

EMERSON CLIMATE TECHNOLOGIES

Wholesale & Contractor Product Catalogue

**Catalogue pour
grossistes et contracteurs**



THE REFRIGERATION AND AIR CONDITIONING SPECIALISTS

Alco Controls pioneered automatic control of liquid refrigerants in the 1920s and our innovation continues today. A name change to Emerson Climate Technologies Flow Controls Division in 2002 communicates our focus within Emerson. As a division of Emerson Climate Technologies our role is essential to providing a complete intergrated technology solution. For additional data or specifications please contact Emerson Climate Technolgies or visit our web site at www.emersonflowcontrols.com.

ALL PRODUCTS APPROVED FOR USE WITH ALL CFC, HCFC AND HFC REFRIGERANTS,
(EXCEPT R123, R410 WHERE DESIGNATED) AND THOSE LISTED IN ASHRAE STANDARD 34 AS A1/A2, A2, A3, B2 AND B3.

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CANADIAN REGISTRