30°C)
- Built-in terminals for remote alarm or telephone dialer connection
- Reliable 120 VAC operation
- Switch provided to activate alarm on either increase or decrease in temperature
- Switch provided to activate alarm with no delay or one hour delay allowing for normal temperature rise during defrost cycles and stocking of refrigerators and freezers
- Power ON indicator light, ALERT warning light and audible warning sound
- Sensor wire can be cut and extended up to 200 feet in field using any standard 22 gauge wire

Model Number	Description	LIST
TA-2	110 VAC Fahrenheit Model	261.00
TA-2C	110 VAC Celsius Model	283.00

TA22 Single Set Point Temperature Alarm With Digital Display



Easy to read display shows current Temperature, Alarm Status, Over/ Under mode indicator, Alarm Set Point and Temperature (°F or °C).

- Adjustable range from -40°F to +160°F (-40°C to +71°C)
- Back Lit Display
- 90 db audible alarm

Part #	Description	LIST
TA-22	120 VAC	348.00

TA33 Temperature Alarm With Display & Battery Backup



Set your temperature threshold and the TA33 provides reliable protection for your temperature sensitive areas. The battery backup allows continuous monitoring even during power outages. The easy to read display shows current Temperature, Alarm Status, Over/ Under mode indicator and Alarm Set Point and Temperature.

- Adjustable range from -40°F to +160°F (-40°C to +71°C)
- Back Lit Display
- 90 db audible alarm
- Adjustable alarm temperature ranges
- Built-in terminals for remote alarm or telephone dialer connection
- Switch for 'No delay' or '1 hour delay'

Part #	LIST
TA-33	474.00

THA2 Temperature Humidity Alarm With Logging Capability



The THA2 is a multi-function product that monitors Temperature, Humidity and Dew Point, provides alarms for out of range conditions and continuously logs data. No computer setup is needed.

Part #	Description	LIST
THA2	120 VAC	779.00

TEMPERATURE ALARMS

SUPCO

TA6 Dual Set Point Temperature Alarm



A single sensor temperature alarm which features two separate colour coded dial controls that allow the user to determine the over and under alarm set points from -10°F to +80°F. A "DELAY" - "NO DELAY" slide switch that can be set for a one hour delay before alarm activation or for immediate alarm activation. Screw type connectors are provided for connection to a remote alarm system or an automatic phone dialing unit. The unique design of the TA6 allows for the probe wire to be cut in the field and extended up to 200 feet using any standard 22 gauge speaker wire.

- Dual settings for over/under temperature alarm variables from -10°F to +80°F (-25°C to 30°C)
- "DELAY" - "NO DELAY" alarm slide switch'
- Remote alarm terminals
- Power "ON" indicator light
- Alert flashing warning light
- Audible alarm beeper
- Reliable 120 VAC operation

Model Number	Description	LIST
TA-6C	110 VAC Celsius Model	418.00

TA7 Battery Operated Temperature Alarm



An inexpensive temperature alarm for refrigerators and freezers. Ideal for units that are not used daily.

- Adjustable alarm temperature setting from -10°F to +80°F (-20°C to +25°C)
- Uses standard 9 volt battery (not included)
- Slide switch for immediate alarm response of 1 hour delay
- Loud audible alarm
- Sensor wire can be extended up to 100 feet using standard 20-28 AWG speaker wire
- Compact size, only 5-3/4" x 1-1/2" x 1"

Model Number	Description	LIST
TA7	Fahrenheit Model	113.00
TA7C	Celsius Model	121.70

Wet Switch Flood Detector



- Solid state control designed to help prevent flooding.
- Turns system off when detecting moisture due to condensate or drain leaks.

Model Number	Description	LIST
WS-1	Wet Switch Flood Detector	162.90

THERMOMETERS

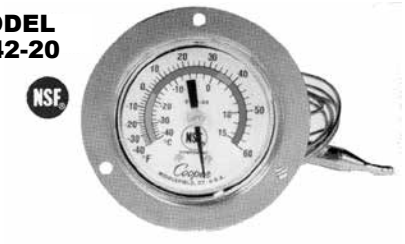
COOPER-ATKINS

Vapor Tension Thermometers

Used in many HVAC / R applications, these units are the perfect choice for use in walk-in refrigerators, tanks, refrigerated display cases, holding and speciality cabinets, dairy cases, freezers, floral displays and much more.

- Nickel / Tin plated bulb and capillary
- Polycarbonate lens / bezel
- Stainless steel cases

MODEL 6142-20



	6142-06	6142-13	6142-20	6142-58
Temperature Range	40° to 240°F 10° to 115°C	-40 to 120°F -40 to 50°C	-40° to 60°F -40° to 15°C	-40° to 60°F -40° to 15°C
Accuracy	±5°F @ 110°F ±3°F @ 200°F	±2°F @ 40°F ±4°F @ 10°F ±5°F @ 110°F	±2°F from 10° to 40°F ±3°F below 10°F and above 40°F	±2°F from 10° to 40°F ±3°F below 10° and above 40°
Dial Dia.	2" / 5.08 cm	2" / 5.08 cm	2" / 5.08 cm	2" / 5.08 cm
Capillary Length	48" / 121.9 cm	48" / 121.9 cm	48" / 121.9 cm	240" 609.6 cm
Flange	Front	Front	Front	Front
Connection	Back	Back	Back	Back
Mounting	Flush	Flush	Flush	Flush
Weight	5.2 oz / 147.4 g	5.2 oz / 147.4 g	4.7 oz / 133.2 g	6.8 oz / 192.8 g
Regulatory Listings	NSF	NSF	NSF	-
LIST	134.20	131.80	92.50	124.90

MODEL 6642-06



MODEL 6812-02



	6642-06	6812-01	6812-02
Temperature Range	-40° to 60°F -40° to 15°C	-40° to 60°F -40° to 15°C	-40° to 120°F -40° to 50°C
Accuracy	±2°F from 10° to 40°F ±3°F below 10°F and above 40°F	±2°F from 10° to 40°F ±3°F below 10°F and above 40°F	±2°F @ 40°F ±4°F @10°F ±5°F @ 110°F
Dial Dia.	2" / 5.08 cm	2" / 5.08 cm	2" / 5.08 cm
Capillary Length	48" / 121.9 cm	48" / 121.9 cm	48" / 121.9 cm
Flange	Strap hanger no flange	Back	Back
Connection	Bottom	Back	Back
Mounting	-	Surface	Surface
Weight	4.6 oz / 130.4 g	5.7 oz / 161.6 g	6.2 oz / 175.8 g
Regulatory Listings	-	NSF	-
LIST	90.80	131.80	198.50

MODEL 7112-01



	7112-01	7112-02	7112-05	7612-06
Temperature Range	-40° to 60°F -40° to 15°C	-40° to 120°F -40° to 50°C	40° to 240°F 10° to 115°C	-40° to 60°F -40° to 15°C
Accuracy	±2°F from 10° to 40°F ±3°F below 10°F and above 40°F	±2°F @ 40°F ±4°F @10°F ±5°F @ 110°F	±5°F @ 110°F ±3°F @200°F	±2°F from 10° to 40°F ±3°F below 10°F and above 40°F
Dial Dia.	2.5" / 6.35 cm	2.5" / 6.35 cm	2.5" / 6.35 cm	2.5" / 6.35 cm
Capillary Length	48" / 121.9 cm	48" / 121.9 cm	48" / 121.9 cm	48" / 121.9 cm
Flange	Front	Front	Front	Strap Hanger
Connection	Back	Back	Back	Bottom
Mounting	Flush	Flush	Flush	N/A
Weight	5.3 oz / 150.3 g	5.8 oz / 164.4 g	5.8 oz / 164.4 g	5.6 oz / 158.8 g
Regulatory Listings	NSF	-	-	-
LIST	123.00	119.90	142.00	103.90

DIGITAL REMOTE THERMOMETERS

Electronic Panel Mount Thermometers

Part #	Description	LIST
DM-450	Front flange mounting remote sensor digital thermometer. Sensor cord is 1 meter (39") long. 1.5 volt battery #393. Temperature range -40° to 232°C. NSF listed.	221.20
DM-120S	Temperature range -40° to 50°C. Back Flange.	165.00
SP160-WHITE SP160-BLACK	Solar powered. "Self powered" thermometers operate without any batteries.Horizontal wall mount -58°F to 158°F / -50°C to 70°C	97.90
PM-120	Rectangular remote, use where mounting space is limited or where a plastic housing is preferred. 2.625" x 1.375" x 1" deep white polystyrene. 39" remote sensor length and 0.5" high LCD display. Mounting dimensions 2.375" x .781" cut-out. Mounting flange #9302 is available. AA battery included. Temperature range -40° to 120°F / -40° to 50°C	85.80
PMRH-120	Digital Remot Temperature/Humidity Panel Meter. Max/Min button. Dry/Comfort/Wet icon shows on the LCD display. Temperature range -12° to 140°F / -40° to 50°C	123.10
SP-120	Solar powered panel meter with battery back-up. Unit operates using ambient light sources, and comes with a 1.5 volt battery that automatically turns on when ambient light is not strong enough to power the meter. Switchable temperature range -50 to 150°F (-50 to 70°C).	130.00











THERMOMETERS

Cooper Mechanical Stem Thermometers

2.5" diameter reverse flange bezel, stainless steel with .25" diameter stem.



Part #	Description	LIST
2225-02	0 to 220°F 4" stem	61.50
2225-03	-40 to 160°F 4" stem	61.50
2245-02	0 to 220°F 6" stem	56.50
2245-03	-40 to 160°F 6" stem	65.80
2255-02	0 to 220°F 9" stem	60.90
2255-03	-40 to 160°F 9" stem	60.90

Winters Tridicators



Part #	Dial Size	Connection	Range	LIST
TTD402	3” (80mm)	1/2” NPT, Back	0-75 psi/kPa, 30-240°F&C	114.00
TTD403	3” (80mm)	1/2” BTM	0-75 psi/kPa, 30-240°F&C T402	125.90
TTD404	2.5” (63mm)	1/4” NPT, Back	0-75 psi/kPa, 70-320°F&C	58.30

Winters Digital Vari-Angle, Solar Powered Thermometer

Range: -40/300°F -40/150°C



Part #	Description	LIST
TSD9ITSD	3-1/2" ind. stem (includes well)	343.00
TSD9ITSD6	6" ind. stem (includes well)	412.00

Winters Vari-Angle Thermometers



Part #	Description	Range	LIST
TIM101A	3.5" (90mm) Stem	40 / 110° F & -40/40°C	222.10
TIM102A		0 / 120° F & -15/50°C	222.10
TIM103A		0 / 160° F & -15/70°C	222.10
TIM100A		30 / 240° F & 0/115°C	222.10
TIM105A		30 / 300°F & 0/150°C	222.10

Winters TAS Series Thermometers

An all-purpose, economical thermometer with a vertical sensing tube and case.



Part # (Straight)	Part # (Angle)	Range	LIST	LIST
TAS130	TAS140	-40°F to110°F & -40°C to 40°C	93.20	110.40
TAS131	TAS141	20°F to 180°F & -5°C to 80°C	93.20	110.40
TAS132	TAS142	30°F to 240°F & 0°C to 115°C	93.20	110.40
TAS134	TAS143	30°F to 300°F & 0°C to 150°C	93.20	110.40

HUMIDITY METERS

Humidity Instruments



Pocket Sling Psychrometer

Part #	Description	LIST
0012-7021	New design protects replaceable 5" tubes. 20° - 120°F in 1° divisions. Leather case with water vial, humidity chart and spare wicks	291.10

Thermor Humidiguide





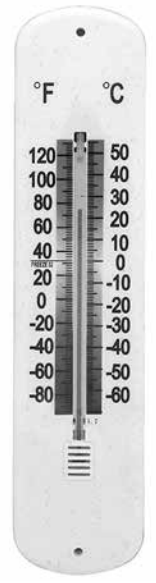
Part #	Description	LIST
TRH158	Measure both temperature and humidity	148.00
TRH122M	-40 to 160°F 9" stem	201.30

Thermo-Hygrometer Pen



Part #	Description	LIST
THP2	Pen size thermo-hygrometer measures and displays an environment temperature and humidity reading. Temperature range: 14 to 122°F and -10 to 50°C Humidity range: 20 to 90% R.H. °F/°C selectable with the touch of a button. Min/Max readings recall.	74.00

THERMOMETERS
COOPER-ATKINS



TR610



TR614



268



212-150

Wall Thermometers

Part #	Description	LIST
TR610	**Utility Thermometer** White aluminum back with rugged caps for wall mounting. 9-1/8" length. For indoor or outdoor.	7.40
TR614	**Handy-Temp Thermometer** Ideal for indoor or outdoor use. Convenient ring top for mobile use or screw holes for permanent fastening. All aluminum, can't rust. White with red and black scale. 8-1/8" length.	11.10
268	**Wall Thermometer** 7-3/4" x 2".	26.00
212-150	**Cooper 14" Diameter Wall Thermometer** -40°F to 120°F / -40°C to 50°C	125.90

POCKET THERMOMETERS

Pocket Test Thermometers

- 1" dial. Red protective sheath. 5" stainless steel stem.

Part #	Description	LIST
1246-01	-40° to 180°F	24.80
1246-02	0° to 220°F	24.60
2238-06	2" Dial - 0° to 220°F	54.90

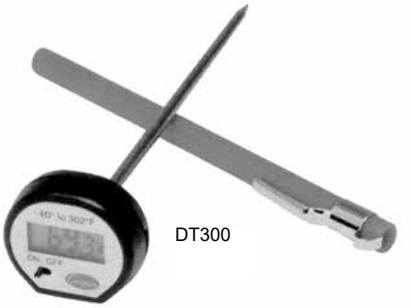

2238


1246-02

Pocket Test Thermometers (Digital)

- Easy to read LCD
- Red protective sheath with clip
- 5" stainless steel stem

Part #	Description	Range	LIST
DPP400W	Auto shut-off	-40° to 392°F/ -4° to 200°C	76.00
DPS300	1" swivel head, turns 30°, 60° or 90°, auto shut-off, 3 sec. update	-58° to 302°F	50.40
DT300	on/off switch, 1" dial	-40° to 302°C/ -40° to 150°C	52.80
DFP-450W	flat head, instant update button, auto shut-off	-40° to 450°F/ -40° to 232°C	99.60


DT300


DPS300


DFP-450W


DPP400W

TEMPERATURE AND HUMIDITY TESTERS

Cooper SRH77A Temperature & Humidity Tester



- Three zone temperature monitor with %RH measurement
- Calculates wet bulb temperature
- Calculates temperature difference between probes one and two

Part #	LIST
SRH-77A	1,282.00

Amprobe THWD-3 Relative Humidity & Temperature Meter



- Dual display
- Extended probe stem to easily access air ducts
- Capacitive sensor with protective cover
- Min/Max readings
- Wet bulb and Dew point
- Data Hold
- Auto Power off
- Soft Carrying Case

Part #	LIST
THWD-3	420.00

Fluke 971 Temperature Humidity Meter

- Backlit dual display of humidity and temperature
- Measures dew point and wet bulb temperatures
- 99 record storage capacity
- Ergonomic design with belt clip and protective holster
- Quick-response capacitance sensor
- Compact and lightweight (188 g/6.6 oz)
- Temperature range from -20 °C to 60 °C (-4°F to 140 °F)
- Relative humidity from 5 % to 95 %
- Min/Max/Avg Data hold
- Low battery indicator



Part #	LIST
971	1,062.00

Cooper Temperature / Relative Humidity

Part #	Description	LIST
TRH122M	Compact size mini thermo-hygrometer monitors temperature and relative humidity in the palm of your hand, from a table top or wall location. Min/max memory records highest & lowest temperatures.	201.30



HAND-HELD INFRARED THERMOMETERS

Fieldpiece Pen Style IR Thermometer with LED Flashlight

With a 1:1 field of view and a protective IR lens cap, the SIL2, is as small as a pen and delivers big results. Features automatic data hold, measurements in °F or °C, and has excellent accuracy: ±1.5°F and a resolution of 0.5°F. The SIL2 has a range of -27°F to 230°F and includes Auto-Power Off (APO) to conserve battery life.

Features:

- Field of view 1:1
- Separate batteries for thermometer and flashlight.
- Regulated power for flashlight means consistent brightness over battery life.
- Protective IR lens cap
- Small as a pen
- Automatic data hold
- Select °F or °C
- Auto off
- Excellent accuracy: ±1.5°F.
- Resolution: 0.5°F
- Range: -27°F to 230°F



Part #	LIST
SIL2	126.20

Fieldpiece Pocketknife Style Thermometer

The SPK1 Pocket Knife Style Thermometer features a sharp tip for punching through flex duct and hangs easily from a vent or thermostat. Pull out the probe rod just like you would a pocketknife. 16 detent position grooves hold the rod at virtually at any angle. The probe rod folds away simply with no cover sleeve to lose. Temperature range: -58°F to 392°F. One of our most popular instruments for HVAC/R field service.

Features:

- Temperature probe folds away like a pocketknife
- Select °F or °C
- MAX/MIN and HOLD functions
- Sharp enough to puncture fiberboard and flexduct
- Easily hangs from register
- Temperature range: -58°F to +392°F



Part #	LIST
SPK1	77.90

HAND-HELD INFRARED THERMOMETERS

FLUKE

59 MAX+ Infrared



- Precise laser technology for more accurate and repeatable measurements
- Large, easy-to-read backlit LCD display for easy viewing
- Small and lightweight design fits easily fits into your tool box
- 10:1 distance to spot ratio
- Displays the minimum, maximum or average temperature, or the difference between two measurements
- Hi and Lo alarms for rapid display of measurements outside the limits

Model	LIST
59MAX-PLUS	281.50

62 MAX+ 12:1 Infrared



- Dual lasers: The 62 MAX+ has dual rotating lasers to help you identify area to be measured. The measurement area is the spot between the dots.
- Large, backlit display: Large screen makes data easier to read, even in dark areas.
- Min/Max/Avg/Dif: Displays the minimum, maximum or average temperature, or the difference between two measurements.
- Alarm: Hi and Lo alarms for rapid display of measurements outside the limits.

Model	LIST
62MAX-PLUS	483.00

561 Pro 12:1 IR Contact



- IR thermometer for quick measurements up close, or at a distance
- Contact thermometry capability, compatible with all standard mini-connector type K thermocouples
- Velcro® pipe probe
- Single-point laser sighting
- Temperature range of -40 °C to 535 ° C (-40 °F to 1022 °F)
- 12:1 distance to spot ratio
- Easy emissivity adjustment
- MIN, MAX, and DIF functions
- 2 year warranty

Model	LIST
561	629.00

566 Infrared and Contact



- Backlit display for poorly lit areas
- Logs temperature measurements to memory
- Temperature range: -32 °C to 650 °C (-25 °F to 1200 °F)
- Distance to Spot Ratio: 30:1
- Emmissivity: Adjustable
- Accuracy: + 1% of reading or +1 °C (+2 °F)
- Display Hold: 7 seconds
- Includes: 9 V alkaline battery, operator's guide, CD with user manuals, durable hard case
- Optional RTD temperature probe (#80PR60)
- 2 year warranty

Model	LIST
566	1,100.00

568 Infrared and Contact



- Backlit display for poorly lit areas
- Displays minimum, maximum and average measurements
- Temperature range: -32 °C to 760 °C (-25 °F to 1400 °F)
- Distance to Spot Ratio: 50:1
- Emmissivity: Adjustable
- Accuracy: + 1% of reading or +1 °C (+2 °F), whichever is greater
- Display Hold: 7 seconds
- Includes: 9 V alkaline battery, operator's guide, CD with user manuals, durable hard case
- Optional RTD temperature probe (#80PR60)
- 1 Year Warranty
- 2 year warranty

Model	LIST
568	1,233.00

FOODSERVICE THERMOMETERS

FoodPro Plus



Combination infrared surface temperature scanner with probe for internal temperature readings, the FoodPro Plus offers the best of both worlds for product temperature measurement. Also includes and integrated countdown timer with alarm to monitor line checks and cooking and cooling intervals.

- Temperature Range: -35°C to 275°C (-30°F to 525°F)

Model	LIST
FP-PLUS	911.00

THERMAL IMAGING CAMERA

SEEK THERMAL

Thermal Camera - Seek Reveal



Seek Reveal™ is designed for the realities of life in the field, combining an advanced thermal imaging camera with a high performance LED light in one compact, rugged reliable device.

- From a DIY homeowner looking for insulation leaks, to a professional home inspector, a plumber detecting clogs, or an electrician checking for failing circuits, Seek Thermal enables all to “see the unseen” like never before.
- Works in total darkness, broad daylight, or obscured visibility conditions. Perfect for HVAC Pros, Police, Security and Hunters.

Features

- Thermal Sensor 206 x 156 (32,136 pixels)
- Imaging Temp. Det. Range -40C to 330C
- Thermal Image Sensitivity <110mK (Avg. 75mK)
- Thermal Temp. Accuracy (@ 25C Ambient) 5% or 5 Degrees
- Distance 6” to 500’
- Distance to Spot Ratio 55:1
- Field of View: 36 Degrees Vertical / 27 Degrees Horizontal
- Display Screen: 2.4” Colour, 240 x 320
- Rechargeable 3.7V Lithium-ion Polymer Battery
- Battery Operating Time – Continuous Use 10Hrs.
- Frame Rate <9Hz
- Spectral Range 7.5 – 14um
- Spot Thermography - Yes
- Storage Media 512 MB microSD – 1,500 images

Model	Description	LIST
RW-EAA	Thermal Imaging Camera 2.4 in (W) x 5 in (H) x 1.2 in (D)	1,317.00

Thermal Camera - Seek Compact



Powerful and portable, the Seek Compact is a state-of-the art thermal camera that connects directly to your smartphone (iOS or Android). Using over 32,000 thermal pixels, Compact creates an image from invisible infrared light. With its wide 36° field of view, Compact is perfect for use indoors and around the home or building.

Just plug Compact into your phone, tap the app, and find, fix and solve faster with more confidence.

Features

- Thermal Sensor 206 x 156
- 36° Field of View
- -40° F to 626° F Detection Range
- 1000 ft Viewable Range
- Works Day & Night
- Waterproof Carrying Case

Model	Description	LIST
UW-BAA	Android Standard	822.00
UT-BAA	Android Long Range	987.00
LW-BAA	iPhone Standard	822.00
LT-BAA	iPhone Long Range	987.00

50 SERIES DIGITAL THERMOMETERS

FLUKE



Features:

- Large backlit dual display shows any combination of T1, T2 (52 and 54 only), T1-T2 (52 and 54 only), plus MIN, MAX or AVG. Relative time clock on MIN, MAX and AVG provides a time reference for major events.
- Readout in °C or °F
- Splash and dust resistant case protected by impact absorbing holster
- User friendly front panel is easy to set up and operate
- Sleep mode increases battery life
- Optional ToolPak accessory allows the thermometer to hang from any metal object (with the rare earth magnet) or secure around a pipe (with hook-and-loop straps) for hands-free operation



The Fluke 54 Series II B include all the features listed above plus:

- Data logging up to 500 points of data with user adjustable recording interval
- Real time clock captures the exact time of day when events occur
- Recall function allows logged data to be easily reviewed on the meter display
- IR communication port allows data to be exported to optional FlukeView Temperature PC software for further analysis and graphing

Features	54-2-B	52-2
Thermocouple Types	K, J, T, E, N, R, S	K, J, T, E
Number of Inputs	Dual	Dual
Time Stamp	Time of Day	Relative Time
Rugged Design with Holster	•	•
Splash / Dust Resistant	•	•
Dual Display with Backlight	•	•
MIN / MAX / AVG Recording with Time Stamp	•	•
Compatible with Optional ToolPak	•	•
Differential (T1-T2) Readout	•	•
Data Logging up to 500 Points	•	
IR Data Port for Interface to PC	•	
LIST	**1,394.00**	**1,100.00**

TEMPERATURE TESTERS

Cooper TM99A-UL Digital Temperature Tester



- Temperature range of -40 to +300°F (-40 to +150°C)
- A detachable, fast acting #1075 probe supplied, stored when not in use in shock resistant case
- Ideal for HVAC: ambient air & duct temperatures, thermostat calibration
- For liquid, air and semi-solid temperatures

Model	LIST
TM99A-NIST	714.00

Cooper SH66A 3 Probe Temperature Tester



- Ideal for measuring superheat
- Temperature differential function displays updated differential between probes 1 & 2
- All functions require a single key stroke
- 3 detachable, interchangeable 10K thermistor probes provided

Model	LIST
SH-66A	902.00

IPRO Super Temperature Pressure Clamp



3 Tools in 1. Easily clamps to 3/8” to 1-1/8 Tube.

- Temperature (Pipe)
- Temperature & Relative Pressure
- PT Chart (Database programmed with 65 refrigerants)
- Set-up & Change Refrigerants in Sec.
- Side Magnets Attach the Clamp to any Metal Surface

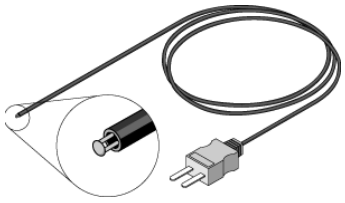
Model	LIST
SC8000	108.60

TEMPERATURE ACCESSORIES

FLUKE

80PK-1 Bead Probes

This basic, inexpensive thermocouple offers good accuracy and fast response. (not suitable for liquid immersion). 80PK-1 is compatible with K-type thermometers. Measurement range: -40 to 260°C (-40 to 500°F)



Part #	LIST
80PK-1	106.60

80PK-22 Immersion Probe

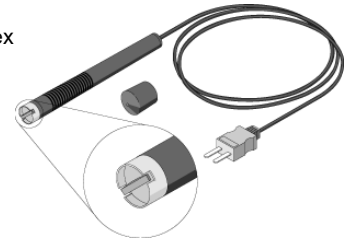
K thermocouple for use in liquids and gels. Soft rubber handle provides a secure grip. Measurement range: -40°C to 1090°C (-40°F to 1994°F).



Part #	LIST
80PK-22	295.60

80PK-3A Surface Probe

Designed for measuring the temperature of flat or slightly convex surfaces, this K type probe is ideal for hot rollers and plates. Exposed junction allows direct contact with the surface being measured. Measurement range: 0°C to 260°C (32°F to 500°F).



Part #	LIST
80PK-3A	456.00

80PK-24 Air Probe

K thermocouple for air and non-caustic gas measurements. Perforated baffle around the measurement bead. Measurement range: -40°C to 816°C (-40°F to 1500°F).



Part #	LIST
80PK-24	336.00

80PK-25 Piercing Probe

4" probe made from 316 stainless steel. Ideal for food service applications. Measurement range: -40 to 350°C (-40°F to 500°F)



Part #	LIST
80PK-25	336.00

80PK-26 Tapered Probe

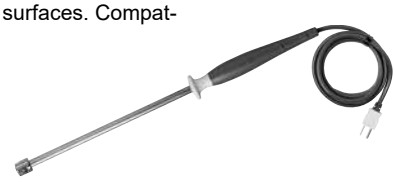
8" probe made from Inconel for general purpose surface and air measurements. Compatible with K-Type measurement instruments. Measurement range: -40°C to 816°C (-40°F to 1500°F).



Part #	LIST
80PK-26	336.00

80PK-27 Industrial Surface Probe

Heavy duty industrial grade probe for flat or slightly curved surfaces. Compatible with K-Type measurement instruments. Measurement range: -127°C to 600°C (-196°F to 1112°F).



Part #	LIST
80PK-27	939.00

TEMPERATURE ACCESSORIES

FLUKE

80PK-8 Pipe Clamp Temperature Probe

Designed for pipe surfaces from 6.4 mm (1/4") diameter to 34.9 mm (1-3/8") diameter. Spring-action jaw will not loosen over time, ensuring repeatable measurements. Robust design for extended service life. Measurement range: -29°C to 149°C (-20°F to 300°F). Repeatability: 0.56°C (1°F)



Part #	LIST
80PK-8	505.00

80PK-9 General Purpose Probes

Use as surface probe and for insertion into air and non-caustic gases. Probe constructed of 304 stainless steel. Compatible with K-type thermometers. Measurement range: -40°C to 260°C (-40°F to 500°F)



Part #	LIST
80PK-9	201.10

80PK-EXT Thermocouple Wire Extension Kits

For extending and repairing K-type thermocouple wires. Kit includes 3 meters (approx. 9 ft.) of thermocouple wire and 1 pair of male/female mini-connectors. Maximum continuous exposure temperature: 260°C (500°F). Compatible with K-type thermometers.



Part #	LIST
80PK-EXT	174.90

80TK Thermocouple Module

Converts multimeters with a mV range into digital thermometers. Converts K-type thermocouple signals into mV output. Connects to DMM via standard banana plugs. Switch selectable °C or °F.
Range: -50°C to 1000°C (-58°F to 1832°F)



Part #	LIST
80TK	428.00

80BK-A Integrated DMM Temperature Probe

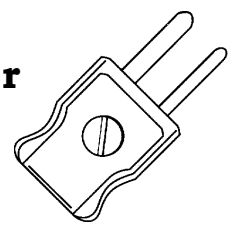
Compatible with the Fluke 16 and Fluke 89 Series IV and other DMMs with temperature measurement functions. K-type thermocouple with standard banana jack. Convenient one piece construction. Measurement range: -40 to 260°C (-40 to 500°F)



Part #	LIST
80BK-A	134.70

80CK-M Type-K Male Mini-Connector

Isothermal screw terminal for K. Suitable for up to 20 gauge thermocouple wire. Two per package.



Part #	LIST
80CK-M	88.50

80AK-A

Adapts Type-K thermocouple mini-connector to dual banana plug inputs. Allows the Fluke 89 IV or Fluke 16 multimeters to be used with any K-type thermocouple accessory. Measurement range and accuracy is not affected by the 80AK adapter.



Part #	LIST
80AK-A	88.50

TYPE K THERMOCOUPLE PROBES

COOPER / ATKINS






	4005MK Pipe Clamp Probe	6030MK Bead Probe	50012-K Angled Surface Probe	50014-K Weighted Surface Probe
Temperature Range	-20° to 300°F -29° to 149°C	-100° to 500°F -73° to 260°C	500°F/260°C	500°F/260°C
Max Tip Temp	NA	500°F/260°C	500°F/260°C	500°F/260°C
Max Cord Temp	200°F/93°C	500°F/260°C	176°F/80°C	400°F/205°C
Response Time	2 Seconds	0.5 Seconds	4 Seconds Oiled Surface	2 Seconds Oiled Surface
Shaft Length	-	NA	4.5"/114 mm	-
Cord Length	120" TEP straight cord	42" teflon straight cord	48" PVC Extended 12" PVC Retracted	30" Flexible Armored Cable
LIST	**408.00**	**75.60**	**359.00**	**645.00**





	50208-K Vat Probe	50209-K MicroNeedle With Cable	50338-K Oven Economy Probe W Clip
Temperature Range	400°F/205°C	500°F/260°C	896°F/480°C
Max Tip Temp	400°F/205°C	500°F/260°C	896°F/480°C
Max Cord Temp	NA	176°F/80°C	NA
Response Time	8 Seconds Liquids	3 Seconds Liquids	1 Second Liquids 9 Seconds Air
Shaft Length	7.3"/185 mm	3.5"/89 mm	-
Cord Length	30" Flexible Armored Cable	48" PVC Extended 12" PVC Retracted	48" Flexible Cable w/Clip
LIST	**367.00**	**332.00**	**276.60**







	50306-K Air Probe For Freezer W Clip	50318-K Ceramic Tip Surface Probe	50332-K Air Probe	50335-K Needle Probe With 4.5" Tip	50336-K DuraNeedle Probe
Temperature Range	600°F/315°C	1202°F/650°C	-40° to 500°F -40° to 260°C	500°F/260°C	500°F/260°C
Max Tip Temp	600°F/315°C	1202°F/650°C	500°F/260°C	500°F/260°C	500°F/260°C
Max Cord Temp	NA	176°F/80°C	176°F/80°C	176°F/80°C	176°F/80°C
Response Time	1 Second Liquids 10 Seconds Air	1 Second Oiled Surface	5 Seconds Air	4 Seconds Liquids	2 Seconds Liquids
Shaft Length	2.125"/54 mm w/Clip	4"/102 mm	4"/102 mm	4.5"/114 mm	6"/153 mm
Cord Length	43" Flexible SS Braid Cable	48" PVC Extended 12" PVC Retracted	48" PVC Extended 12" PVC Retracted	48" PVC Extended 12" PVC Retracted	48" PVC Extended 12" PVC Retracted
LIST	**276.60**	**358.00**	**285.70**	**250.90**	**282.10**

Amprobe TMA-10A Anemometer with Flexible Precision Vane

Part #	LIST
TMA10A	710.00



- Measure air velocity FPM or air volume CFM
- Input surface area for air flow measurements
- Accurate Thermistor for temperature measurements
- Continuous moving average results for up to 2 hours
- MIN/MAX/AVG readings
- Air velocity average for multiple point
- Temperature in °C or °F, switchable
- Data hold to freeze measurement display of both readings
- Auto power off function
- RS232 interface output with optional software and cable,Model TM-SW
- Deluxe hard carrying case

Fluke 9040 Phase Rotation Indicator



Phase Rotation Indicator for Industrial Applications

A portable handheld instrument designed to detect the rotary field of three-phase systems. With three test leads, this rugged tester easily determines a clockwise or counterclockwise direction.

Features

- Large display to easily determine field rotation
- Indication for all three phases
- CAT III 600 V
- Included accessories: test leads and probes, alligator clips
- 2-Year Warranty

Part #	LIST
9040	859.00

Amprobe TACH20 Combo Tachometer



- Measures rotational and surface speed
- Built-in memory
- Digital display
- Auto power off function
- Easy to select units and mode functions
- Contact and non-contact measurement
- Select rpm using infrared beam or adapter: m/min, m/sec, ft/min, ft/sec, in/min, m, ft, and in.
- Includes 6 adapters, carrying case, reflective tapes batteries and users manual

Part #	Description	LIST
TACH20	Includes 6 Adapters	1,261.00

MANOMETERS

Fieldpiece Dual Port Manometer

SDMN6 is a dual-port manometer that also accurately tests pressure switches by stimulating a draft with an internal pump.

- Check the Pressure Differential Across a Blower - use the included static pressure probes for easy, accurate, static pressure testing,
- Find Inlet and Outlet Gas Pressures - Screw the brass fittings directly into the gas regulator taps
- Test any Pressure Switch - Easily calibrate any adjustable pressure switch.



Part #	LIST
SDMN6	830.00

Fieldpiece Dual Port Manometer

- Measures inches WC, mmWC, mBar, and PSI
- Measures Gas Pressure & Static Pressure
- Measures Differential Pressure P1-P2
- Min/Max and Hold
- Range: -60.0 to + 60.0 inch WC
- With Case



Part #	LIST
SDMN5	430.00

Testo 510 - Digital manometer

- Temperature and air density compensation for accurate airflow measurements
- Measures differential pressure to 40 in. H2O
- Backlit display ensures easy readability in low light situations
- Temperature compensated pressure sensor



Part #	LIST
0563-0510	535.00

Dwyer Duel Range Flex-Tube® U-Inclined Manometers

Most versatile and useful low cost manometer we know of. Designed for installation and servicemen. A sturdy, clear plastic manometer, it offers single, direct readings in two ranges: As a U-tube, it reads from 0 to 16" of water; as an inclined gage, it reads from -.20 to 0 to 2.6" of water. Model 1227M (Metric) is 0 to 400 mm water column as a U-tube and -5 to 0 to 70 mm water column as an inclined gage. "How-to-use" instructions are printed directly on the scale.



Part #	LIST
1227	407.00

Gas Pressure Test Kit

This compact kit helps you accurately set manifold pressure for natural or L.P. gas.

Part #	Description	Gauge Range	LIST
29436	Gas Test Kit 0-10 In.	.0 - 10" W.C.	150.40
29435	Gas Test Kit 0-35 In.	0 - 35" W.C.	150.40



INSULATION TESTERS

Fluke 1507 Insulation Tester



The Fluke 1507 Insulation Testers are compact, rugged, reliable, and easy to use. With their multiple test voltages, they are ideal for many troubleshooting, commissioning, and preventative maintenance applications.

- Insulation test range: 0.01 MΩ to 10 GΩ
- Insulation test voltages: 50 V, 100 V, 250 V, 500 V, 1000 V

Additional features, like the remote probe on these tools save both time and money when performing tests.

Part #	LIST
1507	1,689.00

Fluke 1587FC Insulation Multimeters



- Insulation test: 0.01 MΩ to 2 GΩ
- Insulation test voltages:
- 50 V, 100 V, 250 V, 500 V, 1000V
- Auto-discharge of capacitive voltage
- Measure AC/DC voltage, DC millivolts, AC/DC milliamps, resistance, and continuity
- Fluke 1587 includes capacitance, diode test, temperature, min/max, and frequency
- Low-pass filter for variable-speed motor drive measurements
- Three year warranty

Part #	LIST
1587FC	2,204.00

MTP 4010 Insulation Tester



- 1 mA test currrent for meg ohm range at rate voltage
- Large dual display with backlight
- Test hold function for easy operation

Function	Range	Best Accuracy
DC Test Voltage	250V, 500V, 1000V	-
Meg Ohms test	20 MΩ, 200 MΩ, 2000 MΩ	± 1.0 %
DVC measurement	1000V	± 0.8 %
ACV measurement	750V	± 1.2 %
Resistance	200 MΩ, 2000 MΩ	± 1.0 %

Part #	LIST
MTP-4010	613.00

INSULATION TESTERS

M501 Insulation Tester / Electronic Megohmmeter

- Display: llight emitting diodes
- Indicator Range: 5 to 1000 Megohms
- Case: Hi-impact thermoplastic
- Carrying Case: built-in, rugged, 9.5" x 6.5" x 3"
- Batteries: (2) "C" size 1.5 volt (not included)



Part #	LIST
M-501	566.00

Fieldpiece SMG5 Digital Insulation Meter

SMG-5 provides a 1000V voltage source, monitors current, and displays the resistance between the test points. Maximum current output is >1mA. It can be used to determine the condition of insulation from winding to ground in a motor, compressor, or transformer. Includes a case, alligator clip lead tip and leads with removable tips

- 1000VDC Voltage Source
- Measure up to 2000 megohm
- Backlit LCD



Part #	LIST
SMG5	352.00

CARBON MONOXIDE METERS

Klein ET110 Carbon Monoxide Meter



- Easy-to-use meter detects and measures concentration levels of carbon monoxide gas
- User protection with short-term exposure limit (STEL) alarm
- Low level alarm (35 ppm) and high level alarm (200 ppm)
- Audible and visual alarms
- Backlit display with CO measurements (0 to 1000 ppm) and temperature (°F/°C)
- Auto-power off after 20 minutes of no usage helps conserve battery life
- Includes carrying pouch and 4xAAA batteries
- Meter is NOT intended for use as personal protection equipment

Part #	LIST
ET110	310.00

Fluke CO-220 Carbon Monoxide Meter



The Fluke CO-210 Cabon Monoxide Meter is the same as the CO-210 except it's a stand alone unit with digital display

Part #	LIST
CO-220	1,341.00



Fluke CO-205 Aspirator Kit

Sample flue gas with your Fluke CO-210 or CO-220 using the CO-205 Aspirator Kit.

Part #	LIST
CO-205	551.00



Inficon CO Check™ Carbon Monoxide Meter

- Best-in-class accuracy for peace of mind
- Easy-to-use pushbuttons let you perform all functions with one hand
- Highly visible, intuitive “stoplight” LEDs give quick indication of CO hazard
- Large, easy-to-read LCD display for precise measurements
- Audible alarm
- Competitively priced
- Protective case with belt clip included
- Runs for 200 hours on 9V alkaline battery
- 2-year replacement warranty

Part #	LIST
715-202-G1	669.00

CLAMP METERS

FLUKE

Fluke 320 and 370 Series Clamp Meters offer an impressive array of innovative features with current ranges up to 1000 A. Choose the model that matches the jobs you do.

- Small body and jaws fit perfectly in your hand and into tight places
- Backlight available on most models
- Controls positioned for one hand operation
- New Inrush current feature measures motor-starting current the way a circuit breaker or overload unit sees it (selected models)
- Accurate low current measurements
- Auto shut-off
- Display hold
- Includes batteries, test leads, instruction card, safety sheet and carrying case.
- Safety rating: IEC 1010-2-031, 600 V Cat III

H3 Holster



Rugged holster with built-in pocket and velcro flap for test lead storage. Convenient belt loop with snap. Recommended for the 330 Series Clamp Meters.

	325	373	374FC	375FC	376FC
					
Measure ac current	40.00 A 400.0 A	600.0 A	600.0 A	600.0 A	999.9 A
Measure ac voltage	600 V	600.0 V	600.0 V	600.0 V	1000.0 V
Measure continuity	≤ 30 Ω	≤ 30 Ω	≤ 30 Ω	≤ 30 Ω	≤ 30 Ω
Measure dc voltage	600V	600.0V	600.0V	600.0V	1000.0V
Higher resolution for loads below 40 amperes	0-40.00A 40.0 - 400.0 A				
Measure resistance	400.0Ω	6000Ω	6000Ω	60kΩ	60kΩ
Measure inrush			100 mS	100 mS	100 mS
Work in poorly lit areas		Backlight	Backlight	Backlight	Backlight
Measure non-linear loads			True-rms	True-rms	True-rms
Measure dc current			600.0 A	600.0 A	999.9 A
LIST	**859.00**	**688.00**	**1,020.00**	**1,152.00**	**1,287.00**

CLAMP METERS

Amprobe AMP-310 Clamp Meter

- Measures AC Current to 600 A and AC/DC Voltage to 600 V
- Measures temperature from -40° to 752°F, (-40° to 400°C)
- Measures DC Microamps output to test proper operation of the flame sensor on gas appliances
- Measures capacitance, test diodes, and features a continuity beeper
- Tests 3-phase sequence and motor rotation to ensure proper connection of a motor to a 3-phase system

Part #	LIST
AMP310	518.00



Klein CL450 Clamp Meter

- Measures AC/DC voltage up to 1000V, 600A AC Current, 60MΩ Resistance, DC millivolts and microamps
- Automatically ranging True Root Mean Squared (TRMS) measurement technology for accuracy CAT IV 600V, CAT III 1000V, Class 2, Double insulation safety rating
- Clamp measures AC current and inrush current



Part #	LIST
CL450	478.00

Klein CL312 Fork Meter

- Automatically ranging True Root Mean Squared (TRMS) measurement technology for accuracy
- Measures AC current via the clamp, and AC/DC voltage, resistance, and continuity via test leads
- Wide jaw for measuring current in cables up to 3/0 sizes; accommodates cables of diameter up to 0.58-Inch (14.7mm)



Part #	LIST
CL312	226.40

Klein CL800 Clamp Meter

- Automatically ranging true mean squared (TRMS) technology for increased accuracy
- Test leads measure AC/DC voltage, resistance, continuity, frequency and capacitance and tests diodes
- Thermocouple probe measures temperature
- Low Impedance (LoZ) mode for identifying and eliminating ghost or stray voltages



Part #	LIST
CL800	425.00

VOLTAGE, CONTINUITY AND CURRENT TESTERS

Fluke Volt Alert Voltage Detector

The next generation VoltAlert™ AC voltage testers from Fluke are easy to use - just touch the tip to a terminal strip, outlet, or cord. When the tip glows red and the unit beeps, you know there's voltage in the line.

Model #	Description	LIST
1AC-A1-II	AC V Detector 90-1000 V	88.50
1LAC-A-II	Low Voltage Detector 20-90 V AC	88.50
2AC/90-1000VC	AC V Detector 90-1000 V	88.50
LVD2	Non-contact AC voltage detector	120.70



Milwaukee Volt Alert Voltage Detector

Model #	Description	LIST
2200-20	Voltage Detector	32.20
2202-20	Voltage Detector with LED	45.50
2203-20	10-1000V Dual Range Voltage Detector	53.70



2200-20

Klein Non-Contact Voltage Tester

NCVT-6 is a non-contact voltage tester (NCVT) with an integrated laser distance meter. It can detect voltage over the full-range from 12 to 1000 VAC and can measure distances from 2-Inch (51 mm) up to 66-Feet (20 m).

Model #	Description	LIST
NCVT-6	Non-Contact Voltage Tester	153.40



CURRENT TESTERS & CLAMPS

FLUKE

Fluke T5 and T6 Electrical Testers

- T5 Electrical tester for continuity/ohms, ac amps and 600 (model T5-600) or 1000 (model T5-1000) volts ac/dc. New openjaw technology for up to 100 amps ac, with 0.1 amp resolution.
- T6 Electrical tester measures voltage up to 1000 V ac through the open fork, without test lead contact to live voltage. Without opening covers or removing wire nuts. On wires up to AWG 4/0 (120 mm2), carrying as much as 200 A.

Part #	LIST
T5-600	348.00
T5-1000	456.00
T6-600	537.00
T6-1000	750.00



AC Only Models



i200



i200s



i400



i400s

	i200	i200s	i400	i400s
AC Current Range	1 A to 200 A	1 A to 200 A	1 A to 400 A	0.5 A to 400 A
Frequency Response (-3dB)	40 Hz to 40 kHz	40 Hz to 40 kHz	5 Hz to 20 kHz	5 Hz to 10 kHz
Max. Conductor Diameter	0.8" (20mm)	0.8" (20mm)	1.25" (32mm)	1.25" (32mm)
Output Levels	1 mA/A	10 mV/A,100 mV/A	1 mA/A	1 mV/A, 10 mV/A
Output Cable	1.5m shrouded dual banana plugs	2 meter to BNC termination	1.5m shrouded banana plugs	2.5m shrouded BNC plugs
Safety Rating	CAT III, 600V	CAT III, 600V	CAT IV, 600V	CAT IV, 600V
LIST	**456.00**	**724.00**	**442.00**	**798.00**

AC/DC Models *with Carry Case*

	i410-KIT	i1010-KIT
DC Range	1-400 A	1-1000A
AC Current Range	1-400 A	1-600 A
Frequency Response (-3dB)	3 kHz	10 kHz
Zero Error Adjustment	Yes	Yes
Max. Conductor Diameter	1.18" (30mm)	1.18" (30mm)
Output Levels	1 mV/A	1 mV/A
Output Cable	1.2 meter with shrouded banana plugs	1.2 meter with shrouded banana plugs
Safety Rating	CAT III, 600V	CAT III, 600V
LIST	**855.00**	**1,239.00**



DIGITAL MULTIMETERS
FLUKE



116



117



179/EDA2
(Includes TPAK Mag. Hanger)



87/5E2
(Combo Kit)



289/FVF
(Wireless Remote Display)



289/FVF
(Includes Software)



1587FC

Model	116	117	179/EDA2	87/5E2	233	289/FVF	1587FC
Counts	6000	6000	6000	20000	6000	50000	
True RMS readings	AC	AC	AC	AC+DC	AC	AC+DC	AC+DC
Basic DC accuracy	0.5%	0.5%	0.09%	0.05%	0.25%	0.025%	0.09%
Wide bandwidth				20 kHz		100 kHz	
Auto/manual ranging	•	•	•	•	•	•	•
Measurements							
Voltage AC/DC	600V	600V	600V	1000V	1000V	1000V	1000V
Current AC/DC	200µA	10 A	10 A	10 A	10 A	10 A	400mA
Resistance	40MΩ	40MΩ	50MΩ	50MΩ	40MΩ	500MΩ	50MΩ
Frequency	50 kHz	50 kHz	100 kHz	200 kHz	50 kHz	1 MHz	100 kHz
Capacitance	10 mF	10 mF	10 mF	10 mF	9999 µF	100 mF	9999 µF
Temperature	+400°C		+400°C	+1090°C	+400°C	+1350°C	+537°C
dB						60 dB	
Conductance				60 nS		50 nS	
Duty cycle/pulse width				•/-		•	
Continuity with beeper	•	•	•	•		•	•
Diode test	•	•	•	•		•	•
Insulation Test							•
Dual Display						•	•
Analog bargraph	•	•	•	•		•	
Backlight	•	•	•	•	•	•	•
LIST	**537.00**	**589.00**	**1,020.00**	**1,609.00**	**965.00**	**2,146.00**	**2,204.00**

DIGITAL MULTIMETERS

FLUKE

116/62 MAX+ Technician's Combo Kit



Model #	LIST
116/62-MAX-PLUS-KIT	750.00

116/323 HVAC Combo Kit - Includes Multimeter and Clamp Meter



Model #	LIST
116/323-KIT	845.00

AMPROBE

PM55A Compact Precision DMM with AutoTect™ and VolTect™

It is the most full featured multimeter in this minute size. Includes VolTect and AutoTect. It measures AC and DC voltage to 600 V, AC and DC current to 2000 µA, resistance to 6 MΩ, capacitance to 2000 µF, and frequency to 30 kHz. It includes a silicone protective holster, deluxe carrying case, attached test leads, battery and manual. Safety rated to CAT III 300V, CAT II 600V, cULus listed.



Model #	LIST
PM55A	196.60

AM-520 HVAC Multimeter

It offers all the most commonly used HVAC digital multimeter features such as temperature, micro amps to troubleshoot flame sensors, and capacitance to check motor startup capacitors. With its CAT III safety rating, this high voltage multimeter measures a broad range of electrical parameters. The backlit LCD display makes it easy to read, and it's easy to use with non-contact voltage detection, the "third hand probe holder, and the built-in flashlight.



Model #	LIST
AM520	196.60

AM-560 Advanced HVAC Multimeter

It is specifically designed for advanced HVAC applications. This HVAC multimeter offers a full set of professional digital multimeter features to measure a complete range of electrical parameters and key functions for HVAC applications. Dual thermocouples take differential temperature measurements; a low pass filter enhances accuracy on variable frequency drive measurements; and capacitance can be used to check motor startup capacitors. The AM-560 also features micro amps for flame sensor troubleshooting, non-contact voltage detection, and a CAT IV safety rating.



Model #	LIST
AM560	410.00

AM-570 Industrial Multimeter

One of the best digital multimeters in its class. Designed for professional electricians who need to maintain service or troubleshoot advanced electrical systems in the most demanding environments, the high voltage multimeter is packed full of professional digital multimeter features. With True-rms accuracy for measuring voltage in noisy environments, dual thermocouples for differential temperature measurements, low impedance mode to detect stray voltage, and a low pass filter to accurately measure the voltage on variable frequency drives, it takes care of quick go/no-go checks with a single tool.



Model #	LIST
AM570	547.00

SOFT / HARD METER CASES

FLUKE

C12A Meter Case

Zippered carrying case with inside pockets and belt loop

Part #	LIST
C12A	110.60



C25 Meter Case

Zippered carrying case with padding and inside pocket

Part #	LIST
C25	120.70



C50 Meter Case

Zippered carrying case with inside pocket, belt loop and inside meter strap

Part #	LIST
C50	122.70



C75 Accessory Case

Zippered carrying case with 2 inside pockets

Part #	LIST
C75	80.40



C90 Meter Case

Zippered carrying case with inside pocket and belt loop

Part #	LIST
C90	118.60



C781/C125 Meter Case

Zippered carrying case with detachable external pouch.

Part #	LIST
C781	207.10
C125	117.30



C789 Meter & Accessory Case

Large fabric carrying case with 3 compartments, removable handle and shoulder strap.

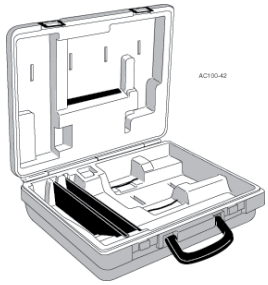
Part #	LIST
C789	416.00



C100 Meter & Accessory Case

Tough polyprophylene case. Holds any Fluke DMM or digital thermometer and most accessories.

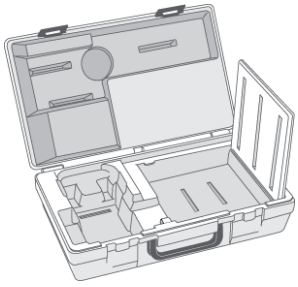
Part #	LIST
C100	174.90



C800 Meter & Accessory Case

Tough polyprophylene case. Holds any Fluke DMMs or digital thermometers. Accessories and manual compartments. Detachable lid.

Part #	LIST
C800	174.90



PREMIUM CASES

FLUKE

C510 Leather Meter Case

- Genuine top grain cowhide
- Oil tanned for long life
- Rugged construction with heavy duty stitching and reinforced rivets
- Large tool belt loop and top flap to secure meter
- Holds most Fluke DMMs, thermometers and process calibrators.

Part #	LIST
C510	227.20



C520A Leather Tester Case

- Genuine top grain cowhide
- Oil tanned for long life
- Rugged construction with heavy duty stitching and reinforced rivets
- Large tool belt loop
- Enlarged case compartment to safely secure tester and leads
- Holds Fluke electrical testers

Part #	LIST
C520A	174.90



Fused Test Probe Set with Test Leads

- Built-in fuses for additional measurement protection
- Probes allow indication of live voltage even with blown fuse, helping to prevent the user from thinking no voltage is present
- 2 mm threaded probe tips include removable 4 mm lantern-style spring contacts and removable GS38 insulated IC caps for probing closely spaced leads
- Operating temperature – 20 °C to 50 °C (-5 °F to 120 °F)
- CAT III 1000 V, CAT IV 600 V, 10 A rating

Part #	LIST
FTPL-1	295.60



C550 Tool Bag

- Steel reinforced frame
- Rugged ballistic cloth with heavy duty hardware
- Large zippered storage compartment with 25 pockets
- Weather resistant
- Carry all your tools to the job

Part #	LIST
C550	295.60

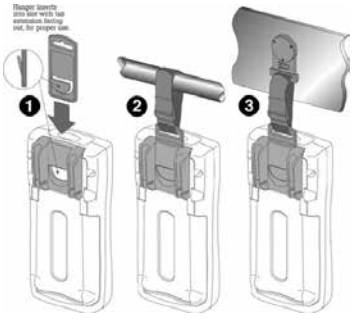


HANGING AND LOCKING KITS

ToolPak

The meter hanging solution

- Kit includes universal hanger clips (2), hook & loop straps (2 lengths), adapter and strong magnet
- Combine components to meet most hanging needs
- Attaches to back of many Fluke meters, including 110, 170, 180 Series, 80 Series IV DMMs, 725 Process Calibrator, 70 Series III DMMs and 50 Series II Digital Thermometers.



Part #	LIST
TPAK	126.70

TEST LEADS, PROBES & CLIPS

FLUKE

Modular Test Leads & Probes

TL175 TwistGuard™ Test Leads

- TwistGuard™ adjustable tips enhance safety and versatility length
- WearGuard™ indicator shows damage to leads
- Heavy duty strain relief withstands over 30,000 bends



Part #	LIST
TL175	94.50

TP175 TwistGuard™ Test Probes

- Adjustable tip length, allowing increased safety and precision
- Compatible with the TL22x series, TL238 and TL27 test leads
- Conforms to EN61010-031
- CAT II 1000 V, CAT III 1000 V, CAT IV 600, 10 A rating, UL Listing



Part #	LIST
TP175	80.40

TL221 SureGrip™ Silicone Test Lead Extension Kit

- Superior strain relief
- Includes 2 adapters to extend lead reach another 1.5M



Part #	LIST
TL221	88.50

TL222 SureGrip™ Silicone Insulated Test Leads

- Recommended for use with AC220,AC280,AC283 test clips
- Superior strain relief



Part #	LIST
TL222	88.50

TL224 SureGrip™Silicone Test Leads

- 1.5 meter silicone-insulated wire resists heat and cold
- Superior strain relief



Part #	LIST
TL224	88.50

TP220 SureGrip™ Industrial Test Probes

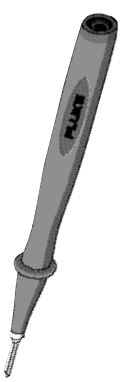
- Sharp 1/2" stainless steel tip provides reliable contact
- Flexible finger barrier improves grip



Part #	LIST
TP220	58.30

TP1, TP2 and TP4 Slim Reach Test Probes

- Slender probe bodies for porbing closely spaces or recessed points
- TP1 has a flat blade ideal for electrical wall sockets
- TP2 has 2 mm diameter tip for precise electronic probing
- TP4 has 4 mm diameter tip ideal for European electrical wall sockets



Part #	LIST
TP1	58.30
TP2	
TP4	

TP80 Electronic Test Probes

- Tapered tip ideal for probing high-density electronic components or boards
- Removable guard for IC probing



Part #	LIST
TP80	106.60

TEST LEADS, PROBES & CLIPS

FLUKE

Modular Clips / Push-On Clips

AC220 SureGrip™ Alligator Clips



- Insulated, nickel plated jaws grip objects up to 3/8"
- Blunt tip grabs round screw heads

Part #	LIST
AC220	134.70

AC280 SureGrip™ Hook Clips



- Profile narrows to .22 inches at tip
- Hook opening .20 inch at front, .08 inch at base

Part #	LIST
AC280	106.60

AC283 SureGrip™ Pincer Clips



- 4.5 inch flexible, insulated shaft
- Nickel plated pincers open to .20 inch

Part #	LIST
AC283	134.70

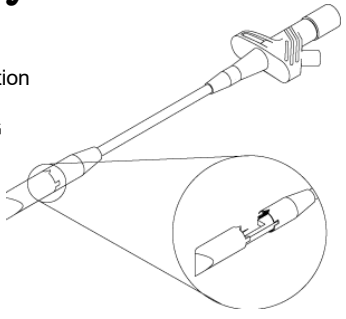
AC285 SureGrip™ Alligator Clips



- Multi-purpose tooth pattern grips anything from fine gauge wire to a 3/4" nut
- Nickel plated steel jaws

Part #	LIST
AC285	78.40

AC89 Heavy Duty Insulation Piercing Clip



- Plunger style, safety grip operation with insulated jaws
- Small pin pierces 30 to 14 AWG insulated wire

Part #	LIST
AC89	134.70

AC175 Alligator Clip Set

Slide-on alligator clips (red, black) compatible with TL71, TL75, TL175 and TP175. Insulated alligator clip jaws provide 8 mm opening with flexible boots. CAT III 1000 V, CAT IV 600 V, 10 A rating.



Part #	LIST
AC175	88.50

TEST LEADS, PROBES & CLIPS

FLUKE

Test Lead and Probe Sets

TL71 Premium DMM Test Lead Set



- Flexible silicone insulated leads are heat and cold resistant
- Distinctive comfort grip probes
- Recommended for µV measurements

Part #	LIST
TL71	88.50

TL76 2/4 mm Tip Test Lead Set

- 2 mm threaded probes with removable 4 mm diameter spring contacts
- Includes GS38 style probe tip cover
- CAT III, 1000V, 10A; CAT IV, 600V, 10A

Part #	LIST
TL76	106.60



TL75 Hard Point Test Lead Set



- Extremely hard alloy tips resist wear
- Distinctive comfort grip probes
- Economical PVC insulated leads

Part #	LIST
TL175	94.50

TL81A Deluxe Electronic Test Lead Set

- 22 piece set with quadfold pouch
- Probes, alligator clips, tip extenders, pincers, clips, leads and adapters for virtually every electronic need

Part #	LIST
TL81A	428.00



TL220 Industrial Test Lead Set

- Starter kit for industrial applications
- Includes 1 pair: C220,TP220,TL222

Part #	LIST
TL220	227.20



TL223 Electrical Test Lead Set

- Starter kit for electrical applications
- Includes 1 pair: AC220, TP1, TL224

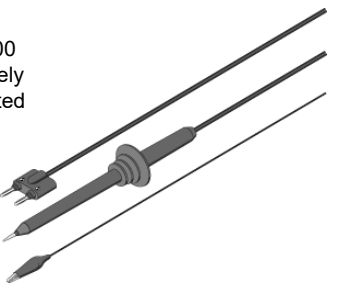
Part #	LIST
TL223	227.20



80K-40 High Voltage Probes

- Allows a digital multimeter to measure up to 6000 volts, 15000 volts and 40000 volts respectively
- 1V/1000V output when connected to 10 MΩ multimeter
- Ground clip included
- Intended for low energy applications only

Part #	LIST
80K-40	698.00



SAFETY PRODUCTS

Hearing Protection

Nextera Over-the-Head Earmuff



- NRR=29 outstanding full spectrum attenuation
- Very low profile
- Soft-Seal™ ear cushions
- Very low headband force assures maximum comfort
- Meets CSA Class AL

Part #	LIST
3006	77.30

Contra Band™ Inner Aural Hearing Protector



- NRR=22
- Super soft gel ear tips provide maximum comfort

Part #	LIST
2299	11.90

Soft-Seal 31™ Polyurethane Foam Earplugs



- NRR=31dB
- Super soft
- Tapered and smooth design allows for quick, easy and positive insertion

Part #	LIST
9300	0.30



RD-1™ Corded PVC Earplugs

- NRR-24dB
- An excellent alternative to disposable earplugs.
- Molded from extra soft PVC
- An extra long tab makes the RD-1 easy to insert and remove.

Part #	LIST
9005	3.60

Knee Pads

True Flex Gel Knee Pad/ Each



Uniquely jointed to flex with the natural motion of the True Flex Safety Knee Pad provides the ultimate in comfort and protection for the most extreme work envirnments. With "Gel-Zone" insert.

Part #	LIST
TSE-2000	101.30

Eye/Face Protection

Goggle

Indirect Vent for use where the possibility of chemical and liquid splash exists.



Part #	LIST
12G223547HAM	14.30

Faceshield

Matrix



Part #	LIST
462000HAM	38.60

Dust Masks

Particle Mask

Offers relief from non-toxic dusts and pollens only. Pack of 5



Part #	LIST
15ND10H125AM	2.70

Dust/Mist Respirator Mask

AD2N95VC50AM: NIOSH approved protection against dusts, fumes, micro-organisms & non-oil containing mists. Pack of 2.

AD2N950VC50AM: Incorporates a layer of activated charcoal that filters out nuisance level (below PEL) of organic vapors and some acid gases. Pack of 5.



AD2N95VC50SM



AD2N950VC50SM

Part #	LIST
AD2N95VC50AM	11.80
AD2N950VC50AM	14.80

SAFETY PRODUCTS

Eye Protection Edge Eyewear


TXR-XL416CF


TSDK41CK


DZ411


XR411


DZ417


TXB436

Part #	Description	LIST
TXR-XL416CF	Robson XL - Forest Camo Frame / Polarized Smoke Lenses	97.00
XB416CF	Brazeau - Forest Camo Frame / Smoke Lenses	44.80
TXB416CF	Brazeau - Forest Camo Frame / Polarized Smoke Lenses	97.00
XR416CF	Robson - Forest Camo Frame / Smoke Lenses	44.80
TXR416CF	Robson - Forest Camo Frame / Polarized Smoke Lenses	97.00
HT416VSGCF	Steele - Forest Camo Frame with Gasket / Smoke Vapor Shield© Lenses	78.50
TSDK41CK	Khor Forest Camo Kit - Forest Camo Frame / Polarized Smoke, Anti-Reflective, Yellow Lenses	123.70
DZ411-1.5	Zorge - Black Frame / Clear 1.5 Magnification Lenses	23.40
DZ411-2.0	Zorge - Black Frame / Clear 2.0 Magnification Lenses	23.40

Part #	Description	LIST
XR416-AFT	Robson - Black Multi-Fit Frame / Smoke Lenses	35.50
SDK416	Khor - Black Frame / Smoke Lenses	37.30
XR412	Robson - Black Frame / Yellow Lenses	37.30
TSDK415	Khor Polarized - Black / Copper "Driving" Lens	89.30
DZ411	Zorge - Black / Clear Lens	13.00
DZ417	Zorge - Black / Silver Mirror Lens	13.00
TXRAP418	Robson - Black / AP Blue Mirror Lens	89.30
TXB436	Brazeau Torque Polarized - Black / Smoke Lens	97.00

Respirators Air Purifying Respirators

North 7700 series is the most comfortable half mask respirator available today. The facepiece is made of soft, hypoallergenic silicone. Because silicone is so much more flexible than organic rubber, it conforms to a worker's face.



Part #	Description	LIST
7700-30M	air purifying respirator	82.60

Particulate Filters

Pancake P100 any particulates filter (HEPA) - 99.97% minimum filter efficiency



Part #	Description	LIST
75FFP100	particulate filter	18.70

Combination Gas & Vapour Cartridges and P100 Particulate Filters

Multi-purpose cartridge for organic vapors, chlorine, hydrogen chloride, sulfur dioxide, hydrogen sulfide (escape), hydrogen fluoride, chlorine dioxide, ammonia, methylamine and formaldehyde.



Part #	Description	LIST
75SCP100	with multi purpose P100 particulate filter (99.97% minimum filter efficiency)	70.30

SAFETY PRODUCTS

First Aid Kits

Kits available for each Province

Part #	Description	LIST
ALB-LEVEL-2-SOFT	Soft Pack - Level 2	66.60
BC-BASIC-SOFT	Soft Pack - Basic	75.10
BC-LEVEL-1-SOFT-PACK	Soft Pack - Level 1	102.50



Work Gloves

Part #	Description	LIST
20-1-10008-M/LXL	Performance Gloves	65.30
20-1-103-S/M/L	Ladies Gloves	60.00
20-1-10605B-S/M/L/XL	Performance Gloves w/Gel Pak	31.40
20-1-1200-M/L/XL	Mechanics Gloves	15.10
20-1-1215-S/M/L/XL	Mechanics Gloves	26.40
60-1-650L	Welders Long Cuff Gloves	30.60
99-1-275BP-(8/9/10)	Grander Coated Gloves	5.00
99-1-912	PVC Gloves - 12" Gauntlet	9.30
99-1-9729-(8/9/10)	Cut Resist. Work Gloves	18.90
99-1-9730-(7/8/9/10)	Cut Resist. Work Gloves	22.00
99-1-9761-(8/9/10)	Cut Resist. Work Gloves	35.40
99-1-9800-(8/9)	Cut Resist. Work Gloves	5.00
99-1-9802(8/9/10)	Coated Nylon Gloves	3.40
99-1-9860(7/8/9/10)	Coated Palm Work Gloves	7.90



20-1-10605B



60-1-650L



99-1-9729

Disposable Gloves

Part #	Description	LIST
5554PF-M/L/XL	Black Nitrile Gloves. 100/pack	31.40
5555PF-M/L/XL/XXL	Heavy Nitrile Gloves. 50/pack	31.40
8888-M/L/XL/XXL	Nitrile Disposable Gloves. 100/pack	22.80



5554PF

SAFETY PRODUCTS

Protective Clothing

3pc PVC Rain Suit, Yellow, 0.35mm



3pc Nylon Rain Suit, Black, 0.18mm



Part #	Description	LIST
R101L	PVC/Polyester Backing	60.50
R101X	PVC/Polyester Backing	60.50
R103L	Black Nylon/PVC Backing	136.50
R103X	Black Nylon/PVC Backing	136.50
R103-2X	Black Nylon/PVC Backing	136.50

Note: R101: Jacket, bib pants, detachable hood
R103: Jacket, elastic pants, detachable hood, high visibility reflective stripe for added contrast around arms and legs

Traffic Safety Vest



Part #	Description	LIST
7825376	Saftey Vest - Lime Green	24.80
7825301	Saftey Vest - Orange	24.80

Heavy Duty Disposable Coveralls

Made with a comfortable, breathable fabric that offers resistance against many dry particulates and non-hazardous liquid sprays.
Elastic: back/wrists Pocket: hip & chest



Part #	Description	LIST
8013-L	L - denim blue	11.00
8013-XL	XL - denim blue	11.00

CSA Hard Hat

High density polyethyene outer shell, designed to provide all around limited impact and penetration protection. Ratchet mechanism to fit head size. Meets and exceeds all tests requirements of the new CSA Z94.1.05 (Canadian lateral protective helmet standard).

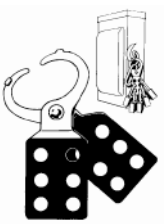


Part #	Description	LIST
49931	Omega-type2-CSA White	62.70
49936	Omega-type2-CSA BLUE	62.70

Lockouts

Lockout Hasps

45200 Klein Tempered-Steel Lockouts with Interlocking tabs. Six-hole locking bodies, holes accept up to 5/16" diameter shackles, 1" closed hasp I.D.



Part #	LIST
45200	23.90

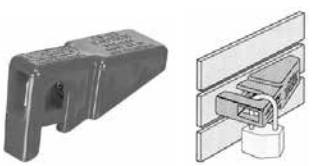
Lockout Tags

Tags are 3" x 5-3/4"



Part #	LIST
ELA-2901	4.50

Circuit Breaker Lockouts



Part #	Size	LIST
CB03	CB-03 - A single pole lockout. The CB-03 does not require a switch breaker with a recessed hole in it.	17.60

Padlocks

Individually keyed.



Part #	Size	LIST
225-1530	30mm KD Carded	16.50
225-1550	50mm KD Carded	45.30

Maintain Refrigerant Records with SAFEGUARD™ Documentation Systems

Discover the easiest, most cost-effective way to help you comply with government regulations!

- **A** Servicing Date
- **B** Job / Location / Phone Number
- **C** Equipment Serial Number
- **D** Technician Certification Number
- **E** Type and Amount of Refrigerant Used
- **F** Additional Distribution Columns to Track Reclaimed, Recovered, and Recycled Refrigerants
- **G** Date, Type, and Amount of Refrigerant Purchased
- **H** Leak Repair Information
- **I** Documentation Slip for Attaching to Equipment
- **J** Poly Envelope Containing Documentation Slip for Attaching to Equipment

Part # SAFEGUARD — **$643.00 LIST**

Kit contains:
- Binder, 125 Refrigerant Service Tags
- 5 Refrigerant Log Journals
- 100 Adhesive Envelopes

Part # SAFEGUARD-REFILL — **$391.00 LIST**

Refill Kit contains:
- 125 Refrigerant Service Tags
- 5 Refrigerant Log Journals
- 100 Adhesive Envelopes

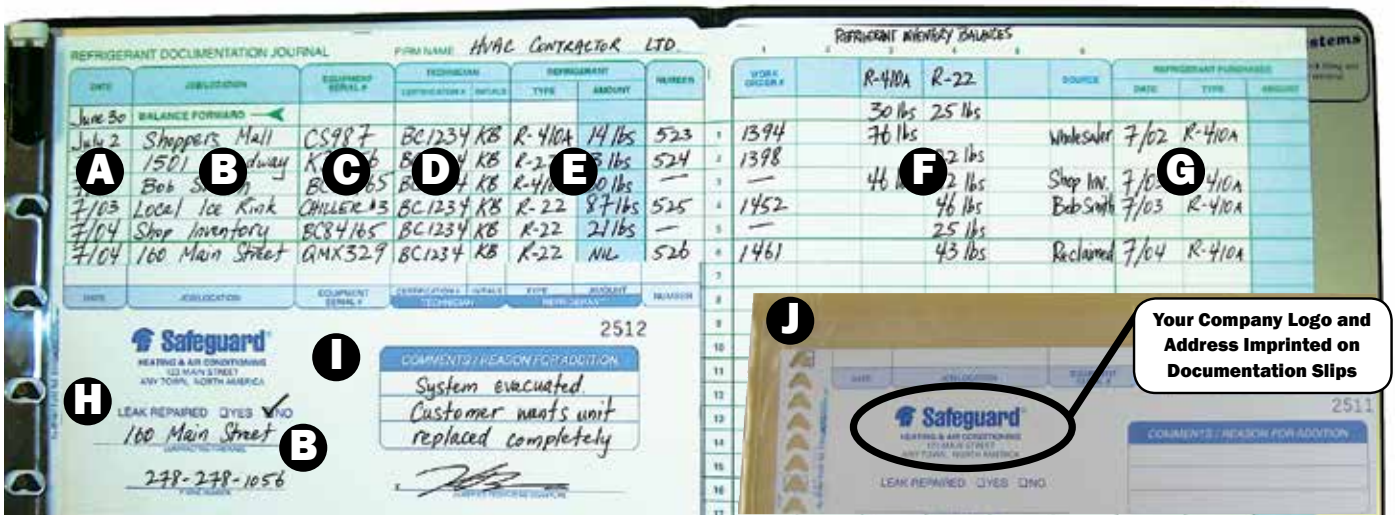
Part # 625CRRDS

Kit contains:
- Binder
- 625 Single copy Refrigerant Service Tags imprinted with your company information ***(name, address and contact phone number)*** and your company logo ***(Black. Multicolour logo is available at additional cost.)*** Tags can be ordered with preprinted numbers of your choosing.
- 25 Refrigerant Log Journals
- 500 Adhesive Envelopes

***SPECIAL ORDER**

Part # SAFEGUARD-BINDER — **$288.20 LIST**

- Binder



REFERENCES

Conversion Factors 899-901

Quick Selection Guide 902-903

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CONVERSION FACTORS

MULTIPLY	BY	OBTAIN
atmospheres	76.0	cms mercury
atm	29.92	ins mercury
atm	33.90	ft water
atm	1.0333	kgs/sq cm
atm	14.70	lbs/sq in
atm	1.058	tons/sq ft
Barrels-Oil	42	gals-oil
BT Units	0.2520	kgs-calories
BTU's	777.5	ft-lbs
BTU's	3.927×10^{-4}	hp-hrs
BTU's	107.5	kg-meters
BTU's	2.928×10^{-4}	kw-hrs
BTU Min	12.96	ft-lbs/sec
BTU/min	0.2356	hp
BTU/min	0.01757	kw
BTU/min	17.57	watts
Centimeters	0.3937	inches
cm	0.01	meters
cm	10	mm
Cms Mercury	0.01316	atm
cms mercury	0.4461	ft water
cms mercury	136.0	kgs/sq meter
cms mercury	27.85	lbs/sq ft
cms mercury	0.1934	lbs/sq in
Cms/Second	1.969	ft/min
cms/second	0.03281	ft/sec
cms/second	0.036	km/hr
cms/second	0.6	meters/min
cms/second	0.02237	miles/hr
cms/second	3.728×10^{-4}	miles/min
Cms/Sec/Sec	0.03281	ft/sec/sec
Cubic Cms	3.531×10^{-5}	cu ft
cu cms	6.102×10^{-2}	cu in
cu cms	10^{-6}	cu meters
cu cms	1.308×10^{-6}	cu yds
cu cms	2.642×10^{-4}	gals
cu cms	10^{-3}	liters
cu cms	2.113×10^{-3}	pints (liq)
cu cms	1.057×10^{-3}	quarts (liq)
Cubic Feet	2.832×10^{4}	cubic cms
cu ft	1728	cu inches
cu ft	0.02832	cu meters
cu ft	0.03704	cu yds
cu ft	7.48052	gals
cu ft	28.32	liters
cu ft	59.84	pints (liq)
cu ft	29.92	quarts (liq)
Cu Ft/min	472.0	cu cms/sec
cu ft/min	0.1247	gals/sec
cu ft/min	0.4720	liters/sec
cu ft/min	62.43	lbs w/min

MULTIPLY	BY	OBTAIN
Cu Ft/Sec	0.646317	Million gals/day
cu ft/sec	448.831	gals/min
Cu inches	16.39	cc
cu ins	5.787×10^{-4}	cu ft
cu ins	1.639×10^{-5}	cu meters
cu ins	2.143×10^{-5}	cu yds
cu ins	4.329×10^{-3}	gals
cu ins	1.639×10^{-2}	liters
cu ins	0.03463	pints (liq)
cu ins	0.01732	quarts (liq)
Cu Meters	10^{6}	cc
cu M	35.31	cu ft
cu M	61.023	cu ins
cu M	1.308	cu yds
cu M	264.2	gals
cu M	10^{3}	liters
cu M	2113	pints (liq)
cu M	1057	quarts (liq)
Cu Yards	7.646×10^{5}	cu cms
cu yds	27	cu ft
cu yds	46.656	cu ins
cu yds	0.7646	cu meters
cu yds	202.0	gals
cu yds	764.6	liters
cu yds	1616	pints (liq)
cu yds	807.9	quarts (liq)
Decimeters	0.1	meters
Degs (Angle)	60	minutes
degs (angle)	0.01745	radians
degs (angle)	3600	secs
Degrees Sec	0.01745	radians/sec
degs/sec	0.1667	revs/min
degs/sec	0.002778	revs/sec
Fathoms	6	ft
Feet	30.48	cms
ft	12	ins
ft	0.3048	meters
ft	1/3	yds
Ft of Water	0.02950	atms
ft of w	0.8876	ins mercury
ft of w	0.08048	kgs/sq cm
ft of w	62.43	lbs/sq ft
ft of w	0.4335	lbs/sq in
Feet/Min	0.5080	cms/sec
ft/min	0.01667	ft/sec
ft/min	0.01829	kms/hrs
ft/min	0.3040	ms/min
ft/min	0.01136	miles/hr
Ft/Sec/Sec	30.48	cms/sec/sec
ft/sec/sec	0.3048	ms/sec/sec

CONVERSION FACTORS

MULTIPLY	BY	OBTAIN
Ft Pounds	1.286×10^{-3}	BTU's
ft lbs	5.050×10^{-7}	hp-hrs
ft lbs	3.241×10^{-4}	kg-calories
ft lbs	0.1383	kg-meters
ft lbs	3.766×10^{-7}	kw-hrs
Ft-Lbs/Min	1.286×10^{-3}	BTUs/min
ft-lbs/min	0.01667	ft-lbs/sec
ft-lbs/min	3.030×10^{-5}	hp
ft-lbs/min	3.241×10^{-4}	kg-calories/min
ft-lbs/min	2.260×10^{-5}	kws
Ft-Lbs/Sec	7.717×10^{-3}	BTUs/min
ft-lbs/sec	1.818×10^{-3}	hp
ft-lbs/sec	1.945×10^{-2}	kg-calories/min
ft-lbs/sec	1.356×10^{-3}	kws
Gallons	3785	ccs
gals	0.1337	cu ft
gals	231	cu ins
gals	3.784×10^{-3}	cu meters
gals	3.785	liters
gals	8	pints (liq)
gals	4	quarts (liq)
Gallons, Imp	1.20095	US gals
Gallons, US	0.83267	imp gals
Gallons Water	8.3453	lbs water
Gallons/Min	2.228×10^{-3}	cu ft/sec
gals/min	0.06308	liter/sec
gals/min	8.0208	cu ft/hr
Gals Water/Min	6.0086	tons water/24 hrs
Grams		dynes
grams		grains
grams	10^{-3}	kgs
grams	10^{3}	milligrams
grams	0.03527	ozs
grams	0.03215	ozs (troy)
grams	2.205×10^{-3}	lbs
Grams/Cm	5.600×10^{-3}	lbs/in
Grams/Cu Cm	62.43	lbs/cu ft
grams/cu cm	0.03613	lbs/cu in
Grams/Liter	58.417	grains/gal
grams/liter	8.345	lbs/1000 gals
grams/liter	0.062427	lbs/cu ft
grams/liter	1000	parts/million
Horsepower	42.44	BTUs/min
hp	33.000	ft-lbs/min
hp	550	ft-lbs/sec
hp	1.014	hp (metric)
hp	10.70	kg-calories/min
hp	0.7457	kws
hp	745.7	watts

MULTIPLY	BY	OBTAIN
Hp-Hours	2547	BTUs
hp-hrs	1.98×10^{6}	ft-lbs
hp-hrs	641.7	kg-calories
hp-hrs	2.737×10^{5}	kg-meters
hp-hrs	0.7457	kw-hrs
Inches	2.540	cms
Ins Mercury	0.03342	atms
ins mercury	1.133	ft water
ins mercury	0.03453	kgs/sq cm
ins mercury	70.73	lbs/sq ft
ins mercury	0.4912	lbs/sq in
Ins of Water	0.002458	atms
ins of w	0.07355	ins mercury
ins of w	0.002540	kgs/sq cm
ins of w	0.5781	ozs/sq in
ins of w	5.202	lbs/sq ft
ins of w	0.03613	lbs/sq in
Kilograms	980.665	dynes
kgs	2.205	lbs
kgs	1.102×10^{-3}	tons (short)
kgs	10^{3}	grams
Kgs/Sq Cm	0.9678	atms
kgs/sq cm	32.81	ft water
kgs/sq cm	28.96	ins mercury
kgs/sq cm	20.48	lbs/sq ft
kgs/sq cm	14.22	psi
Kiloliters	10^{3}	liters
Kilometers	10^{5}	cms
kms	3281	ft
kms	10^{3}	meters
kms	0.6214	miles
Kms Hr	27.78	cms/sec
kms hr	54.68	ft/min
kms hr	0.9113	ft/sec
kms hr	16.67	meters/min
kms hr	0.6214	miles/hr
Kms/Hr Sec	27.78	cms/sec/sec
kms/hr sec	0.9113	ft/sec/sec
kms/hr sec	0.2778	Ms/sec/sec
Kilowatts	56.92	BTUs/min
kws	4.425×10^{4}	ft-lbs/min
kws	737.6	ft-lbs/sec
kws	1.341	hp
kws	14.34	kg-calories/min
kws	10^{3}	watts
Kilowatt-Hrs	3415	BTUs
kw-hrs	2.6655×10^{6}	ft-lbs
kw-hrs	1.341	hp-hours
kw-hrs	860.5	kg-calories
kw-hrs	3.671×10^{5}	kg-meters

CONVERSION FACTORS

MULTIPLY	BY	OBTAIN
Liters	10^{3}	ccs
liters	0.03531	cu ft
liters	61.02	cu ins
liters	10^{-2}	cu meters
liters	0.2642	gals
liters	1.057	quarts (liq)
Liters/Min	4.403×10^{-3}	gals/sec
Meters	100	cms
meters	3.281	ft
meters	39.37	ins
meters	10^{-3}	kms
meters	10^{3}	mms
Meters/Min	1.667	cms/sec
meters/min	3.281	ft/min
meters/min	0.05468	ft/sec
meters/min	0.06	kms/hr
meters/min	0.03728	miles/hr
Meters/Sec	196.8	ft/min
meters/sec	3.281	ft/sec
meters/sec	3.6	kms/hr
meters/sec	0.06	kms/min
meters/sec	2.237	miles/hr
meters/sec	0.03728	miles/min
Microns	10^{-6}	meters
microns	25.400	in
Miles/Hr	44.70	cms/sec
miles/hr	88	ft/min
miles/hr	1.467	ft/sec
miles/hr	1.609	kms/hr
miles/hr	0.8684	knots
miles/hr	26.82	metersl/min
Millimeters	0.1	cms
mms	0.03937	ins
Mins (Angle)	2.909×10^{-4}	radians
Ounces	16	drams
ozs	437.5	grains
ozs	0.0625	lbs
ozs	28.349527	grams
ozs	0.9115	ozs (troy)
ozs	2.790×10^{-5}	tons (long)
ozs	2.835×10^{-5}	tons (metric)
Ozs (Fluid)	1.805	cu in
ozs (fluid)	0.02957	liters
Pounds	16	ozs
lbs	256	drams
lbs	7000	grains
lbs	0.0005	tons (short)
lbs	453.5924	grams
lbs	1.21528	lbs (troy)
lbs	14.5833	ozs (troy)
lbs	0.455	kg

MULTIPLY	BY	OBTAIN
Lbs of Water	0.01602	cu ft
lbs of water	27.68	cu in
lbs of water	0.1198	gals
Lbs of w/Min	2.679×10^{-4}	cu ft/sec
Pounds/Cu Ft	5.787×10^{-4}	lbs/cu in
Pounds/Cu In	1728	lbs/cu ft
Pounds/Sq In	0.06804	atms
lbs/sq in	2.307	ft water
lbs/sq in	2.036	in mercury
lbs/sq in	0.07031	kgs/sq cm
Radians	57.29578	degrees
Tons (Long)	1016	kgs
tons (long)	2240	lbs
tons (long)	1.12000	tons (short)
Tons (Short)	2000	lbs
tons (short)	907.18486	kgs
tons (short)	2430.56	lbs (troy)
tons (short)	0.89287	tons (long)
tons (short)	29166.66	ozs (troy)
tons (short)	0.90718	tons (metric)
Watts	0.05692	BTUs/min
watts	44.26	ft-lbs/min
watts	0.7376	ft-lbs/sec
watts	1.341×10^{-3}	hp
watts	0.01434	kg-calories/min
watts	10^{-3}	kws
Watt-Hours	3.415	BTUs
watt-hrs	2655	ft-lbs
watt-hrs	1.341×10^{-3}	hp-hrs
watt-hrs	0.8605	kg-calories
watt-hrs	367.1	kg-meters
watt-hrs	10^{-3}	kw-hrs

Temperature Conversion Fahrenheit And Centigrade

To convert Fahrenheit to Celsius (Centigrade)

.556 x (°F −32) = °C

To convert Celsius (Centigrade) to Fahrenheit

(°C x 1.8) +32 = °F

C°	F°	C°	F°
−30	−22	40	104
−25	−13	45	113
−20	− 4	50	122
−15	5	55	131
−10	14	60	140
− 5	23	65	149
0	32	70	158
5	41	75	167
10	50	80	176
15	59	85	185
20	68	90	194
25	77	95	203
30	86	100	212
35	95	105	221

QUICK SELECTION GUIDE

Tips for Quick Selection Guide

Walk-In Cooler Box Load Parameters

1. 95°F ambient air temperature surrounding box
2. 4" styrene (R=16.7, K=.24) walls/ceiling, 6" concrete slab floor
3. Average product load with 5°F pulldown in 24 hours
4. BTUH load based on 16-18 hour compressor run time for 35°F box (timer recommended) +20 hrs. for 30°F box
5. See Table C for adjustment to box load for glass doors
6. For 80°F ambient temp. surrounding box deduct 12%
7. For 4" Urethane walls + ceiling, 6" concrete slab floor deduct 12%
8. For 10' ceiling height add 10%
9. For additional BTUH load for product cooling see Table A

Walk-In Freezer Box Load Parameters

1. 95°F ambient air temperature surrounding box
2. 4" urethane (R=25, K=.16) walls, ceiling + floor
3. Average product load with 10°F pulldown in 24 hours
4. BTUH load based on 18 hour compressor run time
5. See Table C for adjustment to box load for glass doors
6. For 80°F ambient temp. surrounding box deduct 12%
7. For 20 hour compressor run time (light frost load) in lieu of 18 hour run time, deduct 11%
8. For 10' ceiling height add 10%
9. For additional BTUH load for product cooling see Table D

Table A Product Cooling Loads for Walk-In Coolers

(24 hour pulldown) / 18 hour compressor operation) 24% safety factor added to loads to allow for service

Product	Specific Heat Above Freezing	10 Degree Pulldown BTUH Load for Indicated lbs of Product per 24 hours					
		500	1000	1500	2000	3000	5000
Beef	.72	240	480	720	960	1440	2400
Pork	.53	177	353	530	706	1060	1767
Veal & Lamb	.76	253	506	760	1012	1520	2533
Poultry	.79	263	526	790	1053	1580	2633
Seafood	.80	267	533	800	1066	1600	2667
Vegetables	.92	307	613	920	1226	1840	3067
Bakery Food	.74	247	494	740	988	1480	2467
Beer	1.00	333	666	1000	1333	2000	3333

For product pulldown greater than 10 degrees, divide pulldown temperature by 10. Multiply this number by the BTUH shown on Table A, then add to box load.

Table B Meat Cutting/Prep Room Load

(BTUH/hr/sq.ft. of floor area)

Floor Sq. Ft.	Approx. 65% R.H. Room Temp.		
	55°F	50°F	
100	93	105	Room loads based on continuous operation and includes allowance for average number of personnel, processing equipment etc., with glass panel in one wall and walls and ceilings insulated with 3" of styrene with box located in air conditioned area. Evaporator should be low outlet velocity type to avoid drafts and should be selected for continuous operation and not less than 30°F evap. temperature
200	88	99	
300	85	95	
400	81	90	
500	78	87	
600	75	85	
700	72	81	
800	69	78	
900	67	75	
1000	65	73	
1200	62	69	

Table C Glass Door Loads

Box Temperature	BTU per Door
+35	1060
+30	960
0	1730
-10	1730
-20	1730

Adjusted for run time load. Multiply number of doors times door load above and add to box load.

Table D Product Freezing Loads for Walk-In Freezers

Product	Specific Heat BTU/lb/°F		Latent Heat BTU/lb	Freezer Temp (F)						
	32 -	32 +			100	300	750	1000	1500	3000
Beef	.72	.40	95	29	790	2370	5925	7900	11850	23700
Pork	.53	.32	60	28	523	1571	3926	5235	7853	15710
Veal & Lamb	.76	.45	100	28	841	2524	6311	8414	12621	25240
Poultry	.79	.42	106	27	878	2636	6590	8787	13181	26360
Seafood	.80	.43	110	28	906	2719	6797	9063	13595	27190
Vegetables	.92	.47	130	30	1053	3159	7898	10530	15795	31590
Bakery Food	.74	.34	53	20	520	1560	3900	5200	7800	15600

Freezing loads based on product entering at 40°F maximum. For a specific pulldown time, the product load BTU/hr may be adjusted by multiplying the above loads by 24 and dividing by the specified pulldown time in hours. To adjust for 0°F freezer temperature, multiply the above loads by 0.97, and for -20°F freezer, multiply by 1.04

QUICK SELECTION GUIDE

Dimensions	Floor Sq. Ft.	+35 Room Usage		+30 Room Usage		0 Room Usage		-10 Room Usage		-20 Room Usage	
		Avg.	Hvy.	Avg.	Hvy.	Avg.	Hvy.	Avg.	Hvy.	Avg.	Hvy.
6 x 6 x 8	36	4750	6389	4488	6037	4583	6505	4929	7041	5274	7577
6 x 8 x 8	48	5417	7274	5119	6974	5225	7407	5630	8028	6034	8648
6 x 10 x 8	60	6055	8100	5722	7655	5806	8213	6265	8911	6725	9609
8 x 8 x 8	64	6188	8291	5848	7835	5934	8410	6405	9127	6876	9844
8 x 10 x 8	80	6954	9269	6572	8759	6631	9363	7165	10169	7699	10974
8 x 12 x 8	96	7669	10174	7247	9614	7273	10234	7867	11123	8461	12011
8 x 14 x 8	112	8366	11045	7905	10437	7922	11092	8575	12059	9227	13026
8 x 16 x 8	128	9051	11888	8553	11234	8528	11890	9237	12933	9946	13976
8 x 18 x 8	144	9748	12732	9212	12032	9169	12732	9936	13852	10702	14972
8 x 20 x 8	160	10419	13548	9846	12803	9755	13490	10576	14682	11397	15874
8 x 22 x 8	176	11540	14807	10905	13992	10817	14715	11692	15977	12567	17239
8 x 24 x 8	192	12224	15622	11552	14763	11386	15439	12314	16769	13242	18099
8 x 26 x 8	208	12874	16398	12166	15496	11976	16176	12955	17573	13935	18970
8 x 28 x 8	224	13519	17163	12775	16219	12530	16873	13562	18336	14594	19799
8 x 30 x 8	240	14187	17947	13407	16960	13108	17587	14191	19115	15274	20642
8 x 32 x 8	256	14824	18694	14009	17666	13653	18264	14786	19855	15920	21446
10 x 10 x 8	100	7789	10339	7361	9770	7386	10401	7990	11304	8594	12208
10 x 12 x 8	120	8626	11385	8152	10759	8138	11405	8809	12401	9481	13397
10 x 14 x 8	140	9439	12384	8920	11703	8887	12405	9626	13493	10365	14581
10 x 16 x 8	160	10250	13379	9686	12643	9577	13311	10379	14484	11182	15658
10 x 18 x 8	180	11049	14349	10441	13560	10279	14216	11144	15472	12009	16728
10 x 20 x 8	200	11838	15299	11187	14458	10942	15070	11868	16405	12794	17741
10 x 24 x 8	240	13391	17180	12654	16207	12751	17231	13796	18721	14842	20211
10 x 28 x 8	280	14891	18922	14072	17881	14043	18844	15205	20482	16367	22120
12 x 12 x 8	144	10038	13021	9486	12305	8991	12553	9739	13655	10486	14756
12 x 14 x 8	168	10956	14155	10353	13376	10235	14052	11055	15251	11875	16450
12 x 16 x 8	192	11886	15284	11232	14443	11029	15082	11919	16375	12810	17667
12 x 18 x 8	216	12775	16359	12072	15459	11807	16080	12767	17464	13726	18847
12 x 20 x 8	240	13681	17440	12928	16481	12573	17052	13599	18524	14626	19995
12 x 22 x 8	264	14549	18474	13749	17458	13299	17974	14392	19541	15485	21088
14 x 14 x 8	196	11993	15423	11333	14575	11126	15216	12024	16521	12923	17826
14 x 16 x 8	224	13013	16656	12297	15740	11995	16338	12971	17745	13946	19152
14 x 20 x 8	280	15011	19042	14185	17795	13687	18487	14811	20088	15935	21688
14 x 24 x 8	336	16969	21347	16036	21073	15330	20539	16598	22324	17866	24110
16 x 16 x 8	256	14148	18019	13370	17028	12939	17550	13998	19067	15056	20583
16 x 20 x 8	320	16349	20631	15450	19496	14777	19873	15996	21598	17215	23323
16 x 24 x 8	374	18506	23157	17488	21883	16563	22093	17938	24017	19313	25941
18 x 18 x 8	324	16476	20782	15570	19639	14864	19989	16090	21724	17317	23460
18 x 20 x 8	360	18128	22644	17131	21398	16305	21678	17617	23523	18930	25369
18 x 24 x 8	432	20484	25389	19357	23993	18260	24090	19739	26149	21219	28208
20 x 20 x 8	400	19470	24145	18340	22817	17386	23019	18790	24982	20194	26945
20 x 24 x 8	480	21988	27132	20779	25640	19453	25566	21036	27755	22619	29945
20 x 28 x 8	560	24963	30480	23590	28804	21963	28514	23721	30922	25479	33330
20 x 32 x 8	640	27480	33340	25969	31506	23954	30909	25884	33529	27813	36149
20 x 36 x 8	720	29946	36127	28299	34140	25919	33251	28017	36077	30115	38903
20 x 40 x 8	800	32420	38904	30637	36764	27888	35575	30153	38603	32518	41631
24 x 40 x 8	960	38694	45735	36565	43878	34681	43023	37368	46538	39939	49937
28 x 40 x 8	1120	43183	50733	40808	48970	38123	47062	41095	50921	43950	54664
32 x 40 x 8	1280	48550	56318	45880	55056	42894	51900	46146	56580	49282	60656
36 x 40 x 8	1440	54344	62804	51355	61626	46254	56259	49872	60781	53194	65186
40 x 40 x 8	1600	58738	67611	55507	66608	49583	60073	53385	64916	57070	69642

*Heavy usage is defined as two times the average air change. Average air changes determined by ASHRAE based on box size for 24 hour period

FORMULAS

Formulas - Electrical

VOLTS =

$Amps \times Ohms$ $\quad \frac{Watts}{Amps}$ $\quad \sqrt{Watts \times Ohms}$

AMPS =

$\frac{Volts}{Ohms}$ $\quad \frac{Watts}{Volts}$ $\quad \sqrt{\frac{Watts}{Ohms}}$

WATTS =

$Volts \times Amps$ $\quad Amps^2 \times Ohms$ $\quad \frac{Volts^2}{Ohms}$

OHMS =

$\frac{Volts}{Amps}$ $\quad \frac{Volts^2}{Watts}$ $\quad \frac{Watts}{Amps^2}$

$$Power\ Factor = \frac{KW}{KVA} = Cos\ \Theta$$

	Single Phase	Three Phase
$KW =$	$\frac{\sqrt{V \times A \times PF}}{1000}$	$\frac{\sqrt{3} \times V \times A \times PF}{1000}$
$KVA =$	$\frac{V \times A}{1000}$	$\frac{\sqrt{3} \times V \times A}{1000}$
$AMPS =$	$\frac{KVA \times 1000}{V}$	$\frac{KVA \times 1000}{\sqrt{3} \times V}$

$\sqrt{3} = 1.73$

Approx. Motor KVA = Motor Horsepower (At Full Load)

Capacitors Connected In Parallel $C_1 + C_2 + C_3 = C\ Total$

Capacitors Connected In Series

For Two

$$\frac{C_1 \times C_2}{C_1 + C_2} = C\ Total$$

More Than Two

$$\frac{1}{\frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}} = C\ Total$$

VOLTAGE UNBALANCE

% Voltage Unbalance =

$$\frac{100 \times Max.\ Voltage\ Deviation\ From\ Average\ Voltage}{Average\ Voltage}$$

BOOST TRANS.:

Rating Plate F.L.A. x Rating Plate VOLTS = KVA

$$\frac{Rating\ Plate\ VOLTS}{Rating\ Plate\ VOLTS\ —\ Norm.\ Line\ VOLTS} = FACTOR$$

$$\frac{KVA}{FACTOR} = Trans.\ KVA\ Rating$$

$$\left(\frac{V_2}{V_1}\right)2 \times Heater\ Rating = Rating\ @\ New\ Voltage$$

V_1 *Rated Volts* V_2 *= Measured Volts*

Typical Ampere Wire Ratings*

AWG MCM	COPPER CONDUCTORS, IN CONDUIT* TEMP. RATING OF CONDUCTOR* 60°C*	75°C*	90°C*
14	15	15	25°
12	20	20	30°
10	30	30	40°
8	40	45	50
6	55	65	70
4	70	85	90
3	80	100	105
2	95	115	120
1	110	130	140
1/0	125	150	155
2/0	145	175	185
3/0	165	200	210
4/0	195	230	235
250	215	255	270
300	240	285	300
350	260	310	325
400	280	335	360
500	320	380	405
600	355	420	455
700	385	460	490
750	400	475	500
800	410	490	515
900	435	520	555
1000	455	545	585
1250	495	590	645
1500	520	625	700
1750	545	650	735
2000	560	665	775

* Summary only, refer to NEC 310-16, -17, -18, -19 (and others) for limitations.

Typical Electric Wire Size

MOTOR HP	SINGLE PH. 115 VOLT	SINGLE PH. 230 VOLT	THREE PH. 230 VOLT	THREE PH. 460 VOLT
1-1/3	14	14		
1/2	14	14	14	14
3/4	12	14	14	14
1	12	14	14	14
1-1/2	10	14	14	14
2		12	14	14
3		10	14	14
5			12	14
7-1/2			10	14
10			8	12

From Standards of the National Board of Fire Underwriters.

Correction Table For Watts - Amperes - Volts

WATTS	VOLTAGE (C - Single Phase) 120	208	240	277
	AMPERES			
500	4.2	2.4	2.1	1.8
1000	8.3	4.8	4.2	3.6
1500	12.5	7.2	6.3	5.4
2000	16.7	9.6	8.3	7.2
2500	20.9	12.0	10.4	9.0
3000	25.0	14.4	12.5	10.8
3500	29.2	16.8	14.6	12.6

FORMULAS

Electrical Units

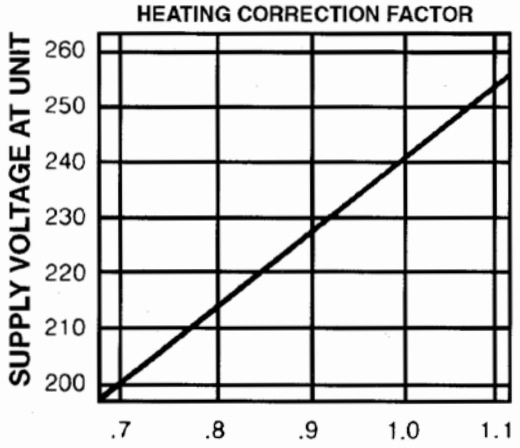
Source: United States Bureau of Standards

The watt is the unit expressing electrical power as horsepower (hp) in mechanics; it is equal to the product of the volts (pressure) times amperes (rate of flow). Thus, 2 volts times 2 amperes would equal 4 watts in a direct current circuit. Electrical energy is sold at so much per watt hour or more generally at a given amount per kilowatt hour - which means 1,000 watt hours. This may represent 1 watt for 1,000 hours or 1,000 watts for one hour. 746 watts are equal to one horsepower or inversely 1 kilowatt (kw) is equal to about 1-1/2 horsepower.

Horsepower represents the power required to lift a weight of 33,000 lbs. 1 foot in 1 minute or 550 lbs. 1 foot in 1 second.

The ohm is the unit of electrical resistance and represents the physical property of a conductor which offers a resistance to the flow of electricity, permitting just 1 ampere to flow at 1 volt of pressure.

Electric Heating Correction Factor



Capacity Correction Factor

For correction of unit output, multiply the correction factor times the KW rating at 240 volts.

$$TR = \frac{3160 \times KW \times VC}{CFM} \quad or \quad CFM = \frac{3160 \times KW \times VC}{TR}$$

Where:

- TR = *temp rise, F°*
- 3160 = *constant*
- KW = *KW rating above*
- CFM = *air flow at specified conditions*
- VC = *heating correction factor*

Formulas – Cooling Capacity *

Total BTUH = CFM x (THC_1 - TCH_2) x 4.5
THC = Total Heat Content or Enthalpy (BTU per lb. of air)

Sensible BTUH = CFM x (T_1 - T_2) x 1.08
T = Dry Bulb Temp (Degrees Fahrenheit)

Latent BTUH = CFM x (W_1 - W_2) x .683
W = Specific Humidity (Grains H_2O per lb. of air (See Psychrometric Chart)

* Based on standard air at 13.3 cubic feet per lb.

Formulas - Heating Capacity*

BTUH = CFM x 1.08 X Rise

$$Cfm = \frac{BTUH\ Output}{108 \times Rise}$$

$$Rise = \frac{BTUH\ Output}{108 \times Cfm}$$

$$CFM = \frac{BTU\ /\ Hr.\ Input}{135 \times \Delta T}$$ Indoor Furnace 80%

$$CFM = \frac{BTU\ /\ Hr.\ Input}{144 \times \Delta T}$$ Outdoor Furnace 75%

$$CFM = \frac{KW \times 3415}{108 \times \Delta T}$$ Electric Heat 92%

* Based on standard air at 13.3 cubic feet per lb.

Formulas - General Subjects

$Area\ of\ Circle = 3.14 \times R^2$

$Circumference\ of\ Circle = 3.14 \times Dia.$

$Area\ of\ Sphere = 3.14 \times (Dia.)^2$

$Volume\ of\ Sphere = 0.524 \times (Dia.)^3$

Horsepower Conversion Chart

To convert decimal horsepower to commonly available fractional horsepower motors.

DECIMAL HORSEPOWER																
0.010	0.014	0.017	0.020	0.025	0.033	00.40	0.050	0.067	0.083	0.100	0.125	0.167	0.250	0.333	0.500	0.750	1.000
FRACTIONAL HORSEPOWER																	
1/100	1/70	1/60	1/50	1/40	1/30	1/25	1/20	1/15	1/12	1/10	1/8	1/6	1/4	1/3	1/2	3/4	1

HOW TO DETERMINE SIZE & SPEED OF PULLEYS OR GEARS & BELT LENGTHS

The driving pulley is called the Driver and the driven pulley the Driven

To determine the diameter of Driver, the diameter of the Driven and its revolutions, and also revolutions of the Driver being given:

$$\frac{\text{Diam. of Driven x revolutions of Driven}}{\text{Revolutions of Driver}} = \text{Diam. of Driver}$$

To determine the diameter of Driven, the revolutions of the Driven and diameter, and revolutions of the Driver being given:

$$\frac{\text{Diam. of Driver x revolutions of Driver}}{\text{Revolutions of Driven}} = \text{Diam. of Driven}$$

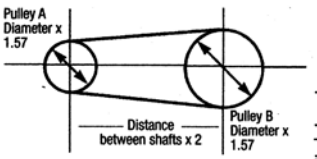
To determine the revolutions of Driver, the diameter and revolutions of the Driven, and diameter of the Driver being given:

$$\frac{\text{Diam. of Driven x revolutions of Driven}}{\text{Diameter of Driver}} = \text{Rev. of Driver}$$

To determine the revolutions of Driven, the diameter and revolutions of the Driver, and diameter of the Driven being given:

$$\frac{\text{Diam. of Driver x revolutions of Driver}}{\text{Diameter of Driven}} = \text{Rev. of Driven}$$

To find OD belt length:



BELT LENGTH FORMULA

Pulley A x 1.57
+ Pulley B x 1.57
+ Distance between shafts x 2
= Belt Length

OD of small pulley + OD of large pulley x 1.57 + twice the distance between shaft centers = OD belt length

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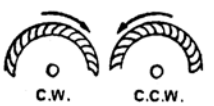
BLOWER TIPS

- Formula for determining blower speed:

$$\text{Blower RPM} = \frac{\text{Motor Pulley P.D.}}{\text{Blower Pulley P.D.}} \times \text{Motor RPM}$$

- You cannot bench test a blower at free air as it will probably overload motor
- If you double the RPM of a fan or blower you would:
  - Get **twice** the *CFM*
  - Get **four** times the *SP*
  - Require **eight** times the *HP*
- When giving the dimensions of a wheel:
  - **First** dimension should be diameter
  - **Second** dimension stated should be width
- **Specifying Rotation:**
  Double Inlet Wheel = Viewing Hub Side
  Single Inlet Wheel = Viewing Back Plate



TEMPERATURE CONVERSION CHART

Fahrenheit-Celsius temperature conversion chart

The numbers in bold-face in the center column refer to the temperature, either in Celsius or Fahrenheit which is to be converted to the other scale. If converting Fahrenheit to Celsius the equivalent temperature will be found in the left column. If converting Celsius to Fahrenheit, the equivalent temperature will be found in the column on the right.

TEMPERATURE			TEMPERATURE			TEMPERATURE			TEMPERATURE		
Celsius	C or F	Fahr	Celsius	C or F	Fahr	Celsius	C or F	Fahr	Celsius	C or F	Fahr
−40.0	**−40**	−40.0	−6.7	**+20**	+68.0	+26.7	**+80**	+176.0	+60.0	**+140**	+284.0
−39.4	**−39**	−38.2	−6.1	**+21**	+69.8	+27.2	**+81**	+177.8	+60.6	**+141**	+285.8
−38.9	**−38**	−36.4	−5.5	**+22**	+71.6	+27.8	**+82**	+179.6	+61.1	**+142**	+287.6
−38.3	**−37**	−34.6	−5.0	**+23**	+73.4	+28.3	**+83**	+181.4	+61.7	**+143**	+289.4
−37.8	**−36**	−32.8	−4.4	**+24**	+75.2	+28.9	**+84**	+183.2	+62.2	**+144**	+291.2
−37.2	**−35**	−31.0	−3.9	**+25**	+77.0	+29.4	**+85**	+185.0	+62.8	**+145**	+293.0
−36.7	**−34**	−29.2	−3.3	**+26**	+78.8	+30.0	**+86**	+186.8	+63.3	**+146**	+294.8
−36.1	**−33**	−27.4	−2.8	**+27**	+80.6	+30.6	**+87**	+188.6	+63.9	**+147**	+296.6
−35.6	**−32**	−25.6	−2.2	**+28**	+82.4	+31.1	**+88**	+190.4	+64.4	**+148**	+298.4
−35.0	**−31**	−23.8	−1.7	**+29**	+84.2	+31.7	**+89**	+192.2	+65.0	**+149**	+300.2
−34.4	**−30**	−22.0	−1.1	**+30**	+86.0	+32.2	**+90**	+194.0	+65.6	**+150**	+302.0
−33.9	**−29**	−20.2	−0.6	**+31**	+87.8	+32.8	**+91**	+195.8	+66.1	**+151**	+303.8
−33.3	**−28**	−18.4	.0	**+32**	+89.6	+33.3	**+92**	+197.6	+66.7	**+152**	+305.6
−32.8	**−27**	−16.6	+0.6	**+33**	+91.4	+33.9	**+93**	+199.4	+67.2	**+153**	+307.4
−32.2	**−26**	−14.8	+1.1	**+34**	+93.2	+34.4	**+94**	+201.2	+67.8	**+154**	+309.2
−31.7	**−25**	−13.0	+1.7	**+35**	+95.0	+35.0	**+95**	+203.0	+68.3	**+155**	+311.0
−31.1	**−24**	−11.2	+2.2	**+36**	+96.8	+35.6	**+96**	+204.8	+68.9	**+156**	+312.8
−30.6	**−23**	−9.4	+2.8	**+37**	+98.6	+36.1	**+97**	+206.6	+69.4	**+157**	+314.6
−30.0	**−22**	−7.6	+3.3	**+38**	+100.4	+36.7	**+98**	+208.4	+70.0	**+158**	+316.4
−29.4	**−21**	−5.8	+3.9	**+39**	+102.2	+37.2	**+99**	+210.2	+70.6	**+159**	+318.2
−28.9	**−20**	−4.0	+4.4	**+40**	+104.0	+37.8	**+100**	+212.0	+71.1	**+160**	+320.0
−28.3	**−19**	−2.2	+5.0	**+41**	+105.8	+38.3	**+101**	+213.8	+71.7	**+161**	+321.8
−27.8	**−18**	−0.4	+5.5	**+42**	+107.6	+38.9	**+102**	+215.6	+72.2	**+162**	+323.6
−27.2	**−17**	+1.4	+6.1	**+43**	+109.4	+39.4	**+103**	+217.4	+72.8	**+163**	+325.4
−26.7	**−16**	+3.2	+6.7	**+44**	+111.2	+40.0	**+104**	+219.2	+73.3	**+164**	+327.2
−26.1	**−15**	+5.0	+7.2	**+45**	+113.0	+40.6	**+105**	+221.0	+73.9	**+165**	+329.0
−25.6	**−14**	+6.8	+7.8	**+46**	+114.8	+41.1	**+106**	+222.8	+74.4	**+166**	+330.8
−25.0	**−13**	+8.6	+8.3	**+47**	+116.6	+41.7	**+107**	+224.6	+75.0	**+167**	+332.6
−24.4	**−12**	+10.4	+8.9	**+48**	+118.4	+42.2	**+108**	+226.4	+75.6	**+168**	+334.4
−23.9	**−11**	+12.2	+9.4	**+49**	+120.2	+42.8	**+109**	+228.2	+76.1	**+169**	+336.2
−23.3	**−10**	+14.0	+10.0	**+50**	+122.0	+43.3	**+110**	+230.0	+76.7	**+170**	+338.0
−22.8	**−9**	+15.8	+10.6	**+51**	+123.8	+43.9	**+111**	+231.8	+77.2	**+171**	+339.8
−22.2	**−8**	+17.6	+11.1	**+52**	+125.6	+44.4	**+112**	+233.6	+77.8	**+172**	+341.6
−21.7	**−7**	+19.4	+11.7	**+53**	+127.4	+45.0	**+113**	+235.4	+78.3	**+173**	+343.4
−21.1	**−6**	+21.2	+12.2	**+54**	+129.2	+45.6	**+114**	+237.2	+78.9	**+174**	+345.2
−20.6	**−5**	+23.0	+12.8	**+55**	+131.0	+46.1	**+115**	+239.0	+79.4	**+175**	+347.0
−20.0	**−4**	+24.8	+13.3	**+56**	+132.8	+46.7	**+116**	+240.8	+80.0	**+176**	+348.8
−19.4	**−3**	+26.6	+13.9	**+57**	+134.6	+47.2	**+117**	+242.6	+80.6	**+177**	+350.6
−18.9	**−2**	+28.4	+14.4	**+58**	+136.4	+47.8	**+118**	+244.4	+81.1	**+178**	+352.4
−18.3	**−1**	+30.2	+15.0	**+59**	+138.2	+48.3	**+119**	+246.2	+81.7	**+179**	+354.2
−17.8	**0**	+32.0	+15.6	**+60**	+140.0	+48.9	**+120**	+248.0	+82.2	**+180**	+356.0
−17.2	**+1**	+33.8	+16.1	**+61**	+141.8	+49.4	**+121**	+249.8	+82.8	**+181**	+357.8
−16.7	**+2**	+35.6	+16.7	**+62**	+143.6	+50.0	**+122**	+251.6	+83.3	**+182**	+359.6
−16.1	**+3**	+37.4	+17.2	**+63**	+145.4	+50.6	**+123**	+253.4	+83.9	**+183**	+361.4
−15.6	**+4**	+39.2	+17.8	**+64**	+147.2	+51.1	**+124**	+255.2	+84.4	**+184**	+363.2
−15.0	**+5**	+41.0	+18.3	**+65**	+149.0	+51.7	**+125**	+257.0	+85.0	**+185**	+365.0
−14.4	**+6**	+42.8	+18.9	**+66**	+150.8	+52.2	**+126**	+258.8	+85.6	**+186**	+366.8
−13.9	**+7**	+44.6	+19.4	**+67**	+152.6	+52.8	**+127**	+260.6	+86.1	**+187**	+368.6
−13.3	**+8**	+46.4	+20.0	**+68**	+154.4	+53.3	**+128**	+262.4	+86.7	**+188**	+370.4
−12.8	**+9**	+48.2	+20.6	**+69**	+156.2	+53.9	**+129**	+264.2	+87.2	**+189**	+372.2
−12.2	**+10**	+50.0	+21.1	**+70**	+158.0	+54.4	**+130**	+266.0	+87.8	**+190**	+374.0
−11.7	**+11**	+51.8	+21.7	**+71**	+159.8	+55.0	**+131**	+267.8	+88.3	**+191**	+375.8
−11.1	**+12**	+53.6	+22.2	**+72**	+161.6	+55.6	**+132**	+269.6	+88.9	**+192**	+377.6
−10.6	**+13**	+55.4	+22.8	**+73**	+163.4	+56.1	**+133**	+271.4	+89.4	**+193**	+379.4
−10.0	**+14**	+57.2	+23.3	**+74**	+165.2	+56.7	**+134**	+273.2	+90.0	**+194**	+381.2
−9.4	**+15**	+59.0	+23.9	**+75**	+167.0	+57.2	**+135**	+275.0	+90.6	**+195**	+383.0
−8.9	**+16**	+60.8	+24.4	**+76**	+168.8	+57.8	**+136**	+276.8	+91.1	**+196**	+384.8
−8.3	**+17**	+62.6	+25.0	**+77**	+170.6	+58.3	**+137**	+278.6	+91.7	**+197**	+386.6
−7.8	**+18**	+64.4	+25.6	**+78**	+172.4	+58.9	**+138**	+280.4	+92.2	**+198**	+388.4
−7.2	**+19**	+66.2	+26.1	**+79**	+174.2	+59.4	**+139**	+282.2	+92.8	**+199**	+390.2

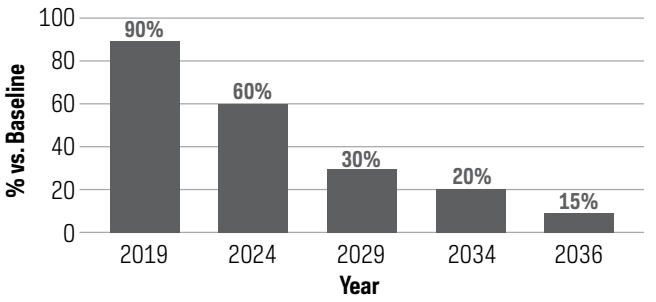
CANADA REGULATIONS - REFRIGERANTS

Summary of Environment and Climate Change Canada Regulations Pertaining to Refrigerants

On October 18, 2017, Environment and Climate Change Canada published amendments to the ODSHAR regulations. These amendments will come into force on April 16, 2018. These regulations will adopt a phasedown, but NOT A PHASEOUT, of hydrofluorocarbons (HFCs) in alignment with the United Nations Kigali Amendment to the Montreal Protocol. The regulations also contain product-specific controls by end use that apply to new equipment only.

This regulation does not require the phaseout of HFC manufacturing.

Canada HFC Phasedown



Baseline is determined from the average imports of HFCs plus 15% of HCFCs in 2011, 2012, and 2013.

Product-Specific Controls for New Equipment

End Use	Application	Date	GWP Limit of Refrigerant*
Stand-alone, medium-temperature refrigeration system: Self-contained refrigeration system with components that are integrated within its structure and designed to maintain an internal temperature of ⩾0 °C	(a) Commercial or industrial (b) Residential	January 1, 2020 January 1, 2025	1400 150
Stand-alone, low-temperature refrigeration system: Self-contained refrigeration system with components that are integrated within its structure and designed to maintain an internal temperature <0 °C, but >-50 °C	(a) Commercial or industrial (b) Residential	January 1, 2020 January 1, 2025	1500 150
Centralized refrigeration system: Refrigeration system with a cooling evaporator in the refrigerated space connected to a compressor rack located in a machinery room and a condenser located outdoors and designed to maintain an internal temperature at ⩾50 °C	Commercial or industrial	January 1, 2020	2200
Condensing units: Refrigeration system with a cooling evaporator in the refrigerated space connected to a compress and condenser unit that are located in a different location and designed to maintain an internal temperature at ⩾-50 °C	Commercial or industrial	January 1, 2020	2200
Chiller: Refrigeration or air-conditioning system that has a compressor, evaporator, and secondary coolant other than an adsorption chiller	Commercial or industrial	January 1, 2025	750
Mobile refrigeration system: Refrigeration system that is normally attached to or installed in or operates in or with means of transportation	Commercial or industrial	January 1, 2025	2200

*IPCC Fourth Assessment Report, AR4

Existing equipment, service, and retrofit will not be impacted by the product-specific controls.

PRESSURE-TEMPERATURE CHART

R-22 Replacements

Key: " (in of Hg) = Vacuum
Black (psig) = Saturated Vapor (calculate Superheat)
Bold (psig) = Saturated Liquid (calculate Subcooling)

Chemours™

°F	Freon™ 22 (R-22)	Opteon™ XP40 (R-449A)	Freon™ M029 (R-422D)	Freon™ 407A (R-407A)	Freon™ M099 (R-438A)	Freon™ 407C (R-407C)	Freon™ 410A (R-410A)
-50	6.1"	7.4"	9.2"	9.0"	11.4"	11.0"	4.9
-48	4.8"	6.1"	7.9"	7.7"	10.3"	9.8"	5.9
-46	3.4"	4.7"	6.6"	6.4"	9.1"	8.6"	7.1
-44	1.9"	3.2"	5.3"	5.0"	7.8"	7.3"	8.2
-42	0.4"	1.7"	3.8"	3.5"	6.5"	6.0"	9.4
-40	0.6	0.1"	2.3"	2.0"	5.2"	4.6"	10.7
-38	1.4	0.8	0.8"	0.4"	3.8"	3.2"	12.0
-36	2.2	1.6	0.4	0.6	2.3"	1.6"	13.3
-34	3.1	2.5	1.2	1.5	0.8"	0.1"	14.7
-32	4.0	3.4	2.1	2.3	0.4	0.8	16.2
-30	4.9	4.4	3.0	3.3	1.2	1.6	17.7
-28	5.9	5.4	3.9	4.2	2.1	2.5	19.3
-26	6.9	6.4	4.9	5.2	3.0	3.5	20.9
-24	8.0	7.5	5.9	6.3	3.9	4.4	22.6
-22	9.1	8.6	7.0	7.4	4.9	5.4	24.4
-20	10.2	9.8	8.1	8.5	5.9	6.5	26.2
-18	11.4	11.0	9.2	9.7	7.0	7.6	28.1
-16	12.6	12.3	10.4	10.9	8.1	8.7	30.0
-14	13.9	13.6	11.7	12.2	9.2	9.9	32.0
-12	15.2	14.9	12.9	13.5	10.4	11.1	34.1
-10	16.5	16.3	14.3	14.9	11.6	12.3	36.3
-8	17.9	17.8	15.6	16.3	12.9	13.7	38.5
-6	19.4	19.3	17.1	17.8	14.2	15.0	40.8
-4	20.9	20.8	18.5	19.3	15.6	16.4	43.2
-2	22.4	22.5	20.1	20.9	17.0	17.9	45.7
0	24.0	24.1	21.7	22.5	18.5	19.4	48.2
2	25.7	25.9	23.3	24.2	20.0	21.0	50.8
4	27.4	27.7	25.0	26.0	21.6	22.6	53.5
6	29.2	29.5	26.7	27.8	23.2	24.3	56.3
8	31.0	31.4	28.5	29.7	24.9	26.1	59.2
10	32.8	33.4	30.4	31.6	26.6	27.9	62.2
12	34.8	35.4	32.3	33.6	28.4	29.8	65.2
14	36.8	37.6	34.3	35.7	30.3	31.7	68.4
16	38.8	39.7	36.4	37.8	32.2	33.7	71.6
18	40.9	42.0	38.5	40.0	34.2	35.7	74.9
20	43.1	44.3	40.7	42.3	36.2	37.9	78.4
22	45.3	46.7	42.9	44.7	38.3	40.1	81.9
24	47.6	49.1	45.2	47.1	40.5	42.3	85.5
26	50.0	51.7	47.6	49.6	42.8	44.7	89.2
28	52.4	54.3	50.1	52.2	45.1	47.1	93.1
30	55.0	56.9	52.6	54.8	47.5	49.6	97.0
32	57.5	59.7	55.2	57.6	49.9	52.1	101.1
34	60.2	62.6	57.9	60.4	52.5	54.8	105.2
36	62.9	65.5	60.6	63.3	55.1	57.5	109.5
38	65.7	68.5	63.5	66.3	57.7	60.3	113.9
40	68.6	71.6	66.4	69.4	60.5	63.2	118.4
42	71.5	74.8	69.4	72.5	63.3	66.1	123.0
44	74.5	78.0	72.5	75.8	66.3	69.2	127.7
46	77.6	81.4	75.6	79.1	69.3	72.3	132.6
48	80.8	84.8	78.9	82.6	72.3	75.5	137.5

°F	Freon™ 22 (R-22)	Opteon™ XP40 (R-449A)	Freon™ M029 (R-422D)	Freon™ 407A (R-407A)	Freon™ M099 (R-438A)	Freon™ 407C (R-407C)	Freon™ 410A (R-410A)
50	84.1	88.4	82.2	86.1	75.5	78.8	142.6
52	**87.4**	**110.8**	**96.1**	**108.2**	**94.6**	**101.7**	**148.4**
54	**90.8**	**115.0**	**99.8**	**112.3**	**98.3**	**105.6**	**153.8**
56	**94.4**	**119.2**	**103.6**	**116.5**	**102.1**	**109.6**	**159.3**
58	**98.0**	**123.5**	**107.4**	**120.8**	**105.9**	**113.7**	**164.9**
60	**101.6**	**128.0**	**111.4**	**125.2**	**109.8**	**117.9**	**170.7**
62	**105.4**	**132.5**	**115.4**	**129.7**	**113.9**	**122.3**	**176.6**
64	**109.3**	**137.2**	**119.6**	**134.3**	**118.0**	**126.7**	**182.7**
66	**113.2**	**142.0**	**123.8**	**139.0**	**122.2**	**131.2**	**188.9**
68	**117.3**	**146.8**	**128.1**	**143.9**	**126.6**	**135.8**	**195.3**
70	**121.4**	**151.8**	**132.6**	**148.8**	**131.0**	**140.5**	**201.8**
72	**125.7**	**156.9**	**137.1**	**153.9**	**135.5**	**145.4**	**208.4**
74	**130.0**	**162.2**	**141.7**	**159.1**	**140.2**	**150.3**	**215.2**
76	**134.5**	**167.5**	**146.5**	**164.4**	**144.9**	**155.4**	**222.2**
78	**139.0**	**172.9**	**151.3**	**169.8**	**149.8**	**160.5**	**229.3**
80	**143.6**	**178.5**	**156.3**	**175.3**	**154.7**	**165.8**	**236.5**
82	**148.4**	**184.2**	**161.4**	**181.0**	**159.8**	**171.2**	**244.0**
84	**153.2**	**190.0**	**166.5**	**186.7**	**165.0**	**176.8**	**251.6**
86	**158.2**	**195.9**	**171.8**	**192.6**	**170.3**	**182.4**	**259.3**
88	**163.2**	**202.0**	**177.2**	**198.7**	**175.7**	**188.2**	**267.3**
90	**168.4**	**208.2**	**182.8**	**204.8**	**181.2**	**194.1**	**275.4**
92	**173.7**	**214.5**	**188.4**	**211.1**	**186.8**	**200.1**	**283.6**
94	**179.1**	**221.0**	**194.2**	**217.6**	**192.6**	**206.3**	**292.1**
96	**184.6**	**227.6**	**200.0**	**224.1**	**198.5**	**212.5**	**300.7**
98	**190.2**	**234.3**	**206.0**	**230.8**	**204.5**	**219.0**	**309.5**
100	**195.9**	**241.1**	**212.2**	**237.6**	**210.6**	**225.5**	**318.5**
102	**201.8**	**248.1**	**218.4**	**244.6**	**216.8**	**232.2**	**327.7**
104	**207.7**	**255.3**	**224.8**	**251.7**	**223.2**	**239.0**	**337.1**
106	**213.8**	**262.5**	**231.3**	**259.0**	**229.7**	**245.9**	**346.7**
108	**220.0**	**270.0**	**237.9**	**266.4**	**236.4**	**253.0**	**356.5**
110	**226.4**	**277.5**	**244.7**	**273.9**	**243.1**	**260.3**	**366.4**
112	**232.8**	**285.2**	**251.6**	**281.6**	**250.1**	**267.6**	**376.6**
114	**239.4**	**293.1**	**258.7**	**289.5**	**257.1**	**275.1**	**387.0**
116	**246.1**	**301.1**	**265.9**	**297.5**	**264.3**	**282.8**	**397.6**
118	**253.0**	**309.3**	**273.2**	**305.6**	**271.6**	**290.6**	**408.4**
120	**260.0**	**317.6**	**280.7**	**314.0**	**279.1**	**298.6**	**419.4**
122	**267.1**	**326.0**	**288.3**	**322.4**	**286.7**	**306.7**	**430.7**
124	**274.3**	**334.7**	**296.0**	**331.1**	**294.4**	**315.0**	**442.1**
126	**281.7**	**343.5**	**303.9**	**339.9**	**302.3**	**323.4**	**453.8**
128	**289.2**	**352.4**	**312.0**	**348.8**	**310.3**	**332.0**	**465.8**
130	**296.9**	**361.5**	**320.2**	**357.9**	**318.5**	**340.7**	**477.9**
132	**304.7**	**370.8**	**328.6**	**367.2**	**326.9**	**349.6**	**490.3**
134	**312.6**	**380.2**	**337.1**	**376.7**	**335.4**	**358.7**	**503.0**
136	**320.7**	**389.9**	**345.8**	**386.3**	**344.1**	**368.0**	**515.9**
138	**329.0**	**399.7**	**354.7**	**396.2**	**352.9**	**377.4**	**529.1**
140	**337.4**	**409.6**	**363.7**	**406.2**	**361.9**	**386.9**	**542.5**
142	**345.9**	**419.7**	**372.9**	**416.3**	**371.0**	**396.7**	**556.2**
144	**354.6**	**430.1**	**382.3**	**426.7**	**380.3**	**406.6**	**570.2**
146	**363.5**	**440.6**	**391.8**	**437.2**	**389.8**	**416.7**	**584.5**
148	**372.5**	**451.2**	**401.5**	**448.0**	**399.4**	**427.0**	**599.0**
150	**381.7**	**462.1**	**411.4**	**458.9**	**409.2**	**437.5**	**613.9**

Properties calculated using REFPROP Ver 9.1, Std Ref Data Program, NIST 2013.
Modifications were made to REFPROP when interaction parameters were not available.

PRESSURE-TEMPERATURE CHART

R-12 and R-502 Replacements

Key: " (in of Hg) = Vacuum
Black (psig) = Saturated Vapor (calculate Superheat)
Bold (psig) = Saturated Liquid (calculate Subcooling)

Chemours™

°F	Freon™ 134a (R-134a)	Opteon™ XP10 (R-513A)	Freon™ M049 *Plus* (R-437A)	Freon™ 507 (R-507A)	Freon™ 404A (R-404A)	Opteon™ XP40 (R-449A)	Freon™ M079 (R-422A)	Freon™ HP80 (R-402A)
-50	18.7"	16.6"	17.0"	0.9	0.1	7.4	2.2	1.1
-48	18.0"	15.8"	16.2"	1.7	0.7	6.1	0.6	1.9
-46	17.3"	14.9"	15.3"	2.6	1.6	4.7	0.5	2.8
-44	16.5"	14.0"	14.4"	3.5	2.4	3.2	1.4	3.7
-42	15.7"	13.1"	13.5"	4.4	3.4	1.7	2.2	4.7
-40	14.8"	12.1"	12.5"	5.4	4.3	0.1	3.1	5.7
-38	13.9"	11.1"	11.5"	6.4	5.3	0.8	4.1	6.8
-36	13.0"	10.0"	10.4"	7.5	6.3	1.6	5.1	7.8
-34	12.0"	8.9"	9.3"	8.6	7.4	2.5	6.1	9.0
-32	10.9"	7.8"	8.1"	9.8	8.5	3.4	7.2	10.1
-30	9.8"	6.6"	6.9"	11.0	9.6	4.4	8.3	11.4
-28	8.7"	5.3"	5.6"	12.2	10.8	5.4	9.5	12.6
-26	7.5"	4.0"	4.3"	13.5	12.0	6.4	10.7	13.9
-24	6.3"	2.6"	2.9"	14.8	13.3	7.5	11.9	15.3
-22	5.0"	1.2"	1.4"	16.2	14.6	8.6	13.2	16.7
-20	3.7"	0.1	0.0"	17.6	16.0	9.8	14.6	18.2
-18	2.3"	0.9	0.8	19.1	17.4	11.0	16.0	19.7
-16	0.8"	1.7	1.6	20.6	18.9	12.3	17.4	21.2
-14	0.4	2.5	2.5	22.2	20.4	13.6	18.9	22.9
-12	1.1	3.4	3.4	23.8	22.0	14.9	20.5	24.5
-10	1.9	4.3	4.3	25.5	23.6	16.3	22.1	26.3
-8	2.8	5.2	5.2	27.2	25.3	17.8	23.7	28.0
-6	3.6	6.1	6.2	29.0	27.0	19.3	25.4	29.9
-4	4.6	7.1	7.2	30.9	28.8	20.8	27.2	31.8
-2	5.5	8.1	8.3	32.8	30.7	22.5	29.1	33.8
0	6.5	9.2	9.4	34.8	32.6	24.1	30.9	35.8
2	7.5	10.3	10.5	36.8	34.6	25.9	32.9	37.9
4	8.5	11.4	11.7	38.9	36.6	27.7	34.9	40.1
6	9.6	12.6	12.9	41.1	38.7	29.5	37.0	42.3
8	10.8	13.8	14.2	43.4	40.9	31.4	39.1	44.6
10	11.9	15.1	15.5	45.7	43.1	33.4	41.4	46.9
12	13.1	16.4	16.8	48.0	45.4	35.4	43.6	49.4
14	14.4	17.7	18.3	50.5	47.8	37.6	46.0	51.9
16	15.7	19.1	19.7	53.0	50.2	39.7	48.4	54.5
18	17.0	20.6	21.2	55.6	52.7	42.0	50.9	57.1
20	18.4	22.0	22.8	58.2	55.3	44.3	53.5	59.8
22	19.9	23.6	24.4	61.0	58.0	46.7	56.1	62.6
24	21.3	25.1	26.0	63.8	60.7	49.1	58.8	65.5
26	22.9	26.8	27.7	66.7	63.5	51.7	61.6	68.5
28	24.5	28.4	29.5	69.6	66.4	54.3	64.5	71.5
30	26.1	30.2	31.3	72.7	69.3	56.9	67.5	74.7
32	27.8	32.0	33.2	75.8	72.4	59.7	70.5	77.9
34	29.5	33.8	35.1	79.0	75.5	62.6	73.6	81.2
36	31.3	35.7	37.1	82.3	78.7	65.5	76.8	84.6
38	33.1	37.6	39.2	85.7	82.0	68.5	80.1	88.0
40	35.0	39.6	41.3	89.2	85.4	71.6	83.5	91.6
42	37.0	41.7	43.5	92.7	88.8	74.8	87.0	95.3
44	39.0	43.8	45.7	96.4	92.4	78.0	90.5	99.0
46	41.1	46.0	48.0	100.1	96.0	81.4	94.2	102.9
48	43.2	48.2	50.4	104.0	99.8	84.8	97.9	106.8

°F	Freon™ 134a (R-134a)	Opteon™ XP10 (R-513A)	Freon™ M049 *Plus* (R-437A)	Freon™ 507 (R-507A)	Freon™ 404A (R-404A)	Opteon™ XP40 (R-449A)	Freon™ M079 (R-422A)	Freon™ HP80 (R-402A)
50	45.4	50.5	52.8	107.9	103.6	88.4	101.8	110.9
52	**47.7**	**52.9**	**61.6**	**112.0**	**109.2**	**110.8**	**111.3**	**119.6**
54	**50.0**	**55.3**	**64.3**	**116.2**	**113.3**	**115.0**	**115.4**	**123.9**
56	**52.4**	**57.8**	**67.1**	**120.4**	**117.4**	**119.2**	**119.7**	**128.3**
58	**54.9**	**60.4**	**69.9**	**124.7**	**121.7**	**123.5**	**124.0**	**132.8**
60	**57.4**	**63.0**	**72.9**	**129.2**	**126.0**	**128.0**	**128.4**	**137.4**
62	**60.0**	**65.7**	**75.9**	**133.7**	**130.5**	**132.5**	**132.9**	**142.1**
64	**62.7**	**68.5**	**78.9**	**138.4**	**135.0**	**137.2**	**137.5**	**147.0**
66	**65.4**	**71.3**	**82.1**	**143.1**	**139.7**	**142.0**	**142.3**	**151.9**
68	**68.2**	**74.2**	**85.3**	**148.0**	**144.4**	**146.8**	**147.1**	**157.0**
70	**71.1**	**77.2**	**88.6**	**153.0**	**149.3**	**151.8**	**152.1**	**162.1**
72	**74.1**	**80.2**	**92.0**	**158.1**	**154.3**	**156.9**	**157.2**	**167.4**
74	**77.1**	**83.4**	**95.5**	**163.3**	**159.4**	**162.2**	**162.3**	**172.8**
76	**80.2**	**86.6**	**99.1**	**168.6**	**164.6**	**167.5**	**167.6**	**178.3**
78	**83.4**	**89.9**	**102.7**	**174.1**	**169.9**	**172.9**	**173.0**	**183.9**
80	**86.7**	**93.2**	**106.5**	**179.6**	**175.4**	**178.5**	**178.6**	**189.7**
82	**90.0**	**96.7**	**110.3**	**185.3**	**181.0**	**184.2**	**184.2**	**195.5**
84	**93.5**	**100.2**	**114.2**	**191.1**	**186.7**	**190.0**	**190.0**	**201.5**
86	**97.0**	**103.8**	**118.2**	**197.1**	**192.5**	**195.9**	**195.9**	**207.7**
88	**100.6**	**107.5**	**122.3**	**203.1**	**198.4**	**202.0**	**201.9**	**213.9**
90	**104.3**	**111.3**	**126.5**	**209.3**	**204.5**	**208.2**	**208.1**	**220.3**
92	**108.1**	**115.2**	**130.8**	**215.6**	**210.7**	**214.5**	**214.4**	**226.8**
94	**112.0**	**119.1**	**135.2**	**222.1**	**217.0**	**221.0**	**220.8**	**233.4**
96	**115.9**	**123.2**	**139.7**	**228.7**	**223.4**	**227.6**	**227.3**	**240.2**
98	**120.0**	**127.3**	**144.2**	**235.4**	**230.0**	**234.3**	**234.0**	**247.1**
100	**124.2**	**131.5**	**148.9**	**242.3**	**236.8**	**241.1**	**240.9**	**254.2**
102	**128.4**	**135.9**	**153.7**	**249.3**	**243.6**	**248.1**	**247.8**	**261.4**
104	**132.7**	**140.3**	**158.6**	**256.5**	**250.6**	**255.3**	**254.9**	**268.7**
106	**137.2**	**144.8**	**163.6**	**263.8**	**257.8**	**262.5**	**262.2**	**276.2**
108	**141.7**	**149.4**	**168.7**	**271.2**	**265.1**	**270.0**	**269.6**	**283.8**
110	**146.4**	**154.1**	**173.9**	**278.8**	**272.5**	**277.5**	**277.1**	**291.6**
112	**151.1**	**159.0**	**179.2**	**286.6**	**280.1**	**285.2**	**284.8**	**299.6**
114	**156.0**	**163.9**	**184.7**	**294.5**	**287.9**	**293.1**	**292.6**	**307.6**
116	**160.9**	**168.9**	**190.2**	**302.6**	**295.8**	**301.1**	**300.6**	**315.9**
118	**166.0**	**174.0**	**195.9**	**310.8**	**303.8**	**309.3**	**308.8**	**324.3**
120	**171.2**	**179.3**	**201.7**	**319.2**	**312.0**	**317.6**	**317.1**	**332.8**
122	**176.4**	**184.6**	**207.5**	**327.8**	**320.4**	**326.0**	**325.6**	**341.6**
124	**181.8**	**190.0**	**213.6**	**336.5**	**329.0**	**334.7**	**334.2**	**350.5**
126	**187.4**	**195.6**	**219.7**	**345.4**	**337.7**	**343.5**	**343.0**	**359.5**
128	**193.0**	**201.3**	**226.0**	**354.5**	**346.6**	**352.4**	**352.0**	**368.7**
130	**198.7**	**207.1**	**232.3**	**363.8**	**355.6**	**361.5**	**361.2**	**378.1**
132	**204.6**	**213.0**	**238.9**	**373.2**	**364.9**	**370.8**	**370.5**	**387.7**
134	**210.6**	**219.0**	**245.5**	**382.9**	**374.3**	**380.2**	**380.0**	**397.5**
136	**216.7**	**225.1**	**252.3**	**392.7**	**383.9**	**389.9**	**389.7**	**407.4**
138	**222.9**	**231.4**	**259.2**	**402.7**	**393.7**	**399.7**	**399.6**	**417.5**
140	**229.2**	**237.8**	**266.2**	**413.0**	**403.7**	**409.6**	**409.7**	**427.8**
142	**235.7**	**244.3**	**273.4**	**423.4**	**413.9**	**419.7**	**420.0**	**438.3**
144	**242.3**	**250.9**	**280.7**	**434.1**	**424.3**	**430.1**	**430.5**	**449.0**
146	**249.0**	**257.7**	**288.1**	**444.9**	**434.9**	**440.6**	**441.2**	**459.9**
148	**255.9**	**264.6**	**295.7**	**456.1**	**445.7**	**451.2**	**452.1**	**471.0**
150	**262.9**	**271.6**	**303.4**	**467.4**	**456.8**	**462.1**	**463.2**	**482.3**

Properties calculated using REFPROP Ver 9.1, Std Ref Data Program, NIST 2013.
Modifications were made to REFPROP when interaction parameters were not available.

For a complete list of P-T charts, please refer to the PT Calc app available for download for Android™ and Apple™ devices.

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Freon™ Refrigerants

General Replacement Guide

Opteon™ Refrigerants

R-22 Replacements*						
Product Name	ASHRAE #	Applications[1]	Refrigerant Type[2]	Equipment Type	Compatible Oil[3]	GWP[4]
Opteon™ XP40	R-449A	LT, MT	HFO Blend	New, Retrofit	POE	1282
Freon™ 407A	R-407A	LT, MT	HFC Blend	New, Retrofit	POE	1923
Freon™ MO29	R-422D	LT, MT	HFC Blend	Service Only[5]	MO, AB, POE	2473
Freon™ MO99	R-438A	AC	HFC Blend	Retrofit	MO, AB, POE	2059
Freon™ 407C	R-407C	AC	HFC Blend	New, Retrofit	POE	1624
Freon™ 410A	R-410A	AC	HFC Blend	New	POE	1924

R-22 Retrofit Recommendation:

LT/MT: **Opteon™ XP40**: Excellent performance match and lower discharge temperature vs. R-22 with 27% lower GWP

AC: **Freon™ MO99**: Field proven R-22 replacement. Closest mineral oil compatible performance match to R-22 in air conditioning

R-12, MP39, MP66, R-409A Replacements*						
Product Name	ASHRAE #	Applications[1]	Refrigerant Type[2]	Equipment Type	Compatible Oil[3]	GWP[4]
Opteon™ XP10	R-513A	MT, AC	HFO Azeotrope	New, Retrofit	POE	573
Freon™ 134a	R-134a	MT, AC, Auto	HFC	New, Retrofit	POE, PAG	1300
Opteon™ YF	R-1234yf	MT, AC, Auto	HFO (A2L)	New	POE, PAG	<1
Freon™ MO49Plus	R-437A	LT, MT	HFC Blend	Retrofit	MO, AB, POE	1638

R-134a Retrofit Recommendation:

Opteon™ XP10: Azeotropic, near drop-in replacement for R-134a in stationary equipment with 56% lower GWP and comparable performance. Specified by major chiller OEMs

R-404A, 507, HP80, HP81, R-408A, 502 Replacements*						
Product Name	ASHRAE #	Applications[1]	Refrigerant Type[2]	Equipment Type	Compatible Oil[3]	GWP[4]
Opteon™ XP40	R-449A	LT, MT	HFO Blend	New, Retrofit	POE	1282
Opteon™ XP44	R-452A	LT, Transport	HFO Blend	New, Retrofit	POE	1945
Freon™ MO79	R-422A	LT, MT	HFC Blend	Service Only[5]	MO, AB, POE	2846

R-404A/507 Retrofit Recommendation:

Opteon™ XP40: Up to 12% energy savings vs. R-404A with 67% lower GWP. TXV adjustment required similar to 407 series

Opteon™ XP44: Ideal for R-404A systems that require a low discharge temperature (e.g., transport refrigeration and low temp hermetics)

R-503, R-13 Replacements*						
Product Name	ASHRAE #	Applications[1]	Refrigerant Type[2]	Equipment Type	Compatible Oil[3]	GWP[4]
Freon™ 95	R-508B	VLT	PFC/HFC Blend	New, Retrofit	POE	11 700
Freon™ 23	R-23	VLT	HFC	New, Retrofit	POE	12 400

R-123 Replacements*						
Product Name	ASHRAE #	Applications[1]	Refrigerant Type[2]	Equipment Type	Compatible Oil[3]	GWP[4]
Opteon™ XP30	R-514A	AC, MT	HFO Blend (B1)	New, Retrofit**	POE	2

R-123 Retrofit Recommendation:

Opteon™ XP30: Azeotropic, with zero glide. Ideal for low pressure centrifugal chillers in commercial and industrial applications

*For more detailed information on Refrigerants from Chemours and their applications, visit www.freon.com and www.opteon.com, as well as consult local country-specific regulations.

**Retrofit options for Opteon™ XP30 are under development. Please consult your equipment manufacturer for more details.

[1]VLT=Very Low Temperature, LT=Low Temperature, MT=Medium Temperature, AC=Air Conditioning, Transport=Transport Refrigeration, Auto=Automotive Air Conditioning

[2]All Refrigerants listed have ASHRAE A1 Safety Classification, unless otherwise noted.

[3]MO=Mineral Oil, AB=Alkylbenzene, POE=Polyol Ester, PAG=Polyalkylene Glycol for Mobile AC

[4]GWP=Global Warming Potential, IPCC Fifth Assessment Report, AR5

[5]In Canada, Freon™ MO29 is not available. Freon™ MO79 is available in limited package size.

Chemours

RECOMMENDED LINE SIZES

R22

Recommended Line Sizes for R-22 *

SYSTEM CAPACITY	SUCTION LINE SIZE																				
	SUCTION TEMPERATURE																				
	+40˚F Equivalent Lengths						+20˚F Equivalent Lengths						+10˚F Equivalent Lengths						0˚F Equivalent		
BTU/H	25'	50'	75'	100'	150'	200'	25'	50'	75'	100'	150'	200'	25'	50'	75'	100'	150'	200'	25'	50'	75'
1,000	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2	3/8	3/8	3/8
3,000	3/8	3/8	3/8	1/2	1/2	1/2	3/8	1/2	1/2	1/2	5/8	5/8	3/8	1/2	1/2	1/2	5/8	5/8	1/2	1/2	1/2
4,000	3/8	3/8	1/2	1/2	1/2	1/2	3/8	1/2	1/2	1/2	5/8	5/8	1/2	1/2	1/2	5/8	5/8	5/8	1/2	1/2	5/8
6,000	1/2	1/2	1/2	5/8	5/8	5/8	1/2	1/2	5/8	5/8	5/8	5/8	1/2	5/8	5/8	5/8	7/8	7/8	5/8	5/8	5/8
9,000	1/2	5/8	5/8	5/8	7/8	7/8	1/2	5/8	5/8	5/8	7/8	7/8	5/8	5/8	7/8	7/8	7/8	7/8	5/8	7/8	7/8
12,000	5/8	5/8	5/8	7/8	7/8	7/8	5/8	5/8	7/8	7/8	7/8	7/8	5/8	7/8	7/8	7/8	7/8	7/8	5/8	7/8	7/8
15,000	5/8	5/8	7/8	7/8	7/8	7/8	5/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	1 1/8	1 1/8	7/8	7/8	7/8
18,000	5/8	7/8	7/8	7/8	7/8	1 1/8	5/8	7/8	7/8	7/8	7/8	1 1/8	7/8	7/8	7/8	7/8	1 1/8	1 1/8	7/8	7/8	1 1/8
24,000	5/8	7/8	7/8	7/8	1 1/8	1 1/8	7/8	7/8	7/8	7/8	1 1/8	1 1/8	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8
30,000	7/8	7/8	7/8	1 1/8	1 1/8	1 1/8	7/8	7/8	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	7/8	1 1/8	1 1/8
36,000	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 1/8	1 1/8
42,000	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 1/8	1 3/8
48,000	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 1/8	1 3/8	1 3/8
54,000	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	1 3/8	1 3/8
60,000	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	1 3/8	1 3/8
66,000	7/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	1 3/8	1 5/8
72,000	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 3/8	1 3/8	1 5/8
78,000	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	1 3/8	1 5/8	1 5/8	1 5/8	2 1/8	1 3/8	1 3/8	1 5/8
84,000	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	2 1/8	1 3/8	1 5/8	1 5/8
90,000	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 3/8	1 5/8	1 5/8
120,000	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	1 5/8	2 1/8
150,000	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8	2 5/8	1 5/8	2 1/8	2 1/8
180,000	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	1 5/8	2 1/8	2 1/8
210,000	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 1/8	2 1/8
240,000	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 1/8	2 5/8
300,000	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 1/8	2 5/8	2 5/8
360,000	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	3 1/8	2 1/8	2 5/8	2 5/8
480,000	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	3 1/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	2 5/8	2 5/8	3 1/8
600,000	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	3 1/8	2 1/8	2 5/8	3 1/8	3 1/8	3 1/8	3 5/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	2 5/8	3 1/8	3 1/8

* NOTES:
1. Sizes that are highlighted indicate maximum suction line sizes that should be used for risers. Riser size should not exceed horizontal size. Properly placed suction traps must also be used for adequate oil return. All sizes shown are for O.D. Type L copper tubing.
2. Suction line sizes selected at pressure drop equivalent to 2˚F. Reduce estimate of system capacity accordingly.
3. Recommended liquid line size may increase with reverse cycle hot gas systems.
4. If system load drops below 40% of design, consideration to installing double suction risers should be made.

RECOMMENDED LINE SIZES

R22

Recommended Line Sizes for R-22 (continued) *

SUCTION LINE SIZE															LIQUID LINE SIZE						
SUCTION TEMPERATURE															Receiver to Expansion Valve Equivalent Lengths						SYSTEM CAPACITY
0˚F Lengths			-10˚F Equivalent Lengths						-20˚F Equivalent Lengths												
100'	150'	200'	25'	50'	75'	100'	150'	200'	25'	50'	75'	100'	150'	200'	25'	50'	75'	100'	150'	200'	BTU/H
3/8	**1/2**	1/2	**3/8**	3/8	3/8	3/8	1/2	1/2	3/8	3/8	3/8	**1/2**	1/2	1/2	3/8	3/8	3/8	3/8	3/8	3/8	1,000
5/8	5/8	5/8	**1/2**	1/2	1/2	5/8	5/8	5/8	**1/2**	1/2	5/8	5/8	5/8	7/8	3/8	3/8	3/8	3/8	3/8	3/8	3,000
5/8	5/8	7/8	1/2	1/2	**5/8**	5/8	5/8	7/8	1/2	**5/8**	5/8	5/8	7/8	7/8	3/8	3/8	3/8	3/8	3/8	3/8	4,000
5/8	7/8	7/8	1/2	**5/8**	5/8	7/8	7/8	7/8	5/8	5/8	**7/8**	7/8	7/8	7/8	3/8	3/8	3/8	3/8	3/8	3/8	6,000
7/8	7/8	7/8	5/8	**7/8**	7/8	7/8	7/8	7/8	5/8	**7/8**	7/8	7/8	1 1/8	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8	9,000
7/8	7/8	1 1/8	**7/8**	7/8	7/8	7/8	1 18	1 1/8	7/8	7/8	7/8	**1 1/8**	1 1/8	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8	12,000
7/8	1 1/8	**1 1/8**	7/8	7/8	7/8	**1 1/8**	1 1/8	1 1/8	7/8	7/8	**1 1/8**	1 1/8	1 1/8	1 1/8	3/8	3/8	3/8	3/8	3/8	1/2	15,000
1 1/8	1 1/8	1 1/8	7/8	7/8	**1 1/8**	1 1/8	1 1/8	1 1/8	7/8	**1 1/8**	1 1/8	1 1/8	1 1/8	1 3/8	3/8	3/8	3/8	3/8	1/2	1/2	18,000
1 1/8	1 1/8	**1 3/8**	7/8	1 1/8	1 1/8	1 1/8	**1 3/8**	1 3/8	7/8	1 1/8	1 1/8	**1 3/8**	1 3/8	1 3/8	3/8	3/8	1/2	1/2	1/2	1/2	24,000
1 1/8	**1 3/8**	1 3/8	7/8	1 1/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	**1 5/8**	3/8	3/8	1/2	1/2	1/2	1/2	30,000
1 3/8	1 3/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	**1 5/8**	1 1/8	1 3/8	1 3/8	1 3/8	**1 5/8**	1 5/8	3/8	1/2	1/2	1/2	1/2	1/2	36,000
1 3/8	1 3/8	**1 5/8**	1 1/8	1 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 5/8	3/8	1/2	1/2	1/2	1/2	5/8	42,000
1 3/8	**1 5/8**	1 5/8	1 1/8	1 3/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	2 1/8	1/2	1/2	1/2	1/2	1/2	5/8	48,000
1 3/8	**1 5/8**	1 5/8	1 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 5/8	1 3/8	1 3/8	**1 5/8**	1 5/8	2 1/8	2 1/8	1/2	1/2	1/2	1/2	5/8	5/8	54,000
1 5/8	1 5/8	2 1/8	1 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	2 1/8	1 3/8	1 3/8	1 5/8	1 5/8	**2 1/8**	2 1/8	1/2	1/2	1/2	5/8	5/8	5/8	60,000
1 5/8	1 5/8	2 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	**2 1/8**	1 3/8	1 5/8	1 5/8	1 5/8	**2 1/8**	2 1/8	1/2	1/2	5/8	5/8	5/8	5/8	66,000
1 5/8	**2 1/8**	2 1/8	1 3/8	1 3/8	1 5/8	1 5/8	**2 1/8**	2 1/8	1 3/8	1 5/8	1 5/8	**2 1/8**	2 1/8	2 1/8	1/2	1/2	5/8	5/8	5/8	5/8	72,000
1 5/8	**2 1/8**	2 1/8	1 3/8	1 5/8	1 5/8	1 5/8	**2 1/8**	2 1/8	1 3/8	1 5/8	1 5/8	**2 1/8**	2 1/8	2 1/8	1/2	1/2	5/8	5/8	5/8	7/8	78,000
1 5/8	**2 1/8**	2 1/8	1 3/8	1 5/8	1 5/8	**2 1/8**	2 1/8	2 1/8	1 3/8	1 5/8	**2 1/8**	2 1/8	2 1/8	2 1/8	1/2	5/8	5/8	5/8	5/8	7/8	84,000
2 1/8	2 1/8	2 1/8	1 3/8	1 5/8	1 5/8	**2 1/8**	2 1/8	2 1/8	1 3/8	1 5/8	**2 1/8**	2 1/8	2 1/8	2 1/8	1/2	5/8	5/8	5/8	7/8	7/8	90,000
2 1/8	2 1/8	2 1/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	**2 5/8**	1 5/8	2 1/8	2 1/8	2 1/8	**2 5/8**	2 5/8	5/8	5/8	5/8	7/8	7/8	7/8	120,000
2 1/8	**2 5/8**	2 5/8	1 5/8	2 1/8	2 1/8	2 1/8	**2 5/8**	2 5/8	2 1/8	2 1/8	2 1/8	**2 5/8**	2 5/8	2 5/8	5/8	7/8	7/8	7/8	7/8	7/8	150,000
2 1/8	**2 5/8**	2 5/8	1 5/8	2 1/8	2 1/8	**2 5/8**	2 5/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	**3 1/8**	5/8	7/8	7/8	7/8	7/8	1 1/8	180,000
2 5/8	2 5/8	2 5/8	2 1/8	2 1/8	2 5/8	**2 5/8**	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	**3 1/8**	3 1/8	7/8	7/8	7/8	7/8	7/8	1 1/8	210,000
2 5/8	2 5/8	**3 1/8**	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	**3 1/8**	2 1/8	2 5/8	2 5/8	2 5/8	**3 1/8**	3 1/8	7/8	7/8	7/8	7/8	1 1/8	1 1/8	240,000
2 5/8	**3 1/8**	3 1/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	**3 1/8**	2 1/8	2 5/8	3 1/8	3 1/8	3 1/8	**3 5/8**	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	300,000
3 1/8	3 1/8	3 1/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	**3 5/8**	2 5/8	2 5/8	3 1/8	3 1/8	**3 5/8**	3 5/8	7/8	7/8	1 18	1 1/8	1 1/8	1 1/8	360,000
3 1/8	**3 5/8**	3 5/8	2 5/8	3 1/8	3 1/8	3 1/8	**3 5/8**	3 5/8	2 5/8	3 1/8	3 5/8	3 5/8	3 5/8	**4 1/8**	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	480,000
3 5/8	3 5/8	**4 1/8**	2 5/8	3 1/8	3 1/8	**3 5/8**	3 5/8	4 1/8	3 1/8	3 1/8	3 5/8	3 5/8	**4 1/8**	4 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	600,000

* NOTES:

1. Sizes that are highlighted indicate maximum suction line sizes that should be used for risers. Riser size should not exceed horizontal size. Properly placed suction traps must also be used for adequate oil return. All sizes shown are for O.D. Type L copper tubing.
2. Suction line sizes selected at pressure drop equivalent to 2˚F. Reduce estimate of system capacity accordingly.
3. Recommended liquid line size may increase with reverse cycle hot gas systems.
4. If system load drops below 40% of design, consideration to installing double suction risers should be made.

RECOMMENDED LINE SIZES

R507 / R404A

Recommended Line Sizes for R-404A and R507 *

SYSTEM CAPACITY	SUCTION LINE SIZE																				
	SUCTION TEMPERATURE																				
	+20˚F Equivalent Lengths						+10˚F Equivalent Lengths						-10˚F Equivalent Lengths						-20˚F Equivalent		
BTU/H	25'	50'	75'	100'	150'	200'	25'	50'	75'	100'	150'	200'	25'	50'	75'	100'	150'	200'	25'	50'	75'
1,000	**3/8**	3/8	3/8	3/8	3/8	3/8	**3/8**	3/8	3/8	3/8	3/8	1/2	**3/8**	3/8	3/8	1/2	1/2	1/2	3/8	3/8	**1/2**
3,000	**3/8**	3/8	1/2	1/2	1/2	5/8	3/8	**1/2**	1/2	1/2	5/8	5/8	**1/2**	1/2	5/8	5/8	5/8	7/8	**1/2**	1/2	5/8
4,000	3/8	**1/2**	1/2	1/2	5/8	5/8	**1/2**	1/2	1/2	5/8	5/8	7/8	**1/2**	5/8	5/8	5/8	7/8	7/8	1/2	**5/8**	5/8
6,000	**1/2**	1/2	5/8	5/8	7/8	7/8	**1/2**	1/2	5/8	5/8	7/8	7/8	**1/2**	5/8	5/8	7/8	7/8	7/8	**5/8**	5/8	7/8
9,000	**5/8**	5/8	7/8	7/8	7/8	7/8	**5/8**	5/8	7/8	7/8	7/8	7/8	5/8	**7/8**	7/8	7/8	7/8	1 1/8	5/8	**7/8**	7/8
12,000	5/8	**7/8**	7/8	7/8	7/8	7/8	5/8	**7/8**	7/8	7/8	7/8	1 1/8	**7/8**	7/8	7/8	7/8	1 1/8	1 1/8	**7/8**	7/8	7/8
15,000	5/8	**7/8**	7/8	7/8	7/8	1 1/8	**7/8**	7/8	7/8	7/8	1 1/8	1 1/8	**7/8**	7/8	7/8	1 1/8	1 1/8	1 1/8	**7/8**	7/8	1 1/8
18,000	**7/8**	7/8	7/8	7/8	1 1/8	1 1/8	**7/8**	7/8	7/8	1 1/8	1 1/8	1 1/8	7/8	7/8	**1 1/8**	1 1/8	1 1/8	1 3/8	7/8	**1 1/8**	1 1/8
24,000	7/8	7/8	7/8	**1 1/8**	1 1/8	1 1/8	7/8	**1 1/8**	1 1/8	1 1/8	1 1/8	1 3/8	7/8	**1 1/8**	1 1/8	1 1/8	1 3/8	1 3/8	**1 1/8**	1 1/8	1 1/8
30,000	7/8	7/8	**1 1/8**	1 1/8	1 1/8	1 3/8	7/8	**1 1/8**	1 1/8	1 1/8	1 3/8	1 3/8	**1 1/8**	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	**1 1/8**	1 1/8	1 1/8
36,000	7/8	**1 1/8**	1 1/8	1 1/8	1 3/8	1 3/8	**1 1/8**	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	**1 1/8**	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	**1 1/8**	1 1/8	1 3/8
42,000	1 1 /8	1 1/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 1/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 5/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	**1 3/8**	1 3/8
48,000	1 1/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 3/8	1 1/8	1 1/8	**1 3/8**	1 3/8	1 5/8	1 5/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	**1 3/8**	1 3/8
54,000	1 1/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 5/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 5/8	1 5/8	**1 3/8**	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 3/8	**1 3/8**	1 5/8
60,000	1 1/8	1 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 5/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 5/8	2 1/8	1 3/8	1 3/8	**1 5/8**
66,000	1 1/8	1 3/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 5/8	1 3/8	**1 5/8**	1 5/8	1 5/8	1 5/8	1 5/8	1 3/8	**1 5/8**	1 5/8
72,000	1 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 5/8	1 1/8	1 3/8	**1 5/8**	1 5/8	1 5/8	1 5/8	1 3/8	**1 5/8**	1 5/8	1 5/8	1 5/8	1 5/8	1 3/8	**1 5/8**	1 5/8
78,000	1 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	2 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 5/8	2 1/8	1 3/8	**1 5/8**	1 5/8	1 5/8	1 5/8	2 1/8	**1 5/8**	1 5/8	1 5/8
84,000	1 1/8	1 3/8	1 5/8	1 5/8	**1 5/8**	2 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	2 1/8	2 1/8	1 3/8	**1 5/8**	1 5/8	1 5/8	2 1/8	2 1/8	**1 5/8**	1 5/8	1 5/8
90,000	1 3/8	1 3/8	1 5/8	**1 5/8**	2 1/8	2 1/8	1 3/8	**1 5/8**	1 5/8	1 5/8	2 1/8	2 1/8	**1 5/8**	1 5/8	1 5/8	2 1/8	2 1/8	2 5/8	1 5/8	1 5/8	**2 1/8**
120,000	1 3/8	1 5/8	1 5/8	**2 1/8**	2 1/8	2 1/8	1 3/8	1 5/8	**2 1/8**	2 1/8	2 1/8	2 1/8	1 5/8	**2 1/8**	2 1/8	2 1/8	2 5/8	2 5/8	1 5/8	**2 1/8**	2 1/8
150,000	1 5/8	1 5/8	**2 1/8**	2 1/8	2 1/8	2 1/8	1 5/8	**2 1/8**	2 1/8	2 1/8	2 1/8	2 5/8	**2 1/8**	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	**2 1/8**	2 1/8	2 1/8
180,000	1 5/8	**2 1/8**	2 1/8	2 1/8	2 1/8	2 5/8	1 5/8	**2 1/8**	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 1/8	**2 5/8**	2 5/8	2 5/8	3 1/8	2 1/8	2 1/8	**2 5/8**
210,000	1 5/8	2 1/8	2 1/8	2 1/8	**2 5/8**	2 5/8	2 1/8	2 1/8	2 1/8	**2 5/8**	2 5/8	2 5/8	2 1/8	2 1/8	**2 5/8**	2 5/8	3 1/8	3 1/8	2 1/8	**2 5/8**	2 5/8
240,000	1 5/8	2 1/8	2 1/8	2 1/8	**2 5/8**	2 5/8	2 1/8	2 1/8	**2 5/8**	2 5/8	2 5/8	2 5/8	2 1/8	**2 5/8**	2 5/8	2 5/8	3 1/8	3 1/8	2 1/8	**2 5/8**	2 5/8
300,000	2 1/8	2 1/8	**2 5/8**	2 5/8	2 5/8	3 1/8	2 1/8	**2 5/8**	2 5/8	2 5/8	3 1/8	3 1/8	**2 5/8**	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	**2 5/8**	2 5/8	2 5/8
360,000	2 1/8	2 1/8	**2 5/8**	2 5/8	3 1/8	3 1/8	2 1/8	2 5/8	2 5/8	2 5/8	**3 1/8**	3 1/8	2 5/8	2 5/8	**3 1/8**	3 1/8	3 5/8	3 5/8	2 5/8	2 5/8	**3 1/8**
480,000	2 1/8	2 5/8	2 5/8	**3 1/8**	3 1/8	3 5/8	2 5/8	2 5/8	2 5/8	**2 5/8**	3 5/8	3 5/8	2 5/8	3 1/8	3 1/8	**3 5/8**	3 5/8	4 1/8	2 5/8	3 1/8	3 1/8
600,000	2 5/8	2 5/8	3 1/8	3 1/8	**3 5/8**	3 5/8	2 5/8	2 5/8	3 1/8	3 1/8	**3 5/8**	3 5/8	3 1/8	3 1/8	3 1/8	**3 5/8**	4 1/8	4 1/8	3 1/8	3 1/8	3 1/8

* NOTES:

1. Sizes that are highlighted indicate maximum suction line sizes that should be used for risers. Riser size should not exceed horizontal size. Properly placed suction traps must also be used for adequate oil return. All sizes shown are for O.D. Type L copper tubing.
2. Suction line sizes selected at pressure drop equivalent to 2˚F. Reduce estimate of system capacity accordingly.
3. Recommended liquid line size may increase with reverse cycle hot gas systems.
4. If system load drops below 40% of design, consideration to installing double suction risers should be made.

RECOMMENDED LINE SIZES

R507 / R404A

Table 14A. Recommended Line Sizes for R-404A and R507 (continued) *

SUCTION LINE SIZE															LIQUID LINE SIZE						
SUCTION TEMPERATURE															Receiver to Expansion Valve Equivalent Lengths						SYSTEM CAPACITY
-20˚F Lengths			-30˚F Equivalent Lengths						-40˚F Equivalent Lengths												
100'	150'	200'	25'	50'	75'	100'	150'	200'	25'	50'	75'	100'	150'	200'	25'	50'	75'	100'	150'	200'	BTU/H
1/2	1/2	1/2	3/8	3/8	**1/2**	1/2	1/2	5/8	3/8	**1/2**	1/2	1/2	5/8	5/8	3/8	3/8	3/8	3/8	3/8	3/8	1,000
5/8	7/8	7/8	**1/2**	1/2	5/8	5/8	7/8	7/8	1/2	1/2	**5/8**	5/8	7/8	7/8	3/8	3/8	3/8	3/8	3/8	3/8	3,000
7/8	7/8	7/8	**5/8**	5/8	5/8	7/8	7/8	7/8	1/2	**5/8**	5/8	7/8	7/8	7/8	3/8	3/8	3/8	3/8	3/8	3/8	4,000
7/8	7/8	7/8	**5/8**	5/8	7/8	7/8	7/8	7/8	5/8	5/8	**7/8**	7/8	7/8	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8	6,000
7/8	1 1/8	1 1/8	5/8	**7/8**	7/8	7/8	1 1/8	1 1/8	5/8	**7/8**	7/8	7/8	1 1/8	1 1/8	3/8	3/8	3/8	3/8	3/8	3/8	9,000
1 1/8	1 1/8	1 1/8	7/8	7/8	7/8	**1 1/8**	1 1/8	1 1/8	7/8	7/8	7/8	**1 1/8**	1 1/8	1 1/8	3/8	3/8	3/8	3/8	3/8	1/2	12,000
1 1/8	1 1/8	1 3/8	7/8	7/8	**1 1/8**	1 1/8	1 1/8	1 3/8	7/8	7/8	**1 1/8**	1 1/8	1 1/8	1 3/8	3/8	3/8	3/8	3/8	1/2	1/2	15,000
1 1/8	1 3/8	1 3/8	7/8	**1 1/8**	1 1/8	1 1/8	1 3/8	1 3/8	7/8	1 1/8	1 1/8	**1 1/8**	1 3/8	1 3/8	3/8	3/8	3/8	1/2	1/2	1/2	18,000
1 3/8	1 3/8	1 3/8	1 1/8	1 1/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 1/8	1 1/8	1 1/8	**1 3/8**	1 3/8	1 3/8	3/8	3/8	1/2	1/2	1/2	1/2	24,000
1 3/8	1 3/8	1 5/8	1 1/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 5/8	1 1/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 5/8	3/8	1/2	1/2	1/2	1/2	1/2	30,000
1 3/8	1 3/8	1 5/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 3/8	1 5/8	1 1/8	**1 3/8**	1 3/8	1 3/8	1 5/8	1 5/8	1/2	1/2	1/2	1/2	1/2	5/8	36,000
1 5/8	1 5/8	1 5/8	1 1/8	1 3/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 1/8	1 3/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1/2	1/2	1/2	1/2	5/8	5/8	42,000
1 5/8	1 5/8	1 5/8	1 1/8	1 3/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 1/8	1 3/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1/2	1/2	1/2	5/8	5/8	5/8	48,000
1 5/8	1 5/8	1 5/8	1 3/8	1 3/8	1 3/8	**1 5/8**	1 5/8	2 1/8	1 3/8	1 3/8	1 3/8	**1 5/8**	1 5/8	2 1/8	1/2	1/2	1/2	5/8	5/8	5/8	54,000
1 5/8	1 5/8	2 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 5/8	2 1/8	1 3/8	1 3/8	**1 5/8**	1 5/8	1 5/8	2 1/8	1/2	1/2	5/8	5/8	5/8	5/8	60,000
1 5/8	1 5/8	2 1/8	1 3/8	**1 5/8**	1 5/8	1 5/8	1 5/8	2 1/8	1 3/8	**1 5/8**	1 5/8	1 5/8	1 5/8	2 1/8	1/2	1/2	5/8	5/8	5/8	5/8	66,000
1 5/8	1 5/8	2 1/8	1 3/8	**1 5/8**	1 5/8	1 5/8	1 5/8	2 1/8	1 3/8	**1 5/8**	1 5/8	1 5/8	1 5/8	2 1/8	1/2	5/8	5/8	5/8	5/8	5/8	72,000
1 5/8	2 1/8	2 1/8	1 5/8	**1 5/8**	1 5/8	1 5/8	2 1/8	2 1/8	1 5/8	1 5/8	1 5/8	1 5/8	**2 1/8**	2 1/8	5/8	5/8	5/8	5/8	5/8	7/8	78,000
2 1/8	2 1/8	2 1/8	1 5/8	1 5/8	1 5/8	**2 1/8**	2 1/8	2 1/8	1 5/8	1 5/8	1 5/8	**2 1/8**	2 1/8	2 1/8	5/8	5/8	5/8	5/8	7/8	7/8	84,000
2 1/8	2 1/8	2 5/8	1 5/8	2 1/8	**2 1/8**	2 1/8	2 1/8	2 5/8	1 5/8	1 5/8	**2 1/8**	2 1/8	2 1/8	2 5/8	5/8	5/8	5/8	7/8	7/8	7/8	90,000
2 1/8	2 5/8	2 5/8	1 5/8	**2 1/8**	2 1/8	2 1/8	2 5/8	2 5/8	1 5/8	2 1/8	2 1/8	2 1/8	**2 5/8**	2 5/8	5/8	5/8	7/8	7/8	7/8	7/8	120,000
2 5/8	2 5/8	2 5/8	**2 1/8**	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 1/8	2 5/8	**2 5/8**	2 5/8	2 5/8	5/8	7/8	7/8	7/8	7/8	1 1/8	150,000
2 5/8	2 5/8	3 1/8	2 1/8	2 1/8	**2 5/8**	2 5/8	2 5/8	3 1/8	2 1/8	2 1/8	**2 5/8**	2 5/8	2 5/8	3 1/8	7/8	7/8	7/8	7/8	1 1/8	1 1/8	180,000
2 5/8	3 1/8	3 1/8	2 1/8	**2 5/8**	2 5/8	2 5/8	3 1/8	3 1/8	2 1/8	2 5/8	2 5/8	2 5/8	**3 1/8**	3 1/8	7/8	7/8	7/8	1 1/8	1 1/8	1 1/8	210,000
2 5/8	3 1/8	3 1/8	2 5/8	2 5/8	**2 5/8**	3 1/8	3 1/8	3 5/8	2 5/8	2 5/8	2 5/8	**3 1/8**	3 1/8	3 5/8	7/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	240,000
3 1/8	3 5/8	3 5/8	2 5/8	2 5/8	**3 1/8**	3 1/8	3 5/8	4 1/8	2 5/8	2 5/8	**3 1/8**	3 5/8	3 5/8	4 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	300,000
3 5/8	3 5/8	4 1/8	2 5/8	3 1/8	3 1/8	**3 5/8**	3 5/8	4 1/8	2 5/8	3 1/8	**3 5/8**	3 5/8	4 1/8	4 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	360,000
3 5/8	3 5/8	4 1/8	3 1/8	**3 5/8**	3 5/8	4 1/8	4 1/8	4 1/8	3 1/8	3 5/8	3 5/8	**4 1/8**	4 1/8	4 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	480,000
3 5/8	3 5/8	**4 1/8**	3 1/8	3 5/8	3 5/8	**4 1/8**	4 1/8	5 1/8	3 1/8	3 5/8	3 5/8	**4 1/8**	4 1/8	5 1/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	600,000

* **NOTES:**

1. Sizes that are highlighted indicate maximum suction line sizes that should be used for risers. Riser size should not exceed horizontal size. Properly placed suction traps must also be used for adequate oil return. All sizes shown are for O.D. Type L copper tubing.
2. Suction line sizes selected at pressure drop equivalent to 2˚F. Reduce estimate of system capacity accordingly.
3. Recommended liquid line size may increase with reverse cycle hot gas systems.
4. If system load drops below 40% of design, consideration to installing double suction risers should be made.

RECOMMENDED LINE SIZES

R448A / R449A

Table 9. Recommended Line Sizes for R-448A/R-449A*

Capacity BTUH	Suction Line Size												Maximum Suction Line Riser Size						
	Suction Temperature												R-448A/R-449A Suction Temperature						
	+40˚F Equivalent Lengths				+20˚F Equivalent Lengths				+10˚F Equivalent Lengths										
	25'	50'	100'	150'	25'	50'	100'	150'	25'	50'	100'	150'	+40	+20	+10	-10	-20	-30	-40
1,000	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2	1/2
3,000	3/8	3/8	1/2	1/2	3/8	3/8	1/2	1/2	3/8	1/2	1/2	5/8	3/8	3/8	1/2	1/2	1/2	1/2	5/8
4,000	3/8	1/2	1/2	1/2	3/8	1/2	1/2	5/8	1/2	1/2	5/8	5/8	3/8	1/2	1/2	1/2	5/8	5/8	5/8
6,000	1/2	1/2	1/2	5/8	1/2	1/2	5/8	7/8	1/2	1/2	5/8	7/8	1/2	1/2	1/2	1/2	5/8	5/8	7/8
9,000	1/2	5/8	5/8	5/8	5/8	5/8	7/8	7/8	5/8	5/8	7/8	7/8	1/2	5/8	5/8	7/8	7/8	7/8	7/8
12,000	1/2	5/8	5/8	7/8	5/8	7/8	7/8	7/8	5/8	7/8	7/8	7/8	1/2	7/8	7/8	7/8	7/8	1-1/8	1-1/8
15,000	5/8	5/8	7/8	7/8	5/8	7/8	7/8	7/8	7/8	7/8	7/8	1-1/8	5/8	7/8	7/8	7/8	7/8	1-1/8	1-1/8
18,000	5/8	7/8	7/8	7/8	7/8	7/8	7/8	1-1/8	7/8	7/8	1-1/8	1-1/8	5/8	7/8	7/8	1-1/8	1-1/8	1-1/8	1-1/8
24,000	5/8	7/8	7/8	7/8	7/8	7/8	1-1/8	1-1/8	7/8	1-1/8	1-1/8	1-1/8	5/8	1-1/8	1-1/8	1-1/8	1-1/8	1-3/8	1-3/8
30,000	5/8	7/8	7/8	1-1/8	7/8	7/8	1-1/8	1-1/8	7/8	1-1/8	1-1/8	1-3/8	7/8	1-1/8	1-1/8	1-1/8	1-1/8	1-3/8	1-3/8
36,000	7/8	7/8	1-1/8	1-1/8	7/8	1-1/8	1-1/8	1-3/8	1-1/8	1-1/8	1-3/8	1-3/8	7/8	1-1/8	1-1/8	1-1/8	1-1/8	1-3/8	1-3/8
42,000	7/8	7/8	1-1/8	1-1/8	1-1/8	1-1/8	1-3/8	1-3/8	1-1/8	1-1/8	1-3/8	1-3/8	7/8	1-3/8	1-3/8	1-3/8	1-3/8	1-5/8	1-5/8
48,000	7/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-3/8	1-3/8	1-1/8	1-1/8	1-3/8	1-5/8	7/8	1-3/8	1-3/8	1-3/8	1-3/8	1-5/8	1-5/8
54,000	7/8	1-1/8	1-1/8	1-3/8	1-1/8	1-1/8	1-3/8	1-3/8	1-1/8	1-3/8	1-3/8	1-5/8	1-1/8	1-3/8	1-3/8	1-3/8	1-3/8	1-5/8	1-5/8
60,000	7/8	1-1/8	1-1/8	1-3/8	1-1/8	1-1/8	1-3/8	1-5/8	1-1/8	1-3/8	1-5/8	1-5/8	1-1/8	1-5/8	1-5/8	1-5/8	1-5/8	1-5/8	1-5/8
66,000	1-1/8	1-1/8	1-3/8	1-3/8	1-1/8	1-3/8	1-3/8	1-5/8	1-1/8	1-3/8	1-5/8	1-5/8	1-1/8	1-5/8	1-5/8	1-5/8	1-5/8	1-5/8	1-5/8
72,000	1-1/8	1-1/8	1-3/8	1-3/8	1-1/8	1-3/8	1-5/8	1-5/8	1-1/8	1-3/8	1-5/8	1-5/8	1-1/8	1-5/8	1-5/8	1-5/8	1-5/8	1-5/8	1-5/8
78,000	1-1/8	1-1/8	1-3/8	1-3/8	1-1/8	1-3/8	1-5/8	1-5/8	1-3/8	1-3/8	1-5/8	1-5/8	1-3/8	1-5/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8
84,000	1-1/8	1-1/8	1-3/8	1-3/8	1-1/8	1-3/8	1-5/8	1-5/8	1-3/8	1-3/8	1-5/8	2-1/8	1-3/8	1-5/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8
90,000	1-1/8	1-3/8	1-3/8	1-5/8	1-3/8	1-3/8	1-5/8	2-1/8	1-3/8	1-5/8	1-5/8	2-1/8	1-3/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8
120,000	1-1/8	1-3/8	1-5/8	1-5/8	1-3/8	1-5/8	2-1/8	2-1/8	1-3/8	1-5/8	2-1/8	2-1/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8	2-5/8	2-5/8
150,000	1-3/8	1-3/8	1-5/8	2-1/8	1-5/8	1-5/8	2-1/8	2-1/8	1-5/8	2-1/8	2-1/8	2-1/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8	2-5/8	2-5/8
180,000	1-3/8	1-5/8	2-1/8	2-1/8	1-5/8	2-1/8	2-1/8	2-1/8	1-5/8	2-1/8	2-1/8	2-5/8	1-5/8	2-1/8	2-1/8	2-5/8	2-5/8	2-5/8	2-5/8
210,000	1-3/8	1-5/8	2-1/8	2-1/8	1-5/8	2-1/8	2-1/8	2-5/8	2-1/8	2-1/8	2-5/8	2-5/8	2-1/8	2-5/8	2-5/8	2-5/8	2-5/8	3-1/8	3-1/8
240,000	1-5/8	1-5/8	2-1/8	2-1/8	1-5/8	2-1/8	2-1/8	2-5/8	2-1/8	2-1/8	2-5/8	2-5/8	2-1/8	2-5/8	2-5/8	2-5/8	2-5/8	3-1/8	3-1/8
300,000	1-5/8	2-1/8	2-1/8	2-5/8	2-1/8	2-1/8	2-5/8	2-5/8	2-1/8	2-5/8	2-5/8	3-1/8	2-5/8	2-5/8	2-5/8	2-5/8	2-5/8	3-1/8	3-1/8
360,000	2-1/8	2-1/8	2-5/8	2-5/8	2-1/8	2-1/8	2-5/8	3-1/8	2-1/8	2-5/8	2-5/8	3-1/8	2-5/8	2-5/8	3-1/8	3-1/8	3-1/8	3-5/8	3-5/8
480,000	2-1/8	2-1/8	2-5/8	2-5/8	2-1/8	2-5/8	3-1/8	3-1/8	2-5/8	2-5/8	2-5/8	3-5/8	3-1/8	3-1/8	3-5/8	3-5/8	3-5/8	4-1/8	4-1/8
600,000	2-1/8	2-5/8	2-5/8	3-1/8	2-5/8	2-5/8	3-1/8	3-5/8	2-5/8	2-5/8	3-1/8	3-5/8	3-1/8	3-5/8	3-5/8	3-5/8	3-5/8	4-1/8	4-1/8

*** NOTES:**

1. Sizes that are highlighted indicate maximum suction line sizes that should be used for risers. Riser size should not exceed horizontal size. Properly placed suction traps must also be used for adequate oil return. All sizes shown are for O.D. Type L copper tubing.
2. Suction line sizes selected at pressure drop equivalent to 2˚F. Reduce estimate of system capacity accordingly.
3. Recommended liquid line size may increase with reverse cycle hot gas systems.
4. If system load drops below 40% of design, consideration to installing double suction risers should be made.

RECOMMENDED LINE SIZES

R448A / R449A

Table 9a.Recommended Line Sizes for R-448A/R-449A* (cont.)

Capacity BTUH	Suction Line Size																Liquid Line Size			
	Suction Temperature																Receiver to Expansion Valve Equivalent Lengths			
	-10˚F Equivalent Lengths				-20˚F Equivalent Lengths				-30˚F Equivalent Lengths				-40˚F Equivalent Lengths							
	25'	50'	100'	150'	25'	50'	100'	150'	25'	50'	100'	150'	25'	50'	100'	150'	25'	50'	100'	150'
1,000	3/8	3/8	1/2	1/2	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2	1/2	5/8	3/8	3/8	3/8	3/8
3,000	1/2	1/2	5/8	5/8	3/8	3/8	1/2	1/2	3/8	1/2	1/2	5/8	1/2	1/2	5/8	7/8	3/8	3/8	3/8	3/8
4,000	1/2	5/8	5/8	7/8	3/8	1/2	1/2	5/8	1/2	1/2	5/8	5/8	1/2	5/8	7/8	7/8	3/8	3/8	3/8	3/8
6,000	1/2	5/8	7/8	7/8	1/2	1/2	5/8	7/8	1/2	1/2	5/8	7/8	5/8	5/8	7/8	7/8	3/8	3/8	3/8	3/8
9,000	5/8	7/8	7/8	7/8	5/8	5/8	7/8	7/8	5/8	5/8	7/8	7/8	5/8	7/8	7/8	1-1/8	3/8	3/8	3/8	3/8
12,000	7/8	7/8	7/8	1-1/8	5/8	7/8	7/8	7/8	5/8	7/8	7/8	7/8	7/8	7/8	1-1/8	1-1/8	3/8	3/8	3/8	3/8
15,000	7/8	7/8	1-1/8	1-1/8	5/8	7/8	7/8	7/8	7/8	7/8	7/8	1-1/8	7/8	7/8	1-1/8	1-1/8	3/8	3/8	3/8	3/8
18,000	7/8	7/8	1-1/8	1-1/8	7/8	7/8	7/8	1-1/8	7/8	7/8	1-1/8	1-1/8	7/8	1-1/8	1-1/8	1-3/8	3/8	3/8	3/8	1/2
24,000	7/8	1-1/8	1-1/8	1-3/8	7/8	7/8	1-1/8	1-1/8	7/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-3/8	1-3/8	3/8	3/8	1/2	1/2
30,000	1-1/8	1-1/8	1-3/8	1-3/8	7/8	7/8	1-1/8	1-1/8	7/8	1-1/8	1-1/8	1-3/8	1-1/8	1-1/8	1-3/8	1-3/8	3/8	3/8	1/2	1/2
36,000	1-1/8	1-1/8	1-3/8	1-3/8	7/8	1-1/8	1-1/8	1-3/8	1-1/8	1-1/8	1-3/8	1-3/8	1-1/8	1-3/8	1-3/8	1-5/8	3/8	1/2	1/2	1/2
42,000	1-1/8	1-3/8	1-3/8	1-5/8	1-1/8	1-1/8	1-3/8	1-3/8	1-1/8	1-1/8	1-3/8	1-3/8	1-1/8	1-3/8	1-3/8	1-5/8	3/8	1/2	1/2	1/2
48,000	1-1/8	1-3/8	1-3/8	1-5/8	1-1/8	1-1/8	1-3/8	1-3/8	1-1/8	1-1/8	1-3/8	1-5/8	1-1/8	1-3/8	1-3/8	1-5/8	1/2	1/2	1/2	1/2
54,000	1-3/8	1-3/8	1-5/8	1-5/8	1-1/8	1-1/8	1-3/8	1-3/8	1-1/8	1-3/8	1-3/8	1-5/8	1-3/8	1-3/8	1-5/8	1-5/8	1/2	1/2	1/2	5/8
60,000	1-3/8	1-3/8	1-5/8	1-5/8	1-1/8	1-1/8	1-3/8	1-5/8	1-1/8	1-3/8	1-5/8	1-5/8	1-3/8	1-3/8	1-5/8	1-5/8	1/2	1/2	5/8	5/8
66,000	1-3/8	1-5/8	1-5/8	1-5/8	1-1/8	1-3/8	1-3/8	1-5/8	1-1/8	1-3/8	1-5/8	1-5/8	1-3/8	1-5/8	1-5/8	1-5/8	1/2	1/2	5/8	5/8
72,000	1-3/8	1-5/8	1-5/8	1-5/8	1-1/8	1-3/8	1-5/8	1-5/8	1-1/8	1-3/8	1-5/8	1-5/8	1-3/8	1-5/8	1-5/8	1-5/8	1/2	1/2	5/8	5/8
78,000	1-3/8	1-5/8	1-5/8	1-5/8	1-1/8	1-3/8	1-5/8	1-5/8	1-3/8	1-3/8	1-5/8	1-5/8	1-5/8	1-5/8	1-5/8	2-1/8	1/2	1/2	5/8	5/8
84,000	1-3/8	1-5/8	1-5/8	2-1/8	1-1/8	1-3/8	1-5/8	1-5/8	1-3/8	1-3/8	1-5/8	2-1/8	1-5/8	1-5/8	2-1/8	2-1/8	1/2	5/8	5/8	5/8
90,000	1-5/8	1-5/8	2-1/8	2-1/8	1-3/8	1-3/8	1-5/8	2-1/8	1-3/8	1-5/8	1 5/8	2-1/8	1-5/8	1-5/8	2-1/8	2-1/8	1/2	5/8	5/8	7/8
120,000	1-5/8	2-1/8	2-1/8	2-5/8	1-3/8	1-5/8	2-1/8	2-1/8	1-3/8	1-5/8	2-1/8	2-1/8	1-5/8	2-1/8	2-1/8	2-5/8	5/8	5/8	7/8	7/8
150,000	2-1/8	2-1/8	2-5/8	2-5/8	1-5/8	1-5/8	2-1/8	2-1/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8	2-1/8	2-5/8	2-5/8	5/8	7/8	7/8	7/8
180,000	2-1/8	2-1/8	2-5/8	2-5/8	1-5/8	2-1/8	2-1/8	2-1/8	1-5/8	2-1/8	2-1/8	2-5/8	2-1/8	2-1/8	2-5/8	2-5/8	5/8	7/8	7/8	7/8
210,000	2-1/8	2-1/8	2-5/8	3-1/8	1-5/8	2-1/8	2-1/8	2-5/8	2-1/8	2-1/8	2-5/8	2-5/8	2-1/8	2-5/8	2-5/8	3-1/8	7/8	7/8	7/8	7/8
240,000	2-1/8	2-5/8	2-5/8	3-1/8	1-5/8	2-1/8	2-1/8	2-5/8	2-1/8	2-1/8	2-5/8	2-5/8	2-5/8	2-5/8	3-1/8	3-1/8	7/8	7/8	7/8	1-1/8
300,000	2-5/8	2-5/8	3-1/8	3-1/8	2-1/8	2-1/8	2-5/8	2-5/8	2-1/8	2-5/8	2-5/8	3-1/8	2-5/8	2-5/8	3-5/8	3-5/8	7/8	7/8	1-1/8	1-1/8
360,000	2-5/8	2-5/8	3-1/8	3-5/8	2-1/8	2-1/8	2-5/8	3-1/8	2-1/8	2-5/8	2-5/8	3-1/8	2-5/8	3-1/8	3-5/8	4-1/8	7/8	7/8	1-1/8	1-1/8
480,000	2-5/8	3-1/8	3-5/8	3-5/8	2-1/8	2-5/8	3-1/8	3-1/8	2-5/8	2-5/8	2-5/8	3-5/8	3-1/8	3-5/8	4-1/8	4-1/8	1-1/8	1-1/8	1-1/8	1-3/8
600,000	3-1/8	3-1/8	3-5/8	4-1/8	2-5/8	2-5/8	3-1/8	3-5/8	2-5/8	2-5/8	3-1/8	3-5/8	3-1/8	3-5/8	4-1/8	4-1/8	1-1/8	1-1/8	1-1/8	1-3/8

*** NOTES:**

1. Sizes that are highlighted indicate maximum suction line sizes that should be used for risers. Riser size should not exceed horizontal size. Properly placed suction traps must also be used for adequate oil return.
   All sizes shown are for O.D. Type L copper tubing.
2. Suction line sizes selected at pressure drop equivalent to 2˚F. Reduce estimate of system capacity accordingly.
3. Recommended liquid line size may increase with reverse cycle hot gas systems.
4. If system load drops below 40% of design, consideration to installing double suction risers should be made.

REMOTE CONDENSER LINE SIZES

Recommended Remote Condenser Line Sizes

Net Evaporator Capacity	Total Equiv. Length	R-134a		R-22		R507 & R-404A	
		Discharge Line (O.D.)	Liquid Line Cond. to Receiver (O.D.)	Discharge Line (O.D.)	Liquid Line Cond. to Receiver (O.D.)	Discharge Line (O.D.)	Liquid Line Cond. to Receiver (O.D.)
3,000	50	3/8	3/8	3/8	3/8	3/8	3/8
	100	3/8	3/8	3/8	3/8	3/8	3/8
6,000	50	1/2	3/8	3/8	3/8	1/2	3/8
	100	1/2	3/8	1/2	3/8	1/2	3/8
9,000	50	1/2	3/8	1/2	3/8	1/2	3/8
	100	5/8	3/8	1/2	3/8	1/2	3/8
12,000	50	5/8	3/8	1/2	3/8	1/2	3/8
	100	5/8	1/2	5/8	3/8	5/8	1/2
18,000	50	5/8	1/2	5/8	3/8	5/8	1/2
	100	7/8	1/2	5/8	3/8	7/8	1/2
24,000	50	7/8	1/2	5/8	3/8	5/8	1/2
	100	7/8	1/2	7/8	1/2	7/8	5/8
36,000	50	7/8	1/2	7/8	1/2	7/8	5/8
	100	1 1/8	5/8	7/8	5/8	7/8	7/8
48,000	50	7/8	5/8	7/8	5/8	7/8	5/8
	100	1 1/8	7/8	7/8	7/8	1 1/8	7/8
60,000	50	1 1/8	5/8	7/8	5/8	7/8	7/8
	100	1 1/8	7/8	1 1/8	7/8	1 1/8	7/8
72,000	50	1 1/8	7/8	7/8	7/8	1 1/8	7/8
	100	1 3/8	7/8	1 1/8	7/8	1 1/8	1 1/8
90,000	50	1 1/8	7/8	1 1/8	7/8	1 1/8	7/8
	100	1 3/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8
120,000	50	1 3/8	7/8	1 1/8	7/8	1 1/8	1 1/8
	100	1 5/8	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8
180,000	50	1 5/8	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8
	100	1 5/8	1 3/8	1 5/8	1 3/8	1 5/8	1 5/8
240,000	50	1 5/8	1 3/8	1 3/8	1 3/8	1 5/8	1 3/8
	100	2 1/8	1 5/8	1 5/8	1 3/8	2 1/8	1 5/8
300,000	50	2 1/8	1 3/8	1 5/8	1 3/8	1 5/8	1 5/8
	100	2 1/8	1 5/8	2 1/8	1 5/8	2 1/8	2 1/8
360,000	50	2 1/8	1 5/8	1 5/8	1 5/8	2 1/8	1 5/8
	100	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8
480,000	50	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8
	100	2 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8
600,000	50	2 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8
	100	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8
720,000	50	2 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8
	100	3 1/8	2 5/8	2 5/8	2 5/8	2 5/8	3 1/8
840,000	50	2 5/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8
	100	3 1/8	3 1/8	2 5/8	2 5/8	2 5/8	3 1/8
960,000	50	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8
	100	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 5/8
1,080,000	50	3 1/8	2 5/8	2 5/8	2 5/8	2 5/8	3 1/8
	100	3 1/8	3 1/8	3 1/8	3 1/8	3 1/8	3 5/8
1,200,000	50	3 1/8	2 5/8	2 5/8	2 5/8	2 5/8	3 1/8
	100	3 5/8	3 5/8	3 1/8	3 1/8	3 5/8	4 1/8
1,440,000	50	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 5/8
	100	3 5/8	3 5/8	3 1/8	3 5/8	3 5/8	4 1/8
1,680,000	50	3 5/8	3 1/8	3 1/8	3 1/8	3 1/8	3 5/8
	100	4 1/8	4 1/8	3 5/8	3 5/8	3 5/8	4 1/8

Line Sizing

The following Tables 12 through 14A on pages 22 through 27 indicate liquid lines and suction lines for all condensing units for R22, R404A, R134a, and R507.

When determining the refrigerant line length, be sure to add an allowance for fittings. See Table 10 below. Total equivalent length of refrigerant lines is the sum of the actual linear footage and the allowance for fittings.

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Suction Line Size .. Evaporator to Compressor

		50º F through 30º F (84 through 55 psig)					29º F through 10º F (54 through 33 psig)					9º F through -10º F (32 through 16 psig)						
		Suggested Allowable Pressure Drop in psig = 2Fº																
		2.9 lbs. (2Fº)					2.2 lbs. (2Fº)					1.7 lbs. (2Fº)						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Suction Line Lengths ... feet															System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150	25	50	75	100	150		
18,000	1.50	5/8	3/4	3/4	3/4	7/8	3/4	3/4	7/8	7/8	1 1/8	3/4	7/8	1 1/8	1 1/8	1 1/8	1.50	18,000
24,000	2.00	5/8	3/4	3/4	7/8	7/8	3/4	7/8	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	2.00	24,000
30,000	2.50	3/4	7/8	7/8	7/8	1 1/8	7/8	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	2.50	30,000
36,000	3.00	3/4	7/8	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	3.00	36,000
42,000	3.50	3/4	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	3.50	42,000
48,000	4.00	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	4.00	48,000
60,000	5.00	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	5.00	60,000
92,000	7.50	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	7.50	92,000
120,000	10.00	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	1 5/8	2 1/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	10.00	120,000
150,000	12.50	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	12.50	150,000
180,000	15.00	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	15.00	180,000
240,000	20.00	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	20.00	240,000
300,000	25.00	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	25.00	300,000
360,000	30.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8	2 5/8	3 1/8	3 1/8	30.00	360,000
420,000	35.00	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	35.00	420,000
480,000	40.00	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	40.00	480,000
540,000	45.00	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	45.00	540,000
600,000	50.00	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	50.00	600,000

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***R407C is a 9% vairants of the capacities of R22**

		Discharge Line Size Compressor to Condenser 1Fº (3 psi) pressure drop maximum					Liquid Condensate Line Condenser to Receiver Condensate drain / vent					Liquid Line Size Receiver to TXV 1Fº (3 psi) pressure drop maximum						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Line Lengths ... feet															System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150	25	50	75	100	150		
18,000	1.50	1/2	5/8	5/8	5/8	3/4	1/2	1/2	1/2	1/2	5/8	3/8	3/8	3/8	3/8	1/2	1.50	18,000
24,000	2.00	5/8	5/8	3/4	3/4	3/4	1/2	1/2	1/2	5/8	5/8	3/8	3/8	3/8	1/2	1/2	2.00	24,000
30,000	2.50	5/8	3/4	3/4	3/4	7/8	1/2	1/2	5/8	5/8	5/8	3/8	3/8	1/2	1/2	1/2	2.50	30,000
36,000	3.00	3/4	3/4	3/4	7/8	7/8	1/2	5/8	5/8	5/8	5/8	3/8	1/2	1/2	1/2	1/2	3.00	36,000
42,000	3.50	3/4	3/4	7/8	7/8	7/8	5/8	5/8	5/8	5/8	3/4	1/2	1/2	1/2	1/2	5/8	3.50	42,000
48,000	4.00	3/4	3/4	7/8	7/8	1 1/8	5/8	5/8	5/8	3/4	3/4	1/2	1/2	1/2	5/8	5/8	4.00	48,000
60,000	5.00	3/4	7/8	7/8	1 1/8	1 1/8	5/8	5/8	3/4	3/4	3/4	1/2	1/2	5/8	5/8	5/8	5.00	60,000
92,000	7.50	7/8	1 1/8	1 1/8	1 1/8	1 3/8	3/4	3/4	3/4	7/8	7/8	5/8	5/8	5/8	3/4	3/4	7.50	92,000
120,000	10.00	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	3/4	3/4	7/8	7/8	7/8	5/8	5/8	3/4	3/4	3/4	10.00	120,000
150,000	12.50	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	3/4	7/8	7/8	7/8	1 1/8	5/8	3/4	3/4	3/4	7/8	12.50	150,000
180,000	15.00	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	7/8	1 1/8	1 1/8	1 1/8	3/4	3/4	7/8	7/8	7/8	15.00	180,000
240,000	20.00	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	7/8	1 1/8	1 1/8	1 3/8	1 3/8	3/4	7/8	7/8	1 1/8	1 1/8	20.00	240,000
300,000	25.00	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	7/8	7/8	1 1/8	1 1/8	1 1/8	25.00	300,000
360,000	30.00	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	30.00	360,000
420,000	35.00	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	35.00	420,000
480,000	40.00	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	40.00	480,000
540,000	45.00	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	45.00	540,000
600,000	50.00	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	50.00	600,000

- Refer to DuPont Refrigerant Expert, version 2.0 for actual velocities and pressure drops.
- Equivalent length is actual length plus friction losses caused by fittings and accessories.
- Line sizes are expressed in outside diameter of type “L” copper tubing.
- Line sizes are calculated at rated full load system capacity.
- All selections are based on a maximum of 65º F return gas entering the compressor and a refrigerant condensing and liquid line temperature of 105º F.

R-134a Refrigerant Line Sizing Selections for Type L Copper Tubing (Dimensions in OD; data based on 120° condensing

Evaporator Capacity (tons)	Suction Line Sizes to Limit Pressure Drop to 2° Equivalent									Discharge Line Sizes for 1° Equivalent			Liquid Line Sizes for 1° Equivalent		
	-40° Evap.			0° Evap.			40° Evap.								
	Equivalent Piping Length (ft)									Equivalent Piping Length (ft)					
	25	50	100	25	50	100	25	50	100	25	50	100	25	50	100
1/4	3/4	7/8	1-1/8	1/2	5/8	3/4	3/8	1/2	1/2	3/8	3/8	3/8	3/8	3/8	3/8
1/2	1-1/8	1-1/8	1-3/8	5/8	3/4	7/8	1/2	5/8	5/8	3/8	1/2	1/2	3/8	3/8	3/8
3/4	1-1/8	1-3/8	1-5/8	3/4	7/8	1-1/8	5/8	5/8	3/4	1/2	1/2	5/8	3/8	3/8	3/8
1	1-3/8	1-3/8	1-5/8	7/8	1-1/8	1-1/8	5/8	3/4	3/4	1/2	5/8	5/8	3/8	3/8	3/8
1-1/2	1-3/8	1-5/8	2-1/8	1-1/8	1-1/8	1-3/8	3/4	7/8	7/8	5/8	5/8	3/4	3/8	3/8	1/2
2	1-5/8	2-1/8	2-1/8	1-1/8	1-3/8	1-5/8	3/4	7/8	1-1/8	5/8	3/4	7/8	3/8	3/8	1/2

- Above chart lists appropriate pipe size selections for various system capacities and evaporating temperatures. These are based solely on pressure drop parameters and do not incorporate minimum or maximum velocity considerations.
- Equivalent length is actual length plus friction losses caused by fittings and accessories.

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Suction Line Size .. Evaporator to Compressor

System Capacity BTU/Hr.	System Capacity Tons/Hr	50º F through 30º F (48 through 26 psig)					29º F through 10º F (25 through 12 psig)					9º F through -10º F (11 through 2 psig)					System Capacity Tons/Hr	System Capacity BTU/Hr.
		Suggested Allowable Pressure Drop in psig = 2Fº																
		2.2 lbs. (2Fº)					1.4 lbs. (2Fº)					1.0 lbs. (2Fº)						
		Equivalent Suction Line Lengths ... feet																
		25	50	75	100	150	25	50	75	100	150	25	50	75	100	150		
18,000	1.50	5/8	3/4	3/4	7/8	7/8	3/4	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1.50	18,000
24,000	2.00	3/4	7/8	7/8	7/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	2.00	24,000
30,000	2.50	3/4	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	2.50	30,000
36,000	3.00	3/4	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	3.00	36,000
42,000	3.50	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	3.50	42,000
48,000	4.00	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	4.00	48,000
60,000	5.00	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	5.00	60,000
92,000	7.50	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	7.50	92,000
120,000	10.00	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 5/8	2 5/8	10.00	120,000
150,000	12.50	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	12.50	150,000
180,000	15.00	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	15.00	180,000
240,000	20.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	3 1/8	3 1/8	3 1/8	20.00	240,000
300,000	25.00	1 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	3 1/8	2 5/8	3 1/8	3 1/8	3 1/8	3 5/8	25.00	300,000
360,000	30.00	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	30.00	360,000
420,000	35.00	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	2 5/8	3 1/8	3 5/8	3 5/8	4 1/8	35.00	420,000
480,000	40.00	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	3 1/8	3 1/8	3 1/8	3 5/8	3 1/8	3 5/8	3 5/8	3 5/8	4 1/8	40.00	480,000
540,000	45.00	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	3 1/8	3 5/8	3 5/8	4 1/8	4 1/8	45.00	540,000
600,000	50.00	2 5/8	2 5/8	3 1/8	3 1/8	3 1/8	2 5/8	3 1/8	3 5/8	3 5/8	3 5/8	3 1/8	3 5/8	4 1/8	4 1/8	5 1/8	50.00	600,000

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		Discharge Line Size Compressor to Condenser 1Fº (2.2 psi) pressure drop maximum					Liquid Condensate Line Condenser to Receiver Condensate drain / vent					Liquid Line Size Receiver to TXV 1Fº (2.2 psi) pressure drop maximum						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Line Lengths ... feet															System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150	25	50	75	100	150		
18,000	1.50	5/8	5/8	3/4	3/4	3/4	1/2	1/2	1/2	5/8	5/8	3/8	3/8	3/8	1/2	1/2	1.50	18,000
24,000	2.00	5/8	5/8	3/4	3/4	7/8	1/2	1/2	5/8	5/8	5/8	3/8	3/8	1/2	1/2	1/2	2.00	24,000
30,000	2.50	5/8	3/4	3/4	7/8	7/8	1/2	5/8	5/8	5/8	5/8	3/8	1/2	1/2	1/2	1/2	2.50	30,000
36,000	3.00	3/4	3/4	7/8	7/8	7/8	1/2	5/8	5/8	5/8	3/4	3/8	1/2	1/2	1/2	5/8	3.00	36,000
42,000	3.50	3/4	7/8	7/8	7/8	1 1/8	5/8	5/8	5/8	3/4	3/4	1/2	1/2	1/2	5/8	5/8	3.50	42,000
48,000	4.00	3/4	7/8	7/8	1 1/8	1 1/8	5/8	5/8	5/8	3/4	3/4	1/2	1/2	1/2	5/8	5/8	4.00	48,000
60,000	5.00	3/4	7/8	1 1/8	1 1/8	1 1/8	5/8	5/8	3/4	3/4	3/4	1/2	1/2	5/8	5/8	5/8	5.00	60,000
92,000	7.50	7/8	1 1/8	1 1/8	1 3/8	1 3/8	3/4	3/4	3/4	7/8	7/8	5/8	5/8	5/8	3/4	3/4	7.50	92,000
120,000	10.00	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	3/4	7/8	7/8	7/8	1 1/8	5/8	3/4	3/4	3/4	7/8	10.00	120,000
150,000	12.50	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	3/4	7/8	7/8	1 1/8	1 1/8	5/8	3/4	3/4	7/8	7/8	12.50	150,000
180,000	15.00	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	7/8	7/8	1 1/8	1 1/8	1 3/8	3/4	3/4	7/8	7/8	1 1/8	15.00	180,000
240,000	20.00	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	7/8	1 1/8	1 1/8	1 3/8	1 3/8	3/4	7/8	7/8	1 1/8	1 1/8	20.00	240,000
300,000	25.00	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	7/8	7/8	1 1/8	1 1/8	1 1/8	25.00	300,000
360,000	30.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	30.00	360,000
420,000	35.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	35.00	420,000
480,000	40.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	40.00	480,000
540,000	45.00	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	45.00	540,000
600,000	50.00	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	50.00	600,000

- Refer to DuPont Refrigerant Expert, version 2.0 for actual velocities and pressure drops.
- Equivalent length is actual length plus friction losses caused by fittings and accessories.
- Line sizes are expressed in outside diameter of type “L” copper tubing.
- Line sizes are calculated at rated full load system capacity.
- All selections are based on a maximum of 65º F return gas entering the compressor and a refrigerant condensing and liquid line temperature of 105º F.

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Suva 404A
Refrigerant Piping Guide

Suva® refrigerants

Suction Line Size .. Evaporator to Compressor

		50º F through 30º F (104 through 70 psig)					29º F through 10º F (68 through 43 psig)					9º F through -10º F (42 through 24 psig)						
		Suggested Allowable Pressure Drop in psig = 2Fº																
		3.4 lbs. (2Fº)					2.6 lbs. (2Fº)					1.9 lbs. (2Fº)						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Suction Line Lengths ... feet															System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150	25	50	75	100	150		
18,000	1.50	5/8	5/8	3/4	3/4	3/4	5/8	3/4	3/4	7/8	7/8	3/4	7/8	7/8	1 1/8	1 1/8	1.50	18,000
24,000	2.00	5/8	3/4	7/8	7/8	7/8	3/4	3/4	7/8	7/8	1 1/8	3/4	7/8	1 1/8	1 1/8	1 1/8	2.00	24,000
30,000	2.50	3/4	3/4	7/8	7/8	1 1/8	3/4	7/8	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	2.50	30,000
36,000	3.00	3/4	7/8	7/8	7/8	1 1/8	7/8	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	3.00	36,000
42,000	3.50	3/4	7/8	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	3.50	42,000
48,000	4.00	3/4	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	4.00	48,000
60,000	5.00	7/8	7/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	5.00	60,000
92,000	7.50	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	7.50	92,000
120,000	10.00	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	10.00	120,000
150,000	12.50	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	12.50	150,000
180,000	15.00	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	15.00	180,000
240,000	20.00	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	20.00	240,000
300,000	25.00	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	25.00	300,000
360,000	30.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	30.00	360,000
420,000	35.00	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	35.00	420,000
480,000	40.00	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	40.00	480,000
540,000	45.00	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 1/8	3 5/8	45.00	540,000
600,000	50.00	2 1/8	2 1/8	2 5/8	2 5/8	3 1/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	50.00	600,000

Suva 404A
Refrigerant Piping Guide

Suva® refrigerants

Suction Line Size .. Evaporator to Compressor

		- 11º F through - 30º F (23 through 10 psig)					- 31º F through - 50º F (9 through 0 psig)						
		Suggested Allowable Pressure Drop in psig = 2Fº											
		1.4 lbs. (2Fº)					1.0 lbs. (2Fº)						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Suction Lengths ... feet										System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150		
18,000	1.50	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1.50	18,000
24,000	2.00	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	2.00	24,000
30,000	2.50	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	2.50	30,000
36,000	3.00	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	3.00	36,000
42,000	3.50	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 3/8	1 5/8	1 5/8	1 5/8	2 1/8	3.50	42,000
48,000	4.00	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	4.00	48,000
60,000	5.00	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8	5.00	60,000
92,000	7.50	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	7.50	92,000
120,000	10.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	10.00	120,000
150,000	12.50	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	12.50	150,000
180,000	15.00	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	15.00	180,000
240,000	20.00	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	3 1/8	3 1/8	3 1/8	3 5/8	20.00	240,000
300,000	25.00	2 5/8	2 5/8	3 1/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	25.00	300,000
360,000	30.00	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	3 1/8	3 1/8	3 5/8	3 5/8	4 1/8	30.00	360,000
420,000	35.00	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	3 1/8	3 5/8	3 5/8	4 1/8	4 1/8	35.00	420,000
480,000	40.00	2 5/8	3 1/8	3 5/8	3 5/8	3 5/8	3 1/8	3 5/8	4 1/8	4 1/8	5 1/8	40.00	480,000
540,000	45.00	3 1/8	3 1/8	3 5/8	3 5/8	4 1/8	3 5/8	3 5/8	4 1/8	4 1/8	5 1/8	45.00	540,000
600,000	50.00	3 1/8	3 5/8	3 5/8	4 1/8	4 1/8	3 5/8	4 1/8	4 1/8	5 1/8	5 1/8	50.00	600,000

- Refer to DuPont Refrigerant Expert, version 2.0 for actual velocities and pressure drops.
- Equivalent length is actual length plus friction losses caused by fittings and accessories.
- Line sizes are expressed in outside diameter of type “L” copper tubing.
- Line sizes are calculated at rated full load system capacity.
- All selections are based on a maximum of 65º F return gas entering the compressor and a refrigerant condensing and liquid line temperature of 105º F.

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Suva® refrigerants

		Discharge Line Size Compressor to Condenser 1F° (3 psi) pressure drop maximum					Liquid Condensate Line Condenser to Receiver Condensate drain / vent					Liquid Line Size Receiver to TXV 1F° (3 psi) pressure drop maximum						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Line Lengths ... feet															System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150	25	50	75	100	150		
18,000	1.50	1/2	5/8	5/8	5/8	5/8	1/2	1/2	1/2	1/2	5/8	3/8	3/8	3/8	3/8	1/2	1.50	18,000
24,000	2.00	5/8	5/8	5/8	3/4	3/4	1/2	1/2	5/8	5/8	5/8	3/8	3/8	1/2	1/2	1/2	2.00	24,000
30,000	2.50	5/8	5/8	3/4	3/4	3/4	1/2	5/8	5/8	5/8	5/8	3/8	1/2	1/2	1/2	1/2	2.50	30,000
36,000	3.00	5/8	3/4	3/4	3/4	7/8	5/8	5/8	5/8	5/8	3/4	1/2	1/2	1/2	1/2	5/8	3.00	36,000
42,000	3.50	5/8	3/4	3/4	7/8	7/8	5/8	5/8	5/8	5/8	3/4	1/2	1/2	1/2	1/2	5/8	3.50	42,000
48,000	4.00	3/4	3/4	7/8	7/8	1 1/8	5/8	5/8	5/8	3/4	3/4	1/2	1/2	1/2	5/8	5/8	4.00	48,000
60,000	5.00	3/4	7/8	7/8	1 1/8	1 1/8	5/8	5/8	3/4	3/4	3/4	1/2	1/2	5/8	5/8	5/8	5.00	60,000
92,000	7.50	7/8	1 1/8	1 1/8	1 1/8	1 1/8	5/8	3/4	3/4	7/8	7/8	1/2	5/8	5/8	3/4	3/4	7.50	92,000
120,000	10.00	7/8	1 1/8	1 1/8	1 3/8	1 3/8	3/4	7/8	7/8	7/8	1 1/8	5/8	3/4	3/4	3/4	7/8	10.00	120,000
150,000	12.50	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	3/4	7/8	7/8	1 1/8	1 1/8	5/8	3/4	3/4	7/8	7/8	12.50	150,000
180,000	15.00	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	7/8	1 1/8	1 1/8	1 3/8	3/4	3/4	7/8	7/8	1 1/8	15.00	180,000
240,000	20.00	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	7/8	1 1/8	1 1/8	1 3/8	1 3/8	3/4	7/8	7/8	1 1/8	1 1/8	20.00	240,000
300,000	25.00	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	7/8	7/8	1 1/8	1 1/8	1 1/8	25.00	300,000
360,000	30.00	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	30.00	360,000
420,000	35.00	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	35.00	420,000
480,000	40.00	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	40.00	480,000
540,000	45.00	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	45.00	540,000
600,000	50.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	50.00	600,000

- Refer to DuPont Refrigerant Expert, version 2.0 for actual velocities and pressure drops.
- Equivalent length is actual length plus friction losses caused by fittings and accessories.
- Line sizes are expressed in outside diameter of type “L” copper tubing.
- Line sizes are calculated at rated full load system capacity.
- All selections are based on a maximum of 65° F return gas entering the compressor and a refrigerant condensing and liquid line temperature of 105° F.

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Suva 507
Refrigerant Piping Guide

Suva® refrigerants

Suction Line Size .. Evaporator to Compressor

		50° F through 30° F (104 through 70 psig)					29° F through 10° F (68 through 43 psig)					9° F through -10° F (42 through 24 psig)						
		Suggested Allowable Pressure Drop in psig = 2F°																
		3.4 lbs. (2F°)					2.6 lbs. (2F°)					1.9 lbs. (2F°)						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Suction Line Lengths ... feet															System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150	25	50	75	100	150		
18,000	1.50	5/8	5/8	3/4	3/4	3/4	5/8	3/4	3/4	7/8	7/8	3/4	7/8	7/8	1 1/8	1 1/8	1.50	18,000
24,000	2.00	5/8	3/4	7/8	7/8	7/8	3/4	3/4	7/8	7/8	1 1/8	3/4	7/8	1 1/8	1 1/8	1 1/8	2.00	24,000
30,000	2.50	3/4	3/4	7/8	7/8	1 1/8	3/4	7/8	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	2.50	30,000
36,000	3.00	3/4	7/8	7/8	7/8	1 1/8	7/8	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	3.00	36,000
42,000	3.50	3/4	7/8	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	3.50	42,000
48,000	4.00	3/4	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	4.00	48,000
60,000	5.00	7/8	7/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	5.00	60,000
92,000	7.50	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	7.50	92,000
120,000	10.00	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	10.00	120,000
150,000	12.50	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	12.50	150,000
180,000	15.00	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	15.00	180,000
240,000	20.00	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	20.00	240,000
300,000	25.00	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	25.00	300,000
360,000	30.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	30.00	360,000
420,000	35.00	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	35.00	420,000
480,000	40.00	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	40.00	480,000
540,000	45.00	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 1/8	3 5/8	45.00	540,000
600,000	50.00	2 1/8	2 1/8	2 5/8	2 5/8	3 1/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	50.00	600,000

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Suction Line Size .. Evaporator to Compressor

		- 11° F through - 30° F (23 through 10 psig)					- 31° F through - 50° F (9 through 0 psig)						
		Suggested Allowable Pressure Drop in psig = 2F°											
		1.4 lbs. (2F°)					1.0 lbs. (2F°)						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Suction Lengths ... feet										System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150		
18,000	1.50	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1.50	18,000
24,000	2.00	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	2.00	24,000
30,000	2.50	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	2.50	30,000
36,000	3.00	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	3.00	36,000
42,000	3.50	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 3/8	1 5/8	1 5/8	1 5/8	2 1/8	3.50	42,000
48,000	4.00	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	4.00	48,000
60,000	5.00	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 5/8	1 5/8	1 5/8	2 1/8	2 1/8	5.00	60,000
92,000	7.50	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	7.50	92,000
120,000	10.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	10.00	120,000
150,000	12.50	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	12.50	150,000
180,000	15.00	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	15.00	180,000
240,000	20.00	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	3 1/8	3 1/8	3 1/8	3 5/8	20.00	240,000
300,000	25.00	2 5/8	2 5/8	3 1/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	25.00	300,000
360,000	30.00	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	3 1/8	3 1/8	3 5/8	3 5/8	4 1/8	30.00	360,000
420,000	35.00	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	3 1/8	3 5/8	3 5/8	4 1/8	4 1/8	35.00	420,000
480,000	40.00	2 5/8	3 1/8	3 5/8	3 5/8	3 5/8	3 1/8	3 5/8	4 1/8	4 1/8	5 1/8	40.00	480,000
540,000	45.00	3 1/8	3 1/8	3 5/8	3 5/8	4 1/8	3 5/8	3 5/8	4 1/8	4 1/8	5 1/8	45.00	540,000
600,000	50.00	3 1/8	3 5/8	3 5/8	4 1/8	4 1/8	3 5/8	4 1/8	4 1/8	5 1/8	5 1/8	50.00	600,000

- Refer to DuPont Refrigerant Expert, version 2.0. Suva 404A (R-404A) for actual velocities and pressure drops.
- Equivalent length is actual length plus friction losses caused by fittings and accessories.
- Line sizes are expressed in outside diameter of type “L” copper tubing.
- Line sizes are calculated at rated full load system capacity.
- All selections are based on a maximum of 65° F return gas entering the compressor and a refrigerant condensing and liquid line temperature of 105° F.

Chemours™

Suva 507
Refrigerant Piping Guide

Suva® refrigerants

		Discharge Line Size Compressor to Condenser 1F° (3 psi) pressure drop maximum					Liquid Condensate Line Condenser to Receiver Condensate drain / vent					Liquid Line Size Receiver to TXV 1F° (3 psi) pressure drop maximum						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Line Lengths ... feet															System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150	25	50	75	100	150		
18,000	1.50	1/2	5/8	5/8	5/8	5/8	1/2	1/2	1/2	1/2	5/8	3/8	3/8	3/8	3/8	1/2	1.50	18,000
24,000	2.00	5/8	5/8	5/8	3/4	3/4	1/2	1/2	5/8	5/8	5/8	3/8	3/8	1/2	1/2	1/2	2.00	24,000
30,000	2.50	5/8	5/8	3/4	3/4	3/4	1/2	5/8	5/8	5/8	5/8	3/8	1/2	1/2	1/2	1/2	2.50	30,000
36,000	3.00	5/8	3/4	3/4	3/4	7/8	5/8	5/8	5/8	5/8	3/4	1/2	1/2	1/2	1/2	5/8	3.00	36,000
42,000	3.50	5/8	3/4	3/4	7/8	7/8	5/8	5/8	5/8	5/8	3/4	1/2	1/2	1/2	1/2	5/8	3.50	42,000
48,000	4.00	3/4	3/4	7/8	7/8	1 1/8	5/8	5/8	5/8	3/4	3/4	1/2	1/2	1/2	5/8	5/8	4.00	48,000
60,000	5.00	3/4	7/8	7/8	1 1/8	1 1/8	5/8	5/8	3/4	3/4	3/4	1/2	1/2	5/8	5/8	5/8	5.00	60,000
92,000	7.50	7/8	1 1/8	1 1/8	1 1/8	1 1/8	5/8	3/4	3/4	7/8	7/8	1/2	5/8	5/8	3/4	3/4	7.50	92,000
120,000	10.00	7/8	1 1/8	1 1/8	1 3/8	1 3/8	3/4	7/8	7/8	7/8	1 1/8	5/8	3/4	3/4	3/4	7/8	10.00	120,000
150,000	12.50	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	3/4	7/8	7/8	1 1/8	1 1/8	5/8	3/4	3/4	7/8	7/8	12.50	150,000
180,000	15.00	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	7/8	1 1/8	1 1/8	1 3/8	3/4	3/4	7/8	7/8	1 1/8	15.00	180,000
240,000	20.00	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	7/8	1 1/8	1 1/8	1 3/8	1 3/8	3/4	7/8	7/8	1 1/8	1 1/8	20.00	240,000
300,000	25.00	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	7/8	7/8	1 1/8	1 1/8	1 1/8	25.00	300,000
360,000	30.00	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	30.00	360,000
420,000	35.00	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	35.00	420,000
480,000	40.00	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	40.00	480,000
540,000	45.00	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	45.00	540,000
600,000	50.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	50.00	600,000

- Refer to DuPont Refrigerant Expert, version 2.0. Suva 404A (R-404A) for actual velocities and pressure drops.
- Equivalent length is actual length plus friction losses caused by fittings and accessories.
- Line sizes are expressed in outside diameter of type “L” copper tubing.
- Line sizes are calculated at rated full load system capacity.
- All selections are based on a maximum of 65° F return gas entering the compressor and a refrigerant condensing and liquid line temperature of 105° F.

Chemours™

Suva 407C
Refrigerant Piping Guide

Suva® refrigerants

Suction Line Size .. Evaporator to Compressor

		50º F through 30º F (77 through 48 psig)					29º F through 10º F (47 through 27 psig)					9º F through -10º F (26 through 12 psig)						
		Suggested Allowable Pressure Drop in psig = 2Fº																
		2.5 lbs. (2Fº)					1.8 lbs. (2Fº)					1.3 lbs. (2Fº)						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Suction Line Lengths ... feet															System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150	25	50	75	100	150		
18,000	1.50	5/8	3/4	3/4	3/4	7/8	3/4	3/4	7/8	7/8	1 1/8	3/4	7/8	1 1/8	1 1/8	1 1/8	1.50	18,000
24,000	2.00	3/4	3/4	7/8	7/8	7/8	3/4	7/8	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	2.00	24,000
30,000	2.50	3/4	7/8	7/8	7/8	1 1/8	7/8	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	2.50	30,000
36,000	3.00	3/4	7/8	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	3.00	36,000
42,000	3.50	3/4	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	3.50	42,000
48,000	4.00	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	4.00	48,000
60,000	5.00	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	5.00	60,000
92,000	7.50	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	7.50	92,000
120,000	10.00	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	10.00	120,000
150,000	12.50	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	12.50	150,000
180,000	15.00	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	15.00	180,000
240,000	20.00	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	20.00	240,000
300,000	25.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	25.00	300,000
360,000	30.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	30.00	360,000
420,000	35.00	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	3 1/8	3 1/8	3 1/8	3 5/8	35.00	420,000
480,000	40.00	2 1/8	2 1/8	2 5/8	2 5/8	3 1/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	40.00	480,000
540,000	45.00	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	2 5/8	3 1/8	3 1/8	3 5/8	3 5/8	45.00	540,000
600,000	50.00	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	3 1/8	3 1/8	3 5/8	3 5/8	4 1/8	50.00	600,000

Suva 407C
Refrigerant Piping Guide

Suva® refrigerants

		Discharge Line Size Compressor to Condenser 1Fº (3.2 psi) pressure drop maximum					Liquid Condensate Line Condenser to Receiver Condensate drain / vent					Liquid Line Size Receiver to TXV 1Fº (3.4 psi) pressure drop maximum						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Line Lengths ... feet															System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150	25	50	75	100	150		
18,000	1.50	1/2	1/2	5/8	5/8	5/8	1/2	1/2	3/4	1/2	1/2	3/8	3/8	3/8	3/8	3/8	1.50	18,000
24,000	2.00	1/2	5/8	5/8	5/8	3/4	1/2	1/2	3/4	1/2	5/8	3/8	3/8	3/8	3/8	1/2	2.00	24,000
30,000	2.50	5/8	5/8	5/8	3/4	3/4	1/2	1/2	3/4	5/8	5/8	3/8	3/8	3/8	1/2	1/2	2.50	30,000
36,000	3.00	5/8	5/8	3/4	3/4	3/4	1/2	1/2	5/8	5/8	5/8	3/8	3/8	1/2	1/2	1/2	3.00	36,000
42,000	3.50	5/8	3/4	3/4	3/4	7/8	1/2	5/8	5/8	5/8	5/8	3/8	1/2	1/2	1/2	1/2	3.50	42,000
48,000	4.00	5/8	3/4	3/4	7/8	7/8	1/2	5/8	5/8	5/8	3/4	3/8	1/2	1/2	1/2	5/8	4.00	48,000
60,000	5.00	3/4	3/4	7/8	7/8	1 1/8	5/8	5/8	5/8	3/4	3/4	1/2	1/2	1/2	5/8	5/8	5.00	60,000
92,000	7.50	3/4	7/8	1 1/8	1 1/8	1 1/8	5/8	3/4	3/4	3/4	7/8	1/2	5/8	5/8	5/8	3/4	7.50	92,000
120,000	10.00	7/8	1 1/8	1 1/8	1 1/8	1 3/8	5/8	3/4	3/4	7/8	7/8	1/2	5/8	5/8	3/4	3/4	10.00	120,000
150,000	12.50	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	3/4	3/4	7/8	7/8	7/8	5/8	5/8	3/4	3/4	3/4	12.50	150,000
180,000	15.00	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	3/4	7/8	7/8	7/8	1 1/8	5/8	3/4	3/4	3/4	7/8	15.00	180,000
240,000	20.00	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	7/8	1 1/8	1 1/8	1 3/8	3/4	3/4	7/8	7/8	1 1/8	20.00	240,000
300,000	25.00	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	7/8	1 1/8	1 1/8	1 3/8	1 3/8	3/4	7/8	7/8	1 1/8	1 1/8	25.00	300,000
360,000	30.00	1 3/8	1 5/8	1 5/8	1 5/8	2 1/8	7/8	1 1/8	1 3/8	1 3/8	1 3/8	3/4	7/8	1 1/8	1 1/8	1 1/8	30.00	360,000
420,000	35.00	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	7/8	7/8	1 1/8	1 1/8	1 1/8	35.00	420,000
480,000	40.00	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	40.00	480,000
540,000	45.00	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	45.00	540,000
600,000	50.00	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	7/8	1 1/8	1 1/8	1 3/8	1 3/8	50.00	600,000

- Refer to DuPont Refrigerant Expert, version 2.0 for actual velocities and pressure drops.
- Equivalent length is actual length plus friction losses caused by fittings and accessories.
- Line sizes are expressed in outside diameter of type “L” copper tubing.
- Line sizes are calculated at rated full load system capacity.
- All selections are based on a maximum of 65º F return gas entering the compressor and a refrigerant condensing and liquid line temperature of 105º F.

Chemours™

Suva 410A
Refrigerant Piping Guide

Suva® refrigerants

Suction Line Size .. Evaporator to Compressor

		50º F through 30º F (145 through 99 psig)					29º F through 10º F (97 through 64 psig)					9º F through -10º F (62 through 38 psig)						
		Suggested Allowable Pressure Drop in psig = 2Fº																
		4.6 lbs. (2Fº)					3.5 lbs. (2Fº)					2.5 lbs. (2Fº)						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Suction Line Lengths ... feet															System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150	25	50	75	100	150		
18,000	1.50	1/2	5/8	5/8	5/8	3/4	5/8	5/8	3/4	3/4	3/4	5/8	3/4	3/4	7/8	7/8	1.50	18,000
24,000	2.00	1/2	5/8	3/4	3/4	3/4	5/8	3/4	3/4	7/8	7/8	3/4	7/8	7/8	1 1/8	1 1/8	2.00	24,000
30,000	2.50	5/8	3/4	3/4	3/4	7/8	3/4	3/4	7/8	7/8	1 1/8	3/4	7/8	1 1/8	1 1/8	1 1/8	2.50	30,000
36,000	3.00	5/8	3/4	3/4	7/8	7/8	3/4	7/8	7/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	3.00	36,000
42,000	3.50	3/4	3/4	7/8	7/8	1 1/8	7/8	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	3.50	42,000
48,000	4.00	3/4	7/8	7/8	7/8	1 1/8	7/8	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 3/8	1 3/8	4.00	48,000
60,000	5.00	7/8	7/8	1 1/8	1 1/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	5.00	60,000
92,000	7.50	7/8	1 1/8	1 1/8	1 1/8	1 3/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	7.50	92,000
120,000	10.00	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 3/8	1 5/8	1 5/8	1 5/8	2 1/8	10.00	120,000
150,000	12.50	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	12.50	150,000
180,000	15.00	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	15.00	180,000
240,000	20.00	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	20.00	240,000
300,000	25.00	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	25.00	300,000
360,000	30.00	1 3/8	1 5/8	2 1/8	2 1/8	2 1/8	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	30.00	360,000
420,000	35.00	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	35.00	420,000
480,000	40.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	40.00	480,000
540,000	45.00	1 5/8	2 1/8	2 1/8	2 1/8	2 5/8	2 1/8	2 1/8	2 5/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	3 1/8	3 1/8	45.00	540,000
600,000	50.00	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8	2 1/8	2 5/8	2 5/8	2 5/8	3 1/8	2 5/8	2 5/8	3 1/8	3 1/8	3 5/8	50.00	600,000

Suva 410A
Refrigerant Piping Guide

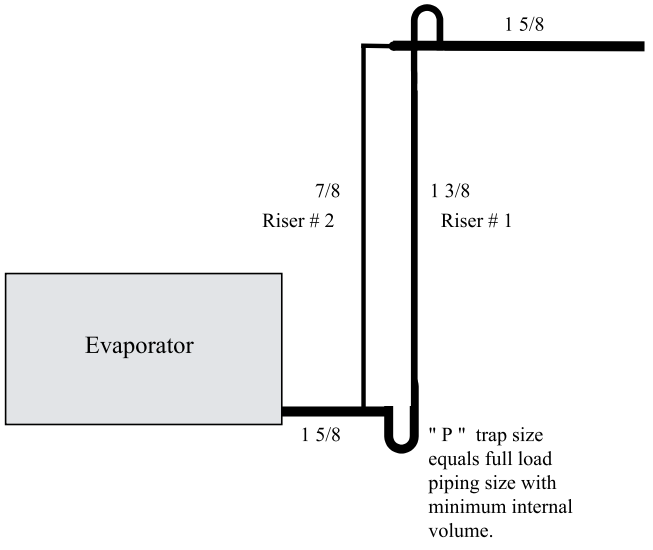
Suva® refrigerants

		Discharge Line Size Compressor to Condenser 1Fº (5 psi) pressure drop maximum					Liquid Condensate Line Condenser to Receiver Condensate drain / vent					Liquid Line Size Receiver to TXV 1Fº (5 psi) pressure drop maximum						
System Capacity BTU/Hr.	System Capacity Tons/Hr	Equivalent Line Lengths ... feet															System Capacity Tons/Hr	System Capacity BTU/Hr.
		25	50	75	100	150	25	50	75	100	150	25	50	75	100	150		
18,000	1.50	1/2	1/2	1/2	5/8	5/8	1/2	1/2	1/2	1/2	1/2	3/8	3/8	3/8	3/8	3/8	1.50	18,000
24,000	2.00	1/2	5/8	5/8	5/8	5/8	1/2	1/2	1/2	5/8	5/8	3/8	3/8	3/8	1/2	1/2	2.00	24,000
30,000	2.50	1/2	5/8	5/8	5/8	3/4	1/2	1/2	5/8	5/8	5/8	3/8	3/8	1/2	1/2	1/2	2.50	30,000
36,000	3.00	5/8	5/8	5/8	3/4	3/4	1/2	1/2	5/8	5/8	5/8	3/8	3/8	1/2	1/2	1/2	3.00	36,000
42,000	3.50	5/8	5/8	3/4	3/4	3/4	1/2	5/8	5/8	5/8	5/8	3/8	1/2	1/2	1/2	1/2	3.50	42,000
48,000	4.00	5/8	3/4	3/4	3/4	7/8	5/8	5/8	5/8	5/8	3/4	1/2	1/2	1/2	1/2	5/8	4.00	48,000
60,000	5.00	3/4	3/4	7/8	7/8	7/8	5/8	5/8	5/8	3/4	3/4	1/2	1/2	1/2	5/8	5/8	5.00	60,000
92,000	7.50	3/4	7/8	7/8	1 1/8	1 1/8	5/8	3/4	3/4	3/4	7/8	1/2	5/8	5/8	5/8	3/4	7.50	92,000
120,000	10.00	7/8	1 1/8	1 1/8	1 1/8	1 1/8	5/8	3/4	3/4	7/8	7/8	1/2	5/8	5/8	3/4	3/4	10.00	120,000
150,000	12.50	7/8	1 1/8	1 1/8	1 1/8	1 3/8	3/4	3/4	7/8	7/8	1 1/8	5/8	5/8	3/4	3/4	7/8	12.50	150,000
180,000	15.00	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	3/4	7/8	7/8	1 1/8	1 1/8	5/8	3/4	3/4	7/8	7/8	15.00	180,000
240,000	20.00	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	7/8	1 1/8	1 1/8	1 3/8	3/4	3/4	7/8	7/8	1 1/8	20.00	240,000
300,000	25.00	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8	7/8	1 1/8	1 1/8	1 3/8	1 3/8	3/4	7/8	7/8	1 1/8	1 1/8	25.00	300,000
360,000	30.00	1 3/8	1 3/8	1 5/8	1 5/8	1 5/8	7/8	1 1/8	1 3/8	1 3/8	1 3/8	3/4	7/8	1 1/8	1 1/8	1 1/8	30.00	360,000
420,000	35.00	1 3/8	1 5/8	1 5/8	1 5/8	2 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	35.00	420,000
480,000	40.00	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	40.00	480,000
540,000	45.00	1 3/8	1 5/8	1 5/8	2 1/8	2 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 5/8	7/8	1 1/8	1 1/8	1 1/8	1 3/8	45.00	540,000
600,000	50.00	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	1 3/8	1 3/8	1 3/8	1 5/8	1 5/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	50.00	600,000

- Refer to DuPont Refrigerant Expert, version 2.0 for actual velocities and pressure drops.
- Equivalent length is actual length plus friction losses caused by fittings and accessories.
- Line sizes are expressed in outside diameter of type “L” copper tubing.
- Line sizes are calculated at rated full load system capacity.
- All selections are based on a maximum of 65º F return gas entering the compressor and a refrigerant condensing and liquid line temperature of 105º F.

Double Risers

A double riser gives the effect of a downsized riser at minimum load, while providing about the same pressure drop as a full sized line at full load. The smaller riser is sized to insure oil return at the minimum capacity step; the larger riser is sized so that the combined "flow areas" of both of these risers are approximately equal to the main suction or discharge line.



Full load capacity	
OD	area
7/8	(0.48)
1 1/8	(0.83)
1 3/8	(1.26)
1 5/8	(1.78)
2 1/8	(3.10)
2 5/8	(4.77)
3 1/8	(6.81)

Minimum capacity ≥ 33 %			
Riser #1		Riser #2	area
3/4	&	1/2	(0.49)
7/8	&	3/4	(0.83)
1 1/8	&	7/8	(1.31)
1 3/8	&	7/8	(1.74)
1 5/8	&	1 3/8	(3.04)
2 1/8	&	1 5/8	(4.88)
2 5/8	&	1 5/8	(6.55)

Notes:

* Systems that have capacity control between 33 % and 100 % of their rated capacity can maintain a minimum refrigerant velocity of 1500 fpm in vertical risers by using the above refrigerant double riser selection table.
* All tubing sizes stated are nominal outside diameter (OD), type "L" copper.
* Area refers to cross sectional tubing area expressed in square inches.
* Suggested maximum riser height is 20 ft. for refrigeration applications, 25 to 30 ft. increments for air conditioning applications. As the saturated suction temperature goes down, riser lengths also get shorter.

Double Riser Examples

Example # 1.

Refrigerant: R-404A or R-507
SST minus 20° F
SCT 100° F
Design load 7.5 tons
Minimum load … N/A
Piping runs:
evaporator to compressor = 50 ft
compressor to condenser = 30 ft
condenser to receiver = 30 ft
receiver to evaporator = 50 ft

Piping runs:

evaporator to compressor = 2 1/8
evaporator riser … N/A
compressor to condenser = 1 1/8
compressor riser … N/A
condenser to receiver = 3/4
receiver to evaporator = 5/8

Example # 2.

Refrigerant: R-134a
SST plus 35° F
SCT 100° F
Design load 5 tons
Minimum load 2/3 design
Piping runs:
evaporator to compressor = 50 ft
compressor to condenser = 30 ft
condenser to receiver = 30 ft
receiver to evaporator = 50 ft

Piping runs:

evaporator to compressor = 1 3/8
evaporator riser = 1 1/8 + 7/8
compressor to condenser = 7/8
compressor riser … N/A
condenser to receiver = 5/8
receiver to evaporator = 5/8

Example # 3.

Refrigerant: R-407C
SST plus 40° F
SCT 105° F
Design load 15 tons
Minimum load 50/50 of design
Piping runs: .. condenser located above
evaporator to compressor = 25 ft
compressor to condenser = 20 ft
condenser to receiver … no receiver
condenser to evaporator = 45 ft

Piping runs:

evaporator to compressor = 1 5/8
evaporator riser = 1 3/8 + 7/8
compressor to condenser = 1 1/8
compressor riser = 7/8 + 3/4
condenser to receiver … no receiver
receiver to evaporator = 3/4

Notes:
SST is Saturated Suction Temperature
SCT is Saturated Condensing Temperature
N/A is Not Applicable

Notes:
1 psi will support 1.8 ft typical refrigerant
1 psi will support 2.3 ft H_2O
1 psi will support 2.5 ft typical oil

Equivalent Lengths of Nonferrous Valves and Fittings

Equivalent Length is expressed in Feet of Pipe

Line Size OD	Globe / Solenoid Valve	Angle / Check Valve	90 º SR Elbow	90 º LR Elbow	45 º Elbow	Tee Line / Sight Glass	Tee Branch	Enlarging Coupling 1/4 (d → D)	Enlarging Coupling 1/2 (d → D)	Enlarging Coupling 3/4 (d → D)	Reducing Coupling 1/4 (D → d)	Reducing Coupling 1/2 (D → d)	Reducing Coupling 3/4 (D → d)
1/2	9	5	1.4	0.9	0.4	0.6	2.0	1.4	0.8	0.3	0.7	0.5	0.3
5/8	12	6	1.5	1.0	0.5	0.8	2.5	1.8	1.1	0.4	0.9	0.7	0.4
3/4	14	7	1.9	1.3	0.6	0.9	3.0	2.5	1.5	0.5	1.2	1.0	0.5
7/8	15	8	2.3	1.5	0.7	1.0	3.5	3.2	2.0	0.7	1.6	1.2	0.7
1 1/8	22	12	2.7	1.8	0.9	1.5	4.5	4.7	3.0	1.0	2.3	1.8	1.0
1 3/8	28	15	3.6	2.4	1.2	1.8	6.0	5.8	3.6	1.2	2.9	2.2	1.2
1 5/8	35	17	4.2	2.8	1.4	2.0	7.0	8.0	4.8	1.6	4.0	3.0	1.6
2 1/8	45	22	5.9	3.9	1.8	3.0	10.0	10	6.1	2.0	5.0	3.8	2.0
2 5/8	51	26	6.9	4.6	2.2	3.5	12.0	13	8.0	2.6	6.5	4.9	2.6
3 1/8	65	34	7.7	5.5	2.7	4.5	15.0	15	9.2	3.0	7.7	6.0	3.0
3 5/8	80	40	9.8	6.5	3.0	5.0	17.0	17	11	3.8	9.0	6.8	3.8

Muller Brass Co. Data

Carrier Engineering Manual number 3

Note: General accepted industry practice for determining the equivalent lengths for both P traps and U Bends is to add ***two*** 90° LR elbows of the specific OD tubing size for each component used.

Enter table for losses at smallest diameter "d"

Refrigerant Piping

Suva® refrigerants

Copper Tubing Specifications

Nominal (OD) Diameter	Type	Diameter OD In	Diameter ID In	Flow Area sq. In.	Weight Lb/Lin Ft.
3/8	K L	0.375 0.375	0.305 0.315	0.073 0.078	0.145 0.126
1/2	K L	0.500 0.500	0.402 0.430	0.127 0.145	0.269 0.198
5/8	K L	0.625 0.625	0.527 0.545	0.218 0.233	0.344 0.285
3/4	K L	0.750 0.750	0.652 0.666	0.334 0.348	0.418 0.362
7/8	K L	0.875 0.875	0.745 0.785	0.436 0.484	0.641 0.455
1 1/8	K L	1.125 1.125	0.995 1.025	0.778 0.825	0.839 0.655
1 3/8	K L	1.375 1.375	1.245 1.265	1.22 1.26	1.040 0.884
1 5/8	K L	1.625 1.625	1.481 1.505	1.72 1.78	1.36 1.14
2 1/8	K L	2.125 2.125	1.959 1.985	3.01 3.10	2.06 1.75
2 5/8	K L	2.625 2.625	2.435 2.465	4.66 4.77	2.93 2.48
3 1/8	K L	3.125 3.125	2.907 2.945	6.64 6.81	4.00 3.33
3 5/8	K L	3.625 3.625	3.385 3.425	9.00 9.21	5.12 4.29
4 1/8	K L	4.125 4.125	3.557 3.905	11.7 12.0	6.51 5.38

Based on ASTM B-88 standard

Maximum Spacing Between Pipe Supports for Copper Tubing

Nominal (OD) Diameter	Max. Span in Ft.
5/8	5
7/8	6
1 1/8	7
1 3/8	8
1 5/8	9
2 1/8	10
2 5/8	11
3 1/8	12
3 5/8	13
4 1/8	14

1967 ASHRAE Guide and Data Book

① Maximum allowable hanger distance as per CSA B52 code

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Weight of Refrigerant in Copper Tubing

Suva® refrigerants

Pounds per 100 feet of Type K & L Tubing

(Weight at 77ºF / 25ºC)

Tube O.D. (2)		Flow Area sq. in	Cu ft / 100ft	R-12 81.84 L	R-12 2.32 V (1)	R-22 74.53 L	R-22 2.76 V	R-500 72.16 L	R-500 2.29 V	R-502 75.95 L	R-502 4.16 V	R-134a 75.28 L	R-134a 2.02 V	R-401A 74.52 L	R-401A 1.81 V	R-402A 71.86 L	R-402A 4.32 V	R-404A 65.45 L (3)	R-404A 4.00 V	R-407C 70.80 L	R-407C 2.62 V	R-410A 66.32 L	R-410A 4.12 V
1/2	K	0.127	0.088	7.2	0.20	6.6	0.24	6.4	0.20	6.7	0.37	6.6	0.18	6.6	0.16	6.3	0.38	5.8	0.35	6.2	0.23	5.8	0.36
	L	0.145	0.101	8.3	0.23	7.5	0.28	7.3	0.23	7.7	0.42	7.6	0.20	7.5	0.18	7.3	0.44	6.6	0.40	7.2	0.26	6.7	0.42
5/8	K	0.218	0.151	12.4	0.35	11.3	0.42	10.9	0.35	11.5	0.63	11.4	0.31	11.3	0.27	10.9	0.65	9.9	0.60	10.7	0.40	10.0	0.62
	L	0.233	0.162	13.3	0.38	12.1	0.45	11.7	0.37	11.7	0.67	12.2	0.37	12.1	0.29	11.6	0.70	10.6	0.65	11.5	0.42	10.7	0.67
3/4	K	0.334	0.232	19.0	0.54	17.3	0.64	16.7	0.53	17.6	0.97	17.5	0.47	17.3	0.42	16.7	1.00	15.2	0.93	16.4	0.61	15.4	0.96
	L	0.348	0.242	19.8	0.56	18.0	0.67	17.5	0.55	18.4	1.01	18.2	0.49	18.0	0.44	17.4	1.05	15.8	0.97	17.1	0.63	16.0	1.00
7/8	K	0.436	0.303	24.8	0.70	22.6	0.84	21.9	0.69	23.0	1.26	22.8	0.61	22.6	0.55	21.8	1.31	19.8	1.21	21.5	0.79	20.1	1.25
	L	0.484	0.336	27.5	0.78	25.0	0.93	24.2	0.77	25.5	1.40	25.3	0.68	25.0	0.61	24.1	1.45	22.0	1.34	23.8	0.88	22.3	1.38
1 1/8	K	0.778	0.540	44.2	1.25	40.2	1.49	39.0	1.24	41.0	2.25	40.7	1.09	40.2	0.98	38.8	2.33	35.3	2.16	38.2	1.41	35.8	2.22
	L	0.825	0.573	46.9	1.33	42.7	1.58	41.3	1.31	43.5	2.38	43.1	1.16	42.7	1.04	41.2	2.48	37.5	2.29	40.7	1.50	38.0	2.36
1 3/8	K	1.217	0.845	69.2	1.96	63.0	2.33	61.0	1.94	64.2	3.52	63.6	1.71	63.0	1.53	60.7	3.65	55.3	3.38	59.8	2.21	56.0	3.48
	L	1.257	0.873	71.4	2.03	65.1	2.41	63.0	2.00	66.3	3.63	65.7	1.76	65.1	1.58	62.7	3.77	57.1	3.49	61.8	2.29	57.8	3.60
1 5/8	K	1.723	1.197	97.9	2.78	89.2	3.30	86.4	2.74	90.9	5.00	90.1	2.42	89.2	2.17	86.0	5.17	78.3	4.79	84.7	3.14	79.4	4.93
	L	1.779	1.235	100.1	2.87	92.0	3.41	89.1	2.82	93.8	5.14	93.0	2.49	92.0	2.24	88.7	5.33	80.8	4.94	87.4	3.24	81.9	5.09
2 1/8	K	3.014	2.093	171.3	4.86	156.0	5.78	151.0	4.79	159.0	8.71	157.6	4.23	156.0	3.79	150.4	9.04	137.0	8.37	148.2	5.48	138.8	8.62
	L	3.095	2.149	175.9	4.99	160.2	5.93	155.1	5.93	163.2	8.94	161.8	4.34	160.1	3.89	154.4	9.28	140.7	8.60	152.1	5.63	142.5	8.85
2 5/8	K	4.657	3.234	264.7	7.50	241.0	8.93	233.4	7.41	245.6	13.45	243.5	6.53	241.0	5.85	232.4	13.97	211.7	12.94	229.0	8.47	214.4	13.32
	L	4.772	3.314	271.2	7.69	247.0	9.15	239.1	7.59	251.7	13.79	249.5	6.69	247.0	6.00	238.1	14.32	216.9	13.26	234.6	8.68	219.8	13.65
3 1/8	K	6.637	4.609	377.2	10.70	343.5	12.72	332.6	10.55	350.1	19.17	347.0	9.31	343.5	8.34	331.2	19.90	301.7	18.43	326.3	12.10	305.7	18.99
	L	6.812	4.731	387.2	10.98	352.6	13.06	341.4	13.06	359.3	19.68	356.1	9.56	352.6	8.56	340.0	20.43	309.6	18.92	345.0	12.40	313.8	19.49
3 5/8	K	8.999	6.249	511.4	14.50	465.7	17.25	450.9	14.31	474.6	25.99	470.4	12.62	465.7	11.31	449.1	26.99	409.0	25.00	442.4	16.37	414.4	25.75
	L	9.213	6.398	523.6	14.84	476.8	17.66	461.7	14.65	485.9	26.62	481.6	12.92	476.8	11.58	459.8	27.64	418.7	25.59	453.0	16.76	424.3	26.36
4 1/8	K	11.684	8.114	664.0	18.82	604.7	22.39	585.5	18.58	616.3	33.75	610.8	16.39	604.7	14.68	583.1	35.10	531.1	32.46	547.5	21.26	538.1	33.43
	L	11.977	8.317	680.7	19.30	619.9	22.95	600.2	19.05	631.7	34.60	626.1	16.80	619.8	15.05	597.7	35.93	544.3	33.27	588.8	21.79	551.6	34.27

NOTES: (1). L ... saturated liquid & density, V ... saturated vapour & density, (2). Copper Tubing as per ASTM – B88, (3). for R-507 use R-404A values

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Heat Rejection Factors

Condenser Load = Compressor Capacity x Factor

If heat of rejection figures are not obtainable from the compressor manufacturer, the factors shown in the table below may be used to determine the Total Heat of Rejection (THR).

For systems outside the normal limits of single stage compressor applications, such as compound and cascade refrigeration systems, the following formulae may be used to arrive at the Total Heat of Rejection requirements for the selection of the condenser:

Open Compressors:
Total Heat of Rejection = Compressor Capacity (Btuh) + (2545 x BHP).

Suction cooled Hermetic Compressors:
Total Heat of Rejection = Compressor Capacity (Btuh) + (3413 x kW).

Evaporator Temperature		Condensing Temperature											
		90° F (32° C)		100° F (38° C)		110° F (43° C)		120° F (49° C)		130° F (55° C)		140° F (60° C)	
°F	°C	Open	Herm	Open	Herm	Open	Herm	Open	Herm	Open	Herm	Open	Herm
-30	-34	1.37	1.57	1.42	1.62	1.47	1.68	*	*	*	*	*	*
-20	-29	1.33	1.49	1.37	1.53	1.42	1.58	1.47	1.65	*	*	*	*
-10	-23	1.28	1.42	1.32	1.46	1.37	1.50	1.42	1.57	1.47	1.64	*	*
0	-18	1.24	1.36	1.28	1.40	1.32	1.44	1.37	1.50	1.41	1.56	1.47	1.62
10	-12	1.21	1.31	1.24	1.34	1.28	1.38	1.32	1.43	1.36	1.49	1.42	1.55
20	- 7	1.17	1.26	1.20	1.29	1.24	1.33	1.28	1.37	1.32	1.43	1.37	1.49
30	- 1	1.14	1.22	1.17	1.25	1.20	1.28	1.24	1.32	1.27	1.37	1.32	1.42
40	4	1.12	1.18	1.15	1.21	1.17	1.24	1.20	1.27	1.23	1.31	1.28	1.35
50	10	1.09	1.14	1.12	1.17	1.14	1.20	1.17	1.23	1.20	1.26	1.24	1.29

Notes:
* Outside normal limits of single stage compressor applications.
For two stage applications use formulae shown above.

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Refrigerant Receivers

Suva® refrigerants

(R-22 capacities at 90º F and 90% full.)
Density of R-22 at 90º F is 72.71 lbs per cubic foot

Vertical Receivers

(R-22 capacity in lbs.)

Dia.		length		lbs.
3.5	x	7.5	=	2
3.5	x	10	=	3
4	x	10	=	4
5	x	10	=	6
5	x	20	=	13
6	x	12	=	10
6	x	18	=	16
6	x	24	=	22
6	x	30	=	28

Note: Dia. and Length are in inches

Horizontal Receivers

(R-22 capacity in lbs.)

Dia.		length		lbs.
5	x	28	=	18
6	x	30	=	28
6	x	36	=	34
6 5/8	x	38	=	43
7 5/8	x	28	=	41
8 5/8	x	28	=	53
8 5/8	x	36	=	69
8 5/8	x	42	=	81
8 5/8	x	48	=	93
8 5/8	x	60	=	117
9 3/4	x	22	=	51
10 3/4	x	36	=	105
10 3/4	x	48	=	142
10 3/4	x	60	=	179
10 3/4	x	72	=	216
10 3/4	x	96	=	290
12 3/4	x	48	=	196
12 3/4	x	60	=	248
12 3/4	x	72	=	299
12 3/4	x	96	=	404
14	x	72	=	363
14	x	96	=	489
16	x	60	=	388
16	x	72	=	470
16	x	96	=	633
18	x	72	=	597
20	x	72	=	736
20	x	84	=	866
20	x	96	=	996

Note: Dia. and Length are in inches

For alternate refrigerant storage capacities in pounds for R-22 rated receivers multiply the rated capacity by the following conversion factors.

Example: A receiver that measures 12 3/4" x 72" has a R-22 rated capacity of 299 lbs.
What is its revised capacity if this receiver is used with R-407C ?
299 lbs x 0.9473 = 283 lbs.

R-22 ... 1.0000	R-401A ... 0.9927	R-404A ... 0.8682	R-410A ... 0.8794
R-123 ... 1.2405	R-401B ... 0.9920	R-407C ... 0.9473	R-507 ... 0.8674
R-124 ... 1.1425	R-402A ... 0.9293	R-408A ... 0.8853	
R-134a ... 1.0114	R-402B ... 0.9433	R-409A ... 1.0278	

Notes: Receivers capacities source .... Standard Refrigeration Company.
All dimensions are expressed in inches and all weights are expressed in pounds.
Densities sourced from E.I. DuPont Thermodynamic Tables,
R-507 ... AlliedSignal Inc., computer program,
R-408A and R-409A ... Elf Atochem, computer program.

Chemours™

Temperature / Pressure Chart Complete Range of Temperature Applications

Suva® refrigerants

High, Medium and Low Temperature Applications

ºF	R-12	R-22	R-502	R-134a	R-404A	R-407C	R-410A	R-507	ºC
-50	16”	7”	0	19”	1 0	3” 11”	6	1	-46
-45	14”	3”	2	17”	4 3	1 8”	9	3	-43
-40	11”	0	9	15”	5 5	3 5”	12	6	-40
-35	9”	2	4	13”	8 7	5 1”	15	8	-37
-30	6”	5	7	10”	11 10	8 1	19	11	-34
-25	2”	7	12	7”	14 13	10 4	23	15	-32
-20	1	10	15	4”	17 16	14 6	28	18	-29
-15	2	13	19	0	21 20	17 9	32	22	-26
-10	5	16	22	2	25 24	21 12	38	26	-23
- 5	5	20	27	4	29 28	25 15	44	31	-21
0	9	24	31	7	34 33	29 19	50	35	-18
5	12	28	36	9	39 38	34 23	57	41	-15
10	15	33	41	12	45 44	39 27	64	46	-12
15	18	38	46	15	51 49	44 32	72	52	- 9
20	21	43	52	19	57 56	50 37	80	59	- 7
25	25	49	59	22	64 63	57 43	89	66	- 4
30	29	55	66	26	71 70	64 48	99	73	- 1
35	33	62	73	31	79 78	71 55	109	81	2
40	37	69	81	35	87 86	79 62	121	90	4
45	42	76	89	40	96 95	87 69	132	99	7
50	47	84	98	46	106 104	96 77	145	108	10
55	52	93	107	52	116 114	106 86	158	119	13
60	57	102	117	58	126 125	116 95	173	129	16
65	64	111	127	64	138 136	127 104	188	141	18
70	70	122	138	71	150 148	139 115	204	153	21
75	77	132	149	79	162 160	151 126	221	166	24
80	84	144	161	87	176 177	163 138	238	180	27
85	92	156	174	95	190 188	177 150	257	194	29
90	100	168	187	104	205 203	191 164	277	210	32
95	108	182	201	114	220 218	206 178	298	226	35
100	117	196	216	124	237 235	222 193	320	243	38
105	127	210	232	135	254 252	239 209	344	261	41
110	136	226	248	146	273 271	257 225	368	280	43
115	147	242	265	158	292 290	275 243	394	300	46
120	158	260	282	171	312 310	294 262	421	322	49
125	169	278	301	184	333 331	315 282	445	344	52
130	181	296	321	199	355 353	336 302	479	368	54
135	193	316	341	213	378 377	358 324	510	392	57
140	207	337	363	229	403 401	381 347	543	418	60
145	220	359	385	246	428 422	405 372	577	446	63
					Bubble / Dew	Bubble / Dew			

Very Low Temperature Applications

º F	R-13	R-503	R-508B	ºC
-200				-129
-195				-126
-190				-123
-185				-121
-180				-118
-175				-115
-170				-112
-165				-109
-160				-107
-155				-104
-150		16”	18”	-101
-145		13”	15”	- 98
-140		10”	12”	- 96
-135		6”	8”	- 93
-130		2”	4”	- 90
-125	9”	1	0	- 87
-120	5”	4	3	- 84
-115	1”	7	6	- 82
-110	2	10	9	- 79
-105	5	13	13	- 76
-100	7	17	17	- 73
-95	11	22	21	- 71
-90	14	26	26	- 68
-85	18	32	32	- 66
-80	23	38	38	- 62
-75	27	44	45	- 59
-70	32	51	52	- 57
-65	38	58	60	- 54
-60	44	67	68	- 51
-55	51	75	77	- 48
-50	58	85	87	- 46
-45	65	95	98	- 43
-40	74	107	110	- 40
-35	82	119	122	- 37
-30	92	132	135	- 34
-25	102	146	150	- 32
-20	113	160	165	- 29
-15	124	176	181	- 26
-10	136	193	198	- 23
- 5	149	211	217	- 21

Note: Pressure / ºC temperature values are rounded off to the nearest whole number, and the values are expressed in PSIG or inches Hg.

Nu-Calgon Refrigeration Oil Cross-Reference

Company	Company Type	Brand Name	Product #	Oil Type	Viscosity SUS/ISO	Nu-Calgon Replacement	Nu-Calgon Product #			
							Quart	Gallon	5 Gallon	Drum
Atochem	Refrigerant	ACD	22W	POE	100/22	RL22H		4313-46		
Planet Elf			32W	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			46W	POE	200/46	RL46H		4315-46		
			68W	POE	300/68	RL68H or RL68HP	4316-44	4316-46 4316-76	4316-45	4316-41
			100W	POE	500/100	RL100E		4317-66		
Bitzer	Compressor		BSE 32	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			BSE 55	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			BSE 170	POE	800/170	RL170H		4318-26	4318-25	
			BSE 220	POE	1100/220	RL220H+		4318-66	4318-65	
			G68	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			B100	Mineral	500/100	C-5s		4305-07		4305-01
			5.2	AB	150/32	Zerol 150		4310-07	4310-05	4310-01
			S68	AB	300/68	Zerol 300		4311-07	4311-05	4311-01
BVA	Oil		3	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			4	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
			5	Mineral	500/100	C-5s		4305-07		4305-01
			100E	AB	500/100	Zerol 500			4312-05	
		AKYL.	150	AB	150/32	Zerol 150		4310-07	4310-05	4310-01
		AKYL.	200ca	AB	210/46	Zerol 200TD		4308-07	4308-05	4308-01
		AKYL.	300	AB	300/68	Zerol 300		4311-07	4311-05	4311-01
Calumet	Oil		RO15	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			RO30	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
Carrier	Compressor		PP23BZ-102	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			PP23BZ-103	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			PP23BZ-104	POE	1100/220	RL220H+		4318-66	4318-65	
			PP23BZ-106	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			PP23BZ-107	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			PP47-10	POE	100/22	RL22H		4313-46		
			PP47-11	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			PP47-12	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			PP47-25	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			PP47-26	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			PP47-30	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			PP47-31	POE	300/68	RL68HP		4316-76		
			PP47-32	POE	1100/220	RL220H+		4318-66	4318-65	
			PP47-33	POE	500/100	RL100E		4317-66		
			PP47-34	POE	1100/220	RL200XL			4318-75	
			PP23BZ-101	AB	400/86	Zerol 400CA			4311-65	
			PP47-8	AB	150/32	Zerol 150		4310-07	4310-05	4310-01
			PP49-7	AB	400/86	Zerol 400CA			4311-65	
			PP49-8	AB	300/68	Zerol 300		4311-07	4311-05	4311-01
Castrol	Oil	Icematic	SW20	POE	100/20	RL22H		4313-46		
			SW20C	POE	100/20	RL22H		4313-46		
			SW22	POE	100/20	RL22H		4313-46		
			SW22CC	POE	100/20	RL32-3MAF	4314-64	4314-66	4314-65	
			SW32	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			SW32C	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			SW46	POE	200/46	RL46H		4315-46		

Nu-Calgon Refrigeration Oil Cross-Reference

Company	Company Type	Brand Name	Product #	Oil Type	Viscosity SUS/ISO	Nu-Calgon Replacement	Nu-Calgon Product #			
							Quart	Gallon	5 Gallon	Drum
Castrol			SW68	POE	300/68	RL68H RL68HP	4316-44	4316-46 4316-76	4316-45	4316-41
(continued)			SW68A	POE	300/68	RL68HP		4316-76		
			SW68C	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			E68	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			SW100	POE	500/100	RL100E		4317-66		
			E100	POE	500/100	RL100E		4317-66		
			SW220	POE	1100/220	RL220H+		4318-66	4318-65	
			SW220XL	POE	1100/220	RL220XL			4318-75	
			266	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			299	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
Copeland	Compressor	Ultra 22CC	998-E022-01	POE	110/22	RL32-3MAF	4314-64	4314-66	4314-65	
		Ultra 32CC	998-E022-XX	POE	110/22	RL32-3MAF	4314-64	4314-66	4314-65	
Copeland/		Solest 170	998-E170-01 (1g)	POE	800/170	RL170H		4318-26	4318-25	
Bitzer		Solest 170	998-E170-05 (5g)	POE	800/170	RL170H		4318-26	4318-25	
		4214-320	998-E320-01 (1g)	POE	1500/320	Call Nu-Calgon				
		4214-320	998-E320-05 (5g)	POE	1500/320	4319-05			4319-05	
		Ultra AB150	998-AB15-01	AB	150/32	Zerol 150		4310-07	4310-05	4310-01
		Ultra AB200	998-AB52-01	AB	200/46	Zerol 200TD		4308-07	4308-05	4308-01
		Ultra AB300	998-AB30-01	AB	300/68	Zerol 300		4311-07	4311-05	4311-01
		Ultra M150	998-M150-01 (1g)	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
		Ultra M150	998-M150-05 (1g)	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
CPI	Oil	Solest	22	POE	100/22	RL22H		4313-46		
			LT-32	POE	150/33	RL32H	4314-44	4314-46	4314-45	4314-41
			32	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			LT-35	POE	150/35	RL32H	4314-44	4314-46	4314-45	4314-41
			46	POE	200/46	RL46H		4315-46		
			68	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			100	POE	500/100	RL100E		4317-66		
			120	POE	600/120	N/A				
			150	POE	700/150	N/A				
			170	POE	800/170	RL170H		4318-26	4318-25	
			220	POE	1100/220	RL220H+		4318-66	4318-65	
			CP-4214-320	POE	1500/320	4319-05			4319-05	
			370	POE	1700/370	N/A				
Dunham Bush	Compressor	Hitachi	SR-30	POE	1100/220	RL220H+		4318-66	4318-65	
Frick	Compressor	Frick Oil	2	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			2A	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
			3	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
Fuchs	Oil	Reniso Triton	SEZ15	POE	75/15	N/A				
			SEZ22	POE	100/22	RL22H		4313-46		
			SEZ32	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			SEZ55	POE	275/55	RL46H		4315-46		
			SEZ68	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			SEZ80	POE	400/80	RL100E		4317-66		
			SEZ100	POE	500/100	RL100E		4317-66		
			SEZ170	POE	800/170	RL170H		4318-26	4318-25	
			SEZ220	POE	1100/220	RL220H+		4318-66	4318-65	
			SEZ320	POE	1600/320	Call Nu-Calgon				
		Reniso	KM32	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			KS46	Mineral	200/46	N/A				

Nu-Calgon Refrigeration Oil Cross-Reference

Company	Company Type	Brand Name	Product #	Oil Type	Viscosity SUS/ISO	Nu-Calgon Replacement	Nu-Calgon Product #			
							Quart	Gallon	5 Gallon	Drum
Fuchs			KC68	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
(continued)			KES100	Mineral	500/100	C-5s		4305-07		4305-01
			TES100	Mineral	500/100	C-5s		4305-07		4305-01
			SP32	AB	150/32	Zerol 150		4310-07	4310-05	4310-01
			KM46	AB	200/46	Zerol 200TD		4308-07	4308-05	4308-01
			SP32	AB	150/32	Zerol 150		4310-07	4310-05	4310-01
			S32	AB	150/32	Zerol 150		4310-07	4310-05	4310-01
			SP46	AB	200/46	Zerol 200TD		4308-07	4308-05	4308-01
			S46	AB	200/46	Zerol 200TD		4308-07	4308-05	4308-01
			SP68	AB	300/68	Zerol 300		4311-07	4311-05	4311-01
			S68	AB	300/68	Zerol 300		4311-07	4311-05	4311-01
			SP100	AB	500/100	Zerol 500			4312-05	
			SP220	AB	1100/220	RL220H+		4318-66	4318-65	
			MS32	AB or Min	150/32	Zerol 150 or C-3s		4310-07 4303-07	4310-05 4303-05	4310-01 4303-01
			MS46	AB	200/46	Zerol 200TD		4308-07	4308-05	4308-01
			MS68	AB or Min	300/68	Zerol 300 or C-4s		4311-07 4304-07	4311-05 4304-05	4311-01 4304-01
Hatco	Oil	Hatcol	All varieties			Call Nu-Calgon				
Maneurop	Compressor		160P	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			160PZ	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			160SZ	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			160ABM	AB	150/32	Zerol 150		4310-07	4310-05	4310-01
Mobil	Oil	Artic	EAL22CC	POE	150/32	RL32-3MAF	4314-64	4314-66	4314-65	
			EAL22	POE	100/22	RL22H		4313-46		
			EAL32	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			EAL46	POE	200/46	RL46H		4315-46		
			EAL68	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
		Gargoyle	155	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
		Zerice	S32	AB	150/32	Zerol 150		4310-07	4310-05	4310-01
			R42	AB	150/32	Zerol 150		4310-07	4310-05	4310-01
			S46	AB	200/46	Zerol 200TD		4308-07	4308-05	4308-01
			S68	AB	300/68	Zerol 300		4311-07	4311-0	4311-01
			S100	AB	500/100	Zerol 500			4312-05	
Refcomp	Compressor		ICI 68S	POE	X/X	RL68H	4316-44	4316-46	4316-45	4316-41
Tecumseh	Compressor		Type=1	Mineral						
			Type=2	AB	(Refer to Mineral)					
			Type=3	White Oil	(Refer to Mineral)					
			Type=4	Paraffinic						
			Type=5	POE						
Texaco	Oil	Capella	HFC22	POE	150/22	RL22H		4313-46		
			HFC32	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			HFC68	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			HFC220	POE	1100/220	RL220H+		4318-66	4318-65	
			HFC32NA	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			HFC68NA	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			HFC100NA	POE	500/100	RL100E		4317-66		
			HFC220NA	POE	1100/220	RL220H+		4318-66	4318-65	
			B (WF32)	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			D (WF68)	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
			E (WF100)	Mineral	500/100	C-5s		4305-07		4305-01
Thermo King	Compressor		203-413	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			203-426	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41

Nu-Calgon Refrigeration Oil Cross-Reference

Company	Company Type	Brand Name	Product #	Oil Type	Viscosity SUS/ISO	Nu-Calgon Replacement	Nu-Calgon Product #			
							Quart	Gallon	5 Gallon	Drum
Thermo King			203-427	POE	750/150	RL170H		4318-26	4318-25	
(continued)			203-433	POE	150/32	RL32-3MAF	4314-64	4314-66	4314-65	
			203-513	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			67-404	AB	150/32	Zerol 150		4310-07	4310-05	4310-01
			67-426	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			306328	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
			306327	Mineral	500/100	C-5s		4305-07		4305-01
Trane	Equipment	Trane	0027	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			0037	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			0048	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			0152	POE	200/46	RL46H		4315-46		
			0075	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			0078	POE	150/32	RL32HB			4314-62	
			0079	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			0086	POE	500/100	RL100E		4317-66		
			015	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
			022	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
			031	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
			042	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			043	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			045	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
			057	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			058	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
Vilter	Compressor		D	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
			F-68	AB	300/68	Zerol 300		4311-07	4311-05	4311-01
Virginia KMP	Chemical		SL22	POE	100/22	RL22H		4313-46		
			SL32	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			SL46	POE	200/46	RL46H		4315-46		
			SL68	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			SL100	POE	500/100	RL100E		4317-66		
		Suniso	3GS	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			4GS	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
			5GS	Mineral	500/100	C-5s		4305-07		4305-01
		Virginia KMP	AB150	AB	150/32	Zerol 150		4310-07	4310-05	4310-01
			AB200A	AB	200/46	Zerol 200TD		4308-07	4308-05	4308-01
			AB300	AB	300/68	Zerol 300		4311-07	4311-05	4311-01
York	Equipment		TypeA	Min/AB	300/68	C-4s or Zerol 300		4304-07 4311-07	4304-05 4311-05	4304-01 4311-01
			C	Mineral	300/68	C-4s		4304-07	4304-05	4304-01
			D	Mineral	150/32	C-3s		4303-07	4303-05	4303-01
			E	Mineral	500/100	C-5s		4305-07		4305-01
			F	Min/AB	150/32	C-3s or Zerol 150		4303-07 4310-07	4303-05 4310-05	4303-01 4310-01
			G	POE	1100/220	RL220H+		4318-66	4318-65	
			H	POE	300/68	RL68H	4316-44	4316-46	4316-45	4316-41
			J	POE	200/46	RL46H		4315-46		
			K	POE	150/32	RL32H	4314-44	4314-46	4314-45	4314-41
			L	POE	Call Nu-Calgon			4317-76		
			(P) 011-00589	POE	750/150	N/A				
			S	POE	500/100	RL100E		4317-66		

WEIGHT OF REFRIGERANT IN COPPER PIPE

Weight of Refrigerants in Copper Lines During Operation (Pounds per 100 lineal feet of type "L" tubing).

Line Size O.D. in Inches	Refrigerant	Liquid Line	Hot Gas Line	Suction Line at Suction Temperature				
				-40˚F	-20˚F	0˚F	+20˚F	+40˚F
3/8	134a	4.0	.15	.01	.01	.02	.04	.06
	22	3.9	.22	.02	.03	.04	.06	.08
	R507, 404A	3.4	.31	.03	.04	.06	.09	.13
1/2	134a	7.4	.30	.01	.03	.04	.07	.11
	22	7.4	.41	.03	.05	.07	.11	.15
	R507, 404A	6.4	.58	.04	.07	.13	.16	.24
5/8	134a	11.9	.47	.02	.05	.07	.12	.17
	22	11.8	.65	.05	.08	.12	.17	.25
	R507, 404A	10.3	.93	.07	.11	.17	.25	.35
7/8	134a	24.7	.99	.05	.10	.15	.24	.36
	22	24.4	1.35	.10	.16	.24	.36	.51
	R507, 404A	21.2	1.92	.15	.23	.37	.51	.72
1 1/8	134a	42.2	1.70	.08	.17	.26	.41	.60
	22	41.6	2.30	.17	.28	.42	.61	.87
	R507, 404A	36.1	3.27	.26	.39	.63	.86	1.24
1 3/8	134a	64.2	2.57	.14	.26	.40	.61	1.91
	22	63.5	3.50	.27	.42	.64	.93	1.33
	R507, 404A	55.0	4.98	.40	.58	.95	1.32	1.87
1 5/8	134a	90.9	3.65	.20	.37	.57	.87	1.30
	22	90.0	4.96	.37	.59	.90	1.33	1.88
	R507, 404A	78.0	7.07	.56	.82	1.35	1.86	2.64
2 1/8	134a	158	6.34	.34	.64	.98	1.51	2.24
	22	156	8.61	.65	1.03	1.57	2.30	3.26
	R507, 404A	134	12.25	.98	1.43	2.35	3.23	4.58
2 5/8	134a	244	9.78	.52	.99	1.51	2.32	3.47
	22	241	13.70	1.01	1.59	2.42	3.54	5.03
	R507, 404A	209	18.92	1.51	2.21	3.62	5.00	7.07
3 1/8	134a	348	13.97	.75	1.41	2.16	3.31	4.96
	22	344	18.95	1.44	2.28	3.45	5.05	7.18
	R507, 404A	298	27.05	2.16	3.15	5.17	7.14	9.95
3 5/8	134a	471	18.90	.99	1.91	2.92	4.48	6.69
	22	465	25.60	1.94	3.08	4.67	6.83	9.74
	R507, 404A	403	36.50	2.92	4.25	6.97	19.65	13.67
4 1/8	134a	612	24.56	1.29	2.49	3.81	5.84	8.75
	22	605	33.40	2.53	4.01	6.08	8.90	12.70
	R507, 404A	526	47.57	3.80	5.55	9.09	12.58	17.80

Equivalent Feet of Pipe Due to Valve and Fitting Friction

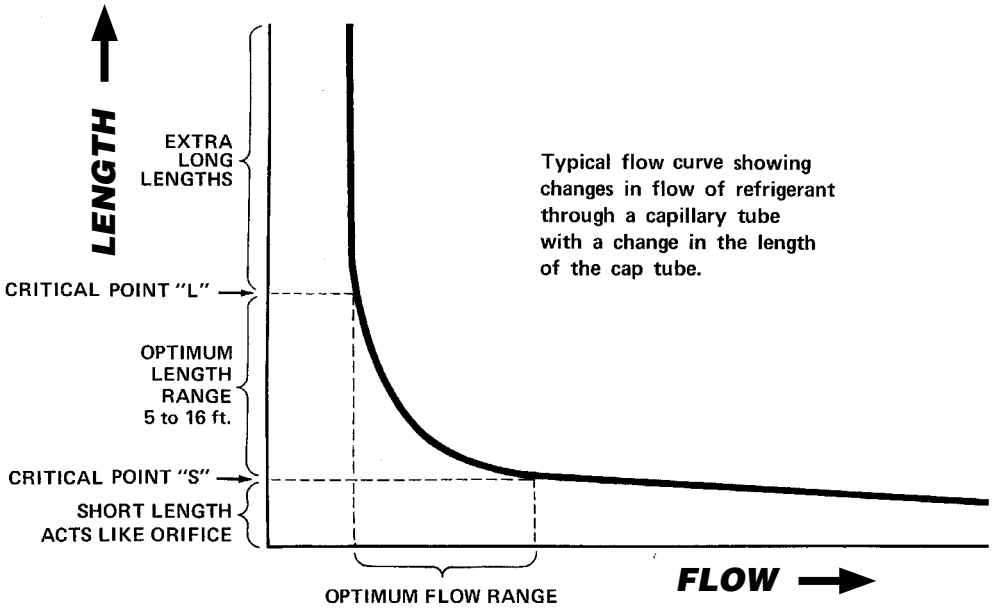
Copper Tuber, O.D., Type "L"	1/2	5/8	7/8	1 1/8	1 3/8	1 5/8	2 1/8	2 5/8	3 1/8	3 5/8	4 1/8	5 1/8	6 1/8
Globe Valve (Open)	14	16	22	28	36	42	57	69	83	99	118	138	168
Angle Valve (Open)	7	9	12	15	18	21	28	34	42	49	57	70	83
90˚ Turn Through Tee	3	4	5	6	8	9	12	14	17	20	22	28	34
Tee (Straight Through) or Sweep Below	.75	1	1.5	2	2.5	3	3.5	4	5	6	7	9	11
90˚ Elbow or Reducing Tee (Straight Through	1	2	2	3	4	4	5	7	8	10	12	14	16

CAPILLARY TUBING

Capillary Tubing - Factors Affecting Refrigerant Flow (Diameter & Length)

The size of the cap tube is fairly critical. Unlike orifices, such as expansion valve seats, capillary tubes depend on their length as well as their diameter to determine their total restriction. The relationship between these two factors are shown in the following charts. A change in diameter on a percentage basis can change the flow more than an equal change in length. To illustrate, changing the diameter by .005" as between .026" I.D. and .031" I.D. can double the flow. Restriction can also be changed by lengthening or shortening the cap tub. The longer the tube, the slower the flow; the shorter the tube, the faster the flow. The general flow curve graph (right) shows what happens to the flow of refrigerant through a cap tube as the length is changed. This curve is not meant to give specific flows but to simply illustrate what happens with all cap tubes so that the general flow pattern can be understood.

By following the flow curve from left to right it can be seen that for the very longest length the flow is the smallest. Then as the cap tube length is decreased, the flow increases slowly until critical point "L" is reached. At this point the flow increases more rapidly with each reduction in length until critical point "S" is reached. From this point on, further decrease in length causes ever increasing flow. From the study of this typical curve, certain pertinent conclusions can be reached that directly affect the field application of capillary tubes.



Typical flow curve showing changes in flow of refrigerant through a capillary tube with a change in the length of the cap tube.

On the graph, the section above the critical point "L" is marked as extra long lengths. Attempting to increase restriction (i.e. reduce flow) by increasing length into this region is not only uneconomical but frequently hopeless. In addition, tubes in this range may not be responsive enough to changes in head pressures during operation. All in all, tube lengths in this range should be avoided where possible.

Continuing down the graph, the section below critical point "S" should be avoided like the plague. In this range, the tube is so short that even small changes in length will cause very large increases in flow. This is caused by the fact that the length no longer affects the flow and the tube now begins to act more like an orifice than a capillary tube. But, without the other components necessary to control an orifice, such as are present in an expansion valve or high side float, a very short cap tube will give wildly erratic operation under varying ambient and loads.

All of this would be meaningless without some definite way to use this information. Although the critical points will vary depending on the I.D. of the cap tubing being used, a very safe operating rule-of-thumb can be offered.

RULE OF THUMB

Keep the cap tube no shorter than 5' and no longer than 16'. As in all general rules there are of course exceptions, but for day to day operation, keeping a cap tub within the 5' to 16' range will eliminate many problems.

An easy way to avoid these problems is to use the R-Line application charts and R-Line capillary tubing. These charts offer recommendations for almost all cap tube systems from 1/20 HP to 5 HP, plus any air conditioner from small window units to large central systems using multiple cap tubes.

CAPILLARY TUBING

Capillary Tubing - Length Conversion Chart

This conversion chart enables the user to translate the recommended length of tube diameter into sizes stocked by J/B. In using the chart it is recommended that conversions be made using factors within the unshaded area.

Part#	TC-26	TC-31	TC-36	TC-42	TC-44	TC-49	TC-50	TC-54	TC-55	TC-59	TC-64	TC-70	TC-75	TC-80	TC-85	TC-90	TC-100
Tube ID	**.026**	**.031**	**.036**	**.042**	**.044**	**.049**	**.050**	**.054**	**.055**	**.059**	**.064**	**.070**	**.075**	**.080**	**.085**	**.090**	**.100**
.024	1.44																
.025	1.20																
.026	1.00	2.24															
.028	.72	1.59															
.030	.52	1.16															
.031	.45	1.00	2.00														
.032		.86	1.75														
.033		.75	1.54														
.034		.65	1.35														
.035		.58	1.16	2.31													
.036		.50	1.00	2.10													
.037		.45	.90	1.79	2.22												
.038		.39	.80	1.59	1.92												
.039		.35	.71	1.41	1.75												
.040		.31	.62	1.25	1.55	2.51											
.041		.28	.56	1.12	1.38	2.26	2.50										
.042		.25	.50	1.00	1.24	2.03	2.23										
.043		.23	.45	.87	1.11	1.83	1.98										
.044		.20	.39	.81	1.00	1.62	1.79										
.045			.35	.73	.90	1.47	1.60	2.32									
.046			.32	.67	.82	1.34	1.47	2.08	2.27								
.047				.59	.74	1.20	1.31	1.89	2.06								
.048				.54	.67	1.10	1.20	1.72	1.87								
.049				.49	.61	1.00	1.09	1.55	1.69								
.050				.45	.56	.91	1.00	1.43	1.56	2.14							
.051				.41	.51	.84	.93	1.31	1.44	1.96							
.052					.47	.76	.85	1.19	1.32	1.78							
.053					.43	.69	.78	1.09	1.20	1.64							
.054					.39	.65	.70	1.00	1.09	1.52	2.18						
.055					.36	.59	.64	.92	1.00	1.38	2.00						
.056						.54	.60	.85	.94	1.27	1.85						
.057						.50	.55	.79	.87	1.17	1.72						
.058						.46	.51	.73	.80	1.07	1.56						
.059						.42	.47	.67	.73	1.00	1.44	2.18					
.060						.39	.43	.62	.67	.93	1.33	2.04					
.064							.32	.47	.50	.69	1.00	1.50	2.07				
.070								.30	.33	.46	.67	1.00	1.37	1.84			
.075											.48	.73	1.00	1.37	1.75		
.080												.54	.74	1.00	1.32	1.71	
.085													.57	.76	1.00	1.29	
.090													.43	.62	.76	1.00	1.62
.095														.46	.60	.79	1.27
.100															.48	.62	1.00
.105																.49	.80
.110																	.65
.115																	.53
.120																	.43

To Use Chart

1. Locate recommended cap tube I.D. in left hand column.
2. Read across and find conversion factor under copper cap tube size.
3. Multiply the given length of the recommended cap tube by the conversion factor.
4. The resultant length (Min. 5'/ Max.16') of copper cap tube will give the same flow characteristics as the original recommended cap tube.

Example

Recommended cap tube: 9'–.040 I.D. Locate .040 in left hand column and reading across gives the following conversion factor: No. TC-36 (.62) and TC-42 (1.25).

Multiplying the recommended cap tube length of 9' by the conversion factor gives the following results: 5½"-TC-36 and 11¼'–TC-42. Either of these two cap tubes will give the same results as the original cap tube of 9'–.040 I.D.

Conversion Chart - Purpose

The "Capillary Tube Length Conversion Chart" was developed to enable users of capillary tubing to use the standard tubing sizes which are available through Refrigeration Jobbers everywhere.

While many original equipment manufacturers and condensing unit manufacturers recommend specific lengths and diameters of capillary tubing for their units, these tube sizes are not always readily available except of special order.

This conversion chart enables the user to translate the recommended length into that of a tube diameter that can be quickly obtained. In using the chart, it is recommended that conversions be made using factors within the unshaded area. In addition, it is highly recommended that the minimum length of capillary used be 5 feet.

CAPILLARY TUBING

AIR-CONDITIONING APPLICATION CHART (R-22)

B.T.U./ CIRCUIT	CAP TUBE		B.T.U./ CIRCUIT	CAP TUBE	
	Length	Size		Length	Size
4000	69 in	TC-49	8750	78 in	TC-75
4250	63 in	TC-49	9000	72 in	TC-75
4500	90 in	TC-54	9250	67 in	TC-75
4750	81 in	TC-54	9500	84 in	TC-80
5000	72 in	TC-54	9750	84 in	TC-80
5250	63 in	TC-54	10,000	76 in	TC-80
5500	101 in	TC-64	10,250	72 in	TC-80
5750	94 in	TC-64	10,500	68 in	TC-80
6000	87 in	TC-64	10,750	64 in	TC-80
6250	79 in	TC-64	11,000	60 in	TC-80
6500	72 in	TC-64	11,250	87 in	TC-85
6750	64 in	TC-64	11,500	84 in	TC-85
7000	90 in	TC-70	11,750	78 in	TC-85
7250	84 in	TC-70	12,000	72 in	TC-85
7500	78 in	TC-70	12,500	82 in	TC-90
7750	73 in	TC-70	13,000	72 in	TC-90
8000	69 in	TC-70	13,500	66 in	TC-90
8250	64 in	TC-70	14,000	60 in	TC-90
8500	84 in	TC-75			

R-134a – It is suggested to add 10% to length.

Recommended capillary tube lengths for each circuit in an air conditioner evaporator where R-22 is the refrigerant. All recommendations must be considered approximate and variations may arise in actual field applications.

Window air conditioners normally have 1 circuit and the recommended cap tube can be read directly from the chart. Larger units have 2 or more circuits in the evaporator. Where this is the case, simply divide the total BTU rating of the unit by the number of cap tube circuits to obtain the BTU/CIRCUIT rating of each individual cap tube.

Example:
Air conditioner is rated at 27,000 BTU and has 3 cap tubes connected to the evaporator. Divide 27,000 by 3 = 9,000 BTU/Circuit. From the chart, this would call for .075 I.D. (TC-75) 72 inch long.The length and I.D. of any cap tube may be adjusted to a more readily available size by using the conversion chart.

REFRIGERATION APPLICATION CHART (R-12 AND R-22)*

			NORMAL EVAPORTING TEMPERATURE DEGREES F							
H.P.	REF.	NOTE	-10 to +5		+5 to +20		+20 to +35		+35 to +50	
1/20	R12	S-F	16 Ft.	TC-26	10 Ft.	TC-26				
1/12	R12	S-F	12 Ft.	TC-26	12 Ft.	TC-31				
1/9	R12	S	12 Ft.	TC-26	12 Ft.	TC-31				
1/9	R12	S	10 Ft.	TC-26	10 Ft.	TC-31				
1/8	R12	S-F	10 Ft.	TC-26	10 Ft.	TC-31				
1/6	R12	S	12 Ft.	TC-31	12 Ft.	TC-36	8 Ft.	TC-36	10 Ft.	TC-42
1/6	R12	F	10 Ft.	TC-31	10 Ft.	TC-36				
1/5	R12	S	10 Ft.	TC-31	10 Ft.	TC-36	7-1/2 Ft.	TC-42	7-1/2 Ft.	TC-49
1/5	R12	F	8 Ft.	TC-31	8 Ft.	TC-36	10 Ft.	TC-42	6 Ft.	TC-42
1/4	R22	S-F	12 Ft.	TC-36	6 Ft.	TC-36	8-1/2 Ft.	TC-42	6 Ft.	TC-49
1/4	R12	F	10 Ft.	TC-36	6 Ft.	TC-36	8 Ft.	TC-42	6 Ft.	TC-49
1/3	R22	F	10 Ft.	TC-36	6 Ft.	TC-36	11 Ft.	TC-49		
1/3	R12	F	12 Ft.	TC-42	6 Ft.	TC-42	9 Ft.	TC-49	6 Ft.	TC-54
1/2	R22	F	6 Ft.	TC-36	9 Ft.	TC-42	7-1/2 Ft.	TC-54	10 Ft.	TC-64
1/2	R12	F	11 Ft.	TC-54	9 Ft.	TC-49				
3/4	R22	F	11 Ft.	TC-54	9 Ft.	TC-54				
3/4	R12	F	7-1/2 Ft.	TC-54	12 Ft.	TC-70	1 Ft.	TC-80		
1	R22	F	10 Ft.	TC-64	12 Ft.	TC-70				
1	R12	F	10 Ft.	TC-70	11 Ft.	TC-54	7-1/2 Ft.	TC-54 (2 pcs)		
1-1/2	R22	F	7-1/2 Ft.	TC-54 (2 pcs)	7-1/2 Ft.	TC-54 (2 pcs)	8 Ft.	TC-64 (2 pcs)		
1-1/2	R12	F			9 Ft.	TC-64 (2 pcs)	10 Ft.	TC-80 (2 pcs)		
2	R22	F			10 Ft.	TC-70 (2 pcs)	9 Ft.	TC-75 (2 pcs)		
2	R12	F	10 Ft.	TC-70 (2 pcs)	9 Ft.	TC-75 (2 pcs)	10 Ft.	TC-85 (2 pcs)		
3	R22	F			10 Ft.	TC-70 (3 pcs)	9 Ft.	TC-75 (3 pcs)		
3	R12	F	10 Ft.	TC-70 (2 pcs)	8 Ft.	TC-64 (4 pcs)	10 Ft.	TC-80 (4 pcs)		
4	R22	F			10 Ft.	TC-70 (4 pcs)	9 Ft.	TC-75 (4 pcs)		
4	R12	F			10 Ft.	TC-70 (5 pcs)	9 Ft.	TC-75 (5 pcs)		
5	R12	F			10 Ft.	TC-80 (5 pcs)	9 Ft.	TC-85 (5 pcs)		

NOTE: Condenser Type: S = Static, F = FAN

***R-134a** – It is suggested to add 10% to length.

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
0012-7012	866	291.10	016-261	593	307.00	035503	214	4.10	035778	214	2.90
010-1000	596	321.00	016-263	596	286.30	035504	214	4.20	035779	214	3.50
010-1401	593	205.90	016-264	596	381.00	035507	214	1.10	035901	214	7.50
010-1402	593	190.40	016-503	593	297.40	035508	214	1.80	035902	214	7.60
010-1408	596	196.20	016-527	593	248.40	035509	214	3.00	035903	214	24.50
010-1409	596	225.50	016-557	593	256.90	035510	214	3.30	035904	214	25.40
010-1410	596	232.90	016-585	593	267.30	035520	214	0.70	036000	214	1.00
010-1416	596	231.80	016-588	597	382.00	035521	214	1.50	036001	214	1.20
010-1418	596	231.50	016-601	596	339.00	035522	214	2.50	036002	214	1.50
010-1433	596	221.00	016-601	597	339.00	035523	214	2.70	036003	214	1.80
010-1473	596	329.00	01688	733	133.40	035545	214	2.30	036004	214	2.00
010-1483	593	190.40	01689	733	282.20	035546	214	3.90	036005	214	3.00
01-0180	858	179.10	018-100	601	299.80	035547	214	4.60	0361	214	1.20
01-0182	858	380.00	020-047	186	46.60	035548	214	5.10	0366	214	2.10
010-1894	593	275.10	020-057	186	42.90	035560	214	1.10	0384-0947	787	1,142.00
01-0192	858	529.00	020-1010	327	73.60	035561	214	1.20	0384-0957	788	1,693.00
010-2000	593	302.00	020-1011	327	78.80	035562	214	1.80	0384-0958	788	2,715.00
010-2054	593	228.70	020-1012	327	86.80	035563	214	2.10	0386-0090	786	473.00
011-171	593	284.10	020-1018	327	99.90	0356	214	3.70	0386-0100	785	204.30
012-1502	594	418.00	020-1019	327	178.60	035603	214	0.80	0386-0101	785	221.40
012-1505	594	441.00	020-1054	327	182.10	035604	214	1.40	0386-0102	785	261.20
012-1506	594	400.00	020-7006	593	404.00	035605	214	1.50	0386-0103	785	286.50
012-1549	594	378.00	028-10505-000	690	6.00	035606	214	2.10	0386-0104	785	302.00
012-1550	594	437.00	0341	214	1.10	035624	214	3.20	0386-0105	785	373.00
012-1594	594	502.00	0346	214	1.80	035646	214	0.80	0386-0106	785	532.00
012-4833	594	511.00	0352	214	0.80	035648	214	1.40	0386-0112	786	74.40
012-4834	594	428.00	035408	214	0.80	035649	214	1.40	0386-0113	786	83.30
012-4846	594	487.00	035409	214	1.20	035651	214	1.80	0386-0114	786	98.10
01287	733	51.00	035410	214	1.70	035652	214	1.80	0386-0115	786	120.00
01488	733	89.80	035411	214	1.80	035654	214	1.80	0386-0297	799	47.70
016-104	596	354.00	035449	214	0.70	035655	214	1.80	0386-0308	784	264.90
016-107	593	226.90	035450	214	1.10	035656	214	1.80	0386-0335	784	1,077.00
016-108	593	251.20	035451	214	1.50	0357	214	3.50	0386-0336	784	1,116.00
016-111	596	245.20	035452	214	1.70	035759	214	1.20	0386-0365	785	347.00
016-120	593	228.80	035482	214	1.80	035760	214	2.00	0386-0403	786	254.80
016141	318	29.30	035483	214	2.10	035761	214	3.20	0386-0410	786	173.20
016-142	593	372.00	035484	214	3.00	035762	214	3.40	0386-0500	784	149.70
016-166	593	317.00	035485	214	3.70	035764	214	5.40	0386-0503	787	126.70
016-200	593	292.40	035501	214	1.80	035776	214	1.10	0386-0505	787	167.10
016-209	593	304.00	035502	214	3.00	035777	214	1.80	0386-0561	796	150.00

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
0386-0725	784	338.00	065408	317	60.60	1/2W-7/8	191	19.80	103-C	210	4.90
0386-0726	784	380.00	065410	317	88.90	1/4-10FT-PLTD	186	7.20	103-D	210	7.10
0386-0835	784	796.00	065411	317	101.00	1/4-2-HOLE	698	16.00	103-E	210	7.80
0386-0849	789	200.30	066159	316	169.20	1/4-3FT-PLTD	186	2.10	105-FF-SP	825	113.70
0386-0857	789	434.00	066161	316	201.70	1/4-3-HOLE	696	15.50	106.44	193	145.40
0386-1090	784	157.30	066162	316	201.70	1/4-AL	627	3.00	1070-1-1/8	739	167.00
0386-1091	784	270.00	066163	316	201.70	1/4W-36-48	191	65.80	1070-7/8	739	192.30
0386-1200	787	131.00	066164	316	242.50	1/8-SEISMIC-KIT	187	92.40	1071-1-1/8	739	349.00
0386-1226	787	11.60	066165	316	242.50	10/3-TEC	727	4.60	1071-7/8	739	184.90
0386-1293	786	351.00	066166	316	242.50	1000-1200-125V	713	53.30	1074-1-1/8	741	331.00
0386-1299	786	389.00	066167	316	242.50	10009	792	196.90	1074-FLUSH	741	331.00
0386-1370	789	921.00	077811	214	1.00	1001	802	90.30	1075-1-1/4	741	567.00
0418030	704	126.20	077812	214	1.20	10017	799	76.90	1075-1-1/8	741	556.00
0418050	704	142.10	077813	214	1.50	10041C	624	242.60	1075-1-3/8	741	305.00
047602	318	34.30	077814	214	1.80	10041STC	624	268.10	1075-FLUSH	741	498.00
047604	318	34.30	077815	214	2.00	10048PC	624	232.70	1076-1-1/4	741	700.00
047606	318	40.40	077816	214	70.60	10048STPC	624	256.20	1076-1-1/8	741	694.00
047608	318	40.40	0781-3652	789	436.00	1005	802	102.00	1076-1-3/8	741	698.00
047610	318	40.40	083-014	186	4.80	100-A	210	3.40	108-130-125V	713	13.80
047612	318	52.50	083-014	186	4.80	100-B	210	4.50	108-130-250V	713	24.30
047614	318	52.50	083-022	186	11.20	100-C	210	7.10	108-130-330V	713	26.00
047618	318	52.50	087-016	186	7.70	100-D	210	10.70	1092-1-1/8	742	387.00
05280T	765	30.50	087-018	186	11.30	100-E	210	33.00	1092-FLUSH	742	340.00
0563-0510	879	535.00	087-024	186	12.50	1010	802	80.10	10937	807	50.60
0563-1550	832	1,194.00	0969-81	780	15.20	1011	802	47.80	1094-000013	742	237.80
0563-1557	832	1,824.00	1/2-10FT-PLTD	186	23.80	101423	683	539.00	1094H-1-1/8	742	43.70
0564-3002-83	853	6,268.00	1/2-3-HOLE	696	15.40	101-A	210	3.80	1094H-F	742	43.70
0564-3004-79	853	7,717.00	1/2W-1/2	191	16.00	101-B	210	5.50	1095	742	237.90
057341	317	148.80	1/2W-1-1/8	191	22.10	101-C	210	7.80	10995	807	69.00
057343	317	148.80	1/2W-1-3/8	191	24.40	101-D	210	12.70	10G711B	278	2,709.00
05857	733	67.90	1/2W-1-5/8	191	27.90	101-E	210	34.10	10G711C	278	2,860.00
060012	318	26.20	1/2W-2-1/8	191	35.70	102F-04	821	10.30	10G79B	278	2,610.00
060014	318	26.20	1/2W-2-5/8	191	48.30	102F-05	821	10.30	110004	683	1,059.00
060-100	597	316.00	1/2W-3/4	191	18.30	102F-06	821	12.30	1101	828	276.40
060-101	597	351.00	1/2W-3/8	191	15.10	102F-08	821	14.10	11017	799	84.60
0613-5505	832	189.00	1/2W-3-1/8	191	56.70	102F-10	821	14.30	11055	802	71.40
063208	318	32.30	1/2W-3-5/8	191	74.70	102F-12	821	17.40	11057	802	74.80
065405	317	36.30	1/2W-36-48	191	91.80	102F-14	821	18.20	11063W	802	105.60
065406	317	40.40	1/2W-4-1/8	191	82.70	103-A	210	2.80	110-BA	210	1.20
065407	317	52.50	1/2W-5/8	191	17.80	103-B	210	5.40	110-CA	210	2.30

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
110-CB	210	1.50	12/3-BX	727	2.50	122-D	210	8.10	12D17B	279	3,567.00
110-DA	210	4.40	1209	798	15.00	122-DB	210	6.30	12G223547HAM	893	14.30
110-DB	210	3.30	120923	683	1,524.00	122-DC	210	7.10	1301V	724	3.00
110-DC	210	3.10	120-AA	210	1.50	122-E	210	8.10	131519	683	1,987.00
110-EA	210	15.60	120-BA	210	2.40	122-ED	210	10.00	131520	683	2,170.00
110-EB	210	6.30	120-BB	210	2.80	124-156-125V	713	13.90	132255	683	2,255.00
110-EC	210	5.20	120-CA	210	4.00	124-156-250V	713	27.10	132262	683	2,170.00
110-ED	210	5.20	120-CB	210	4.10	124-156-330V	713	26.70	135-316	186	0.30
110-HC	210	11.20	120-DB	210	7.20	1245-1-1/2	741	292.10	135-451	186	0.30
110-HD	210	11.80	120-DC	210	6.90	1245-1-1/4-BC	741	287.60	135-453	186	0.40
110-HE	210	9.00	120-ED	210	11.70	1245-1-1/8	741	287.60	135-455	186	0.50
111114	797	59.70	121004	683	1,373.00	1245-1-3/4	741	303.00	135-459	186	0.60
111115	797	44.40	121005	683	1,442.00	1245-1-3/8	741	290.50	135-500	186	0.70
111116	797	35.60	12132	807	13.10	1245-1-5/8	741	300.00	135-808	189	1.10
1113	532	10.60	12137	807	29.10	1245-1-7/8	741	303.00	135-810	189	1.50
11201	713	11.70	1216-1-1/8	738	95.80	1245-2	741	305.00	135-832	189	0.30/EA
11206	713	9.70	1219-13004	539	0.40	1245-FLUSH	741	283.60	135-838	189	0.40/EA
11207	713	10.50	1219-130T4	539	1.10	1246-01	868	24.80	13655	214	3.20
11208	713	11.30	1219-44003	539	0.60	1246-02	868	24.60	1366-15	730	17.20
11211	713	4.10	121948	683	1,442.00	1248-1-1/2-CHR	741	327.00	139-1-1/8	739	429.00
11212	713	4.80	1219-66203	539	1.40	1248-1-1/4	741	338.00	1398-2-1/2	739	583.00
11-291	627	33.90	12199	807	27.50	1248-1-3/4-CHR	741	327.00	1398-3-1/2	739	441.00
11-293	627	37.00	121-A	210	0.90	1248-1-3/8	741	339.00	14/3	727	1.70/ft
112-A	210	1.00	121-B	210	1.50	1248-1-5/8-CHR	741	325.00	14/3-BX	727	2.00
112A100F11BA	532	846.00	121-C	210	2.40	1248-FLUSH-CHR	741	308.00	14/3-BX	727	2.00
112-B	210	1.30	121-D	210	5.60	12585	807	27.80	14/3-TEC	727	3.10
112-C	210	1.90	121-E	210	6.70	12587	807	21.80	14003118-001	536	
112-D	210	3.60	12204	714	5.70	12589	807	19.60	14003299-001	536	
112-E	210	5.50	12205	714	5.30	12591	807	16.00	14003640-001	535	
11577	761	66.40	12206	714	5.30	12592	807	15.80	14004406-110	533	
11577	761	66.40	12210	714	5.70	12632	807	39.30	14004406-310	533	
116	886	537.00	12211	714	4.40	12634	807	38.80	14004623-001	536	
116/323-KIT	887	845.00	12212	714	21.70	1266CS	730	17.10	14004897-003	536	
116/62-MAX-PLUS-KIT	887	750.00	1227	879	407.00	1268-15	730	21.90	140F-04	825	26.80
116-A	210	5.40	122-A	210	1.60	127C	806	38.00	140F-06	825	26.80
116-B	210	5.10	122-B	210	1.70	12D11B	278	2,367.00	140F-08	825	29.10
116-C	210	7.60	122-BA	210	2.40	12D11B	279	2,367.00	140F-10	825	34.80
116-D	210	11.60	122-C	210	4.30	12D11C	279	2,367.00	140F-12	825	34.80
116-E	210	19.60	122-CA	210	3.00	12D13B	278	2,401.00	140F-14	825	52.10
117	886	589.00	122-CB	210	3.50	12D13C	279	2,401.00	140F-18	825	63.30

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
141-914	186	0.30	1527514	757	51.60	1-6009	694	109.60	1-6143	694	116.70
141-918	186	1.10	1530	740	81.20	1-6024	694	54.80	1-6160	694	134.40
141-922	186	1.80	15305	807	14.50	1-6025	694	54.80	1-6161	694	134.40
1421-0016	788	218.40	15306	807	15.40	1-6027	694	136.10	162-393	186	5.40
1421-0034	788	305.00	15307	807	16.30	1-6038	694	40.70	162-395	186	10.80
1421-0035	788	305.00	15308	807	16.70	1-6039	694	40.70	162-397	186	10.20
1421-0084	788	165.40	15309	807	17.30	1-6040	694	44.20	162-398	186	15.00
1423-0024	787	10.10	15310	807	17.60	1-6041	694	44.20	162-400	186	27.10
1423-0061	787	12.30	15311	807	20.70	1-6042	694	44.20	16268	214	1.40
1423-0061	799		15312	807	21.20	1-6043	694	44.20	1687-9	649	186.10
1423-0061	799	12.30	15313	807	31.10	1-6044	694	44.20	16C	225	53.80
142F	825	104.20	15390	807	195.80	1-6045	694	44.20	16D17B	278	4,274.00
145-175-125V	713	14.40	15636	838	114.30	1-6046	694	44.20	16D17B	279	4,274.00
145-175-250V	713	27.60	15648	838	130.80	1-6047	694	53.00	17004	721	75.40
145-175-330V	713	33.70	15660	838	141.00	1-6048	694	44.20	17006	721	97.70
14536	839	96.00	15672	838	156.30	1-6051	694	53.00	1700CS	730	20.10
14548	839	107.70	15696	838	196.60	1-6053	694	54.80	17019	721	143.90
14560	839	118.20	157-014	186	1.90	1-6054	694	54.80	170207	683	2,741.00
14571	834	1,231.00	157-016	186	2.90	1-6057	694	58.30	1704CS	730	22.10
14572	839	129.50	157-018	186	4.30	1-6058	694	68.90	1705CS	730	22.10
14596	839	152.60	15725	838	469.00	16060	839	228.60	170S-L	743	514.00
148-014	186	5.50	15750	838	869.00	1-6060	694	63.60	171320	683	1,965.00
148-016	186	10.00	15799	838	1,670.00	1-6063	694	70.70	171322	683	2,239.00
148-018	186	12.60	15848	839	193.20	1-6064	694	70.70	171C-L-S	743	302.00
148-022	186	18.00	15860	839	216.30	1-6066	694	79.60	1723CS	730	22.20
14E23C2-R1021E	282	543.00	15872	839	239.90	1-6070	694	88.40	1724CS	730	22.10
14E23C2-R1021E	283	543.00	1587BP	730	4.30	1-6074	694	100.80	1725CS	730	22.20
150	731	59.90	1587FC	880	2,204.00	1-6077	694	111.40	172C-L-S	743	296.00
15036	838	80.90	1587FC	886	2,204.00	1-6079	694	129.10	173C-L-S	742	291.00
15048	838	91.80	15896	839	280.90	1-6080	694	129.10	1749CS	730	22.10
15060	838	99.60	1591-15	730	23.10	16082	214	5.30	1750CS	730	48.40
1507	880	1,689.00	1594BP	730	4.30	1609-101	649	172.10	1751	844	500.00
15072	838	110.90	1595CS	730	77.00	1609-90	649	244.70	1755CS	730	22.10
1510	740	82.00	1597CS	730	69.30	1-6113	694	46.00	1756CS	730	22.20
1511	740	82.80	15ND10H125AM	893	2.70	1-6114	694	46.00	1760-15	730	12.80
151TP	809	74.50	1-6000	694	44.20	161-193-125V	713	14.60	17723	214	7.50
1521L	740	173.00	1-6005	694	86.60	161-193-250V	713	30.20	1786074	779	66.20
1521R	740	173.00	1-6006	694	100.80	161-193-330V	713	35.40	179/EDA2	886	1,020.00
1522L	740	170.40	1-6007	694	109.60	1-6133	694	54.80	17C	225	71.10
1522R	740	170.40	1-6008	694	109.60	1-6141	694	54.80	18/2-PC-75M	726	101.10

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
18/2-SC-75M	726	139.40	1885384	820	172.30	1904-15	730	22.80	193-10	211	7.10
18/3-PC-75M	726	141.60	1885385	820	254.20	1905CP	730	30.40	193-8	211	5.70
18/3-SC-75M	726	190.10	1885386	820	44.20	1906122	778	20.80	193-S-SP	824	94.80
18/4-PC-75M	726	182.00	1885387	820	47.40	1906-15	730	28.80	194000	212	49.80
18/6-PC-75M	726	265.40	1891133	818	65.20	19101	225	29.20	194001	212	116.60
18/8-PC-75M	726	316.00	1891134	818	66.90	19102	225	36.60	194-D	211	7.70
18/8-SC-75M	726	695.00	1891135	818	64.90	19104	225	54.60	195-10	211	7.50
180	278	780.00	1891137	818	87.20	19105	839	50.80	19551	719	144.60
1800CP	730	20.10	1891138	818	81.70	19106	839	64.10	1955CP	730	19.00
1803CS	730	20.40	1891180	818	98.90	19109	225	50.50	1956CP	730	45.10
1804CS	730	20.50	1891185	818	118.40	19110	225	35.20	195-8	211	6.30
1805CS	730	20.30	1891187	818	93.20	19111	225	38.60	195FC-SP	822	240.20
1806CP	730	26.20	189-227-125V	713	15.10	19115	225	100.70	195SA	824	347.00
18072	839	101.90	189-227-250V	713	34.90	19116	225	38.60	196005	213	162.30
1823CS	730	22.40	189-227-330V	713	38.60	19117	225	61.70	196006	213	218.90
1823CS	730	20.40	18973	220	23.00	19118	225	39.30	196010	212	7.60
1824CS	730	22.40	18974	220	39.30	19120	225	72.90	196011	212	20.10
1825CS	730	22.40	18975	220	181.10	19125	225	48.20	196017	213	27.40
183367	246	58.20	18978	220	64.10	19128	225	61.70	196022	212	8.30
183368	246	54.10	18979	220	64.10	19129	225	64.40	196023	212	22.10
183369	246	58.20	18980	220	125.10	19158	225	67.10	196025	212	20.90
183370	246	54.10	18993	222	65.40	19161	225	39.80	196035	212	7.60
183371	246	49.70	18997	220	60.00	19162	225	39.80	196040	213	22.10
1838947	823	458.00	18C	225	120.00	19163	225	62.60	196042	213	25.10
1838952	822	395.00	18E23C2-R1021E	282	560.00	19164	719	58.70	196044	213	23.60
183899	246	28.10	18E23C2-R1021E	283	560.00	19165	225	44.60	196050	213	5.80
1839015	823	1,388.00	19002	719	129.80	19165	719	58.70	196051	213	14.90
1839027	821	118.40	19003	719	141.60	19166	225	61.80	196056	212	10.90
1839032	821	553.00	19004	719	136.40	19168	225	44.60	196061	212	23.50
1839053	809	37.90	19005	719	141.60	19169	225	61.80	196071	212	8.00
185001	799	6.40	19006	719	147.00	19171	719	58.70	196082	212	13.30
1851CS	730	21.00	19007	719	155.20	19201	225	29.20	196083	212	24.00
1852CS	730	31.30	19008	719	136.40	19203	225	59.30	196125	213	202.10
1853CS	730	33.10	19009	719	134.60	19208	225	52.60	196232	212	6.60
1855CS	730	21.00	1900CP	730	26.20	19209	225	51.50	196233	212	19.00
1856CS	730	21.20	19010	719	147.00	19210	225	35.60	196242	212	6.50
18581	762	71.90	19011	223	48.40	19217	225	62.70	196243	212	18.00
1858-15	730	16.60	19019	727	10.60	19220	225	77.60	196252	212	11.30
1885381	820	49.50	19020	727	13.90	1923-15	730	28.40	196278	213	3.80
1885382	820	105.10	19022	220	33.60	1923CS	730	26.10	196282	213	3.80
1885383	820	88.40	1903-15	730	20.00	1925CP	730	25.40	196284	213	7.90

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
196352	213	4.40	1VP50-5/8	702	103.30	2020	729	10.10	214-4	322	127.20
196353	213	10.20	1VP50-7/8	702	144.30	20200	544	110.20	214-4S	322	89.40
196364	213	16.20	1VP56-1-1/8	702	194.30	20201	544	327.00	214-4ST	322	98.70
196453	213	7.40	1VP56-3/4	702	186.30	20204	544	380.00	214-6	322	127.20
196673	213	8.40	1VP56-5/8	702	150.50	2020-8000	846	2,730.00	214-6S	322	90.10
196-D	211	5.30	1VP56-7/8	702	194.30	2020-8001	846	2,853.00	214-6ST	322	131.60
196-E	211	6.30	1VP62-1-1/8	702	237.60	20217	544	4,105.00	214-7/8	738	150.50
1A66W-633	649	83.70	1VP62-3/4	702	299.90	20222	544	2,357.00	2150	753	344.00
1AC-A1-II	884	88.50	1VP62-5/8	702	243.60	2031F	624	34.30	215-8	322	167.90
1E30N-311	648	66.00	1VP62-7/8	702	237.60	2045	753	207.00	215-8ST	322	200.20
1E50N-303	648	72.40	1W-1-1/8	191	72.10	20536	544	253.40	216-10	322	190.00
1E56N-361	648	78.80	1W-1-3/8	191	83.50	20543	544	152.10	216-10S	322	147.00
1E78-151	645	97.20	1W-1-5/8	191	92.60	20544	544	851.00	216-10ST	322	202.20
1F78-144	645	81.50	1W-2-1/8	191	111.40	206004	321	264.90	216-259-125V	713	16.30
1F80-0471	646	168.00	1W-2-5/8	191	157.40	206005	321	264.90	216-259-250V	713	38.00
1F80-0471	647	168.00	1W-3/4	191	53.30	206007	321	273.80	216-259-330V	713	40.20
1F83-0422	648	148.30	1W-3-1/8	191	190.60	20601	659	21.70	21632	545	173.90
1F85-0422	646	164.20	1W-3-5/8	191	208.40	20611	546	436.00	21633	545	183.80
1F95-1277	647	486.00	1W-36-48	191	167.00	2068	753	230.50	21634	545	1,391.00
1F97-1277	647	430.00	1W-4-1/8	191	244.70	20687	544	162.20	2165	701	45.00
1HT0901-636	213	64.20	1W-5/8	191	48.00	20695	544	1,384.00	2166	701	35.50
1HT0902-636	213	64.20	1W-7/8	191	59.40	208-F-SP	825	75.80	21660	545	1,977.00
1LAC-A-II	884	88.50	2000-0D	837	276.00	20906-906	817	39.30	217-1-1/8	738	162.30
1VL25-1/2	702	72.50	2001D	837	276.00	20908-908	817	45.10	217-1-3/8	738	170.30
1VL25-5/8	702	72.50	200-240-125V	713	17.40	2091	753	257.90	217-7/8	738	159.90
1VL30-1/2	702	73.60	2002D	837	262.20	209541B	616	124.40	2188	753	367.00
1VL30-5/8	702	87.60	2003D	837	276.00	20C1	729	4.40	21983	838	167.20
1VL34-1/2	702	78.50	2005N	803	109.50	20C4	729	5.30	21984	838	193.20
1VL34-3/4	702	97.20	2006D	837	376.00	20C5	729	5.50	21985	838	207.90
1VL34-5/8	702	78.50	2008D	837	300.00	21024TCD	820	35.40	21986	838	234.90
1VL40-1/2	702	81.50	2010D	837	276.00	2105	753	296.90	2200-20	884	32.20
1VL40-3/4	702	98.40	20-1-10008-L	895	65.30	210F	825	45.00	2202-20	804	45.50
1VL40-5/8	702	79.50	20-1-103-L	895	60.00	21150	838	498.00	2202-20	884	45.50
1VL40-7/8	702	79.50	20-1-10605B-L	895	31.40	2118	753	313.00	2203-20	884	53.70
1VL44-1/2	702	88.00	20-1-1200-L	895	15.10	21200	838	969.00	22112	838	156.70
1VL44-3/4	702	106.20	20-1-1215-L	895	26.40	212-150	867	125.90	221-412	733	67.30
1VL44-5/8	702	85.80	201-20	649	332.00	21-25-125V	713	17.10	221-413	733	42.10
1VL44-7/8	702	119.10	20178	544	1,840.00	21-25-250V	713	14.50	221-415	733	32.30
1VP44-1-1/8	702	118.70	20184	544	729.00	21-25-330V	713	14.60	2216	753	422.00
1VP50-1-1/8	702	144.30	20185	544	119.30	214-1-1/8	738	151.50	2225-02	865	61.50
1VP50-3/4	702	124.80	20199	544	64.40	214-1-3/8	738	157.80	2225-03	865	61.50

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
223-2-BLACK	783	21.80	233-292-165V	713	27.90	2593	799	16.40	26EH5C2-R1021E	283	1,253.00
2238-06	868	54.90	2351-20	797	154.60	25980	838	261.20	27001	719	38.70
2245-02	865	56.50	2352-20	797	171.40	25983	838	346.00	27002	719	36.10
2245-03	865	65.80	2353-20	797	212.50	25984	838	372.00	27004	719	51.20
225-1530	896	16.50	2360-20	797	476.00	25985	838	398.00	27005	719	31.90
225-1550	896	45.30	2361-20	797	304.00	25986	838	426.00	27006	719	25.80
2255-02	865	60.90	2362-20	797	170.40	26002	838	124.20	27008	719	30.90
2255-03	865	60.90	2363-20	797	213.00	2-6011	694	86.60	27012	719	25.80
225B	194	9.90	2375CS	730	37.60	2-6012	694	88.40	270-324-125V	713	17.60
225W	194	9.90	2375N-15	730	33.00	2-6014	694	90.20	270-324-250V	713	44.70
22681501	125	1,266.00	2410-1112	853	8,067.00	2-6015	694	102.50	2735-20	797	166.20
227-046	189	1.60	24233	830	343.00	2-6016	694	122.00	27436	839	79.00
227-050	189	2.20	2471-21	819	472.00	2-6017	694	122.00	27460	839	97.90
227-054	189	2.70	2471CS	730	31.10	2-6018	694	162.60	27472	839	107.30
227-122	189	22.30	2475CS	730	38.20	2-6019	694	171.50	27518	635	26.00
227-132E	189	46.10	2475N-15	730	33.00	2-6020	694	196.20	275FS	823	474.00
227-150	189	1.10	24-8518	853	4,876.00	2-6021	694	244.00	276	675	304.00
227-152	189	1.20	24A01G-3	649	210.70	2-6022	694	252.80	27636	839	63.40
227-154	189	1.30	24A05E-1	649	196.60	26026B	635	51.80	27660	839	82.00
227-180	189	1.30	24A34-21	653	36.00	26026G	635	52.70	27672	839	91.50
227-182	189	1.70	24A34-22	653	36.00	2-6029	694	86.60	2775BP	730	4.30
227-200	189	0.80	24A34-23	653	36.00	2-6030	694	88.40	28754	757	54.50
227-202	189	0.90	24A34-24	653	36.00	2-6031	694	93.70	289/FVF	886	2,146.00
227-204	189	1.80	24A34-25	653	36.00	2-6032	694	93.70	28R-1/2	185	5.50
227-210	189	4.90	24A34-26	653	51.20	2-6033	694	102.50	28R-3/8	185	4.10
227-212	189	7.70	24A34-27	653	54.10	2-6034	694	111.40	291C-11S	323	907.00
22751	702	3.80	24A34-28	653	56.20	2-6036	694	116.70	29435	879	150.40
22751	703	3.80	24A34-29	653	36.00	2-6037	694	247.50	29436	879	150.40
22752	702	5.60	24A34-36	653	54.60	2-6082	694	83.10	294C-21S	323	1,650.00
22752	703	5.60	24A34-37	653	52.50	2-6083	694	102.50	296C-31S	323	3,684.00
22983	838	220.20	24DT-L4F1	585	336.00	2-6084	694	102.50	2AC/90-1000VC	884	88.50
22984	838	246.30	25002	838	87.10	2-6085	694	102.50	2BK55H	703	149.90
22985	838	258.30	25202	838	89.70	2-6087	694	116.70	2BK57H	703	152.40
22986	838	285.20	25225	829	407.00	2-6089	694	166.10	2BK60H	703	155.80
22988	838	357.00	25-30-125V	713	17.10	2-6090	694	180.30	2BK62H	703	157.90
2299	893	11.90	25-30-250V	713	20.90	2-6092	694	205.10	2BK65H	703	170.20
22EH5C2-R1021E	282	1,217.00	25-30-330V	713	23.50	2-6093	694	228.00	2BK67H	703	173.20
22EH5C2-R1021E	283	1,217.00	25602	838	89.70	26225	829	448.00	2BK70H	703	177.80
23218	764	43.60	2567-15	730	37.40	26225L	829	532.00	2DA3F23KE-TFC-800	68	9,755.00
233	886	965.00	25882	757	37.60	268	867	26.00	2DA3F23KE-TFD-800	68	9,755.00
233-292-125V	713	16.70	25890002	733	168.20	26EH5C2-R1021E	282	1,253.00	2DA3F23KE-TFE-800	68	9,755.00

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
2DA3R89KE-TFC-800	69	10,188.00	3/8-3-HOLE	696	15.50	3015-0486	852	451.00	32288	803	150.40
2DA3R89KE-TFD-800	69	10,188.00	3/8-CONE-NUT	183	8.20	3015-0781	852	610.00	3243-3	783	126.40
2DA3R89KE-TFE-800	69	10,188.00	3/8W-1/2	191	10.60	3015-0784	852	147.80	324-388-125V	713	18.10
2DB3F25KE-TFC-800	68	9,798.00	3/8W-1/4	191	9.30	3015-0864	852	97.70	325	883	859.00
2DB3F25KE-TFE-800	68	9,798.00	3/8W-1-1/8	191	15.50	3015-0895	852	134.60	32527	809	65.10
2DC3R53KE-TFC-800	69	9,581.00	3/8W-1-3/8	191	17.50	3015-5812	852	97.70	32535	809	94.40
2DC3R53KE-TFE-800	69	9,581.00	3/8W-1-5/8	191	21.70	3015-8004	852	1,753.00	325B	194	11.90
2DD3R63KE-TFC-800	69	9,690.00	3/8W-2-1/8	191	25.90	30-176J	732	51.10	325W	194	11.90
2DD3R63KE-TFE-800	69	9,690.00	3/8W-2-5/8	191	38.90	3020	326	199.10	32613	809	42.40
2DF3F16KE-TFC-800	68	9,215.00	3/8W-3/4	191	13.00	30-207	732	26.00	32614	809	42.40
2DF3F16KE-TFE-800	68	9,215.00	3/8W-3/8	191	9.90	30-207XT	732	32.30	328643	799	20.90
2DL3F20KE-TFC-800	68	9,650.00	3/8W-3-1/8	191	47.90	30-2088	732	136.90	331942	788	254.50
2DL3F20KE-TFD-800	68	9,650.00	3/8W-36-48	191	86.80	3030	326	380.00	3328	679	252.90
2DL3R78KE-TFC-800	69	9,755.00	3/8W-5/8	191	12.30	30-36-125V	713	17.10	3330	679	299.30
2DL3R78KE-TFE-800	69	9,755.00	3/8W-7/8	191	13.60	30-36-250V	713	20.90	338-3-0	783	30.60
2VP42-1-1/8	702	215.80	3000	645	164.90	30-36-330V	713	25.10	340-408-125V	713	23.70
2VP42-7/8	702	215.80	300-360-125V	713	22.30	3045	326	438.00	3466-1E	783	4.80
2VP56-1-1/8	702	292.70	30-051	732	16.10	304-V	254	153.90	3466-3E	783	4.80
2VP60-1-1/8	702	374.00	30-052	732	18.30	30536	779	13.70	3466-4E	783	4.80
2VP68-1-3/8	702	414.00	30-053	732	21.00	30537	748	27.10	3466-5E	783	4.80
2VP75-1-3/8	702	629.00	30-059	732	37.10	30537	760	27.10	3466-6E	783	4.80
3/16-SEISMIC-KIT	187	137.80	3005CR	803	75.10	3060	326	627.00	3466-7E	783	4.80
3/4-25-GALV	184	8.90	3006	893	77.30	3075	326	846.00	34E24C2-R1021E	282	1,740.00
3/4-3-HOLE	696	18.30	30-071	732	24.20	313.02.016	193	4.80	34E24C2-R1021E	283	1,740.00
3/4W-1/2	191	24.70	30-072	732	26.00	313.04.016	193	7.20	361-21	783	25.00
3/4W-1-1/8	191	39.30	30-073	732	26.90	313.06.016	193	7.20	36-43-250V	713	20.90
3/4W-1-3/8	191	44.90	30-073J	732	80.60	314.02.90	193	20.50	36-43-330V	713	26.80
3/4W-1-5/8	191	59.50	30-074	732	30.20	314.03.T	193	51.70	364-FHA-10	821	578.00
3/4W-2-1/8	191	72.40	30-074J	732	52.90	314.04.90	193	20.50	364-FHA-12	821	757.00
3/4W-2-5/8	191	91.40	30-076	732	51.10	314.06.90	193	20.50	364-FHA-14	821	853.00
3/4W-3/4	191	29.40	30-0S	751	134.60	314.06.T	193	56.90	364-FHB-04	821	231.10
3/4W-3/8	191	22.70	30-107J	732	40.60	31502-91	731	107.70	364-FHB-06	821	260.50
3/4W-3-1/8	191	104.70	30-1161	732	65.70	3155W-E	326	919.00	364-FHB-08	821	371.00
3/4W-3-5/8	191	126.80	30-1162	732	64.40	31803-91	731	153.10	36782	779	37.70
3/4W-36-48	191	137.90	30-1163	732	64.40	31894	792	90.30	367FH	821	94.80
3/4W-4-1/8	191	136.50	3012	326	191.30	31896	792	219.10	368FH	821	112.20
3/4W-48-50FT	191	2,299.00	301-3/8	185	6.80	3212	326	615.00	36C03-258	654	290.90
3/4W-5/8	191	27.00	30-141	732	41.20	3214	326	242.00	36C76-450	654	567.00
3/4W-7/8	191	32.30	3015	326	195.60	3216	326	259.50	36H32-423	654	482.00
3/8-10FT-PLTD	186	10.00	3015-0103	852	192.70	3220	326	259.50	3700-ALUMINUM	762	17.60
3/8-3FT-PLTD	186	3.40	3015-0326	852	171.60	3227	679	348.00	3700-BLACK	762	17.60

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
3700-CLEAR	762	17.60	3DB3F33KE-TFC-800	68	11,346.00	3L02-200	651	24.50	400-480-125V	713	22.50
3700-WHITE	762	17.60	3DB3F33KE-TFD-800	68	11,346.00	3L03-140	651	22.90	40057	795	11.50
3705-10	747	7.50	3DB3F33KE-TFE-800	68	11,346.00	3L03-190	651	22.90	4005MK	877	408.00
370FH	821	173.70	3DB3R12ME-TFC-800	69	12,018.00	3L05-1	653	39.60	4011F	624	50.30
3729	679	233.30	3DB3R12ME-TFD-800	69	12,018.00	3L05-2	653	39.60	4011M	624	59.00
373	883	688.00	3DB3R12ME-TFE-800	69	12,018.00	3L05-3	653	39.60	401LSM606400	746	2.20ft
3730	679	255.80	3DF3F40KE-TFC-800	68	11,381.00	3L09-10	653	32.60	401SM8080300	746	3.40/ft
3731	679	506.00	3DF3F40KE-TFD-800	68	11,381.00	3L09-11	653	32.60	402LA6063884	746	259.30
3732	679	209.40	3DF3F40KE-TFE-800	68	11,381.00	3L09-12	653	32.60	402SD8084490	746	396.00
374FC	883	1,020.00	3DF3R15ME-TFC-800	69	13,402.00	3L09-13	653	32.60	402SM6060100	746	5.90ft
375FC	883	1,152.00	3DS3F46KE-TFC-800	68	12,135.00	3L09-14	653	32.60	402SM8080100	746	3.40/ft
375FS	823	316.00	3DS3F46KE-TFE-800	68	12,135.00	3L09-3	653	32.60	4031F	624	41.60
376FC	883	1,287.00	3DS3R17ME-TFC-800	69	13,103.00	3L09-4	653	32.60	4032F	624	60.80
378-440-125V	713	20.80	3DS3R17ME-TFD-800	69	13,103.00	3L09-5	653	32.60	4036-2	701	76.40
3810	747	8.80	3DS3R17ME-TFE-800	69	13,103.00	3L09-6	653	32.60	4036-4-OZ	758	56.60
38133	759	32.90	3F01-110	651	15.50	3L09-7	653	32.60	4046-2	701	116.10
38136	759	38.20	3F01-120	651	15.50	3L09-8	653	32.60	40465	762	62.70
38137	759	18.30	3F01-130	651	15.50	3L09-9	653	32.60	4050-01	842	131.70
38138	759	18.30	3F01-140	651	15.50	3L180	704	14.00	4050-02	842	394.00
38-2205-01	700	45.70	3F01-150	651	15.50	3L190	704	14.00	4050-05	842	138.90
38-2590-01	701	164.60	3F01-160	651	15.50	3L200	704	14.00	4050-06	842	172.30
38611	756	49.00	3F01-180	651	15.50	3L210	704	14.00	4050-08	842	180.30
38615	760	12.30	3F01-200	651	15.50	3L220	704	14.00	4050-11	842	183.90
38621	756	19.00	3F05-1	653	40.60	3L230	704	14.30	4050-12	842	996.00
38635	757	42.70	3F05-2	653	40.60	3L240	704	14.00	4050-15	842	100.70
38637	756	19.00	3L01-120	651	15.10	3L250	704	14.30	4051-06	842	169.70
38638	757	40.20	3L01-130	651	15.10	3L260	704	16.80	4051-99	842	48.40
39088	761	53.70	3L01-140	651	15.10	3L270	704	17.00	406-3/8	185	3.70
39152	759	58.50	3L01-150	651	15.10	3L280	704	17.60	407-3/8	185	7.00
39156	759	30.10	3L01-170	651	15.10	3L290	704	17.90	4081-75	767	31.00
39516	186	50.20	3L01-180	651	15.10	3L300	704	18.20	4083-75	774	38.20
39518	186	54.50	3L01-190	651	15.10	3L310	704	18.30	4084-03	778	51.00
3ABA-031E-TAC	63	7,397.00	3L01-200	651	15.10	3L320	704	18.50	4086-03	781	55.40
3ABB-032E-CAB	63	7,397.00	3L01-230	651	15.10	3L330	704	18.90	40870	832	1,992.00
3AJA-0210-TAC	61	7,466.00	3L01-250	651	15.10	3RA1-0311-TAC	60		41-1	184	1.60
3AJB-0210-CAB	61		3L01-300	651	15.10	3RA1-0311-TAD	60		41-1/2	184	1.60
3DA3F28KE-TFC-800	68	10,858.00	3L01-350	651	15.10	3RA2-0310-CAB	60	8,110.00	41-1-1/2	184	1.60
3DA3F28KE-TFE-800	68	10,858.00	3L02-160	651	24.50	3RAA-031E-TAC	62	7,581.00	41-2	184	2.00
3DA3R10ME-TFC-800	69	11,346.00	3L02-170	651	24.50	3W1	716	69.70	4120-08	767	70.00
3DA3R10ME-TFD-800	69	11,346.00	3L02-180	651	24.50	3W2	716	80.90	41-2-1/2	184	3.80
3DA3R10ME-TFE-800	69	11,346.00	3L02-190	651	24.50	3W3	716	94.40	41212	831	216.30

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
4127-75	767	24.20	4186-08	768	72.50	42EF35A-F	657	261.50	4364-88	771	486.00
41-3	184	4.10	4186-24	768	39.40	42EF35A-G	657	261.50	4369-75	760	23.60
41-3/4	184	1.60	4188-02	773	2,262.00	42EF35A-J	657	261.50	4371-32	796	61.50
41312	831	196.50	4188-05	773	236.30	42FE35A-F	657	519.00	4371-36	796	39.10
4132-20	768	38.40	4188-07	773	47.60	42FE35A-G	657	519.00	4371-53	796	30.30
4133-08	767	88.80	4189-05	773	242.80	42FE35A-J	657	519.00	4371-88	768	50.00
4135-06	767	215.40	4189-07	773	50.00	42GE35A-F	657	716.00	4372-24	768	66.00
4135-2	701	110.40	4190-02	773	69.10	42GE35A-G	657	712.00	4383-07	849	81.40
4136-2	701	45.00	4190-08	766	69.80	42GE35A-J	657	716.00	4383-24	849	29.40
4137-2	701	47.90	4191-08	766	65.20	4300-09	774	168.30	4383-34	849	18.80
4138-2	701	44.20	42030	831	165.10	4300-10	774	743.00	44002	502	36.20
41-4	184	4.90	42-1	184	3.80	4300-11	774	323.00	44005	502	49.40
4143-06	767	226.20	42-1-1/2	184	4.10	4300-15	774	1,912.00	44007	352	251.70
4146-2	701	18.00	42-1-1/4	184	3.80	4300-30	774	168.30	4410181	780	14.30
4147-2	701	94.80	4216-27	776	38.50	4300-50	774	36.00	44-102	731	58.10
4148-2	701	100.50	4216-92	776	32.90	4300-51	774	95.90	45090	759	85.60
4148-32	768	97.20	4217-W3	776	50.50	4300-52	774	70.60	45200	896	23.90
41-5	184	11.60	4218-12	776	45.90	4300-89	774	101.00	45300	799	98.40
41-6	184	14.50	4218-W3	776	45.90	4300-89	774	101.00	45EG10A-FA	657	47.40
4162-07	774	118.10	42-2	184	6.00	4301-02	841	77.70	45EG10A-GA	657	48.80
4165-08	763	74.80	42-2-1/2	184	8.20	4301-05	841	77.70	45EG10A-JA	657	47.40
4165-24	763	23.40	42-3	184	10.40	43014	720	118.50	45EG20A-F	657	46.10
4167-05	771	267.80	42-3/4	184	3.30	4303-07	840	81.30	45EG20A-G	657	46.10
4167-08	771	58.70	42-4	184	11.60	4304-07	840	81.30	45EG20A-J	657	46.10
4168-08	768	61.20	425B	194	12.80	4305-07	840	81.30	45GG10A-JA	657	70.60
41712	831	192.30	425W	194	12.80	4308-07	840	160.70	4603-0	771	629.00
4171-75	768	30.60	4290-75	768	44.70	4310-07	840	155.50	4604-0	771	177.00
4173-04	773	66.90	4291-05	767	173.50	4311-07	840	201.70	460-552-125V	713	22.40
4173-06	773	78.50	4291-18	767	26.30	4314-46	840	295.20	4612-W3	522	152.00
4178-05	767	174.90	4296-50	778	64.90	4314-66	840	269.20	4613-Y8	522	221.50
4178-08	767	68.90	4296-51	778	64.90	4316-46	840	316.00	4614-Y8	522	313.00
4182-08	775	79.40	4298-01	774	917.00	4317-66	840	321.00	4615-W3	522	92.80
4182-24	775	29.60	42BF35A-F	657	95.20	4320-W8	841	56.70	462000HAM	893	38.60
4182-53	775	16.70	42BF35A-G	657	95.20	4336-1	701	32.20	4621-01	520	580.00
4183-08	775	113.60	42BF35A-J	657	95.20	4340-08	772	293.80	4621-02	520	1,002.00
4183-24	775	43.50	42CF35A-F	657	102.40	4346-1	701	39.60	4621-03	520	1,423.00
4184-08	775	87.60	42CF35A-G	657	102.40	43-56-125V	713	15.80	4621-04	520	2,025.00
4184-24	775	43.30	42CF35A-J	657	102.40	43-56-250V	713	20.90	4621-05	521	528.00
4184-53	775	18.10	42DF35A-F	657	249.90	43-56-330V	713	29.70	4621-10	520	262.50
4185-75	764	52.00	42DF35A-G	657	249.90	4360-84	771	1,230.00	4621-11	520	286.40
4185-75	764	52.00	42DF35A-J	657	249.90	4360-88	771	277.50	4621-15	521	163.70

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
4621-20	520	231.30	48-00-5035	814	43.20	48-20-5050	815	332.00	48-22-2761	804	28.20
4621-21	520	288.20	48-00-5036	814	56.60	48-20-5055	815	497.00	48-22-2761	809	28.20
4621-30	520	260.70	48-00-5037	814	64.10	48-20-7065	816	61.80	48-22-3079	804	78.20
4621-41	521	14.70	48-00-5093	814	46.40	48-20-7072	816	85.70	48-22-4010	804	37.00
4621-42	521	240.50	48-00-5182	814	36.20	48-20-7410	816	10.90	48-22-4011	804	60.00
4621-43	521	27.90	48-00-5184	814	36.20	48-20-7411	816	11.60	48-22-4020	804	37.00
4621-43	523	27.90	48-00-5186	814	36.20	48-20-7430	816	10.60	48-22-4021	804	60.00
4621-44	521	423.00	48-00-5187	814	44.30	48-20-7431	816	11.60	48-22-4030	804	37.00
4622-10	520	194.60	48-00-5188	814	44.30	48-20-7432	816		48-22-4202	804	60.00
4622-20	520	175.10	48-00-5782	814	49.70	48-20-7441	816	15.40	48-22-4202	819	60.00
462570	761	22.70	48-00-5784	814	49.70	48-20-7451	816	14.30	48-22-4250	819	39.90
4701-87	523	111.50	48-00-5787	814	66.00	48-20-7452	816	18.20	48-22-4251	819	64.50
4702-87	523	21.00	48-00-5788	814	66.00	48-20-7454	816	29.30	48-22-4252	819	147.30
4704-24	522	179.00	48-03-3545	815	97.20	48-20-7471	816	18.70	48-22-4253	820	240.90
47044	765	23.20	48-03-3551	815	110.80	48-20-7474	816	28.60	48-22-4255	825	22.70
4705-87	523	221.60	48-03-3555	815	97.20	48-20-7490	816	67.10	48-22-4256	819	27.60
4706-87	523	178.40	48-03-3561	815	110.80	48-20-7602	816	32.90	48-22-4500	804	41.00
4711-87	523	222.50	48-03-4405	814	45.50	48-20-7604	816	49.30	48-22-4510	804	33.30
4712-87	523	14.70	48-03-4410	814	47.40	48-20-8801	816	17.70	48-22-4520	804	33.30
4714-24	522	226.40	48-09-5055	815	34.20	48-20-8806	816	18.80	48-22-4521	804	59.50
4715-87	523	358.00	48-13-5750	816	80.80	48-20-8811	816	12.80	48-22-4530	804	33.30
4716-87	523	306.00	48-13-5870	816	91.00	48-20-8816	816	13.90	48-22-5107	808	89.10
4768-W3	769	22.50	48-13-6000	816	98.00	48-20-8821	816	15.90	48-22-6100	804	67.60
4770-0	769	117.80	48-13-6120	816	125.70	48-20-8830	816	21.30	48-22-6210	804	49.50
4770-2	769	212.30	48-13-6250	816	145.90	48-20-8831	816	34.60	48-22-6310	804	40.30
4771-2	769	340.00	48-13-7125	816	31.50	48-22-0012	817	30.70	48-22-7210	805	105.10
4771-3	769	185.80	48-13-7137	816	36.30	48-22-0050	817	86.40	48-22-7212	805	117.10
4772-0	769	296.10	48-13-7237	816	40.50	48-22-0218	817	58.30	48-22-7214	805	129.90
4774-0	769	237.60	4814-0	844	340.00	48-22-0304	817	22.50	48-22-7218	805	169.80
48-00-1600	814	69.20	4815-0	843	860.00	48-22-0305	817	40.40	48-22-7224	805	263.00
48-00-1630	814	50.30	481A,B,C	745	41.20	48-22-0316	808	42.10	48-22-7225	808	60.20
48-00-1640	814	15.10	4820-08	767	85.90	48-22-0317	808	51.60	48-22-8200	801	253.90
48-00-4182	814	46.40	48-20-5005	815	113.50	48-22-0325	808	49.70	48-22-8201	801	424.00
48-00-4184	814	46.40	48-20-5010	815	122.70	48-22-0326	808	49.70	48-22-8425	804	297.20
48-00-4187	814	Call	48-20-5015	815	207.70	48-22-1901	804	25.60	48-22-8426	804	439.00
48-00-4188	814	Call	48-20-5020	815	154.40	48-22-2009	804	97.80	48-22-8430	804	174.70
48-00-4787	814	81.90	48-20-5025	815	168.40	48-22-2132	809	39.10	48-22-8435	804	118.10
48-00-4788	814	81.90	48-20-5030	815	189.50	48-22-2133	809	41.10	4823-08	767	91.50
48-00-5021	814	48.40	48-20-5035	815	289.60	48-22-2134	809	41.10	48-32-4401	814	81.90
48-00-5026	814	64.30	48-20-5040	815	201.20	48-22-2322	809	50.90	48-32-4411	814	4.40
48-00-5027	814	73.90	48-20-5045	815	276.20	48-22-2507	810	159.20	48-32-4412	814	4.40

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
48-32-4413	814	4.40	48-89-2714	816	4.80	49001	835	60.50	49-56-0102	815	27.00
48-32-4421	814	4.40	48-89-2715	816	3.10	4900-10	355	2,068.00	49-56-0117	815	27.00
48-32-4422	814	4.40	48-89-2716	816	3.20	49002	835	60.50	49-56-0127	815	32.30
48-32-4423	814	4.40	48-89-2717	816	3.30	4900-20	355	1,328.00	49-56-0132	815	32.30
48-32-4444	814	4.50	48-89-2718	816	3.80	4900-30	355	1,518.00	49-56-0142	815	32.30
48-32-4462	814	5.00	48-89-2719	816	4.20	49010	835	12.40	49-56-0147	815	35.50
48-32-4463	814	5.00	48-89-2720	816	4.50	49015	835	53.20	49-56-0158	815	35.50
48-32-4471	814	5.00	48-89-2721	816	4.80	49016	835	53.20	49-56-0163	815	35.50
48-32-4472	814	5.00	48-89-2722	816	5.10	49035	835	53.20	49-56-0173	815	37.80
48-32-4473	814	5.00	48-89-2723	816	6.10	49036	835	53.20	49-56-0177	815	37.80
48-32-4483	814	5.00	48-89-2724	816	6.90	49051	835	53.20	49-56-0183	815	37.80
48-32-4484	814	5.00	48-89-2725	816	7.40	49052	835	53.20	49-56-0193	815	40.50
48-32-4485	814	5.00	48-89-2726	816	7.50	49063	835	67.50	49-56-0197	815	44.50
48-32-4487	814	5.00	48-89-2727	816	8.50	49064	835	67.50	49-56-0213	815	55.90
48-32-4503	814	16.50	48-89-2728	816	9.40	49067	835	116.90	49-56-0217	815	59.70
48-32-4562	814	7.30	48-89-2729	816	10.50	49067	835	116.90	49-56-0223	815	79.10
48-32-4572	814	7.30	48-89-2730	816	10.50	49068	835	116.90	49-56-0233	815	109.70
48-32-4601	814	8.90	48-89-2731	816	16.60	49090	835	45.70	49-56-0237	815	121.80
48-32-4602	814	15.60	48-89-2732	816	16.90	49100	835	16.40	49-56-0243	815	135.20
48-32-4605	814	10.70	48-89-2733	816	18.10	49105	835	80.20	49-56-0253	815	139.30
48-32-4606	814	15.60	48-89-2734	816	19.40	49106	835	80.20	49-56-7010	815	23.80
48-32-4802	814	11.40	48-89-2735	816	20.40	49137	835	70.50	49-56-8000	815	9.70
48-32-4805	814	11.40	48-89-2736	816	23.20	49138	835	70.50	49-56-8010	815	9.70
48-32-5030	814	8.00	48-89-2737	816	24.00	49151	835	70.50	49-56-9210	815	86.80
48-32-5031	814	10.40	48-89-2738	816	24.60	49152	835	70.50	49-56-9220	815	88.90
48-32-5032	814	13.60	48-89-2803	816	67.00	49190	835	49.80	49-56-9230	815	118.10
4832-C9	775	24.10	48-89-9201	816	75.10	49-22-1131	814	141.40	49-56-9240	815	120.50
4834-08	770	228.90	48-89-9202	816	91.80	49-22-1145	814	69.40	49-56-9265	815	190.50
4834-C7	770	25.90	48-89-9203	816	130.30	49-22-3310	814	72.50	49-56-9270	815	200.50
4841-08	770	180.80	48-89-9204	816	118.00	49-22-3329	814	98.30	49-56-9275	815	206.30
4841-AB	770	29.80	48-89-9205	816	170.50	49-22-4175	815	390.00	49-56-9280	815	321.00
48-43-0610	817	60.30	48-89-9206	816	85.20	49-24-0146	797	126.10	49-56-9300	815	11.20
48-43-0620	817	60.30	48-89-9207	816	143.50	49512	835	178.10	49-56-9305	815	55.40
48-43-0630	817	60.30	48-89-9208	816	155.40	49-56-0023	815	20.30	49-66-4419	814	132.80
4845-K8	771	76.20	48-89-9209	816	137.70	49-56-0032	815	20.30	49-66-4502	814	7.40
4845-PB	771	275.10	48-89-9211	816	205.50	49-56-0043	815	20.40	49-66-4503	814	7.80
48-55-3490	801	58.90	48-89-9212	816	160.70	49-56-0052	815	20.40	49-66-4505	814	8.70
48-89-2710	816	4.60	48-89-9221	816	301.00	49-56-0062	815	20.40	49-66-4506	814	13.60
48-89-2711	816	4.60	48-89-9223	816	442.00	49-56-0072	815	21.50	49-66-4522	814	21.30
48-89-2712	816	4.70	4891-08	767	68.10	49-56-0082	815	21.50	49-66-4523	814	22.40
48-89-2713	816	4.80	489A	745	92.60	49-56-0092	815	21.50	49-66-4525	814	25.20

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
49-66-4526	814	39.50	5/16-3-HOLE	696	15.40	506158	531	435.00	540-648-125V	713	23.90
49-66-4532	814	8.80	5/8-10FT-PLTD	186	36.90	506171	531	479.00	541005	527	111.80
49-66-4533	814	9.60	5/8-3-HOLE	696	18.10	506271	531	411.00	541015	527	123.50
49-66-4535	814	10.00	50/50	793	77.50	506274	531	433.00	542005	527	164.80
49-66-4536	814	16.50	5000	645	234.20	506630	530	424.00	54-2-B	873	1,394.00
49-66-4561	814	26.50	50012-K	877	359.00	508257	531	1,137.00	5444	675	333.00
49-66-4562	814	41.60	50014-K	877	645.00	509209	531	893.00	5444	675	333.00
4991	820	625.00	50021579-001	613	137.10	50A55-843	650	319.00	545600	527	203.10
49931	896	62.70	500286	528	211.70	50E47-843	650	347.00	54C6	729	2.20
49932	831	487.00	500386	528	229.40	5101	828	1,935.00	54C94	729	4.50
49936	896	62.70	50053060-001	616	62.00	511330	530	697.00	550	763	55.20
49ACR0	658	43.70	500-FC-SP	822	271.20	51211	781	35.10	550521	526	269.10
49ACR6	658	76.70	501020	528	312.00	51252	780	46.00	550532	526	279.30
49ACR7	658	121.10	501086	528	255.70	5140C	698	28.20	551020	526	374.00
49ACR8	658	121.10	50172F	761	22.60	518087	528	228.00	551320	526	589.00
49ACRC	658	43.70	50176F	761	19.20	520-1/2PT-BT	191	17.10	553101	525	261.10
49D36098003	658	73.10	502	788	124.10	520-1GAL	191	143.30	553201	525	272.20
49D57071001	658	50.20	50208-K	877	367.00	520-1PT-BT	191	26.10	553211	525	288.40
49D57071002	658	29.50	50209-K	877	332.00	520-1QT	191	41.40	553240	525	626.00
4DA3F47KE-TSE-800	68	13,903.00	502286	528	314.00	520-BLV-1PT-BT	191	36.40	553245	525	689.00
4DA3F47KE-TSK-800	68	13,903.00	5024P	624	147.50	52171K	729	12.10	553500	524	317.00
4DA3R18ME-TSK-800	69	14,420.00	50306-K	877	276.60	52-2	873	1,100.00	553501	524	317.00
4DH3R22ME-TSK-800	69	17,308.00	503186	528	479.00	52245	834	112.90	553510	524	411.00
4DHDF63KE-TSE-800	69	18,257.00	50318-K	877	358.00	523086	528	207.30	553511	524	411.00
4DJ3R28ME-TSE-800	69	19,232.00	5031M	624	81.70	525B	194	13.70	553674	526	483.00
4DJ3R28ME-TSK-800	69	19,232.00	503203	528	554.00	525W	194	13.70	553676	526	599.00
4DL3F63KE-TSE-800	68	16,089.00	5032F	624	61.40	526003	528	262.50	553712	524	359.00
4DL3F63KE-TSK-800	68	16,089.00	5032M	624	72.90	52959	659	3.00	554158-14	801	222.60
4MTLS11ME-TSE-C89	58	17,254.00	50332-K	877	285.70	52C6	729	3.20	5541610-14	801	278.80
4MTLS15ME-TSE-C89	58	20,621.00	50335-8K	877	250.90	53137	793	77.50	55419SP-14	801	180.80
4MTLS82KE-TSE-C89	58	15,991.00	50336K	877	282.10	53151K	729	11.00	554200	525	161.90
4RA*-1000	59	12,793.00	50338-K	877	276.60	531C-L-S	742	859.00	554210	525	150.60
4RE*-2000	59	14,423.00	503603	528	479.00	5326	867	30.20	554411	525	117.40
4RK*-1500	59		50-3-KA2	848	1,019.00	533D-L-S	742	228.10	554415	525	125.50
4RK*-2500	59		504186	528	626.00	537-346	189	45.10	554550	525	143.70
4RR1-3000	59	19,888.00	5041C	624	111.70	537-355	189	43.30	554551	525	150.80
4RR2-3000	59	19,888.00	504203	528	663.00	537-356	189	36.90	5554PF-M	895	31.40
4VEA006	699	25.00	505176	530	365.00	537-357	189	55.60	555502	530	264.20
4VEA007	699	18.30	505486	530	357.00	538C-L-S	742	307.00	5555PF-L	895	31.40
4VEA009	699	11.30	505700	531	472.00	540005	527	94.60	555602	530	325.00
5/16-2-HOLE	698	15.50	506055	530	763.00	540015	527	105.40	55L	689	49.20

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
55S	689	43.60	59575	762	35.80	6041C	624	118.40	61203	764	18.10
561	871	629.00	59675	762	39.50	60-5	209	0.20	6121-14	731	26.20
56403	803	122.10	599061	527	28.90	605-4	809	31.60	61212	700	36.70
566	871	1,100.00	599062	527	77.40	605-6	809	34.70	6122-14	731	28.70
566608	528	173.30	599063	527	51.90	605-6D	328	173.60	612-25-3/8W	502	225.50
56-72-125V	713	16.10	599064	527	50.40	605-8	809	40.40	612-30-3/8W	502	261.70
56-72-250V	713	16.20	599065	527	16.10	605-8C	328	97.10	6123-14	731	15.20
56-72-330V	713	33.20	599085	527	20.20	605-8D	328	120.50	612-40-3/8W	502	341.00
568	871	1,233.00	59MAX-PLUS	871	281.50	606	746	2.20/ft	6124-14	731	18.40
57263	793	71.20	5D5B	278	994.00	60-6	209	0.30	612-50-3/8W	502	403.00
579200	527	349.00	5R016	675	281.00	60-6571-01	697	219.50	6127-34	731	71.60
580002	529	473.00	60/40	793	49.50	60668	220	24.80	61301	772	393.00
580503	529	538.00	6002	848	1,399.00	606B-10D	328	147.60	61-4	209	0.70
580506	528	518.00	6003	848	1,508.00	60-7720-01	697	98.90	61400	700	21.30
580603	529	655.00	6007	848	999.00	6079	848	413.00	6142-06	863	134.20
581002	529	569.00	6008	848	1,016.00	60-8	209	0.50	6142-13	863	131.80
581503	529	608.00	600A-4B	328	54.90	6086	848	103.70	6142-20	863	92.50
581506	528	705.00	600A-4C	328	70.00	6088	848	148.80	614-25-3/8W	502	292.40
581509	529	738.00	600A-6B	328	57.00	61001	755	22.40	6142-58	863	124.90
581604	529	824.00	600A-6C	328	70.00	610-25-3/8W	502	198.40	614-30-3/8W	502	339.00
581614	529	901.00	6010	848	549.00	61030	755	27.10	614-40-3/8W	502	442.00
582002	529	684.00	60-10	209	0.70	610-30-3/8W	502	229.20	614-50-3/8W	502	522.00
582503	529	735.00	601-10	809	38.40	610-50-3/8W	502	348.00	61-5	209	0.90
582506	528	788.00	60-12	209	1.10	61-0782-03	697	74.10	61-6	209	0.90
582507	528	792.00	601-4	809	28.10	61-0782-05	697	76.90	61610	658	43.70
582514	529	843.00	601-6	809	29.10	61-0782-06	697	79.60	61610	700	23.70
582604	529	998.00	60-1-650-L	895	30.60	61-0782-08	697	79.50	61611	658	43.70
583002	529	1,011.00	601-8	809	33.50	61-0782-09	697	62.50	61612	658	76.70
583-01	783	12.30	6020	848	1,035.00	61-10	209	2.40	61613	658	121.10
58310	764	27.40	602-10	809	65.10	61-1064-01	697	92.80	61614	658	121.10
583503	529	1,053.00	602-3	809	32.30	61-1065-01	697	101.00	61615	658	86.00
583603	529	1,177.00	602-4	809	34.30	61-1067-01	697	92.80	61616	658	73.10
584504	529	1,527.00	602-6	809	42.00	61-12	209	3.90	61623	658	86.60
584604	529	1,713.00	602-8	809	55.20	6115PK	731	7.40	61624	658	86.60
58469	793	49.50	60-3	209	0.20	6116PK	731	9.00	61625	658	86.60
585514	528	1,762.00	6030MK	877	75.60	6117-14	731	9.80	61-8	209	1.80
587010	529	2,945.00	603-1	809	27.20	6118-14	731	10.50	61800	700	24.80
588001	529	250.10	603-10	809	40.00	6119-14	731	10.50	61920	700	73.40
589002	529	386.00	603-3	809	27.40	61201	764	100.90	62000	700	26.40
590-708-125V	713	27.90	603-4	809	29.90	6120-14	731	18.00	62-10	209	8.60
59475	762	37.10	60-4	209	0.20	61202	764	18.70	62-12	209	19.50

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
62-14	209	22.20	64-8	209	13.00	68-12D	209	10.70	6DJ3R40ME-TSE-800	69	26,491.00
62-2	209	2.40	6492-1014-6213	745	20.60	68-12E	209	12.50	6DL3F93KE-TSE-800	68	22,641.00
62200	700	28.00	6500	727	40.40	68-14E	209	13.50	6DL3F93KE-TSK-800	68	22,641.00
62-3	209	2.60	65001	827	19.30	68234	806	47.20	6DT3F11ME-TSE-800	68	24,830.00
62-4	209	2.70	65002	827	108.50	68236	806	51.80	6DT3F11ME-TSK-800	68	24,830.00
62400	700	29.70	65003	827	25.20	68238	806	65.90	6RB*-1000	59	
62-5	209	2.70	65004	827	24.10	68-2A	209	1.90	6RB*-2000	59	26,416.00
625B	194	16.20	65006	827	18.30	68309	806	75.60	6RE*-2000[1]	59	26,416.00
625CRRDS	897		65010	827	57.70	68310	806	60.80	6RE*-3000[1]	59	24,477.00
625W	194	16.20	65015	827	58.20	68-4A	209	2.00	6RK*-2000[1]	59	
62-6	209	3.70	65016	827	61.10	68-4B	209	2.40	6RK*-3500[1]	59	25,752.00
62-8	209	6.30	65145	827	59.20	68-4C	209	2.90	6RN*-2000[2]	59	
62MAX-PLUS	871	483.00	65155	827	48.60	68-4D	209	5.80	6RN*-3000[2]	59	24,477.00
630-1/4	810	27.40	65260	827	53.20	68-5A	209	3.00	6RP*-2000[2]	59	
630-11/32	810	27.60	65270	827	57.30	68-5B	209	3.20	6RP*-3500[2]	59	24,604.00
630-3/8	810	28.60	65-3	209	11.20	68-6A	209	3.50	6RR*-4000[1]	59	27,403.00
630-5/16	810	27.70	65300	827	59.60	68-6B	209	2.40	6RS*-4000[2]	59	
630-7/16	810	31.20	65-4	209	4.80	68-6C	209	3.10	6TM*-2000	59	
630M	810	67.80	65-5	209	7.30	68-6D	209	4.40	7000	645	307.00
631	810	190.00	65-6	209	7.00	68-6E	209	15.50	7000427	187	0.40/ft
631M	810	264.50	65-8	209	12.20	68-8B	209	4.20	7000627	187	0.70/ft
63600	700	121.10	660	809	31.60	68-8C	209	4.20	700-100-P1	849	682.00
6387	748	1.30	660A	751	349.00	68-8D	209	6.20	70013	805	85.60
6416-1010-6401	745	17.90	661	809	31.60	68-8E	209	11.10	70014	805	102.80
64-3	209	6.80	662	809	30.80	69075	833	1,114.00	70015	805	152.10
64-4	209	5.60	663	809	31.60	691	747	13.30	70070	821	554.00
64-5	209	9.60	6642-06	863	90.80	69-4A	209	4.50	70078	805	185.20
64-6	209	7.00	66-4B	209	2.50	69-4B	209	5.50	703-020-G1	851	130.10
646-1/2	810	36.60	666	809	35.70	69-4C	209	6.90	705-202-G1	851	558.00
646-1/4	810	29.00	6662	748	2.40	69-4D	209	11.60	70550	807	43.70
646-11/32	810	29.80	66640	761	30.00	69637	807	84.00	705-600-G1	851	46.30
646-3/16	810	28.60	66-6B	209	3.20	69-6A	209	5.90	7070-PK	736	55.40
646-3/8	810	30.00	667	809	35.70	69-6B	209	5.70	7075819	659	120.40
646-5/16	810	29.20	668	809	26.00	69-6C	209	6.90	7086E	731	105.10
646-5/8	810	49.70	6750	727	55.90	69-6D	209	12.00	708-850-125V	713	39.60
646-7/16	810	34.40	67XAD	540	525.00	69727	854	72.20	70CSA220	751	315.00
646-9/16	810	46.90	68-10C	209	7.30	69789	854	482.00	710-202-G1	833	694.00
646M	810	77.20	68-10D	209	6.70	69-8B	209	8.30	7112-01	863	123.00
647	810	206.90	68-10E	209	11.70	69-8C	209	8.80	7112-02	863	119.90
647M	810	286.60	6812-01	863	131.80	69-8D	209	6.90	711-202-G1	851	682.00
			6812-02	863	198.50	6DH3R35ME-TSK-800	69	23,768.00	7112-05	863	142.00

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
7118HNC	737	23.90	7541C	624	167.80	803-31	737	134.10	8134C-R	726	198.70
7119HNC	737	23.90	7541STC	624	179.50	80340	763	27.90	8134C-W	726	198.70
7120HNC	737	22.90	75FFP100	894	18.70	80350	763	28.00	81-3N	211	10.10
7121HNC	737	23.50	75SCP100	894	70.30	80365	763	28.00	8141-00	665	397.00
712-202-G1	851	1,326.00	7602-130	364	352.00	8038	820	58.60	8141-20	665	397.00
7122HNC	737	24.10	7602-131	364	547.00	80395	763	27.90	8143-00	665	573.00
7124HNC	737	26.30	7602-132	364	761.00	803B-10ST	323	211.40	8143-20	665	638.00
7126HNC	737	35.90	7612-06	863	103.90	80400	763	28.00	8145-00	665	261.20
7128HNC	737	44.00	7616BR	635	39.20	8041-00	665	397.00	8145-20	665	260.00
7130HNC	737	60.30	7700-30M	894	82.60	8041-20	665	397.00	81-4N	211	4.40
713-202-G1	850	582.00	770-3	650	101.60	804-31	737	134.10	81736	839	433.00
714-202-G1	845	2,194.00	77930	844	456.00	8045-00	665	265.10	81748	839	484.00
715-202-G1	882	669.00	7825301XLG	896	24.80	8045-20	665	265.10	81860	839	534.00
718-202-G1	854	595.00	7825376XLG	896	24.80	80465	763	28.10	81988	763	28.10
719-202-G1	850	620.00	78712	570	68.20	8047-20	665	588.00	81989	763	28.10
719-203-G1	850	818.00	78718	570	70.70	804A-14S	323	226.60	81991	763	28.10
72105	782	36.40	78724	570	77.10	804A-14ST	323	338.00	82000	700	117.30
724-202-G1	851	2,603.00	78730	570	87.70	805C-14S	322	432.00	82039	781	32.70
724-202-G1	851	2,603.00	78736	570	89.20	806C-11S	322	432.00	82325	779	30.60
72-88-125V	713	13.70	78748	570	102.20	807C-13S	322	490.00	82400	700	98.40
72-88-250V	713	19.50	78760	570	120.30	808	746	3.40/ft	8245-00	666	907.00
72-88-330V	713	24.40	78772	570	133.60	808C-15S	322	505.00	8245-20	666	987.00
7295-34	736	7.80	78819	793	64.50	809C-21S	322	784.00	8247-20	666	1,030.00
7314PK	737	20.90	78820	793	66.40	80AK-A	876	88.50	825B	194	23.70
7315PK	737	22.60	79040	782	45.60	80BK-A	876	134.70	825W	194	23.70
7316PK	737	23.20	8010C-B	726	158.20	80CK-M	876	88.50	8265-S	761	17.20
7317PK	737	33.40	8012C-B	726	93.70	80K-40	892	698.00	8277	761	19.80
7318PK	737	36.50	801-31	737	67.40	80PK-1	875	106.60	829-995-125V	713	32.90
7319PK	737	35.30	8013-L	896	11.00	80PK-22	875	295.60	83600	700	191.80
7321PK	737	23.90	8013-XL	896	11.00	80PK-24	875	336.00	8361	729	8.40
73834	826	16.80	8014C-B	726	67.30	80PK-25	875	336.00	8365	729	7.30
73836	826	16.30	8016C-B	726	46.20	80PK-26	875	336.00	8367	729	9.10
75	751	351.00	8018C-B	726	33.60	80PK-27	875	939.00	8371	729	7.60
750-12100	727	1.70	802-11	737	146.30	80PK-3A	875	456.00	8375	729	9.10
750-34100	727	2.30	802B-4	323		80PK-8	876	505.00	8431	727	1.70
7507-10	747	8.50	802B-4ST	323		80PK-9	876	201.10	8432	727	2.30
7519-05	773	765.00	802B-6	323	194.20	80PK-EXT	876	174.90	846CSC	829	1,089.00
75-220	751	351.00	802B-6ST	323	194.20	80TK	876	428.00	85175	728	4.50
7524P	624	160.40	802B-8	323	194.20	81200	763	21.90	85201	806	93.20
7531F	624	80.00	802B-8ST	323	211.40	81234	826	15.50	85202D	806	111.20
7537-05	773	607.00	80308	724	231.80	8134C-B	726	198.70	85220D	806	91.10

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
87/5E2	886	1,609.00	90345	720	55.70	952569	313	924.00	99-1-9802-8	895	3.40
87-01-250-SBA	802	115.60	90346	720	40.90	952570	313	1,515.00	99-1-9860-7	895	7.90
87-01-300-SBA	802	160.40	90348	720	50.90	952660	314	1,307.00	995	842	205.30
88-108-125V	713	13.40	90380	720	26.00	952664	314	1,383.00	9RP*-0765	59	
88-108-250V	713	21.00	90382	720	35.90	952957	314	687.00	9RP*-1015	59	
88-108-330V	713	25.10	90384	720	17.00	952960	314	611.00	9RT*-1505	59	12,871.00
88403	727	3.10	9040	878	859.00	9533N	805	334.00	9TH*-1015	59	
88405	727	4.70	9040-35	783	33.10	9534-20	517	27.90	9TK*-0505	59	13,216.00
885C-31S	322	3,184.00	9045-00	666	495.00	9534-26	521	27.90	9TL*-0765	59	13,576.00
886C-35S	322		91002	809	26.40	9534-40	517	14.70	A00149	205	9.80
8888-XXL	895	22.80	91371	764	52.00	953462	313	1,515.00	A00356	205	9.80
8A05A-1S1	649	203.60	9145-00	666	528.00	953474	313	1,515.00	A01171	205	5.60
8D7B	278	1,490.00	920	825	24.60	953495	831	1,531.00	A0401-1-16X25	354	191.20
8D7B	279	1,490.00	924	793	12.60	95-61-190-SBA	187	189.50	A0401-1-20X20	354	191.20
8D7C	279	1,490.00	925	793	9.90	95762	845	3,926.00	A0401-1-20X25	354	191.20
8D9B	278	1,490.00	926	793	9.30	95-S	824	57.00	A04734	205	20.30
9000	796	80.30	927	793	8.70	9620N	805	526.00	A04846	205	13.00
9005	893	3.60	928	793	18.20	9700	805	376.00	A04981	205	11.10
900M-10S	323	62.00	929	793	18.90	97000	795	11.60	A05270	205	9.80
900M-14S	323	136.60	9300	893	0.30	97001	795	51.60	A08730	205	11.60
900M-4S	323	61.00	93001	721	9.00	97020	795	16.70	A100	704	51.40
900M-6S	323	61.00	930C-L-S	742	483.00	97030	795	11.60	A10971	828	96.00
900M-8S	323	62.00	930D-L-S	742	486.00	971	869	1,062.00	A10973	828	25.30
900MA-11S	323	315.00	931	793	9.80	97705	504	393.00	A-11	785	302.00
900MA-13S	323	606.00	932	793	10.60	9795-80	517	240.50	A11A-1C	548	648.00
900MA-15S	323	719.00	934	793	20.40	9795-80	521	240.50	A11B-1C	548	624.00
900MA-21S	323	1,045.00	935	793	26.40	9795-90	517	386.00	A1203	184	0.70
900MA-25S	323	1,238.00	93530	849	4,423.00	9795-90	521	386.00	A12-1506	599	233.60
901654	305	1,199.00	93560	849	1,731.00	9798-45	521	528.00	A12-1560	599	209.30
901655	305	1,199.00	93580	849	1,876.00	9799-02	521	200.10	A12-700	599	170.80
901656	305	1,163.00	93FB	822	217.90	9799-32	521	163.70	A12-701	599	174.60
90293	720	22.30	93S-03	824	16.30	98010	792	50.00	A1278	184	0.70
90294	720	30.60	93S-04	824	17.40	98250	847	413.00	A1366	184	0.70
90295	720	23.40	93S-05	824	22.20	98880	809	44.00	A-14	785	373.00
902SM6060100	746	5.90/ft	93S-06	824	24.60	99088	794	47.90	A1467	184	0.70
902SM8080300	746	3.40ft	93S-10	824	31.60	99-1-275BP-8	895	5.00	A15725	205	6.80
90340	720	18.80	93S-12	824	39.60	99-1-912	895	9.30	A15726	205	10.80
90341	720	19.30	94S	824	49.00	99-1-9729-8	895	18.90	A15727	205	13.40
90342	720	19.30	94S-SP	824	49.00	99-1-9730-7	895	22.00	A15728	205	11.50
90343	720	41.00	95/5	793	71.20	99-1-9761-8	895	35.40	A15729	205	25.40
90344	720	40.90	952567	313	1,399.00	99-1-9800-8	895	5.00	A-175-1	263	83.80

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
A17867	324	322.00	A19PRC-1	553	649.00	A30-261	598	203.50	A-4000-1049	538	916.00
A17868	324	512.00	A19ZBC-2	554	789.00	A30-262	598	218.20	A-4000-147	538	1,348.00
A17869	324	1,364.00	A-2	785	204.30	A30-263	598	214.90	A-4000-604	537	198.20
A17870	324	2,449.00	A22-1112	598	264.00	A30-301	598	253.50	A-4000-604	538	198.20
A17871	324	798.00	A22-1114	600	283.30	A30-308	598	302.00	A-4000-620	537	72.70
A17872	324	894.00	A22-1129	601	260.20	A30-310	598	304.00	A-4000-632	537	789.00
A17936	327	65.70	A22-2237	598	190.30	A30-311	598	294.30	A-4000-632	538	789.00
A17937	327	65.70	A22-2451	600	256.80	A30-314	598	233.90	A41	704	21.00
A17939	327	170.70	A22-2453	600	330.00	A30-323	598	166.80	A-4110-604	537	197.50
A17940	327	335.00	A22-391	598	233.90	A30-542	598	231.00	A42	704	21.50
A17941	327	683.00	A22-392	598	264.60	A30-X450	600	186.50	A421ABC-02C	543	244.90
A17942	327	788.00	A22-4506	601	267.30	A30-X451	600	203.90	A421ABG-02C	543	336.00
A17943	327	1,155.00	A24	704	15.00	A30-X452	600	245.20	A421AEC-01C	543	360.00
A17944	327	1,307.00	A25	704	16.00	A30-X453	600	190.50	A421GBF-02C	543	244.90
A17981	327	2,029.00	A2529	184	0.80	A31	704	17.60	A421GEF-01C	543	358.00
A19AAB-10C	548	611.00	A2574	184	1.30	A31999	223	7.30	A421GEF-02C	543	375.00
A19AAC-4C	549	364.00	A26	704	16.30	A32	704	17.90	A43	704	21.90
A19AAC-9C	548	325.00	A2614	184	1.40	A-32	785	532.00	A-4300-600	537	654.00
A19AAD-12C	549	363.00	A2650	184	1.50	A32004	220	16.30	A44	704	22.10
A19AAD-5	549	337.00	A2675	184	1.90	A32008	220	53.00	A-4412-1	537	10,182.00
A19AAF-12	549	360.00	A27	704	16.50	A32008	220	53.00	A-4412-2	537	7,079.00
A19AAF-20	549	292.80	A2708	184	2.10	A32100	220	163.20	A-4417-1	537	10,627.00
A19AAF-21	549	292.80	A27520G	635	22.70	A32101	220	26.30	A-4423-2	537	9,743.00
A19AAF-4	550	395.00	A27520K	635	22.40	A32525N	220	143.50	A45	704	22.40
A19ABA-40	549	182.90	A28	704	16.80	A33	704	18.10	A46	704	22.50
A19ABC-11	550	291.10	A28AA-29	555	586.00	A33000	222	86.30	A47	704	22.80
A19ABC-12	550	325.00	A28AA-37	555	575.00	A33600	224	36.60	A48	704	23.00
A19ABC-24	549	182.10	A28AA-8001	555	652.00	A34	704	18.50	A49	704	23.30
A19ABC-36	549	364.00	A28AK-1	556	695.00	A35	704	18.80	A-5	785	261.20
A19ABC-37	549	310.00	A28PJ-1	556	893.00	A350PS-1	572		A50	704	23.50
A19ABC-4	549	322.00	A29	704	17.00	A36	704	19.10	A51	704	23.80
A19ACA-14	549	295.80	A-3	785	221.40	A36AHA-50	557	1,439.00	A52	704	24.00
A19ACA-15	549	317.00	A30	704	17.30	A36AHA-52	557	1,439.00	A53	704	24.30
A19ADB-1	549	324.00	A30-180	598	243.20	A36AHA-58	557	1,642.00	A54	704	24.60
A19ANC-1	551	630.00	A30-182	598	260.50	A37	704	19.60	A55	704	24.90
A19BAB-3	552	301.00	A30-183	598	245.10	A38	704	20.00	A56	704	25.20
A19BAC-1	552	325.00	A30-184	598	264.40	A39	704	20.40	A57	704	25.40
A19BAF-1	552	360.00	A30-2209	598	155.40	A40	704	20.60	A58	704	25.80
A19BBC-2	552	249.10	A30-2210	598	143.40	A-4000-1037	538	91.10	A59	704	26.00
A19DAC-1	553	240.50	A30-2211	598	254.30	A-4000-1048	538	786.00	A60	704	26.20
A19EAF-2	552	361.00	A30-260	598	209.80	A-4000-1049	537	916.00	A61	704	26.70

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
A62	704	26.90	AC220	891	134.70	ACB-2UB487MW	590	65.00	AK104-3/4	702	192.70
A63	704	27.30	AC280	891	106.60	ACB-2UB488W	590	41.00	AK114-1	702	206.60
A64	704	27.50	AC283	891	134.70	ACB-2UB489W	590	41.00	AK114-3/4	702	249.60
A65	704	27.80	AC285	891	78.40	ACB-2UB629	590	65.00	AK124-1	702	274.50
A66	704	28.10	AC89	891	134.70	ACB-2UB723W	590	41.00	AK124-3/4	702	283.90
A67	704	28.50	ACB-2UA100W	590	41.00	ACB-2UB724W	590	41.00	AK54-1	702	79.10
A68	704	28.80	ACB-2UA143	590	41.00	ACB-2UB754W	590	41.00	AK54-3/4	702	79.10
A-685	263	82.20	ACB-2UA17	590	41.00	ACME-2313	699	7.60	AK54-5/8	702	77.10
A69	704	30.10	ACB-2UA227W	590	41.00	ACME-2402	699	7.00	AK64-1	702	90.70
A70	704	30.00	ACB-2UA286W	590	41.00	ACME-2403	699	7.60	AK64-3/4	702	90.70
A71	704	30.30	ACB-2UA318W	590	41.00	ACS-50FF-12	217	20.40	AK64-5/8	702	94.30
A72	704	31.20	ACB-2UA319W	590	41.00	ACS-50FF-24	217	28.70	AK74-1	702	107.30
A72AA-1	557	547.00	ACB-2UA354W	590	41.00	ACS-50FF-36	217	33.60	AK74-3/4	702	110.00
A72AA-2	557	563.00	ACB-2UA375W	590	41.00	ACS-50FF-48	217	39.10	AK74-5/8	702	155.70
A73	704	31.40	ACB-2UA40W	590	41.00	ACS-50FF-60	217	50.20	AK84-1	702	131.20
A74	704	31.60	ACB-2UA417W	590	41.00	ACS-75FF-24	217	46.80	AK84-3/4	702	134.50
A75	704	31.30	ACB-2UA441W	590	41.00	ACS-75FF-36	217	59.40	AK84-5/8	702	190.40
A76	704	32.60	ACB-2UA47W	590	41.00	ACS-75FF-48	217	71.20	AK94-1	702	145.20
A77	704	33.10	ACB-2UA48W	590	41.00	ACS-75FF-60	217	74.60	AK94-3/4	702	151.00
A78	704	33.60	ACB-2UA49W	590	41.00	ACS-75FF-72	217	94.80	AL-9V-6	798	19.70
A79	704	34.10	ACB-2UA50W	590	41.00	AD2N950VC50AM	893	14.80	AL-AA-24F	798	21.80
A-8	785	286.50	ACB-2UA626W	590	41.00	AD2N95VC50AM	893	11.80	AL-AAA-18F	798	17.50
A80	704	34.60	ACB-2UA627W	590	41.00	ADRHE6-0/80-1-1/8	284	1,448.00	AL-AAA-8	798	7.80
A81	704	35.10	ACB-2UA630W	590	41.00	ADRHE6-0/80-1-1/8	285	1,448.00	ALB-LEVEL-2-SOFT	895	66.60
A82	704	35.70	ACB-2UA631W	590	41.00	ADRI-1-1/4-0/55	284	407.00	AL-C-6	798	9.90
A-8218	690	9.90	ACB-2UA685W	590	41.00	ADRI-1-1/4-0/55	285	407.00	AL-D-6	798	13.10
A83	704	36.70	ACB-2UA94	590	41.00	ADRIE-1-1/4-0/100	284	407.00	AM-50BAJ	507	6,280.00
A84	704	37.20	ACB-2UA97W	590	41.00	ADRIE-1-1/4-0/100	285	407.00	AM-50BAJ-AD	507	6,664.00
A85	704	37.10	ACB-2UB107MW	590	65.00	ADRPE3-0/80-1/2	284	764.00	AM-50BAJ-DS	507	6,536.00
A86	704	37.70	ACB-2UB148MW	590	65.00	ADRPE3-0/80-1/2	285	764.00	AM520	887	196.60
A87	704	38.20	ACB-2UB192	590	41.00	ADRS-2-0/80-1/2	284	642.00	AM560	887	410.00
A88	704	38.70	ACB-2UB282W	590	41.00	ADRS-2-0/80-1/2	285	642.00	AM570	887	547.00
A90	704	38.80	ACB-2UB36	590	40.00	ADRSE2-0/30-1/2	284	683.00	AMG-120/240	317	148.80
A92	704	41.20	ACB-2UB367MW	590	65.00	ADRSE2-0/30-1/2	285	683.00	AMG-24	317	148.80
A93	704	41.60	ACB-2UB37W	590	41.00	AE1C-1	659	19.70	AMP310	884	518.00
A96	704	42.30	ACB-2UB38W	590	41.00	AG-1	787	131.00	AOL-A	267	261.90
A99BB-200C	576		ACB-2UB38W	590	41.00	AG3000	660	195.40	AOL-C	267	299.30
A99BC-1500C	576		ACB-2UB393W	590	41.00	AH12	784	157.30	AOL-R1	267	286.90
A99BC-25C	576		ACB-2UB428	590	41.00	AH24	784	270.00	AP124	521	16.20
A99-CLP-1	577		ACB-2UB430W	590	41.00	AHC80-PLUS	586	1,999.00	APR8	215	11.60
AC175	891	88.50	ACB-2UB46W	590	41.00	AK104-1	702	155.70	AR-B	784	338.00

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
AR-MC	784	380.00	B-26	826	6.20	B57	704	36.80	B87	704	52.30
ASC-11-7	251	383.00	B28	704	22.30	B58	704	37.00	B88	704	52.80
ASC-13-9	251	534.00	B2-8	208	1.30	B59	704	37.30	B89	704	53.30
ASC-5-4	251	207.20	B28-KIT-2	518	793.00	B5D5C	279	994.00	B90	704	53.80
ASC-7-4	251	285.40	B30	704	23.30	B60	704	37.50	B-900PF	512	5,030.00
ASC-9-5	251	290.80	B-300PF	512	3,060.00	B61	704	38.00	B-900SF	512	5,351.00
ASC-H-7	251		B-300SF	512	3,268.00	B62	704	38.50	B91	704	54.50
ASC-M-9	251		B3033-3/8	185	7.00	B63	704	39.00	B92	704	55.40
ASDS	352	259.50	B3036L-3/8	185	6.80	B64	704	39.50	B93	704	56.30
AT120A1004	623	53.80	B3060-3/8	185	3.70	B65	704	40.00	B94	704	56.90
AT175A1008	623	124.90	B31	704	23.90	B66	704	40.50	B95	704	57.50
AT20B1056	623	62.60	B32	704	24.20	B67	704	40.90	B96	704	58.10
AT72D1725	623	72.90	B3213-3/8-12	185	5.60	B68	704	41.20	B97	704	58.80
AT72D1733	623	81.30	B3213-3/8-3	185	2.30	B69	704	41.80	B98	704	59.20
AUTO-PID+	586	488.00	B3213-3/8-8	185	3.50	B70	704	42.40	B99	704	61.20
AW-1	242	12.20	B33	704	24.70	B-700PF	512	4,373.00	Ball Valves		204
AW-1	243	12.20	B34	704	24.50	B-700SF	512	4,534.00	BC-01	586	30.00
AW-1	244	12.20	B35	704	25.00	B71	704	42.90	BC-BASIC-SOFT	895	75.10
AWP117	521	32.30	B36	704	25.80	B72	704	43.40	BC-BASIC-SOFT	895	75.10
AWR1203Q71	588	318.00	B37	704	26.70	B73	704	43.90	BC-LEVEL-1-SOFT-PACK	895	102.50
AWR1504Q71	588	326.00	B38	704	27.50	B74	704	44.50	BD-300PF	512	3,124.00
AWR2006Q71	588	354.00	B39	704	28.10	B75	704	45.00	BD-500PF	512	3,492.00
AWR2510Q71	588	438.00	B40	704	28.80	B76	704	45.70	BD-500SF	512	3,653.00
B100	704	60.00	B41	704	29.40	B7670419	187	0.70	BF1	777	92.30
B1-10	208	2.70	B42	704	30.00	B7670429	187	0.90	BFC	777	19.20
B1-12	208	8.50	B43	704	30.60	B7670439	187	1.50	BFF-1000	218	98.60
B-1150SS	512	10,045.00	B44	704	31.30	B7670609	187	0.60	BFF-500	218	55.40
B1-3	208	7.50	B45	704	31.90	B7670619	187	0.70	BFF-750	218	71.70
B-1300SS	512	10,381.00	B46	704	32.50	B7670629	187	0.70	BG-10	518	300.00
B1-4	208	1.60	B47	704	33.00	B77	704	46.30	BG1100MAAK-1G	591	378.00
B1-5	208	10.00	B48	704	33.50	B78	704	46.90	BG1100MADL-1G	591	360.00
B-1500SS	512	11,534.00	B49	704	34.00	B79	704	47.50	BG1600M00EK-1AA	591	397.00
B1-6	208	2.00	B50	704	34.50	B80	704	48.20	BG1600M51EF-1AAC	591	395.00
B-1650SS	512	11,935.00	B-500PF	512	3,412.00	B-800PF	512	4,710.00	BG-8	518	260.40
B1-8	208	3.40	B-500SF	512	3,588.00	B-800SF	512	5,014.00	BK100H	703	135.60
B2-10	208	1.00	B51	704	35.00	B81	704	48.80	BK105H	703	141.60
B2-12	208	3.90	B52	704	35.40	B82	704	50.00	BK110H	703	149.00
B2-4	208	0.80	B53	704	35.70	B83	704	50.40	BK115H	703	153.70
B2-5	208	6.40	B54	704	36.00	B84	704	50.90	BK120H	703	164.90
B-250PF	512	2,884.00	B55	704	36.20	B85	704	51.30	BK130H	703	180.50
B2-6	208	0.80	B56	704	36.50	B86	704	51.80	BK52H	703	74.50

PART #	PG	LIST
BK55H	703	76.00
BK57H	703	77.50
BK60H	703	76.50
BK62H	703	80.60
BK65H	703	86.00
BK67H	703	88.50
BK70H	703	91.50
BK72H	703	95.80
BK75H	703	102.30
BK77H	703	101.00
BK80H	703	102.80
BK85H	703	114.10
BK90H	703	121.40
BK95H	703	130.50
BKT287-1R	576	
BKT287-2R	576	
BMA-130	120	
BMA-155	120	3,272.00
BMA-245	120	4,621.00
BMA-300	120	5,908.00
BMA-365	120	7,262.00
BMA-450	120	8,713.00
BMA-510	120	
BMA-600	120	10,756.00
BMA-710	120	12,419.00
BNE-D06-A046C	136	
BNE-D06-A046C	137	
BNE-D06-A046C	138	
BNE-D06-A046C	139	
BNE-D06-A046C	140	
BNE-D06-A046C	141	
BNE-D06-A046C	142	
BNE-D06-A046C	143	
BNE-D06-A046C	144	
BNE-D06-A046C	145	
BNE-D06-A046C	146	
BNE-D06-A046C	147	
BNE-D06-A046C	148	
BNE-D06-A046C	149	
BNE-D06-A046C	150	

PART #	PG	LIST
BNE-S01-A009C	136	
BNE-S01-A009C	137	
BNE-S01-A009C	138	
BNE-S01-A009C	139	
BNE-S01-A009C	140	
BNE-S01-A009C	141	
BNE-S01-A009C	142	
BNE-S01-A009C	143	
BNE-S01-A009C	144	
BNE-S01-A009C	145	
BNE-S01-A009C	146	
BNE-S01-A009C	147	
BNE-S01-A009C	148	
BNE-S01-A009C	149	
BNE-S01-A009C	150	
BNH-S02-A015C	136	13,151.00
BNH-S02-A015C	137	13,151.00
BNH-S02-A015C	138	13,151.00
BNH-S02-A015C	139	13,151.00
BNH-S02-A015C	140	13,151.00
BNH-S02-A015C	141	13,151.00
BNH-S02-A015C	142	13,151.00
BNH-S02-A015C	143	13,151.00
BNH-S02-A015C	144	13,151.00
BNH-S02-A015C	145	13,151.00
BNH-S02-A015C	146	13,151.00
BNH-S02-A015C	147	13,151.00
BNH-S02-A015C	148	13,151.00
BNH-S02-A015C	149	13,151.00
BNH-S02-A015C	150	13,151.00
BNL-S02-A014C	136	13,764.00
BNL-S02-A014C	137	13,764.00
BNL-S02-A014C	138	13,764.00
BNL-S02-A014C	139	13,764.00
BNL-S02-A014C	140	13,764.00
BNL-S02-A014C	141	13,764.00
BNL-S02-A014C	142	13,764.00
BNL-S02-A014C	143	13,764.00
BNL-S02-A014C	144	13,764.00
BNL-S02-A014C	145	13,764.00
BNL-S02-A014C	146	13,764.00

PART #	PG	LIST
BNL-S02-A014C	147	13,764.00
BNL-S02-A014C	148	13,764.00
BNL-S02-A014C	149	13,764.00
BNL-S02-A014C	150	13,764.00
BNQ-S04-A023C	136	31,013.00
BNQ-S04-A023C	137	31,013.00
BNQ-S04-A023C	138	31,013.00
BNQ-S04-A023C	139	31,013.00
BNQ-S04-A023C	140	31,013.00
BNQ-S04-A023C	141	31,013.00
BNQ-S04-A023C	142	31,013.00
BNQ-S04-A023C	143	31,013.00
BNQ-S04-A023C	144	31,013.00
BNQ-S04-A023C	145	31,013.00
BNQ-S04-A023C	146	31,013.00
BNQ-S04-A023C	147	31,013.00
BNQ-S04-A023C	148	31,013.00
BNQ-S04-A023C	149	31,013.00
BNQ-S04-A023C	150	31,013.00
BPV21	222	12.80
BPV31	222	9.20
BQ-BODY-1/4X1/2-SAE	242	131.10
BQ-BODY-1/4X1/2-SAE	243	131.10
BQ-BODY-1/4X1/2-SAE	244	131.10
BQ-BODY-1/4X1/2-SAE	246	131.10
BRZ1000	789	89.30
BSB-1X3/4	219	4.30
BSB-3/4X1/2	219	3.20
BSC-1/2X1/2	219	2.40
BSC-1X1	219	5.60
BSC-1X1/2	219	6.10
BSC-1X3/4	219	5.60
BSC-3/4X1/2	219	4.10
BSC-3/4X3/4	219	3.30
BSCAP-1	219	4.10
BSCAP-1/2	219	2.40
BSCAP-3/4	219	3.00
BSE-1/2X45	219	3.10
BSE-1/2X90	219	3.10
BSE-1X45	219	6.90
BSE-1X90	219	6.90

PART #	PG	LIST
BSE-3/4X45	219	4.70
BSE-3/4X90	219	4.50
BSN-1/2X1-1/2	219	2.70
BSN-1/2X2	219	3.00
BSN-1/2X2-1/2	219	3.10
BSN-1/2X3	219	3.50
BSN-1/2X3-1/2	219	4.00
BSN-1/2X4	219	4.20
BSN-1/2X4-1/2	219	4.70
BSN-1/2X5	219	5.00
BSN-1/2X5-1/2	219	5.30
BSN-1/2X6	219	5.60
BSN-1/2XCLOSE	219	2.60
BSN-3/4X1-1/2	219	3.40
BSN-3/4X12	219	17.10
BSN-3/4X18	219	25.20
BSN-3/4X2	219	3.50
BSN-3/4X2-1/2	219	3.60
BSN-3/4X24	219	30.40
BSN-3/4X3	219	4.00
BSN-3/4X3-1/2	219	4.50
BSN-3/4X4	219	4.80
BSN-3/4X4-1/2	219	5.20
BSN-3/4X48	219	60.40
BSN-3/4X5	219	5.60
BSN-3/4X5-1/2	219	6.10
BSN-3/4X6	219	6.70
BSN-3/4X60	219	75.20
BSN-3/4X72	219	85.80
BSN-3/4XCLOSE	219	3.20
BSP-1	219	3.50
BSP-1/2	219	2.60
BSP-3/4	219	3.40
BSSE-1/2X90	219	3.80
BSSE-1X90	219	8.20
BSSE-3/4X90	219	5.60
BST-1	219	9.00
BST-1/2	219	4.00
BSU-1	219	23.30
BSU-1/2	219	15.50
BSU-3/4	219	19.80

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
BTMCR	787	126.70	C-084-S-T-HH	254	86.50	C-164-S-T-HH	254	116.20	C-306-S	254	154.30
BUN-FLOOD	859	405.00	C10	216	29.60	C-165	254	81.80	C-306-S-T-HH	254	197.00
BUN-HYGRO	859	419.00	C100	888	174.90	C-165-HH	252	97.80	C-307-S	254	140.20
BUN-MULTI	859	542.00	C12-2001	604	154.80	C-165-HH	253	97.80	C-309-S	254	151.50
BUN-THERMO-X	859	436.00	C125	888	117.30	C-165-HH	254	97.80	C-309-S-T-HH	254	210.60
BUSH3273	690	24.30	C12-5010	605	243.30	C-165-S	254	81.10	C-30E5	254	278.30
BUSH3274	690	29.00	C12A	888	110.60	C-165-S-HH	252	97.80	C33804	795	10.30
BUSH3314	690	28.80	C-144-S-TT-HH	254	129.70	C-165-S-HH	253	97.80	C33808	795	11.00
BUSH6005	690	32.80	C-144-S-TT-HH	260	129.70	C-165-S-HH	254	97.80	C3-A30X-120VAC	722	49.60
BV2103-C	219	9.80	C-145-S-TT-HH	254	148.50	C-165-S-T-HH	254	118.70	C3-A30X-240VAC	722	52.00
BV2103-D	219	13.50	C-145-S-TT-HH	260	148.50	C-166-S-T-HH	254	125.60	C3-A30X-24VAC	722	49.60
BV2103-E	219	21.10	C-146-S-TT-HH	254	146.20	C-167-S-T-HH	254	124.30	C-413	254	192.70
C-032	254	38.00	C-146-S-TT-HH	260	146.20	C168	683	902.00	C-413-P	254	346.00
C-032-CAP	254	50.20	C-147-S-TT-HH	254	148.10	C17-100	605	302.00	C-414	254	186.30
C-032-CAP-T	254	60.50	C-147-S-TT-HH	260	148.10	C17-9043	605	331.00	C-414-HH	252	230.60
C-032-F	254	44.40	C-149-S-TT-HH	254	172.60	C20	216	75.60	C-414-HH	253	230.60
C-032-FM	254	53.30	C-149-S-TT-HH	260	172.60	C23319	782	27.30	C-414-HH	254	230.60
C-032-S	254	37.70	C159	683	861.00	C25	888	120.70	C-414-S	254	186.30
C-033	254	39.30	C-162	254	72.90	C2-A20X-120VAC	722	42.00	C-415	254	184.40
C-033-S	254	39.30	C-162-HH	252	88.60	C2-A20X-240VAC	722	44.40	C-415-HH	252	230.60
C03E124	254	41.80	C-162-HH	253	88.60	C2-A20X-24VAC	722	42.00	C-415-HH	253	230.60
C-052	254	44.80	C-162-HH	254	88.60	C-303	254	128.20	C-415-HH	254	230.60
C-052-CAP-TT-HH	254	96.30	C-162-S	254	73.20	C-303-HH	252	172.80	C-415-S	254	184.40
C-052-HH	252	62.70	C-163	254	70.00	C-303-HH	253	172.80	C-415-S-HH	254	223.90
C-052-HH	253	62.70	C-163-HH	252	83.30	C-303-HH	254	172.80	C-417-S	254	181.70
C-052-HH	254	62.70	C-163-HH	253	83.30	C-303-S	254	129.90	C-417-S-HH	252	230.60
C-052-S	254	44.40	C-163-HH	254	83.30	C-304	254	125.10	C-417-S-HH	253	230.60
C-053	254	45.60	C-163-S	254	70.00	C-304-HH	252	163.10	C-417-S-HH	254	230.60
C-053-S	254	44.10	C-163-S-HH	252	81.30	C-304-HH	253	163.10	C-417-S-T-HH	254	257.60
C-082	254	55.90	C-163-S-HH	253	81.30	C-304-HH	254	163.10	C-419-S	254	196.50
C-082-HH	252	71.30	C-163-S-HH	254	81.30	C-304-S	254	125.10	C-419-S-T-HH	254	268.80
C-082-HH	253	71.30	C-164	254	76.40	C-304-S-HH	252	164.70	C-4311-S-T-HH	254	429.00
C-082-HH	254	71.30	C-164-HH	252	97.80	C-304-S-HH	253	164.70	C-4313-S-T-HH	254	449.00
C-082-S	254	57.70	C-164-HH	253	97.80	C-304-S-HH	254	164.70	C-437-S-T-HH	254	448.00
C-083	254	54.60	C-164-HH	254	97.80	C-305	254	125.10	C-439-S-T-HH	254	425.00
C-083-HH	252	71.30	C-164-S	254	76.40	C-305-HH	252	163.10	C-441	783	20.90
C-083-HH	253	71.30	C-164-S-HH	252	92.30	C-305-HH	253	163.10	C450CPW-100C	576	
C-083-HH	254	71.30	C-164-S-HH	253	92.30	C-305-HH	254	163.10	C474	681	749.00
C-083-S	254	54.60	C-164-S-HH	254	92.30	C-305-S	254	125.10	C5	216	22.40
C-084	254	58.40	C-164-S-T-HH	252	116.20	C-305-S-HH	254	163.10	C50	888	122.70
C-084-S	254	58.40	C-164-S-T-HH	253	116.20	C-305-S-T-HH	254	203.50	C510	888	227.20

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
C510	889	227.20	C800	888	174.90	CDS4-5	303	1,247.00	CN-1/4	186	0.30
C520A	889	174.90	C-80BAJ	510	9,404.00	CDS4-5	304	1,247.00	CN-3/8	186	
C550	889	295.60	C-80BAJ-AD	510	9,420.00	CDS4-5	314	1,247.00	CN-3/8	186	1.10
C5-A30X-120AC	723	35.10	C90	888	118.60	CDS7-9	302	1,247.00	CO-1	780	5.60
C5-A30X-240AC	723	37.60	C9-A41X-120VAC	723	33.80	CDS7-9	303	1,247.00	CO-1504-AFZ	532	846.00
C5-A30X-24VAC	723	35.10	C9-A41X-24VAC	723	33.80	CDS7-9	304	1,247.00	CO-1504-X	532	846.00
C-607-S	254	276.40	CB01	896	18.20	CDS7-9	314	1,247.00	CO-205	882	551.00
C-607-S-T-HH	254	380.00	CB02	896	31.70	CDS-9	302	1,357.00	CO-220	882	1,341.00
C-609-S	254	287.30	CB03	896	17.60	CDS-9	303	1,357.00	CONV32-2	586	400.00
C-609-S-T-HH	254	391.00	CB2024AV1	532	413.00	CDS-9	304	1,357.00	CP05G10B	385	785.00
C7027A1023	632	368.00	CB2034AD	532	478.00	CDS-9	314	1,357.00	CP06G10B	385	1,084.00
C7027A1031	632	554.00	CB2054AD	532	585.00	CE10-12	216	62.50	CP08G10B	385	1,275.00
C7031D2003	613	159.00	CCLE4-60	829	296.90	CE10-8	216	60.50	CP10G10B	385	1,401.00
C7031J2009	613	257.10	CCLS4-60	829	377.00	CFC-T24	672	10.80	CP12G10B	385	1,635.00
C7041B2005	616	47.80	CCNEOPSA1/2X1-1/2X20	748	79.80	CG-307-S	254	66.00	CP15G10B	385	2,233.00
C7041D2001	616	51.20	CCNEOPSA1/2X1X20	748	61.40	CH-100-2	754	37.50	CP18G30B	385	2,450.00
C7041F2006/U	616	68.90	CCNEOPSA-1/4X3/4X25	748	37.60	CH-100-3	754	49.90	CP24G30B	385	2,701.00
C7046A1004	615	84.90	CCNEOPSA1/4X3/8X25	748	27.30	CH-100-6	754	74.20	CP801	751	366.00
C7046D1008/U	613	159.50	CCNEOPSA1X2X12.5	748	115.50	CH-101	754	47.10	CP802	751	383.00
C7089R1013	611	179.20	CCNEOPSA-3/4X3/4	748	38.50	CH-101-3	754	47.10	CP802-240	751	406.00
C7089R1013	612	179.20	CCNEOPSA5/16X1/2X25	748	36.00	CH-102	754	47.10	CP804	751	404.00
C7089U1006	611	81.40	CCNEOPSA5/16X3/4X25	748	38.30	CH-102-2	754	49.90	CP804-240	751	427.00
C7100D1001	613	215.50	CD1-024R	660	280.40	CH-102-6	754	71.50	CP804HD	751	440.00
C7130B1009/U	613	118.00	CD-5512	223	21.00	CH-103	754	47.10	CP804HD-240	751	460.00
C7150B1004	615	60.60	CD-5514	223	19.10	CH-104	754	49.90	CP807	751	427.00
C7189R1004	611	135.60	CD-5516	223	19.10	CH-104-6	754	78.00	CP807-240	751	449.00
C7189R1004	612	135.60	CD-5518	223	29.70	CH-197	754	49.90	CP808	751	434.00
C7189U1005	611	94.00	CD-5534	223	29.70	CL200-EG	195	7.90	CP815	751	580.00
C7232A1008	613	735.00	CD-5538	223	19.50	CL300-EG	195	16.40	CP815-240	751	602.00
C7232A1008	615	735.00	CD-5558	223	24.70	CL312	884	226.40	CP816	751	427.00
C7232B1014	615	857.00	CD-5578	223	29.70	CL400	746	432.00	CP817	751	440.00
C7232B1014	616	857.00	CDS-16	302		CL400-EG	195	10.90	CP818	751	440.00
C7250A1001	616	51.70	CDS-16	303		CL450	884	478.00	CP819	751	427.00
C7400A2001	615	212.40	CDS-16	304		CL500	746	531.00	CP820	751	445.00
C7400S1000	616	183.80	CDS-16	314		CL680	746	791.00	CP821	751	580.00
C75	888	80.40	CDS-17	302	1,804.00	CL800	884	425.00	CPLG-1000	218	159.70
C7770A1040	616	52.90	CDS-17	303	1,804.00	CL880	746	792.00	CPLG-500	218	75.00
C781	888	207.10	CDS-17	304	1,804.00	CM3000	351	1,142.00	CPLG-750	218	103.20
C789	888	416.00	CDS-17	314	1,804.00	CN-1/2	186		CR-1	780	6.00
C7-A20X-120VAC	723	30.90	CDS4-5	302	1,247.00	CN-1/2	186	1.80	CR-87B	860	1,128.00
C7-A20X-24VAC	723	30.90				CN-1/4	186		CR-87BC	860	1,258.00

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
CRH24-1	364	207.60	CSK-1	242		D203-8	802	104.40	D909	679	240.30
CRH24-1/2	364	76.90	CSK-1	243		D213-9NE	802	115.10	D917	679	185.50
CRH24-1-1/4	364	317.00	CSK-1	244		D220-7	802	105.30	D919	679	278.30
CRH24-3/4	364	104.00	CT11-50C0W	736	21.10	D228-8	802	93.20	D922	679	328.00
CRH36-1	364	238.20	CT11-50C9	736	19.40	D245-5	802	106.80	D929	679	379.00
CRH36-1/2	364	90.10	CT14-50C0W	736	25.20	D248-8	802	97.00	D931	679	290.90
CRH36-3/4	364	122.40	CT14-50C9	736	23.60	D260	676	580.00	D932	679	317.00
CRO-4-0/20	291	544.00	CT2A30/L	722	210.70	D261	676	556.00	D935	679	431.00
CRO-4-0/20	292	544.00	CT2E20/L	722	159.10	D295-4C	802	134.70	DB-10-2	673	421.00
CRO-4-0/20	293	544.00	CT2E25/L	722	159.10	D301-6C	802	83.10	DB-124	673	423.00
CRO-4-0/20	294	544.00	CT3E30/H	722	167.30	D303/357BPK	798	7.30	DB-130H	511	9,067.00
CRO-4-0/50	291	544.00	CT4-18C9	736	5.30	D309/393BPK	798	5.40	DB-130H	511	9,067.00
CRO-4-0/50	292	544.00	CT6-40C0W	736	10.60	D384/392BPK	798	3.60	DB-144	673	438.00
CRO-4-0/50	293	544.00	CT8-50C0W	736	11.80	D474	676	410.00	DB-200H	511	10,413.00
CRO-4-0/50	294	544.00	CT8-50C9	736	10.90	D488	676	384.00	DB-200H	511	10,413.00
CRO-4-0/75	291	POA	CTM11-50C0W	736	42.80	D489	676	385.00	DB-204C	673	191.20
CRO-4-0/75	292	POA	CTM11-50C9	736	38.30	D490	676	381.00	DB-205C	673	206.50
CRO-4-0/75	293	POA	CTM14-50C0W	736	50.70	D491	676	381.00	DB-206C	673	191.20
CRO-4-0/75	294	POA	CTM14-50C9	736	46.20	D492	676	353.00	DB-208C	673	252.40
CRO-6	291	625.00	CTM6-40C0W	736	20.20	D494	676	351.00	DB-210C	673	329.00
CRO-6	292	625.00	CTM6-40C9	736	17.50	D502-10	802	81.60	DB-6-2	673	164.60
CRO-6	293	625.00	CTM8-50C0W	736	23.20	D502-12	802	100.80	DB-6-2	673	164.60
CRO-6	294	625.00	CTM8-50C9	736	19.50	D502-16	802	193.50	DC-2	382	73.70
CROT-10-0/60	291	786.00	CTP-V-50	616	222.30	D507-10	805	122.60	DCM-270BAH	512	12,640.00
CROT-10-0/60	292	786.00	CUS-12	723	16.60	D507-12	805	175.80	DCM-270BAH-OS	512	12,800.00
CROT-10-0/60	293	786.00	CVMINI	524	343.00	D507-6	805	88.80	DCM-300BAH	512	16,324.00
CROT-10-0/60	294	786.00	CW-1/2	805	6.40	D507-8	805	96.80	DCM-300BAH-OS	512	16,485.00
CROT-10-30/110	291	864.00	CW-1/4	805	4.30	D569	675	113.80	DCM-500BAH	512	20,746.00
CROT-10-30/110	292	864.00	CW-13/16	805	10.80	D575	675	234.70	DCM-500BAH-OS	512	20,906.00
CROT-10-30/110	293	864.00	CW-3/4	805	9.90	D577	675	234.70	DCM-500BWH	512	20,906.00
CROT-10-30/110	294	864.00	CW-3/8	805	5.10	D70BPA	378	1,119.00	DCM-500BWH-OS	512	21,066.00
CROT-6	291	616.00	CW-5/16	805	4.70	D732	676	421.00	DCM-751BAH	512	26,978.00
CROT-6	292	616.00	CW-5/8	805	7.80	D733	676	455.00	DCM-751BAH-OS	512	27,138.00
CROT-6	293	616.00	CW-7/16	805	5.50	D734	676	438.00	DFP-450W	868	99.60
CROT-6	294	616.00	CW-9/16	805	7.30	D736	676	503.00	DH-16	504	193.50
CS-100-100	218	1,767.00	CXM	216	16.30	D748	679	247.30	DKM-500BAH	511	17,751.00
CS-500-1	218	9.50	CXP	216	21.60	D817	676	603.00	DKM-500BAJ	511	20,778.00
CS-750-1	218	12.40	D1700	679	636.00	D903	679	517.00	DKM-500BWJ	511	20,938.00
CSG-083S	264	133.90	D1702	679	621.00	D904	679	524.00	DL2025BPK	798	9.70
CSG-084-S	264	153.60	D203-6	802	79.80	D906	679	285.30	DL2032BPK	798	9.70
CSG-163S	264	152.30	D203-7	802	84.50	D908	679	265.60	DM-120S	864	165.00

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
DM-200B	511	10,717.00	E2-10	207	10.50	EC-34W230	674	174.20	ER2-84	207	14.50
DM-200B	511	10,717.00	E2-12	207	32.90	EC39EZ067	223	24.10	ER2-86	207	7.70
DM3000P	351	1,142.00	E2-4	207	4.40	EC-4W115	674	68.90	ERA1-0200-TAC	60	6,836.00
DM-450	864	221.20	E25UE	798	131.10	EC-5W115	674	77.30	ERA1-0200-TAD	60	
DMG2-5	832	1,698.00	E2-6	207	5.80	EC-6W115	674	87.10	ERA1-0200-TAE	60	
DP-4P40A240	657	77.90	E2-8	207	8.70	EC-6W230	674	58.10	ERA2-0200-CAB	60	6,393.00
DPP400W	868	76.00	E3-4A	207	5.70	EC-9W115	674	88.50	ERC1-0200-TAC	60	
DPS300	868	50.40	E3-4B	207	11.70	EC-9W230	674	70.90	ERC1-0200-TAD	60	
DPT2650-0R5D-AB	577		E35S1110	274	1,350.00	EDF1	352	108.40	ERC2-0200-CAB	60	6,836.00
DPT2650-2R5D-AB	577		E35S190	274	1,285.00	EDF5	352	191.70	ERCA-021E-TAC	62	6,393.00
DRHE-6	286		E3-6B	207	6.20	EDT10	659	71.70	ERF1-0300-TAE	60	7,595.00
DSH-14-16V	504	16.00	E3-6C	207	5.70	EDT11	659	80.70	ERF1-0311-TAC	60	
DSH-14J	504	5.10	E37-1204	602	705.00	EDT21	659	89.70	ERF1-0311-TAD	60	
DT300	868	52.80	E3-8D	207	8.30	EL36N35B	383	5,567.00	ERF2-0310-CAB	60	
DTAV40	662	295.40	E4-44	207	9.90	ELA-2901	896	4.50	ERFA-031E-TAC	62	7,104.00
DUCT-TAPE	783	21.00	E4-66	207	18.70	ELEC-TAPE	783	4.60	ERFA-031E-TAD-800	62	7,104.00
DV-24N	833	503.00	E4-88	207	30.30	EM45HHR	34	544.00	ERFA-031E-TAE-800	62	7,104.00
DV-6E	849	1,044.00	EA122A1002	617	72.90	EMI45ER1	34	523.00	ES100	347	1,837.00
DVO-12	849	24.30	EA122B117	617	56.00	EMI45HER	34	544.00	ES12N33B	383	3,170.00
DVO-24	849	74.80	EAD1-0320-TAC	60		EMI50HER	34	454.00	ES150	347	2,007.00
DV-T1	849	86.60	EAD1-0320-TAD	60		EMI55ER1	34	530.00	ES170	347	2,179.00
DY-16	504	14.50	EAD2-0320-CAB	60		EMI55HER	34	558.00	ES18809	724	10.60
E1-10C	206	10.20	EADA-0200-TAC	61		EMIS30HHR1	34	396.00	ES18810	724	10.80
E1-10D	206	11.70	EADA-0200-TAD	61		EMIS70HHR1	34	645.00	ES210	347	2,345.00
E1-10E	206	13.70	EADA-020E-TAC	63	6,393.00	EMOCT	397	4,358.00	ES2-44	207	8.30
E1-12D	206	16.90	EADB-0200-CAB	61		EMRAF	397	338.00	ES2-66	207	10.70
E1-12E	206	17.80	EADB-021E-CAB	63	6,393.00	EMRT1	397	825.00	ES2-88	207	21.00
E1-4A	206	4.00	EAVA-0210-TAD	61		EMRT1	398	825.00	ES4-44	207	22.40
E1-4B	206	4.00	EAVA-021E-TAC	63	6,393.00	EMWRT1	397	825.00	ES4-66	207	25.20
E1-4C	206	4.70	EAVA-021E-TAD	63	6,393.00	EMWRT1	398	825.00	ESM2	347	92.60
E15-256	604	395.00	EAVA-021E-TAE	63	6,393.00	EP08G11B	385	1,583.00	EST1	347	88.50
E15-2601	604	365.00	EAVB-0210-CAV	61		EP12G33B	385	2,094.00	ET110	882	310.00
E1-6A	206	4.70	EAVB-021E-CAV	63	6,393.00	EP18G33B	385	2,801.00	ETC-1110	592	193.00
E1-6B	206	4.50	EBQ-BODY-3/8X1/20DF	242	155.30	EP24G33B	385	3,152.00	ETC-1111	592	250.00
E1-6C	206	3.90	EBQ-BODY-3/8X1/20DF	243	155.30	EP-8000-2	538	609.00	ETC-1120	592	192.10
E1-6D	206	6.50	EBQ-BODY-3/8X1/20DF	244	155.30	EQ08N11D	383	2,285.00	ETC-1121	592	298.50
E1-8B	206	6.40	EBQ-BODY-3/8X1/20DF	246	155.30	EQ-BODY-3/8X1/20DF	242	160.00	ETC-1410	592	293.40
E1-8C	206	5.50	EC-16W115	674	136.30	EQ-BODY-3/8X1/20DF	243	160.00	ETC-2110	592	388.00
E1-8D	206	7.40	EC-16W230	674	136.30	EQ-BODY-3/8X1/20DF	244	160.00	ETC-2111	592	518.00
E1-8E	206	12.40	EC-34W115	674	174.20	EQ-BODY-3/8X1/20DF	246	160.00	ETC-2120	592	387.00
E20	798	105.70	EC-34W115V1543	674	213.60	ER2-64	207	10.30	ETC-2121	592	477.00

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
ETC-2410	592	327.00	F2A-FG	513	20,521.32	FB660	699	9.90	FGK-P-RS	752	19.80
ETPM-902	586	62.50	F2A-FS	513	13,828.32	FB665	699	9.90	FH20	352	92.90
EX9CK40A40B7	657	92.40	F2A-HS	513	15,783.84	FB804	699	12.80	Filter-Driers		204
EZP-406-15-1/2W	502	135.70	F-300BAJ	510	13,665.00	FBKH2604	696	556.00	FIT120E	349	2,420.00
EZP-406-20-1/2W	502	162.30	F300E1019	354	1,800.00	FBKH2804	696	1,167.00	FIT120H	349	1,984.00
EZP-406-25-1/2W	502	184.70	F300E1027	354	1,800.00	FBKH3004	696	1,040.00	FLAME-GARD912	796	44.80
EZP-406-50-1/2W	502	322.00	F300E1035	354	2,021.00	FBKH3604	696	1,209.00	FLEX100H	350	1,994.00
EZP-408-15-1/2W	502	142.40	F-330BAJ	510	13,024.00	FC-34PR	521	66.99	FM1D20A-24V	663	311.00
EZP-408-20-1/2W	502	169.80	F-330BAJ-C	510	13,184.00	FC802-04-4401-36	226	90.40	FM1QTUZH-24V	663	248.20
EZP-408-25-1/2W	502	193.00	F3A-FS	513	20,521.32	FC802-04-4401-48	226	107.80	FM1QWUZH-240V	663	351.00
EZP-408-50-1/2W	502	335.00	F3A-HS	513	22,767.84	FC802-04-4401-60	226	125.70	FM1STUZH-24V60	663	120.30
EZP-410-25-1/2W	502	205.40	F-450MAJ	510	11,727.00	FC802-04-4401-72	226	184.90	FM2D50-120V	664	628.00
EZP-410-50-1/2W	502	354.00	F-450MAJ-C	511	11,999.00	FC802-06-4401-36	226	135.10	FM55	689	35.10
EZP-610-25-1/2W	502	221.80	F47-3TD-120-25C	656	237.10	FC802-06-4401-48	226	160.80	FN-224	183	3.30
F-1001MAJ	510	16,239.00	F47-7TD-120-25C	656	237.10	FC802-06-4401-60	226	186.60	FP-A-168	208	19.50
F-1001MAJ-C	511	16,418.00	F61KB-11	558	306.00	FC802-06-4401-72	226	205.30	FP-B-168	208	25.10
F-1001MLJ	510	14,321.00	F61KD-4	558	376.00	FC802-08-4401-36	226	140.20	FP-C-168	208	30.70
F-1001MRJ	510	16,076.00	F61MB-1	558	457.00	FC802-08-4401-48	226	179.00	FP-PLUS	871	911.00
F-1001MWJ	510	16,239.00	F-801MAJ	510	14,995.00	FC802-08-4401-60	226	245.90	FR100	351	385.00
F100F1012	354	508.00	F-801MWJ	510	15,171.00	FC802-08-4401-72	226	248.20	FR110	351	426.00
F100F1020	354	441.00	FA47TS3-110	656	280.90	FC802-10-4401-36	226	195.20	FR125	351	434.00
F100F1038	354	508.00	FA47TS7-110	656	280.90	FC802-10-4401-48	226	218.80	FR140	351	445.00
F-1501MAJ	510	23,485.00	FAL3C05TD120A	656	253.90	FC802-10-4401-60	226	282.50	FR150	351	445.00
F-1501MAJ-C	511	23,934.00	FAL7C05TD120A	656	253.90	FC802-10-4401-72	226	324.00	FR160	351	552.00
F-1501MRJ	510	23,309.00	FALTS57C05T120A	656	275.30	FD-1001MAH-C	511	16,743.00	FR16251D	353	82.70
F-1501MRJ-C	511	23,758.00	FALTS57C13BT120A	656	285.40	FD-1001MAJ-C	511	17,247.00	FR16252D	353	124.50
F-1501MWJ	510	23,646.00	FALTS57C65T120A	656	285.40	FD-1001MRJ-C	511	16,987.00	FR16254D	353	326.00
F-1501MWJ-C	511	24,094.00	FB299	699	5.60	FD60EM	352	203.30	FR20201D	353	105.30
F1A-FG	513	14,515.08	FB301	699	5.60	FD-650MAH-C	511	13,168.00	FR20202D	353	84.00
F1A-FS	513	9,859.08	FB350	699	6.50	FESP30	370	2,196.00	FR20204D	353	96.30
F1A-FSL	513	9,859.08	FB403	699	6.50	FF10BX1	34	551.00	FR20251D	353	81.50
F1A-HS	513	11,220.96	FB404	699	6.50	FF10HBX	34	600.00	FR20252D	353	124.50
F1A-HSL	513	11,220.96	FB450	699	6.50	FF11.5BKW	34	965.00	FR20254D	353	228.50
F-2001MLJ	510	29,685.00	FB455	699	8.50	FF7.5HBK	34	635.00	FSTF-1000	218	85.90
F-2001MRJ	510	31,864.00	FB501	699	7.20	FF8.5HBK	34	635.00	FSTF-500	218	40.80
F-2001MRJ	511	31,864.00	FB504	699	6.80	FF8.5HBK	34	635.00	FSTF-750	218	55.50
F-2001MRJ3	510	32,024.00	FB550	699	8.80	FF8.5HBK	34	635.00	FTG18A-600R	561	64.20
F-2001MWJ	510	32,024.00	FB601	699	9.90	FFC60BK	34	558.00	FTPL-1	889	295.60
F214-12A-140-25C	656	237.10	FB604	699	10.10	FFI12BKW	34	628.00	FTV-12	221	89.70
F214-13A-140-25C	656	237.10	FB650	699	9.90	FFI12BX	34	698.00	FU-4B-210	208	21.90
F25-107	599	316.00	FB651	699	10.10	FFI12HBX	34	733.00	FU-6C-210	208	27.60

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
G-2010-11	538	106.00	HAG2-0050-CAA-800	60	3,816.00	HC6-64	211	2.20	HG704	681	400.00
G-2010-11	540	106.00	HAG2-0050-CAV	60		HC6-6TB	211	0.90	HG706	681	486.00
G-2010-23	540	136.30	HAJ1-0050-TAC	60		HC6-8	211	1.30	HG711	681	241.70
G-2010-5	537	95.90	HAJ2-0050-CAV	60		HD-1019-CW-4	695	63.60	HG715	681	513.00
G-2010-5	540	95.90	HAJB-003E-IAA	63		HD-1023-CW-4	695	60.00	HGBE5-95/115-1/2	287	646.00
G-4	784	264.90	HAJB-005E-CAV	62	3,543.00	HD-1027-CW-4	695	60.40	HGBE-8-75/150-1-1/8	287	1,576.00
G5TWIN	846	2,246.00	HATB-0051-CAA	61		HD-1033-CW-4	695	60.40	HGBE-8-75/150-7/8	287	1,340.00
GB-01S	586	85.50	HATB-005E-CAA	63		HD-1219-CW-4	695	69.20	HH45	792	50.00
GG-1	790	131.60	HB-01	752	73.40	HD-1223-CW-4	695	63.50	HH822-PACK	794	47.90
GGC-12	790	86.80	HB-02	752	77.90	HD-1227-CW-4	695	69.20	HNC-120BA-R-SL	515	8,456.00
GM40AV	662	194.50	HB-02-2	752	81.80	HD-1233-CW-4	695	66.50	HNC-150BA-R-SL	515	9,136.00
GOBI 406 001S	370	2,812.00	HB-03	752	84.20	HD-1419-CW-4	695	73.00	HNC-180BA-R-SL	515	10,216.00
GOBI 408 001S	370	3,329.00	HB-04	752	90.90	HD-1423-CW-4	695	72.00	HNC-210BA-R-SL	515	11,694.00
GT260	759	5.80	HB-04-2	752	90.40	HD-1427-CW-4	695	72.40	HPC-103	259	97.40
H-1	703	25.00	HB-05	752	97.60	HD-1433-CW-4	695	72.30	HPC-103-S	259	97.40
H-1/2	703	26.20	HB-06	752	101.90	HD-1619-CW-4	695	87.90	HPC-104	259	109.10
H-1-1/2	703	24.10	HB-06-2	752	107.60	HD-1623-CW-4	695	87.20	HPC-104-S	259	102.00
H-1-1/8	703	25.00	HB-07	752	108.40	HD-1627-CW-4	695	82.20	HPC-163-HH	259	145.10
H-1-3/16	703	24.10	HB-08-2	752	133.00	HD-1633-CW-4	695	86.80	HPC-163-S-HH	259	142.90
H-1-3/8	703	25.00	HB-09	752	117.20	HD-1827-CW-4	695	108.70	HPC-164-HH	259	156.90
H-1-5/16	703	25.50	HB-10-2	752	163.40	HD-1830-CCW-4	695	114.50	HPC-164-S-HH	259	145.30
H-1-7/16	703	24.10	HB-12	752	161.90	HD-1833-CW-4	695	108.60	HPC-165-HH	259	162.20
H17004	763	25.90	HB-12-2	752	193.20	HD-2027-CW-4	695	114.50	HPC-165-S-HH	259	151.60
H20004	775	25.90	HB-14-2	752	222.90	HD-2033-CW-4	695	115.80	HPC-304-HH	259	239.00
H-5/8	703	25.50	HB-18	752	230.30	HD-2227-CW-4	696	130.60	HPC-304-S-HH	259	225.80
H600A1014	622	474.00	HB-24	752	301.00	HD-2233-CW-4	696	136.70	HPC-305-HH	259	239.70
H-7/8	703	25.50	HBL13R89D	725	235.40	HD-2427-CW-4	696	135.90	HPC-305-S-HH	259	224.20
H701	681	212.20	HBL13R92D	725	170.30	HD-2433-CW-4	696	151.00	HPC-307-S-HH	259	228.70
H705A1003	622	307.00	HBL16R93	725	342.00	HD-2624-CW-4	696	158.40	HR24B	513	3,672.75
H7625A2010	613	578.00	HBL7810D	725	140.30	HD-2627-CW-4	696	165.00	HRV6-GX	358	700.00
H7655A1001	613	233.20	HBL7832D	725	135.30	HD-2633-CW-4	696	168.10	HRV-8	358	743.00
H7655B2014	613	458.00	HBL7862D	725	396.00	HD-3022-CW-4	696	219.10	HS-2032	516	336.00
H91WG-1	591	324.00	HBL7863D	725	480.00	HD-3027-CW-4	696	548.00	HS-2033	516	368.00
H9320-51	517	644.00	HC6-10	211	1.30	HE100C1001	353	333.00	HS-2034	516	368.00
H9320-52	517	1,094.00	HC6-12	211	1.30	HE105C1000/U	353	320.00	HS-2035	516	401.00
H9320-53	517	1,513.00	HC6-16	211	1.30	HE150C1014	353	426.00	HS-2036	516	336.00
H9655-06	517	1,223.00	HC6-24	211	1.50	HE250C1014	353	822.00	HS-2129	516	449.00
H9655-11	517	257.50	HC6-32	211	1.60	HE300A1005	353	994.00	HS-2132	516	753.00
HAFB-0033-IAA	61		HC6-40	211	1.70	HE-67S3-0N00P	577		HS-2160	516	1,426.00
HAFB-003E-IAA-800	63		HC6-4TB	211	0.80	HE-67S3-0N0BT	577		HT04	183	5.00
HAG1-0050-TAC	60		HC6-6	211	1.30	HG703	681	306.00	HT06	183	5.00

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
HT08	183	5.00	ICM102	706	27.70	IL-75-N	497	1,794.00	ITBU-110-20-N	496	4,085.00
HT10	183	5.10	ICM103	706	44.10	IM1050G	195	44.60	ITBU-130-20-N	496	4,085.00
HT-102	782	12.20	ICM150	708	69.90	IM1250G	195	50.90	ITBU-155-20-N	496	4,162.00
HT-103	782	15.60	ICM151	708	101.10	IM2-5/8	195	10.90	ITBU-155-30-N	496	5,082.00
HT-105	782	59.60	ICM175	709	46.90	IM250G	195	9.30	ITBU-200-30-N	496	5,479.00
HT12	183	5.60	ICM203	707	27.70	IM350G	195	13.50	ITBU-60-10-N	496	3,381.00
HT14	183	6.20	ICM204	707	50.10	IM42X42G	195	2.90	J991LYW-7225	591	285.40
HT18	183	7.30	ICM205	707	51.40	IM450G	195	15.30	JA-0514-XX	497	385.00
HT22	183	8.40	ICM206	707	32.80	IM-500SAB	509	13,265.00	JA-0528-XX	497	63.30
HT26	183	9.60	ICM220	708	53.50	IM550G	195	20.10	JC 5310	542	130.70
HT34	183	17.70	ICM251	711	92.60	IM650G	195	22.50	JC 5361	538	126.80
HT42	183	20.00	ICM253	711	75.10	IM850G	195	28.50	JC 5361	542	126.80
HT50	183	28.20	ICM254	711	73.80	IMCLEVIS	195	2.50	JL-0798-JC	497	149.70
HT58	183	36.50	ICM255	711	59.30	IPPCT01212CL	192	3.60	JM-0150-XX	497	403.00
HT66	183	50.80	ICM300	712	88.40	IPPCT01234CL	192	9.10	JS-0508-JZ	497	471.00
HX3643	330	6,266.00	ICM305	709	131.80	IPPCT01412CL	192	3.20	JS-0532-VC	497	46.10
HX3700	330	748.00	ICM315	712	323.00	IPPCT03412CL	192	4.60	K1063	183	5.30
HX3702	330	452.00	ICM320	712	243.90	IPPCT03434CL	192	10.30	K1-1	208	15.30
HX3703	330	440.00	ICM325HN	710	337.00	IPPCT03812CL	192	3.50	K1-3	208	13.30
HX3704	330	1,312.00	ICM326H	710	468.00	IPPCT03834CL	192	6.90	K1-5	208	28.60
HX3706	330	1,057.00	ICM327H	710	408.00	IPPCT05812CL	192	3.90	K1-8	208	60.80
HX3738	330	580.00	ICM340	524	78.50	IPPCT05834CL	192	9.70	K-3001	602	113.30
HX3810	330	1,392.00	ICM345	524	77.40	IPPCT07812CL	192	5.00	K-3002	602	147.90
HX3836	330	1,082.00	ICM400	705	428.00	IPPCT11812CL	192	5.80	K52-L-S	743	916.00
HX3839	330	2,705.00	ICM450	705	481.00	ITB-110-30-N	496	3,360.00	K53-L-S	743	1,507.00
HXR-100	328	174.90	ICM491	709	138.40	ITB-110-40-N	496	3,697.00	K55-L-S-1-1/8-1-5/8	744	1,986.00
HXR-150	328	174.90	ICM850	717	83.10	ITB-110-50-N	496	4,297.00	K56L-L	744	441.00
HXR-25	328	87.50	ICM860	717	83.10	ITB-130-30-CN	496	3,360.00	K56-S-1-3/4	744	244.80
HXR-250A	328	304.00	IE-1524-12	497	969.00	ITB-130-40-CN	496	3,697.00	K56-S-3/4	744	236.50
HXR-350A	328	304.00	IG2240-IMS	661	973.00	ITB-130-50-N	496	4,297.00	K56-S-FLUSH	744	235.90
HXR-50	328	96.70	IL-100-NG	497	1,932.00	ITB-155-40-CN	496	3,773.00	K58L-L	744	276.00
HXR-500	328	566.00	IL12-G	357	970.00	ITB-155-50-N	496	4,373.00	KA12	755	6.70
HXR-75	328	128.90	IL-150-N	497	3,324.00	ITB-175-50-N	496	4,745.00	KAAB-007E-CAA	63	3,459.00
I1010-KIT	885	1,239.00	IL18-G	357	1,075.00	ITB-175-60-N	496	5,108.00	KAE1-0075-TAC	60	
I200	885	456.00	IL-200-N	497	3,647.00	ITB-175-70-N	496	5,472.00	KAE2-0075-CAA	60	
I200S	885	724.00	IL30-G	357	1,144.00	ITB-200-50-N	496	4,745.00	KAE2-0075-CAV	60	3,500.00
I400	885	442.00	IL-37-N	497	1,287.00	ITB-60-20-N	496	3,020.00	KAEA-007E-TAC-800	63	
I400S	885	798.00	IL40-G	357	1,239.00	ITB-60-30-N	496	3,360.00	KAEB-007E-CAA-800	63	
I410-KIT	885	855.00	IL50-G	357	1,317.00	ITB-80-20-N	496	3,020.00	KAEB-007E-CAV	63	
ICG-1	718	14.60	IL-50-N	497	1,535.00	ITB-80-30-N	496	3,360.00	KAGA-0150-TAC	60	4,685.00
ICG-220	718	15.70	IL60-G	357	1,433.00	ITB-80-40-N	496	3,697.00	KAGA-0150-TAD	60	

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
KAGB-005E-IAA	63	3,238.00	KATA-015E-TAC	63	4,602.00	KM-515MWJ	509	9,212.00	L4006E1042	620	532.00
KAGB-0150-CAV	60	4,367.00	KATB-015E-CAV	63	4,602.00	KM-520MAJ	509	9,884.00	L4008A1015	620	399.00
KAJA-0101-TAC	61		KBWC-110K	690	178.00	KM-520MRJ	509	9,740.00	L4008B1013	620	434.00
KAJA-011E-TAC	63	3,940.00	KBWC-115K	690	210.50	KM-660MAJ	509	11,486.00	L4008E1040	620	343.00
KAJA-011E-TAD-800	63	3,940.00	KBWC-13K	690	69.20	KM-660MWJ	509	11,647.00	L4064B2947	621	136.40
KAJB-0100-CAV	61		KBWC-15K	690	78.20	KM-81BAJ	507	5,703.00	L4064B2954	621	136.40
KAJB-010E-CAV	63	3,940.00	KBWC-16K	690	76.60	KM-901MAJ	509	14,867.00	L4064W1197	621	186.40
KAKA-0200-TAC	60	5,091.00	KIT150	689	19.70	KM-901MRJ	509	14,706.00	L4064W1213	621	186.20
KAKA-0200-TAC	61	5,091.00	KIT170	689	16.90	KM-901MRJ-3	509	15,203.00	L59-3B-A	656	119.10
KAKA-0200-TAD	60		KIT315	689	52.00	KM-901MWJ	509	15,203.00	L59-7B-A	656	119.10
KAKA-0200-TAD	61		KIT317	689	52.00	KMD-410MAH	508	9,051.00	L6006A1145	620	371.00
KAKA-020E-TAC	62	4,763.00	KIT34	689	52.00	KMD-410MWH	508	9,452.00	L6006C1034	620	336.00
KAKB-011E-CAV	63	4,143.00	KIT-39516	186	50.20	KMD-450MWH	508	8,144.00	L6064A1037	621	113.90
KAKB-0200-CAV	60		KIT49	689	21.10	KMD-460MWH	508	9,212.00	L62GB-3C	591	391.00
KAKB-0200-CAV	61		KIT50	689	49.20	KMD-860MAJ	508	14,674.00	L62GB-3C	591	391.00
KAKB-021E-CAV	62	4,763.00	KM-116BAJ	507	6,424.00	KMH-2100SRJ	509	29,525.00	LAC-10	288	1,479.00
KALA-016E-TAC	63	4,602.00	KM-1301SAH-P	509	17,799.00	KML-325MAJ	508	8,394.00	LAC-10	289	1,479.00
KALA-016E-TAD-800	63		KM-1301SAJ	509	19,288.00	KML-500MAJ	508	9,708.00	LAC-10	290	1,479.00
KALB-010E-CAV	63	3,940.00	KM-1301SAJ3	509	19,448.00	KML-700MAJ	508	11,871.00	LAC-4	288	469.00
KALB-015E-CAV	63	4,602.00	KM-1301SRJ3	509	17,751.00	KML-700MRJ	508	11,695.00	LAC-4	289	469.00
KAM1-0100-TAC	60	4,216.00	KM-1301SWJ3	509	19,625.00	KML-700MWJ	508	12,031.00	LAC-4	290	469.00
KAM1-0100-TAD	60		KM-1340MAJ	509	19,625.00	KMS-1122MLH	508	13,866.00	LAC-5	288	815.00
KAM2-0100-CAA	60		KM-1340MWJ	509	19,785.00	KMS-1402MLJ	508	14,114.00	LAC-5	289	815.00
KAM2-0100-CAV	60		KM-1601SRJ3	509	22,893.00	KMS-2000MLJ	508	17,462.00	LAC-5	290	815.00
KAMA-0075-TAC	61		KM-1601SRJ3	509	22,893.00	KMS-822MLJ	508	13,217.00	LACA-032E-TAD	63	
KAMA-007E-TAC-800	63	3,379.00	KM-161BAJ	507	7,065.00	KMS-830MLJ	508	13,200.00	LACB-032E-CAB	63	7,605.00
KAMB-0075-CAA	61		KM-1900SAJ	509	24,735.00	KPK-M20-MVP-EX	728	15.80	LAHA-0310-TAC	61	
KAMB-0075-CAV	61		KM-1900SAJ3	509	24,895.00	KTB1	803	130.20	LAHA-0310-TAD	61	
KAMB-007E-CAA	63	3,379.00	KM-1900SRJ	509	24,575.00	KTB2	803	165.00	LAHA-032E-TAC	63	7,605.00
KAMB-007E-CAV	63	3,379.00	KM-1900SRJ3	509	24,735.00	KWCFL	382	69.40	LAHA-032E-TAD	63	
KAN1-0075-TAC	60		KM-1900SWJ3	509	25,071.00	KWCFM	382	69.40	LAHA-032E-TAE	63	7,605.00
KAN2-0075-CAA	60		KM-2200SRJ3	509	31,175.00	KWCFQ	382	69.40	LAHB-032E-CAB	63	7,605.00
KAN2-0075-CAV	60		KM-2200SWJ3	509	31,175.00	KWCFS	382	69.40	LALA-032E-TAC	63	7,605.00
KANB-0050-CAV	61		KM-231BAJ	507	7,642.00	KWIFI	382	164.80	LALB-032E-CAB-800	63	7,605.00
KANB-005E-IAA-800	63	3,238.00	KM-2600SRJ3	509	33,850.00	KWW	382	620.00	LC	800	597.00
KAR1-0100-TAC	60		KM-301BAJ	507	8,923.00	L10-X008	745	34.50	LCFI-122-I	503	52.00
KAR1-0100-TAD	60		KM-301BWJ	507	9,003.00	L1706	745	63.00	LCFI-92-I	503	39.90
KAR2-0100-CAA	60		KM-340MAJ	509	8,122.00	L1921	733	78.10	LCFO-122-I	503	52.00
KAR2-0100-CAV	60		KM-340MWJ	509	8,122.00	L4006A1017	620	479.00	LCFO-92-I	503	39.90
KARA-010E-TAC	62	3,959.00	KM-515MAJ	509	9,347.00	L4006A1678	620	353.00	LCI-122-I	503	52.00
KARB-010E-CAV	62	3,959.00	KM-515MRJ	509	9,051.00	L4006A1959	620	359.00	LCI-92-I	503	39.90

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
LCO-122-I	503	52.00	LW-EAA	872	822.00	ME35S1110	274	1,389.00	MP-18E	217	127.40
LCO-92-I	503	39.90	LWF-122-I	503	39.90	ME35S190-HP	274	1,189.00	MP-2E	217	2.00
LD-122-I	503	96.90	LWF-92-I	503	30.70	ME43S1130	274	2,303.00	MP-4E	217	7.60
LD22	798	149.00	LWS-C1030Q13	588	161.70	ME43S1130-HP	274	2,148.00	MP516A1087	534	
LD-92-I	503	74.60	M-1	799	19.60	ME43S1170	274	2,373.00	MP516A1095	534	
LDK-110000-070	603	94.30	M-2	799	22.30	MG-12R	606	59.70	MP516A1103	534	
LDK-310000-070	603	101.60	M2-5-410AB	830	292.60	MG-12S	606	59.70	MP-6E	217	15.20
LDK-410000-070	603	118.90	M-2R	799	13.50	MG-3	606	61.20	MP909D1201	535	
LDR-122-92-I	503	29.20	M-3	799	20.20	MG-6	606	61.20	MP909D1219	535	
LEN-122-I	503	20.70	M-3R	799	13.90	MG-9	606	37.00	MP909E1026	535	
LEN-92-I	503	15.90	M436A1116	634	945.00	MICROSOL-II-PLUS	586	456.00	MP909E1034	535	
LF-122-I	503	81.90	M436A1124	634	1,315.00	MIL72AQTUZH-120V	663	271.70	MP918B1014	535	
LF-92-I	503	63.00	M-501	881	566.00	MIL72AQWUZH-120V	663	378.00	MP953C1000	535	
LFJ-122-I	503	24.30	M-5211	675	113.80	MIL72ASTUZH-120V	663	138.40	MP953C1018	535	
LFJ-92-I	503	21.70	M-5311	675	109.60	MIL72ASWUZH-120V	663	245.00	MP953C1026	535	
LGW1000	616	863.00	M-5421	675	133.50	MKC-1-115V-DC	281	207.10	MPR1	716	102.20
LHXR-25	328	1,137.00	M7215A1008	615	744.00	MKC-1-120/240	281	163.20	MPR5	716	93.20
LHXR-40	328	1,570.00	M7415A1006/U	634	829.00	MKC-1-120V	281	124.00	MR2PM24-11C	547	980.00
LHXR-60	328	2,095.00	M7415B1004	634	829.00	MKC-1-12V-DC	281	201.60	MR45	844	2,709.00
LJ-122-I	503	14.50	M836A1042	634	916.00	MKC-1-240V	281	124.00	MR4PM12C-12C	547	988.00
LJ-92-I	503	14.10	M836B1033	634	999.00	MKC-1-24V-AC	281	124.00	MR4PM24-12	547	1,209.00
LK-122-I	503	38.20	M8405A1006	634	779.00	MKC-1-24V-DC	281	197.80	MR4PMUHV-12C	547	1,140.00
LK-92-I	503	29.30	M8415A1004	634	802.00	MKC-2-115V-DC	281	256.60	MS2PM24T-11C	547	724.00
LKF-122-W	503	46.20	M9184D4009	634	1,856.00	MKC-2-120/240	281	195.90	MS-406-15-3/8W	502	136.70
LKF-92-W	503	35.50	M9184E4006	634	2,045.00	MKC-2-120V	281	152.90	MS-406-20-3/8W	502	194.10
LKS-122-I	503	48.30	M9185D4008	635	2,123.00	MKC-2-12V-DC-CAK	281	249.10	MS-406-25-3/8W	502	185.80
LKS-92-I	503	37.00	M9185E4005	635	2,367.00	MKC-2-240V	281	152.90	MS-406-50-3/8W	502	327.00
LP-122-I	503	43.60	MA-115	524	274.30	MKC-2-24V-AC	281	152.90	MS-408-15-3/8W	502	143.50
LP907A1002	534		MA-115/230	524	416.00	MKC-2-24V-DC	281	237.20	MS-408-20-3/8W	502	203.30
LP915A1044	533		MAG1YL	731	30.40	ML45	659	9.40	MS-408-25-3/8W	502	193.40
LP915A1051	533		MB	801	193.70	ML50	659	9.40	MS-408-50-3/8W	502	337.00
LP-92-I	503	33.50	MB30	505	62.30	ML55	659	9.40	MS-410-15-3/8W	502	154.30
LT-122-I	503	68.80	MB36	505	76.20	ML60	659	9.40	MS-410-25-3/8W	502	203.80
LT-92-I	503	52.80	MB42	505	89.40	ML6161A2009	636	226.50	MS-410-50-3/8W	502	356.00
LT-BAA	872	987.00	MBK-6	790	1,146.00	ML70	659	9.40	MS4DR24T-11C	547	963.00
LT-EAA	872	987.00	MB-UNI	524	411.00	ML7161A2008/U	636	368.00	MS4PM24T-11C	547	628.00
LTR200	799	20.90	MC	800	413.00	ML80	659	9.40	MS4PMUHVT-11C	547	1,571.00
LVD2	884	120.70	MCSP-A	616	109.50	ML90	659	10.20	MS-610-25-3/8W	502	223.70
LW-122-I	503	37.90	MC-T	787	167.10	ML-UNI	524	495.00	MS-610-50-3/8W	502	384.00
LW-92-I	503	29.20	MDEH1	352	73.60	MO-UNI	524	378.00	MS7503A2030	615	553.00
LW-BAA	872	822.00	MDEH2	352	96.80	MP-18	217	52.90	MSA-8	785	347.00

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
MT-512E-2HP	586	179.90	NBV25-S	324	1,608.00	NEK2150GK1	35	633.00	NRM1-0500-TFC	60	9,735.00
MT-512EL-2HP	586	179.90	NBV38FFS	324	65.20	NEK6160Z1	34	754.00	NRM1-0500-TFD	60	
MT-512RIL-LOG	586	394.00	NBV58FFS	324	80.00	NEK6170Z1	34	782.00	NRM1-0500-TFE	60	
MT-512RI-PLUS	586	376.00	NC-100	227	106.60	NEK6181GK1	35	893.00	NRS4-108	205	10.60
MT514E	586	239.90	NC-48	227	47.20	NEK6187Z1	34	810.00	NRS4-43	205	15.60
MT514EL	586	239.90	NCH-032S-TW	227	25.80	NEK6210GK1	35	921.00	NRS4-54	205	19.60
MT530E-L-SUPER	586	668.00	NCH-033S-TW	227	25.80	NEK6210GK2	35	921.00	NRS4-64	205	5.50
MT543RIL-PLUS	586	391.00	NCH-052F-TW	227	36.90	NEK6210Z1	34	810.00	NRS4-65	205	7.90
MTP-4010	880	613.00	NCH-052S-TW	227	31.80	NFM-TT	789	200.30	NRS4-86	205	4.40
N40/45S	363	2,820.00	NCH-053S-TW	227	36.90	NFP-75	504	24.50	NS2000003	650	55.70
N4-10	205	10.30	NCH-082F-TW	227	45.10	NFT5-4-100	223	1.00	NS4-10	205	5.30
N4-12	205	15.70	NCH-082S-TW	227	45.10	NFT5-5	223	3.30	NS4-12	205	12.60
N43	363	2,476.00	NCH-083F-TW	227	39.00	NFT5-6-100	223	3.00	NS4-14	205	36.40
N4-4	205	4.00	NCH-083S-TW	227	39.00	NG8150	825	64.60	NS4-3	205	7.80
N4-5	205	17.40	NCH-084S-TW	227	45.10	NJ2192GK1	35	1,197.00	NS4-4	205	1.80
N4-6	205	3.20	NCH-163F-TW	227	45.10	NJ2192GK2	35	1,535.00	NS4-5	205	3.50
N4-8	205	5.70	NCH-163S-TW	227	45.10	NJ2212GJ2	35	2,129.00	NS4-8	205	3.30
N5-10	208	4.80	NCH-164F-TW	227	52.20	NJ2212GK1	35	2,059.00	NSS-48	227	55.40
N5-12	208	15.50	NCH-164S-TW	227	52.20	NJ2212GK2	35	1,151.00	NT2168GKV1	35	1,029.00
N5-4	208	1.10	NCH-165S-TW	227	52.20	NJ6220Z1	34	1,265.00	NT2168GKV2	35	1,466.00
N5-5	208	3.90	NCH-303F-TW	227	78.10	NJ6220Z2	34	1,265.00	NT2180GKV1	35	1,176.00
N55/65S	363	3,563.00	NCH-303S-TW	227	78.10	NJ6226Z2	34	1,265.00	NT2180GKV2	35	1,176.00
N5-6	208	2.30	NCH-304F-TW	227	78.10	NJ7238E2	35	2,129.00	NT6215Z1	34	980.00
N56/66D	363	3,819.00	NCH-304S-TW	227	78.10	NJ9226GK2	35	1,647.00	NT6217GKV1	35	1,731.00
N5-8	208	2.50	NCH-305F-TW	227	78.10	NJ9232GK2	35	1,815.00	NT6217Z1	34	1,154.00
NA-48	227	47.20	NCH-305S-TW	227	78.10	NMC038	728	1.80	NT6217Z2	34	1,154.00
NAV-561	347	134.30	NCH-306S-TW	227	80.80	NO33L	689	54.80	NT6220GKV1	35	1,850.00
NB-48	227	47.20	NCH-307S-TW	227	83.60	NO50L	689	54.80	NT6220GKV2	35	1,850.00
NBV02-S	324	58.40	NCH-309S-TW	227	93.50	NP1I	729	0.90	NT6222GKV1	35	1,850.00
NBV03-S	324	58.40	NCH-415F-TW	227	93.50	NP2BR	522	114.60	NT6222GKV2	35	1,850.00
NBV04-S	324	58.40	NCH-415S-TW	227	93.50	NP3BR	522	154.40	NU145	347	1,744.00
NBV05-S	324	58.40	NCH-417S-TW	227	120.90	NP8I	729	0.90	NU165	347	2,008.00
NBV06-S	324	87.60	NCH-419S-TW	227	142.90	NPE-48-BD	227	96.70	NU205	347	2,259.00
NBV07-S	324	95.80	NCVT-6	884	153.40	NRA2-0500-TFC	60	9,735.00	OB-1	242	19.60
NBV09-S	324	153.50	NE2121Z1	34	852.00	NRA2-0500-TFE	60	9,080.00	OB-1	242	19.60
NBV11-S	324	222.80	NE6210E1	35	698.00	NRB2-0400-TFC	60	9,671.00	OB-1	243	19.60
NBV12FFS	324	70.70	NE9213E1	35	894.00	NRB2-0400-TFD	60		OB-1	243	19.60
NBV13-S	324	309.00	NE9213E2	35	894.00	NRB2-0400-TFE	60	9,020.00	OB-1	244	19.60
NBV14FFS	324	110.50	NE9213E2	35	894.00	NRB2-040E-TFC	62		OB-1	244	19.60
NBV17-S	324	412.00	NEK2125GK1	35	561.00	NRD1-032E-TFC-800	63	9,026.00	OE35S1110	274	1,602.00
NBV21-S	324	1,042.00	NEK2134GK1	35	579.00	NRD1-032E-TFD-800	63	9,026.00	OE43S1130-HP	274	2,223.00

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
OE43S1170-HP	274	2,290.00	ORIT-20-65/225-1-5/8	296		P1118	183	7.50	P2038	183	7.40
OF-303	269	432.00	ORIT-6-0/50	295	763.00	P1119	183	10.50	P2039	183	8.40
OF-303-BP	269	469.00	OROA5-100-58	288	783.00	P1120	183		P2040	183	8.80
OIL32	849	26.90	OROA5-100-58	289	783.00	P1121	183	14.00	P2043	183	9.20
OL-60CH	267	750.00	OROA5-100-78	288	783.00	P1123	183	20.40	P2044	183	10.00
OL-60CH	268	750.00	OROA5-100-78	289	783.00	P1124	183	23.00	P2047	183	10.40
OL-60FH	267	798.00	OROA5-180-7/8	288	320.00	P128AA-1	562	713.00	P2048	183	11.30
OL-60FH	268	798.00	OROA5-180-7/8	289	320.00	P128AA-17	562	706.00	P2051	183	19.40
OL-60HH-6	267	791.00	OT-LC	800	726.00	P128AA-2	562	706.00	P2055	183	20.30
OL-60HH-6	268	791.00	OU1020-CW	698	17.00	P12B	379	1,639.00	P2059	183	24.10
OL-60NH-2	267	890.00	OU1031-CW	698	16.60	P145NCA-12	562	631.00	P20BB-1	559	171.40
OL-60NH-2	268	890.00	OU631-CW	698	12.00	P145NCA-82	562	631.00	P20DB-1	559	242.00
OL-60XH	267	798.00	OU720-CW	698	10.60	P1546	187	5.70	P20EB-1	559	212.40
OL-60XH	268	798.00	OU731-CW	698	9.90	P170AA-118	565	281.50	P20EB-2	559	231.40
OM25	793	104.70	OU820-CW	698	10.20	P170AA-2C	580	300.00	P2-10	208	7.70
OM5	793	18.20	OU831-CW	698	10.60	P170AA-400C	580	281.50	P2-12	208	8.40
ORD-4-20	288	222.80	OU920-CW	698	16.40	P170AB-12	564	279.20	P2-3	208	3.20
ORD-4-20	289	222.80	OU931-CW	698	13.90	P170AB-2	564	281.80	P2-4	208	1.80
ORI10-65/225-1-1/8	288	1,071.00	P-065-NA1	724	86.70	P170CA-1	564	339.00	P2-5	208	7.30
ORI10-65/225-1-1/8	289	1,071.00	P1000	183	51.70	P170CA-3	565	317.00	P2-6	208	2.70
ORI10-65/225-1-3/8	288	1,071.00	P1000T	183	51.70	P170CA-400C	580	281.50	P266ABA-100	571	1,271.00
ORI10-65/225-1-3/8	289	1,071.00	P1008	183	2.80	P170DA-1	565	326.00	P266ABA-100	580	1,271.00
ORI6-65/225-1-1/8	288	606.00	P100AC-1	589	89.30	P170DA-400C	580	281.50	P266ACA-100	571	1,062.00
ORI6-65/225-1-1/8	289	606.00	P100AP-201C	580	79.80	P170LB-1	567	533.00	P266BCA-100	571	1,073.00
ORI6-65/225-5/8	288	589.00	P100AP-201C	589	79.80	P170LB-6	567	533.00	P266BCA-100	580	1,073.00
ORI6-65/225-5/8	289	589.00	P100AP-2C	589	79.80	P170MA-1	567	548.00	P266BHA-100	571	1,314.00
ORI6-65/225-7/8	288	606.00	P100AP-332C	580	83.60	P170MA-18	567	600.00	P266SNR-1	571	338.00
ORI6-65/225-7/8	289	606.00	P100AP-3C	589	80.60	P170NA-1	567	550.00	P266SNR-2	571	338.00
ORIT-10-0/50	295	1,078.00	P100AP-4C	589	79.80	P2024	183	3.60	P2-8	208	4.10
ORIT-12	305	1,163.00	P100CC-9C	589	90.20	P2024	183	3.60	P28AA-1	560	739.00
ORIT-12-0/100-1-1/8	296	1,746.00	P100CP-1C	589	79.80	P2025	183	4.10	P28AA-17	560	739.00
ORIT-15	305	1,199.00	P100CP-2C	589	81.30	P2026	183	4.10	P28AA-18	560	739.00
ORIT-15-0/100-1-3/8	296	2,294.00	P100CP-85	580	91.60	P2027	183	4.10	P28AA-2	560	739.00
ORIT15-65/225	288		P100DA-1	589	143.10	P2028	183	4.10	P28AN-15	560	1,245.00
ORIT15-65/225	289		P100DA-2	589	145.90	P2029	183	4.30	P28NA-5	560	763.00
ORIT-15-65/225-1-3/8	296		P100DA-81	580	121.20	P2030	183	4.50	P29NC-2	561	692.00
ORIT-15-65/225-1-5/8	296		P100DA-86	580	108.70	P2031	183	4.80	P29NC-3	561	692.00
ORIT-20	305	1,199.00	P1010	183	2.80	P2032	183	4.80	P30-5826	595	550.00
ORIT-20-0/100-1-5/8	296	2,872.00	P10BC-7	559	287.10	P2033	183	4.80	P30-5827	595	545.00
ORIT20-65/225	288		P1115	183	6.00	P2034	183	4.80	P32AC-1	561	239.70
ORIT20-65/225	289		P1117	183	6.90	P2037	183	6.70	P32AC-2	561	268.00

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
P32AF-2	561	268.00	P70CA-3	564	338.00	PDH15K5SG	396	2,610.00	PVC-1-1/4-20FT	214	24.70
P3300	183	44.40	P70CA-4	563	595.00	PDXDAA	397	963.00	PVC-1-10FT	214	5.50
P3300T	183	44.40	P70CA-400C	580	303.00	PDXRTA	397	14.70	PVC-128	215	2.10/ft
P399AAA-1	572		P70CA-5	564	595.00	PDXWSA	397	290.50	PVC-1410	215	3.00/ft
P40-R	496	3,414.00	P70DA-1	564	339.00	PDXWSEXT	397	-	PVC-1712	215	3.50/ft
P45NCA-12	562	661.00	P70DA-2	564	617.00	PH14B	379	2,029.00	PVC-2116	215	5.50/ft
P45NCA-82	562	661.00	P70DA-400C	580	303.00	PHASELOGPLUS	586	525.00	PVC-3/4-10FT	214	5.50
P470EB-1C	579	294.10	P70KA-1	565	487.00	PINK-TEFLON-TAPE	759	3.50	PVC-457-010	214	7.60
P470FB-1C	579	285.30	P70LB-1	566	569.00	PL123	798	5.80	PXAA	397	251.50
P499RAP-101C	572		P70LB-6	566	569.00	PL8	215	12.10	PXCJA	397	112.70
P499RAP-101C	578		P70MA-1	566	575.00	PL-8A-DLX-B	784	796.00	PXDR10	397	36.90
P499RAP-101K	578		P70MA-2	566	1,115.00	PM-120	864	85.80	PXFTA	397	18.20
P499RAP-105C	572		P70NA-1	566	580.00	PM55A	887	196.60	PXGA	397	117.10
P499RAP-105C	578		P72AA-1	567	462.00	PMRH-120	864	123.10	PXPC23000	397	95.40
P499RAP-107C	572		P72AA-27	568	462.00	PO-115	718	17.30	PXPC23015A	397	112.70
P499RAP-107C	578		P72CA-2	568	480.00	PO-230	718	19.80	PXPC23020A	397	112.70
P499RCP-101C	572		P72DA-1	568	498.00	PORT12000A	378	1,106.00	PXPC23030	397	105.10
P499RCP-101C	578		P72LB-1	568	730.00	PPL8	215	11.00	PXPC26515A	397	108.40
P499RCP-101K	572		P72MA-1	568	743.00	PR-24/120-36W	655	161.80	PXPC26515A	397	108.40
P499RCP-101K	578		P72NA-1	568	743.00	PR-351N-I	504	27.30	PXSBA	397	190.80
P499RCP-105C	578		P74AA-1	569	575.00	PR-351N-M	504	33.60	PXSC	397	312.00
P499RCP-105K	572		P74BA-1	569	548.00	PR46A	515	10,545.84	PXSE	397	177.80
P499RCP-105K	578		P74EA-8C	569	557.00	PR67A	515	14,608.20	Q179A1092	632	860.00
P499RCP-107C	578		P74FA-1	569	528.00	PR67A-D4	515	20,777.40	Q179B1042	632	1,062.00
P499RCP-107K	572		P7650A1000	613	535.00	PR93A	515	19,531.92	Q313A1055	628	168.80
P499RCP-107K	578		P900-GX	356	1,347.00	PRC-351N	504	22.00	Q313A1188	628	145.70
P499RCPS100K	578		PC1300	798	6.10	PRO-41	718	20.20	Q313A1402	628	147.40
P545NCB-22	570	690.00	PC1400	798	6.10	PRO-42	718	33.70	Q313B1005	628	195.20
P545NCB-25C	570	695.00	PC1500	798	2.50	PRO-81	718	20.20	Q314A4586	628	99.00
P545NCB-82	570	854.00	PC2400	798	3.10	PS0509NGY	727	20.40	Q314A6094	628	99.00
P70AA-118	564	303.00	PCL16	215	17.60	PS0759NGY	727	32.00	Q314A6102	628	99.50
P70AA-119	564	536.00	PCT100RI	586	548.00	PS3500	183	9.70	Q3200U1004	633	93.60
P70AA-2	564	311.00	PCT100RIL	586	548.00	PS3500	187	9.70	Q327A1626	628	115.30
P70AA-2C	580	311.00	PCT400RIPLUS	586	873.00	PT-109	220	123.20	Q3400A1024	633	190.50
P70AA-400C	580	303.00	PDE07K3SG	396	2,064.00	PT-153	755	22.50	Q340A1405	627	22.40
P70AA-5	563	557.00	PDE09K3SG	396	2,094.00	PT-156	755	11.40	Q340A1413	627	23.90
P70AB-1	563	290.80	PDE12K3SG	396	2,216.00	PTC-4111	592	138.70	Q340A1421	627	24.70
P70AB-12	563	304.00	PDE15K5SG	396	2,458.00	PTC-4111	597	138.70	Q340A1439	627	26.20
P70AB-2	563	304.00	PDH07K3SG	396	2,211.00	PV350	834	1,663.00	Q340A1447	627	28.40
P70CA-1	563	328.00	PDH09K3SG	396	2,246.00	PVC-106	215	1.70/ft	Q605A1070	635	163.40
P70CA-2	564	312.00	PDH12K3SG	396	2,363.00	PVC-1-1/2-10FT	214	50.50	Q605D1051	635	244.60

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
Q605E1050	635	124.30	QE-BODY-3/8X1/2SAE	244	155.40	R-203	668	83.20	R-360	669	109.90
Q769C1007	634	141.90	QE-BODY-3/8X1/2SAE	246	155.40	R-205	669	129.80	R-3612	675	440.00
Q77-1000	778	46.70	QT-1	221	18.40	R-206	668	106.50	R-362	669	179.10
Q77-1240	778	285.30	QT-2	221	22.40	R-207	668	89.30	R-3710-1005	539	34.40
Q77-1250	778	1,021.00	QT2810	728	140.60	R-208	668	185.40	R-3710-1007	538	34.40
Q90CC-1C	591	240.40	QT2812	728	137.50	R-209	668	100.50	R-3710-1007	539	34.40
Q90DD-1C	591	244.80	QTH-1	221	47.50	R-210	668	99.10	R-3710-2007	539	28.30
QAV-2	221	19.10	QTH-2	221	31.20	R-214	668	111.10	R-3710-3005	539	33.20
Q-BODY-1/4X1/2SAE	242	135.00	QTM-1	221	10.00	R-215	668	102.80	R-3710-3007	539	33.20
Q-BODY-1/4X1/2SAE	243	135.00	QTM-2	221	12.50	R-217	668	98.60	R3A-FG	513	25,968.84
Q-BODY-1/4X1/2SAE	244	135.00	QU1604	798	12.30	R-219	668	117.60	R3A-FS	513	18,321.36
Q-BODY-1/4X1/2SAE	246	135.00	QUICK-BLOCK	215	15.60	R-220	668	122.90	R3A-HS	513	20,928.72
QC-0	242	24.90	R101L	896	60.50	R-222	668	89.10	R4222B1082	625	56.80
QC-0	243	24.90	R-101L	674	96.40	R-224	668	112.30	R4222D1013	625	58.80
QC-0	244	24.90	R101X	896	60.50	R-230	668	119.00	R4222D1021	625	61.50
QC-1	242	24.90	R103-2X	896	136.50	R-231	668	162.30	R4222N1002	625	89.10
QC-1	243	24.90	R103L	896	136.50	R-232	668	162.30	R-450	668	518.00
QC-1	244	24.90	R103X	896	136.50	R-233	668	164.80	R-506	668	87.10
QC-2	242	24.90	R-108	674	194.60	R-235	668	136.30	R-5109	675	84.90
QC-2	243	24.90	R110	805	119.70	R2A-FG	513	13,444.20	R-511	668	129.70
QC-2	244	24.90	R-114	674	151.40	R2A-FS	513	10,510.92	R-5112	675	422.00
QC-3	242	24.90	R-120	674	124.00	R2A-HS	513	12,757.44	R-5221	675	128.30
QC-3	243	24.90	R-1211	675	140.20	R-302	669	95.70	R5311	675	109.60
QC-3	244	24.90	R-122	674	157.10	R-304	669	144.20	R-5611	675	150.60
QC-4	242	24.90	R-123	674	190.70	R-305	669	96.90	R-5911	675	126.20
QC-4	243	24.90	R-124	674	156.60	R-306	669	277.80	R8222B1067	625	51.00
QC-4	244	24.90	R-125	674	156.70	R-307	669	193.10	R8222D1014	625	54.70
QC-5	242	24.90	R-127	674	102.70	R-308	669	136.10	R8222N1011	625	57.80
QC-5	243	24.90	R-128	674	123.50	R-309	669	136.50	R8222V1003	625	61.70
QC-5	244	24.90	R-129	674	151.50	R-315	669	113.40	R8225A1017	721	191.80
QC-6	242	24.90	R-130	669	164.90	R-318	669	175.10	R8228B1012	625	90.80
QC-6	243	24.90	R-133	674	126.50	R-319	669	90.30	R8285A1048	626	110.30
QC-6	244	24.90	R1363	791	263.10	R-325	669	182.00	R-90721	669	175.90
Q-CASE-EMPTY	242	199.20	R-137	674	147.60	R-326	669	157.70	RA890F1288	632	8,921.00
Q-CASE-EMPTY	243	199.20	R1A-FG	513	9,800.88	R-334	669	200.00	RAA160A-601D	591	10.00
Q-CASE-EMPTY	244	199.20	R1A-FS	513	7,891.92	R-340	669	194.70	RAIN6017	689	25.30
QC-S5S	224	20.40	R1A-FSL	513	7,891.92	R-343	669	300.00	RB1000	825	37.40
QD-1/4	185	7.70	R1A-HS	513	9,416.76	R-355	669	170.50	RC-10098-HH	252	277.10
QD-3/8	185	5.30	R1A-HSL	513	9,416.76	R-357	669	158.90	RC-10098-HH	253	277.10
QE-BODY-3/8X1/2SAE	242	155.40	R-201	668	100.70	R-358	669	105.20	RC-4864-HH	252	126.20
QE-BODY-3/8X1/2SAE	243	155.40	R-2011	675	551.00	R-359	669	105.20	RC-4864-HH	253	126.20

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
RCO-210	718	44.70	RP920A1033	536		S1-3243	783	126.40	S-8113	690	12.00
RCO-220	718	44.70	RPLUS	356	1,228.00	S1-UV22024-2	358	274.80	S-8115	690	12.00
RCO-410	718	30.30	RSF-4811-T	262	716.00	S1-UVLAMP36120	358	208.80	S-8202	690	14.50
RCO-420	718	44.70	RSF-4813-T	262	761.00	S1-VR8204M1026	630	487.00	S-8204	690	13.20
RCO-620	718	44.70	RSF-4817-T	262	848.00	S1-VR8205A2024	630	545.00	S-8205	690	1.90
RCO-810	718	30.30	RSF-4821-T	262	1,201.00	S210	782	56.90	S-8206	690	26.10
REM5000R1001/U	612	297.30	RSF-487-T	262	693.00	S2-B	722	17.70	S-8215	690	43.20
RF200	672	96.90	RSF-489-T	262	693.00	S2-S	722	17.70	S-8217	690	115.90
RF205	672	97.20	RSF-9617-T	262	1,322.00	S-3	786	74.40	S8610U3009	631	391.00
RF210	672	128.90	RSF-9621-T	262	1,256.00	S300FX-GX	357	2,532.00	S8910U1000	631	357.00
RF215	672	96.50	RSF-9625-T	262	1,518.00	S3-B	722	19.20	S9-M	723	18.80
RF220	672	128.90	RSL3	222	10.80	S3-S	722	17.30	SA	784	149.70
RF225	672	128.90	RSL4	222	10.20	S-4	786	83.30	SA-12	266	58.60
RF230	672	82.90	RSL5	222	20.10	S-5	786	98.10	SA-12FM	266	57.70
RF235	672	147.60	RSS-495-011	650	76.40	S-6	786	120.00	SA-12S	266	55.40
RF240	672	211.50	RT200R	758	21.90	S-7004	698	59.90	SA-13	266	57.30
RF245	672	211.50	RT201B	758	23.50	S-7471	698	15.60	SA-13FM	266	58.40
RF250	672	321.00	RT24-G	357	1,088.00	S-7472	698	35.70	SA-13FU	266	84.60
RF255	672	321.00	RT30-G	357	1,121.00	S-7481	698	13.60	SA-13S	266	55.20
RGE-Z1Q4-7	587	599.00	RT6	397	234.20	S-7482	698	13.60	SA-13SU	266	84.60
RGE-Z1Q6-7L	587	702.00	RT6	398	255.80	S-7491	698	51.90	SA-13U	266	79.70
RING-1000	218	23.60	RT700K	843	673.00	S-7492	698	35.20	SA-13UU	266	87.70
RING-500	218	17.70	RT750A	843	82.50	S-7493	698	15.20	SA-14	266	70.80
RING-750	218	19.10	RT751M	843	82.50	S-7494	698	15.20	SA-14FM	266	70.30
RLY13A-602R	560	353.00	RT752C	843	82.50	S-7551	698	42.20	SA-14FU	266	101.20
RLY13A-608R	560	353.00	RTS2	352	62.00	S-7552	698	21.70	SA-14S	266	69.30
RLY13A-609R	560	398.00	RTS3	352	106.50	S-7571	698	19.40	SA-14SU	266	101.20
RLY13A-610R	560	353.00	RW0705	728	0.30	S-7572	698	19.40	SA-14U	266	98.30
RLY13A-613R	560	353.00	RW1005	728	0.40	S-7581	698	13.60	SA-14UU	266	105.80
RLY13A-616R	560	353.00	RW-EAA	872	1,317.00	S-7582	698	13.60	SA-15	266	69.10
R-MAX	356	1,256.00	RWS-C1030Q01	588	170.90	S-7591	698	14.90	SA-15S	266	71.70
RO-41	718	20.20	S-10	825	6.20	S-7592	698	37.10	SA-15SU	266	101.80
RO-42	718	31.20	S1000FX-GX	357	7,316.00	S-7593	698	15.20	SA-15U	266	96.00
RO-81	718	20.20	S106-1A40-100	655	197.50	S-7594	698	15.20	SA-15UU	266	117.40
RO-82	718	31.20	S106-1A45-75C	655	197.50	S-7801	690	16.20	SA-17S	266	101.90
ROF-413	269	497.00	S106-1A50-40C	655	197.50	S-7802	690	16.20	SA-19S	266	110.20
RP418A1107	535		S106-1A55-60C	655	197.50	S-7804	690	15.10	SA-211	266	226.90
RP418B1071	535		S106-1B65-45C	655	197.50	S-7805	690	14.30	SA-213	266	273.90
RP7517A1017	536		S1-302009	777	103.70	S7-M	723	14.70	SA-217	266	328.00
RP818A1004	535		S1-304156	777	59.50	S-8	843	30.40	SAFEGUARD	897	643.00
RP818B1002	535		S1-304159	777	7.30	S-8004	689	59.60	SAFEGUARD-BINDER	897	288.20

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
SAFEGUARD-REFILL	897	391.00	SERI-L	308		SHA-50	188	47.00	SORIT-20-0/100-1-5/8	296	3,088.00
SB41-B	586	42.50	SF-114	261	65.80	SHB-200	188	87.40	SP10	793	16.80
SBLHD	34	137.20	SF-115	261	67.70	SHGB-15	286	POA	SP-120	864	130.00
SBQ-BODY-3/8X1/2-ODF	242	157.10	SF-283F	261	134.60	SHGB-8	286	1,670.00	SP160-BLACK	864	97.90
SBQ-BODY-3/8X1/2-ODF	243	157.10	SF-285-T	261	156.50	SHGBE-15	286	2,337.00	SP160-WHITE	864	97.90
SBQ-BODY-3/8X1/2-ODF	244	157.10	SF-286-T	261	166.60	SHGBE-8	286	1,519.00	SP60	793	21.80
SBQ-BODY-3/8X1/2-ODF	246	157.10	SF-287-T	261	163.40	SHL10A-603R	577		SP970A1005	534	
SBRHD	34	110.10	SF-289-T	261	176.30	SHR2004	350	2,507.00	SP970A1013	534	
SBSHD	34	101.80	SF-4811-T	261	256.10	SHR2005R	350	3,070.00	SPA1401AD	659	19.20
SBUHD	34	125.60	SF-4813-T	261	280.60	SHR3005R	350	4,453.00	SPE-BEZ5E-4CS	854	428.00
SC8000	874	108.60	SF-489-T	261	263.70	SHR3205RD	350	3,872.00	SPE-EZ100E-CS	854	334.00
SDMN5	879	430.00	SF-6417-T	261	640.00	SIL2	870	126.20	SPE-EZ5E-CS	854	50.00
SDMN6	879	830.00	SFD-163-S	264	146.00	SKZ050	728	1.60	SPE-GS2E-CS	854	43.10
SEC99AA-24C	563	74.70	SFS-77	504	16.70	SL243	659	3.00	SPE-HVLEZE	854	553.00
SEC99AA-36C	563	87.00	SFST-500	218	35.20	SL249	659	3.00	SPG1401GE	659	20.00
SEC99AA-60C	563	111.50	SFST-750	218	48.00	SL24N30C	383	4,149.00	SPK1	870	77.90
SEC99AB-24C	563	74.80	SH15M30A	388	8,204.00	SL28N30C	383	4,522.00	SPP	716	22.20
SEC99AB-36C	563	87.00	SH201	753	35.70	SL-300	504	2.50	SPP-4E	716	71.70
SEC99AB-48C	563	99.30	SH202	753	44.70	SL300TH	860	305.00	SPP-5	716	22.20
SEC99AB-60C	563	111.50	SH203	753	44.70	SL36N30B	383	5,546.00	SPP-5E	716	67.20
SEFE1021B	487	1,858.00	SH207	753	48.50	SM003	505	61.60	SPP-6	716	31.20
SEFE1521B	487	1,974.00	SH20M30B	388	9,509.00	SM-052AE	121	1,647.00	SPP-6E	716	76.20
SEFE1821B	487	2,021.00	SH222	753	28.50	SM-052BE	121	1,777.00	SPP-7E	716	85.20
SEFE2021B	487	2,045.00	SH224	753	58.20	SM-076AE	121	2,008.00	SPP-7S	716	62.70
SEFE2321B	487	2,162.00	SH226	753	44.70	SM-090AE	121	2,265.00	SPP-8E	716	85.20
SEFE2721B	487	2,603.00	SH24N20	388	10,593.00	SM-090BE	121	2,421.00	SPP-9E	716	130.10
SEFE3021B	487	2,671.00	SH250	751	40.20	SM-102AE	121	2,509.00	SQ050	728	4.70
SEFECM1021B	489	2,565.00	SH281	753	55.30	SM-102BE	121	2,668.00	SQ08N10D	383	2,047.00
SEFECM1521B	489	2,725.00	SH282	753	44.00	SM-108AE	121	2,611.00	SQ90038	728	2.10
SEFECM2021B	489	2,823.00	SH283	753	44.00	SM-134AE	121	3,018.00	SQ90050	728	3.90
SEFECM2321B	489	2,982.00	SH284	753	47.20	SM-156AE	121	3,396.00	SQ-BODY-3/8X1/2ODF	242	186.00
SEFECM2721B	489	3,591.00	SH500	753	46.10	SM-179AE	121	3,749.00	SQ-BODY-3/8X1/2ODF	243	186.00
SEFECM3021B	489	3,688.00	SH502	753	46.10	SM-208AE	121	4,208.00	SQ-BODY-3/8X1/2ODF	244	186.00
SEHI-175	308		SH503	753	46.10	SM-208BE	121	4,430.00	SQ-BODY-3/8X1/2ODF	246	186.00
SEHI-400	308		SH504	753	46.10	SM-249AE	121	5,121.00	SR27A-12M	515	6,448.56
SER-B	308	685.00	SH505	753	46.10	SM480V	832	1,812.00	SR27A-8D2	514	8,427.36
SER-C	308	685.00	SH-66A	874	902.00	SMG5	881	352.00	SR48A-12D4	514	13,490.76
SER-D	308	716.00	SH704	350	1,657.00	SN8512	799	94.60	SR48A-12M	515	9,800.88
SERI-G	308	1,514.00	SHA-100	188	47.00	S-OL	267	89.30	SR48A-18M	515	9,381.84
SERI-J	308	1,436.00	SHA-25	188	47.00	SORIT-12-0/100-1-1/8	296	1,935.00	SR48A-18MD4	515	14,550.00
SERI-K	308	2,002.00	SHA-250	188	47.00	SORIT-15-0/100-1-3/8	296	2,538.00	SR48A-8	514	7,531.08

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
SR60A-12	514	9,323.64	T1-10C	207	22.90	T5-1000	885	456.00	T775M2030	613	1,238.00
SR60A-12M	515	10,801.92	T1-10D	207	29.70	T5-600	885	348.00	T775M2048	613	890.00
SR60A-16	514	8,834.76	T1-4A	207	6.40	T-5800-1	542	2,327.00	T775P2003	613	1,160.00
SR60A-18M	515	10,929.96	T1-4B	207	8.10	T-5800-3	542	3,216.00	T775R2027	613	1,006.00
SR60A-24M	515	10,510.92	T1-4C	207	18.30	T6031A1219	617	249.20	T775R2035	613	852.00
SR60A-8	514	9,172.32	T1-6B	207	9.30	T6031A1235	617	345.00	T775R2043	613	852.00
SR72A-12	514	10,801.92	T1-6C	207	12.80	T6051A1057	619	483.00	T775S2008	613	298.60
SR72A-16	514	10,895.04	T1-8B	207	22.10	T6052A1023	619	660.00	T775-SENS-OAT	613	177.50
SR72A-18	514	12,454.80	T1-8C	207	16.60	T6-1000	885	750.00	T775-SENS-WR	613	178.00
SR72A-18M	515	12,454.80	T1-8D	207	26.50	T6217E1	35	1,235.00	T775-SENS-WT	613	224.50
SR72A-24M	515	12,664.32	T-200-260	847	1,122.00	T6217E2	35	1,235.00	T775U2006	613	890.00
SR72A-30M	515	12,012.48	T20351	826	34.60	T6220E1	35	3,267.00	T775U2016	613	1,034.00
SRCCH-1	754	144.60	T20353	826	37.90	T6220E2	35	3,267.00	T822K1034	608	79.50
SRCCH-2	754	144.60	T2-10	208	11.90	T631A1162	617	319.00	T834N1010	608	98.70
SRH-77A	869	1,282.00	T21125U	806	53.40	T631B1070	617	412.00	T8775A1017	608	273.90
SR-MAX	356	808.00	T2-12	208	47.50	T631C1020	617	391.00	T8775C1013	608	291.00
SRS3	850	883.00	T21294	825	51.90	T631C1103	617	375.00	T87K1015	608	123.70
SS08N10C	383	2,645.00	T2-4	208	5.40	T6-4	207	11.40	T87N1018	608	204.00
SS10N10C	383	2,762.00	T2-5	208	9.20	T6-600	885	537.00	T991A1012	619	956.00
SS12N10C	383	2,957.00	T2-6	208	6.50	T675A1045	618	915.00	T991A1061	619	946.00
SS12N30C	383	2,957.00	T26S-18	579	298.50	T675A1458	618	329.00	T991A1194	619	1,002.00
SS14N10C	383	2,992.00	T26T-3	579	473.00	T675A1524	618	382.00	T991A1244	619	850.00
SS3S2-10-US-208/230V	715	924.00	T2-8	208	9.00	T675A1722	618	397.00	T991A1350	619	1,390.00
SS3S2-20-US-460V	715	924.00	T2-HKA	806	26.60	T675A1771	618	501.00	T991A1426	619	850.00
SS6S0.5-1.75-USL115	715	924.00	T30251	844	270.80	T675A2068	618	557.00	T991A1756	619	1,254.00
SS6S2-3.5-USL-230V	715	924.00	T-30-400	847	269.70	T675A2084	618	580.00	T991A1764	619	951.00
SS6S2-3.5-USL-230V	715		T3-4A	207	10.50	T675A2118/U	618	524.00	TA-1	841	46.60
SS6S3.5-7-USL-230V	715	924.00	T3-4B	207	10.20	T675B1002	618	391.00	TA-2	861	261.00
SS6S3.5-7-USL-230V	715		T3-6B	207	11.90	T678A1155	618	627.00	TA-22	861	348.00
STAB1050	195	6.20	T3-6C	207	8.40	T678A1163	618	945.00	TA-2C	861	283.00
STAB1250	195	6.20	T-400	826	40.40	T678A1478	618	512.00	TA-33	861	474.00
STK-9	786	254.80	T-408	826	10.60	T7223G1	35	3,350.00	TA-6C	862	418.00
STW51-12P	752	187.40	T-409	826	10.80	T775A2009	613	450.00	TA7	862	113.00
STW51-18P	752	246.30	T-411	826	10.60	T775B2024	613	1,090.00	TA7C	862	121.70
STW51-24P	752	316.00	T-412	826	10.90	T775B2032	613	679.00	TAA-2416	211	2.20
STW51-50P	752	519.00	T-417	826	10.80	T775B2032	618	679.00	TAA-2420	211	3.50
STW51-6P	752	160.70	T-418	826	10.60	T775B2040	613	993.00	TACH20	878	1,261.00
SVG3	834	497.00	T498A1927	613	61.80	T775L2007	613	968.00	TAS130	865	93.20
T-100	826	25.10	T498B1652	613	71.30	T775M2006	613	511.00	TAS131	865	93.20
T-1000-260	847	3,020.00	T498B1678	613	83.90	T775M2014	613	1,455.00	TAS132	865	93.20
T-100-400	847	726.00	T-50-400	847	331.00	T775M2022	613	1,045.00	TAS134	865	93.20

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
TAS140	865	110.40	TH6110D1021	611	268.60	TN-225	183	7.60	TTA-202020	211	5.00
TAS141	865	110.40	TH6210U2001/U	610	185.10	TP1	890	58.30	TT-B	788	305.00
TAS142	865	110.40	TH6220D1028	611	332.00	TP175	890	80.40	TTB-161616	211	2.50
TAS143	865	110.40	TH6220U2000/U	610	249.90	TP220	890	58.30	TTD402	865	114.00
TB7220U1012	611	655.00	TH6220WF2006/U	610	339.00	TP3	801	193.70	TTD403	865	125.90
TC-007	728	164.50	TH6320WF2003/U	610	452.00	TP4	801	246.00	TTD404	865	58.30
TC900EL-POWER	586	313.00	TH8110R1008/U	611	499.00	TP80	890	106.60	TT-MC	788	305.00
TC900E-POWER	586	313.00	TH8110U1003	611	360.00	TP970A2020	533		TW6-1C	752	11.30
TC920RI	586	390.00	TH8320R1003/U	611	555.00	TP970A2234	533		TW6-1C	752	11.30
TC920RIL	586	390.00	TH8321R1001/U	611	611.00	TP970B2010	533		TW6-1CR	752	13.60
TC940RI	586	313.00	TH8321WF1001/U	610	517.00	TP971A2011	533		TW6-2C	752	11.90
TC940RIL	586	313.00	TH8732WFH5010/U	609	583.00	TP971A2029	533		TW6-2C	752	11.90
TE-6000-1	577		TH9320WF5003	609	652.00	TP971A2102	533		TW6-2CR	752	15.60
TE-68NT-0N00S	577		THA2	861	779.00	TP971C2058	533		TW-GFI-CS	752	214.20
TEA-2412	211	2.50	THA5	347	200.20	TPA-24	211	3.40	TX500	786	389.00
TEA-2416	211	3.70	THM6000R1002	612	262.20	TPA-24	214	3.40	TZMGLN	849	118.20
TEA-2420	211	4.50	THP2	866	74.00	TPAK	889	126.70	U065NA1	724	40.30
TEA-2424	211	4.50	THPXL	848	85.50	TPC8000	874	108.60	U1-10C	205	7.90
TEB-2416	211	9.00	THSP2C	848	69.40	TR2-46	208	34.80	U1-10D	205	6.00
TEB-2420	211	3.90	THWD-3	869	420.00	TR2-64	208	6.20	U1-10E	205	7.90
TECH-LC	800	704.00	TI33RILPLUS	586	388.00	TR2-68	208	12.90	U1-12D	205	9.50
TECH-LT	800	936.00	TIM100A	865	222.10	TR2-810	208	13.30	U1-12E	205	11.90
TECH-PAC-1	801	961.00	TIM101A	865	222.10	TR2-84	208	63.00	U1-3A	205	1.80
TECH-XL	800	760.00	TIM102A	865	222.10	TR2-86	208	7.60	U1-4A	205	1.60
TEFLON-TAPE	759	1.40	TIM103A	865	222.10	TR40	616	100.00	U1-4B	205	2.20
TF500-T500	218	118.40	TIM105A	865	222.10	TR40-CO2	616	804.00	U1-4C	205	3.40
TF750-T750	218	156.80	TL175	890	94.50	TR40-H-CO2	616	981.00	U1-4D	205	6.70
TFM55	689	32.30	TL175	892	94.50	TR610	867	7.40	U1-5A	205	2.30
TG	606	71.60	TL220	892	227.20	TR614	867	11.10	U1-5B	205	2.60
TG2	606	52.60	TL221	890	88.50	TRA-2416	211	2.90	U1-5C	205	5.50
TG5	606	42.70	TL222	890	88.50	TRH122M	866	201.30	U1-6A	205	2.90
TG509F1003	534		TL223	892	227.20	TRH122M	869	201.30	U1-6B	205	2.50
TG510A1001	607	72.40	TL224	890	88.50	TRH158	866	148.00	U1-6C	205	3.20
TG510D1005	607	136.30	TL71	892	88.50	TSD9ITSD	865	343.00	U1-6D	205	4.50
TG511A1000	607	72.30	TL76	892	106.60	TSD9ITSD6	865	412.00	U1-8B	205	4.10
TG511D1004	607	106.90	TL81A	892	428.00	TSE-2000	893	101.30	U1-8C	205	4.80
TG512A1009	607	75.00	TM-500	218	55.40	TSRTK-050-2	727	32.20	U1-8D	205	4.20
TG512D1003	607	129.30	TM-750	218	61.10	TT-120	728	18.00	U1-8E	205	7.70
TG6	606	49.70	TM99A-NIST	874	714.00	TT-150B	788	218.40	U2-10	205	7.50
TH5110D1022	611	193.20	TMA10A	878	710.00	TT-24	728	15.20	U2-12	205	16.00
TH5220D1029	611	267.80	TMD90A	874	436.00	TT-240	728	19.30	U2-3	205	5.10

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
U2-4	205	1.80	UC3648-3	505	218.20	UR3-48	206	10.80	USC	393	412.00
U2-5	205	3.40	UDAP-100	494	2,575.00	UR3-64	206	6.00	UT-BAA	872	987.00
U2-6	205	3.90	UDAP-125	494	2,901.00	UR3-68	206	8.70	UT-EAA	872	987.00
U2-8	205	4.10	UDAP-150	494	3,090.00	UR3-810	206	9.50	UW-BAA	872	822.00
U3-10C	206	13.20	UDAP-175	494	3,434.00	UR3-84	206	8.50	UW-EAA	872	822.00
U3-10D	206	7.80	UDAP-200	494	3,680.00	UR3-86	206	8.50	V10-414080-170	603	708.00
U3-10E	206	11.40	UDAP-225	494	3,976.00	UR48A-01	514	7,635.84	V10-414140-470	603	957.00
U3-4A	206	2.00	UDAP-250	494	4,277.00	UR60A-01	514	8,415.72	V10-418140-170	603	742.00
U3-4B	206	2.80	UDAP-30	494	1,960.00	UR72A	514	8,951.16	V11HAA-100	541	581.00
U3-4C	206	7.60	UDAP-300	494	5,117.00	URC0210	717	47.20	V11HAA-115	541	583.00
U3-6A	206	2.80	UDAP-350	494	5,809.00	URC0410	717	33.70	V11HBA-100	541	574.00
U3-6B	206	3.40	UDAP-400	494	6,249.00	URC0810	717	33.70	V11HCA-100	541	574.00
U3-6C	206	4.20	UDAP-45	494	2,038.00	URSC10	717	40.20	V11HGA-100	541	618.00
U3-6D	206	5.60	UDAP-60	494	2,147.00	URSC20	717	40.20	V1212	747	9.30
U3-8B	206	14.40	UDAP-75	494	2,253.00	US08D10C	392	1,496.00	V12-4220T0-270	603	894.00
U3-8C	206	4.80	UDAS-100	495	4,262.00	US10D10C	392	1,626.00	V1-406060-270	603	301.00
U3-8D	206	6.90	UDAS-125	495	4,740.00	US10D30C	392	1,843.00	V1-408060-170	603	368.00
U4-4	206	10.80	UDAS-150	495	5,290.00	US12D10C	392	1,656.00	V2-408060-170	603	368.00
U4-6	206	18.20	UF27A-01	514	5,831.64	US12D30C	392	1,873.00	V2-408060-270	603	367.00
U4-8	206	18.20	UF27A-LP	514	5,738.52	US3-1010	206	9.30	V2-4100F0-370	603	364.00
U7001	850	687.00	UF48A	514	8,148.00	US3-1012	206	31.20	V246GA1-001C	581	609.00
U7002	850	1,066.00	UF48A-01	514	8,753.28	US3-1014	206	14.00	V246GB1-001	581	661.00
U7006	850	1,556.00	UF60A	514	10,150.08	US3-108	206	13.30	V246GC1-001	581	756.00
UB566	675	106.80	UF60A-01	514	10,755.36	US3-1212	206	12.70	V246GD1-001	581	1,224.00
UB568	675	106.80	UMSR50	719	83.10	US3-1214	206	16.00	V246GE1-001	581	1,427.00
UB570	675	222.00	UR2-106	205	8.70	US3-44	206	2.70	V246GR1-001C	581	1,765.00
UB572	675	222.00	UR2108	205	13.00	US3-45	206	5.80	V248GC1-001C	581	1,164.00
UB574	675	233.30	UR2-128	205	20.30	US3-46	206	9.80	V-3000-1	541	278.20
UB576	675	233.30	UR2-43	205	9.80	US3-610	206	13.30	V-3000-6000	541	97.70
UB578	675	244.50	UR2-54	205	11.60	US3-64	206	5.80	V3-410080-770	603	335.00
UB578	675	244.50	UR2-65	205	11.10	US3-65	206	11.80	V3-412080-870	603	326.00
UB580	675	244.50	UR2-65	205	11.10	US3-66	206	4.80	V46AA-1	582	444.00
UB597	675	81.50	UR27A-01	514	5,028.48	US3-68	206	10.80	V46AB-1	582	483.00
UC1636-3	505	72.80	UR27A-LP	514	4,725.84	US3-810	206	13.30	V46AC-1	582	581.00
UC2424-3	505	66.00	UR2-84	205	9.80	US3-86	206	10.80	V46AD-1	582	1,224.00
UC2448-3	505	123.30	UR2-86	205	9.80	US3-88	206	10.80	V46AE-1	582	1,429.00
UC3030-3	505	102.10	UR3-1012	206	17.40	US4-10	206	11.80	V46AR-1	582	1,767.00
UC3036-3	505	179.20	UR3-108	206	17.40	US4-4	206	9.80	V46AR-2	582	2,616.00
UC3232-3	505	80.70	UR3-1210	206	17.40	US4-5	206	14.10	V46AS-1	582	2,567.00
UC3237-3	505	153.40	UR3-43	206	21.20	US4-6	206	6.90	V46AS-2	582	2,411.00
UC3636-3	505	176.80	UR3-46	206	6.80	US4-8	206	8.90	V46AT-1	582	3,519.00

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
V46AT-2	582	3,519.00	V8043D1205	633	255.50	VEA24K50RTL	399	6,276.00	VR8304P4504	629	601.00
V46BB-2	582	1,909.00	V8043G1018	633	254.30	VF3	598	55.10	VR8345M4302	630	368.00
V46BC-2	582	1,255.00	V8043G1026	633	294.00	VFD66AAA-1C	572		VS-4	223	14.20
V46BD-2	582	2,063.00	V-9502-15	541	659.00	VFD66BAA-1C	572		VS820A1054	629	1,198.00
V46BE-2	582	2,569.00	VA2	598	43.10	VFD66CAA-1C	572		VST-4	224	11.70
V46BT-4	582	7,258.00	VA-24	223	6.90	VFD66DAA-1C	572		VST-44	224	11.70
V46NB-1	583	534.00	VA3-346	223	3.50	VFD66EBA-1C	572		VT-1	215	4.20
V46NB-2	583	530.00	VA-34	223	4.20	VFD66FBA-1C	572		VT-1/4	215	0.70
V46NC-1	583	732.00	VA-46	223	3.60	VHA09K50RTM	399	4,367.00	VT-1/8	215	0.50
V46NC-2	583	604.00	VA-58	223	20.00	VHA12K50RTN	399	5,116.00	VT-24	224	14.30
V47AA-1	583	1,158.00	VA-68	223	6.70	VHA18K50RTN	399	6,751.00	VT-3/16	215	1.10
V47AA-2	583	1,259.00	VAS-012	226	33.80	VHA24K50RTL	399	7,988.00	VT-3/4	215	3.50
V47AA-3	583	1,182.00	VAS-014	226	29.20	VHR2004	350	2,507.00	VT-3/8	215	2.10
V47AB-3	583	1,233.00	VAS-034	226	49.70	VN-500	789	539.00	VT-5/8	215	2.90
V47AB-5	583	1,257.00	VAS-038	226	31.80	VN-500-KIT	789	728.00	VT-7/8	215	7.60
V47AC-3	583	1,321.00	VAS-058	226	37.00	VP525C1016	536		VT9	598	53.50
V47AC-4	583	1,321.00	VAS-078	226	53.20	VP525C1024	536		VTR-24	224	10.20
V47AC-6	583	1,343.00	VAS-118	226	69.10	VP525C1032	536		VTS-10	224	17.60
V47AD-1	583	2,053.00	VAS-138	226	98.10	VP525C1040	536		VTS-12	224	21.60
V47AD-2	583	1,990.00	VAS-158	226	126.60	VP525C1057	536		VTS-14	224	26.60
V47AD-3	583	1,990.00	VAS-2-1/8	226	181.10	VPAL2	398	425.00	VTS3-10	224	47.40
V47AE-2C	583	2,146.00	VAS-258	226	359.00	VPASA1	398	702.00	VTS3-12	224	48.30
V47AR-1	583	2,567.00	VAS-318	226	571.00	VPAWP1-14	398	581.00	VTS3-14	224	50.90
V47AR-2	583	2,504.00	VAS-358	226	737.00	VPAWP1-8	398	490.00	VTS3-18	224	62.60
V47AT-3	583	4,465.00	VAS-418	226	870.00	VPDP1	398	164.80	VTS-46	224	9.30
V48AB-2	584	952.00	VAU-24	223	3.80	VPRG4	398	637.00	VTS-56	224	13.50
V48AC-1	584	1,052.00	VAU-45	223	4.20	VPS-210AH	701	101.00	VTS-68	224	12.40
V48AC-2	584	1,031.00	VAX-2	223	4.30	VPS-212AH	701	110.40	VU-4	224	8.90
V48AD-2	584	2,012.00	VAX-3	223	4.40	VPS-216AH	701	119.80	VUR-4	224	11.40
V48AE-2	584	2,064.00	VAX-4	223	4.40	VPS-218AH	701	144.50	VW8	598	76.90
V48AF-2	584	3,146.00	VAX-5	223	4.60	VPS-219AH	701	141.60	VWR-1203GLWQ1	588	425.00
V5858	747	13.10	VAX-6	223	4.60	VPS-223AH	701	166.90	VWR-1504GLWQ1	588	493.00
V6-412080-170	603	525.00	VAX-8	223	11.90	VPSC2	398	538.00	VWR-2006GLWQ1	588	561.00
V6-414080-170	603	525.00	VB11	598	71.90	VR-554T	781	112.00	W1000	196	1.90
V6-414120-170	603	488.00	VB7	598	53.50	VR8200A2124	630	401.00	W1001	196	2.40
V800A1179	629	893.00	VC1	598	58.10	VR8200A2322	630	375.00	W1003	196	1.30
V800C1052	629	1,799.00	VCR-1	220	25.80	VR8200H1236	630	320.00	W1004	197	11.40
V8043C1041	633	213.10	VE-2	223	9.00	VR8245M2530	629	344.00	W1005	197	12.20
V8043C1058	633	246.40	VEA09K34RTN	399	3,701.00	VR8300A4508	629	374.00	W1009	196	1.10
V8043D1031	633	259.50	VEA12K34RTN	399	3,883.00	VR8304H4503	629	584.00	W1010	197	6.60
V8043D1080	633	293.60	VEA18K50RTL	399	4,441.00	VR8304M4515	629	629.00	W1011	197	6.20

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
W1017	196	1.30	W1114	199	21.80	W1224	199	9.30	W1347	197	10.50
W1019	197	2.20	W1115	199	18.60	W1225	199	9.50	W1350	197	13.70
W1021	197	3.00	W1116	199	13.40	W1226	199	12.50	W1351	197	13.70
W1022	196	1.00	W1123	199	17.00	W1230	199	9.20	W1353	197	13.70
W1023	197	2.20	W1124	199	9.60	W1231	199	4.30	W1355	197	13.70
W1025	197	2.60	W1125	199	7.10	W1232	199	9.50	W1358	197	25.90
W1027	197	2.90	W1126	199	21.20	W1233	199	9.60	W1359	197	25.90
W1028	196	3.10	W1129	199	73.80	W1238	199	10.80	W1360	197	27.30
W1029	197	5.30	W1130	199	8.40	W1239	199	102.80	W1362	197	25.30
W1030	197	6.60	W1131	199	2.90	W1245	199	19.70	W1364	197	27.10
W1031	197	5.40	W1132	199	7.30	W1246	199	5.90	W1414	199	14.80
W1034	196	2.10	W1133	199	11.90	W1247	199	9.90	W1425	199	13.80
W1035	197	3.80	W1138	199	10.80	W1263	199	14.50	W1431	199	17.00
W1036	197	3.50	W1139	199	15.10	W1264	199	26.00	W1446	199	21.80
W1037	197	4.70	W1145	199	17.10	W1265	199	35.50	W1463	199	28.00
W1038	197	4.60	W1146	199	4.80	W1270	199	348.00	W1464	199	47.50
W1047	196	4.40	W1147	199	8.40	W1271	199	19.50	W1479	199	89.70
W1049	197	6.90	W1161	199	67.20	W1272	199	59.60	W1487	199	169.30
W1050	197	7.30	W1162	199	36.00	W1278	199	112.00	W14P2	278	524.00
W1051	197	8.10	W1163	199	11.80	W1279	199	33.20	W1526	199	11.60
W1052	197	7.90	W1164	199	18.50	W1280	199	65.50	W1531	199	12.10
W1055	196	7.40	W1165	199	31.00	W1287	199	41.30	W1546	199	15.60
W1056	197	9.60	W1170	199	57.00	W1302	197	4.30	W1547	199	60.40
W1058	197	9.60	W1171	199	18.50	W1306	197	3.00	W19P2	278	771.00
W1060	197	9.20	W1172	199	27.60	W1312	197	3.10	W2003	196	4.10
W1063	196	9.80	W1173	199	42.30	W1314	197	3.70	W2009	196	3.90
W1064	197	16.00	W1178	199	106.80	W1315	197	2.40	W2011	198	11.30
W1065	197	16.00	W1179	199	21.20	W1317	197	2.70	W2017	196	4.10
W1067	197	16.00	W1180	199	57.20	W1320	197	5.90	W2019	198	11.00
W1069	197	16.00	W1181	199	67.80	W1321	197	6.00	W2022	196	4.60
W1072	196	17.20	W1187	199	35.90	W1322	197	7.90	W2023	198	10.60
W1073	197	24.70	W1188	199	83.10	W1325	197	3.80	W2025	198	19.80
W1074	197	24.70	W1189	199	204.70	W1326	197	3.50	W2028	196	7.60
W1075	197	26.10	W1204	199	12.80	W1327	197	4.90	W2029	198	18.00
W1077	197	34.20	W1205	199	8.00	W1328	197	6.90	W2034	196	8.40
W1079	197	31.00	W1206	199	3.10	W1337	197	5.70	W2035	198	12.60
W1083	197	54.70	W1207	199	9.70	W1338	197	6.90	W2036	198	10.70
W1105	199	23.50	W1214	199	19.80	W1339	197	7.50	W2037	198	14.60
W1106	199	20.20	W1215	199	8.40	W1340	197	7.10	W2047	196	11.10
W1107	199	19.90	W1216	199	16.20	W1343	197	10.50	W2049	198	19.20
W1113	199	7.90	W1223	199	15.20	W1345	197	10.50	W2055	196	21.90

PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST	PART #	PG	LIST
W2056	198	49.00	W3030	198	11.40	W4021	200	39.50	W4074	201	34.70
W2063	196	29.40	W3034	198	4.20	W4022	200	39.50	W4075	201	35.60
W2072	196	77.40	W3044	198	10.50	W4023	200	42.40	W4078	201	34.90
W2077	198	51.70	W3050	198	15.00	W40230	200	20.80	W4084	200	36.90
W2078	198	80.70	W3055	198	18.10	W40238	201	77.50	W4085	201	27.50
W2084	196	12.30	W3059	198	30.20	W40239	201	122.00	W4086	201	35.80
W2085	196	17.00	W3334	198	4.20	W40248	201	95.80	W4087	201	31.30
W2086	196	30.90	W3344	198	14.70	W4027	200	41.60	W4088	201	24.60
W2305	196	7.00	W3350	198	18.50	W40302	200	11.50	W4089	201	50.80
W2312	196	6.90	W3355	198	22.60	W40306	200	7.80	W4090	201	77.20
W2321	196	5.30	W3359	198	35.90	W4031	200	5.70	W4092	201	59.00
W2326	196	5.90	W3626	198	28.30	W40313	200	15.00	W4093	201	59.10
W2330	196	7.80	W3634	198	31.80	W4032	200	10.30	W4094	201	76.70
W2334	196	9.50	W3644	198	31.80	W40324	200	13.40	W4095	201	95.60
W2344	196	11.50	W3P1	278	185.80	W4033	200	5.40	W4099	201	62.70
W2350	196	29.00	W4000	200	8.30	W40330	200	21.50	W60110	198	44.60
W2355	196	40.40	W4001	200	6.90	W40332	200	29.20	W60111	198	44.00
W2359	196	65.80	W4002	200	12.50	W4034	200	9.40	W60121	198	73.40
W2384	196	17.50	W4003	200	31.90	W4035	200	7.70	W60131	198	92.10
W2385	196	22.90	W4004	200	19.50	W40364	200	41.40	W60140	198	240.40
W2386	196	49.90	W4005	200	18.80	W40366	200	39.20	W6020	198	8.50
W25P2	278	1,192.00	W4006	200	2.50	W40368	200	23.90	W6032	198	7.10
W2701	196	15.70	W4007	200	12.10	W4037	200	14.30	W6036	198	11.10
W2710	196	7.60	W4008	200	11.60	W4041	200	12.70	W6041	198	10.60
W2715	196	7.40	W40100	200	90.90	W4043	200	6.70	W6051	198	19.00
W2716	196	5.90	W40102	200	57.50	W4044	200	11.20	W6053	198	19.10
W2717	196	7.70	W40103	201	44.80	W4047	200	10.90	W6056	198	22.10
W2722	196	3.20	W40105	201	61.40	W4048	200	16.60	W6058	198	11.60
W2728	196	5.30	W40106	201	56.20	W4049	200	17.60	W6060	198	17.50
W2734	196	7.70	W40109	201	124.70	W4050	200	42.50	W6073	198	44.20
W2747	196	13.70	W40116	201	103.80	W4051	200	20.30	W6074	198	27.30
W2809	196	6.70	W40118	201	604.00	W4052	200	27.50	W6077	198	40.40
W2817	196	12.90	W40125	201	162.60	W4056	200	20.90	W6092	198	20.60
W2822	196	4.90	W40127	201	163.70	W4058	200	27.80	W6095	198	28.70
W2828	196	5.90	W40131	201	169.50	W4061	200	19.70	W60999	200	41.50
W2834	196	10.20	W40132	201	210.70	W4065	200	17.50	W61000	200	46.20
W2847	196	19.60	W40144	201	347.00	W4068	200	23.90	W61001	200	70.10
W3005	198	10.40	W4017	200	15.20	W4069	200	25.90	W61002	200	127.50
W3012	198	7.40	W4018	200	39.20	W4070	201	27.00	W61003	200	193.30
W3021	198	6.60	W4019	200	23.30	W4071	201	29.60	W61008	200	61.90
W3026	198	2.40	W4020	200	36.00	W4072	201	48.80	W61009	200	396.00

PART #	PG	LIST
W6P1	278	237.00
W7002	198	1.90
W7004	198	1.30
W7006	198	2.00
W7007	198	1.00
W7008	198	2.40
W7009	198	1.70
W7011	198	4.00
W7012	198	5.90
W7013	198	8.70
W7014	198	16.00
W7220A1000	615	642.00
W8001	198	23.90
W8002	198	32.20
W8003	198	17.00
W8004	198	20.30
W8005	198	39.60
W88-1010	745	212.10
W88-1010-6000	745	210.00
W88-2010-4	745	134.10
WA-400	786	173.20
WBB-300	504	170.50
WBB-500	504	258.50
WBF8530005	191	67.30
WBF8530006	191	207.10
WC15	352	77.40
WE10D33	390	2,307.00
WE12D33	390	2,645.00
WE15D33A	390	2,784.00
WEL14A-601R	577	
WF27A	514	5,808.36
WF27A-01	514	6,111.00
WF27A-D2	514	9,079.20
WF60A	514	10,545.84
WF60A-01	514	11,151.12
WHA-P399-200C	572	
WHA-P399-400C	572	
WHA-P399-400C	579	64.60
WIPING-RAG	765	20.00
WK-050AC	121	2,532.00
WK-075AC	121	2,978.00
WK-100AC	121	3,431.00
WK-130AC	121	4,093.00
WK-155AC	121	4,640.00
WK-180AC	121	5,529.00
WK-210AC	121	6,096.00
WK-270AC	121	6,783.00
WK-340AC	121	8,736.00
WR27A	514	4,947.00
WR27A-01	514	5,249.64
WR27A-D2	514	7,484.52
WR60A	514	8,182.92
WR60A-01	514	8,788.20
WR60A-D2	514	10,743.72
WR72A	514	9,370.20
WR72A-01	514	10,278.12
WR72A-D6	514	18,367.92
WRT1	397	460.00
WRT1	398	460.00
WS08D10A	390	2,103.00
WS-1	862	162.90
WS10D30A	390	2,198.00
WS12D10A	390	2,450.00
WS12D30A	390	2,537.00
WS15D30A	390	2,649.00
WSE	393	399.00
WSF-4	786	473.00
WSK-24/U	616	483.00
WY12D33A	390	2,922.00
X-3B	784	1,077.00
X415	679	530.00
X-4B	784	1,116.00
XGE-4CC-7	587	375.00
XGE-4MC7	587	375.00
XGE-6CC-7	587	375.00
XGE-6MC7	587	375.00
XGE-AE01	587	26.20
XL	800	686.00
XLT	800	1,017.00
X-PANDO-14-OZ	758	47.70
XR60CX-4N1F1-UR	585	604.00
XR60CX-5N1F1-UR	585	604.00
XXL-F	800	866.00
Y70AA-1C	591	67.60
Y7220A7215	615	1,320.00
Y75AS-2H	591	101.90
Y75BS-1H	591	104.90
Y99AN-1H	591	132.00
Y99AR-1H	627	53.50
YCRL6438SR1000	616	1,055.00
YS10N10C	383	3,048.00
YS12N33C	383	3,443.00
YTHX9321R1011	612	688.00
YTHX9321R5061	612	875.00
YTHX9321R5079	612	813.00
YTHX9421R5051	612	605.00
YTHX9421R5069	612	713.00
YTHX9421R5077	612	891.00
YZV24B21S	479	10,347.00
YZV24B21S	480	10,347.00
YZV36B21S	479	11,529.00
YZV36B21S	480	11,529.00
YZV48B21S	479	12,712.00
YZV48B21S	480	12,712.00
YZV60B21S	479	13,599.00
YZV60B21S	480	13,599.00
ZA-1	794	62.00
ZG-002	731	77.20
ZG-003	731	96.80
ZG-004	731	83.00
ZG-JSL	638	369.00
ZO104KCE-TF5-969	58	4,267.00
ZO104KCE-TFD-969	58	4,267.00
ZO104KCE-TFE-969	58	4,267.00
ZO21K5E-TFD-969	58	3,189.00
ZO34K3E-TF5-969	58	3,396.00
ZO34K3E-TFD-969	58	3,396.00
ZO58K3E-TF5-969	58	3,625.00
ZO58K3E-TFD-969	58	3,625.00
ZO58K3E-TFD-969	58	3,625.00
ZO58K3E-TFE-969	58	3,625.00
ZO58K3E-TFE-969	58	3,625.00
ZO88KCE-TFE-969	58	4,176.00
ZOD104KCE-TFE-969	58	4,956.00
ZOD34K3E-TF5-969	58	4,313.00
ZR108KCE-TFD-950	51	5,794.00
ZR108KC-TF5	51	
ZR108KC-TFE	51	
ZR125KC-TF5	51	
ZR125KC-TFD	51	
ZR125KC-TFE	51	
ZR144KC-TF5*	51	
ZR144KC-TFD*	51	5,175.00
ZR144KC-TFE*	51	
ZR72KC-TF5	51	
ZR72KC-TFD	51	
ZR72KC-TFE	51	
ZR84KC-TF5	51	
ZR84KC-TFD	51	
ZR84KC-TFE	51	
ZR94KC-TF5	51	
ZR94KC-TFD	51	
ZR94KC-TFE	51	

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Chemours



Chemours PT Calc

- The Pressure Temperature Calculator mobile app provides HVACR and Auto service technicians handy and accurate refrigerant data in both English and Metric units on the go, enabling quick and reliable system diagnostics and response.

Google play | Download on the App Store

Emerson/Copeland

Copeland™ Mobile

- The Copeland Mobile smartphone app provides on-the-go access to Emerson's Online Product Information (OPI) database for Copeland compressor specifications.
- This database includes both air conditioning and refrigeration products used in a variety of HVACR applications.
- This app's focus is to bring access of the OPI database directly to the HVACR service industry.

Emerson Mobile Apps Page

Honeywell



Honeywell Home

- Honeywell Home connected products simplify home comfort, security and awareness by allowing easy control with a single app. Our heritage and experience in and around the home means you can trust each of our products to perform brilliantly and give you a smarter, more comfortable home.

Google play | Download on the App Store



Honeywell PT Chart

- Honeywell offers a colorful display in which users can select a refrigerant and get all of the data they need to perform their tasks in the field. Using the touch screen, users can quickly calculate superheat and subcool averages to set a control.

Google play | Download on the App Store

Parker/ Sporlan



SMART Pro/R App

- Accommodates low temperature refrigeration applications (down to -40°)
- Exceptional wireless range - up to 10x longer than existing Bluetooth® sensors.
- Sensors display records and exports HVAC/R system temperatures, pressures, superheat and subcooling using a free app.

Android | ios



SMART Service Tool App

- Allows quick pressure to temperature conversion and automatic calculation of superheat and subcooling by utilizing essential refrigerant data in the app.
- Contractors and technicians will enjoy the user friendly design and precise calculations (based on National Institute of Standards and Technology (NIST) Refrigerant Properties).

Android | ios

Tecumseh Products Company LLC



Electrical Parts & X-Reference

- A native app supporting HVACR contractors and service technicians. Users can search by Tecumseh compressor model and/or item number to obtain information on replacement electrical components and their operating characteristics. The app also has a Cross Reference tool that provides suitable replacements for Tecumseh and competitive brands of compressors and condensing units to a currently available Tecumseh equivalent.

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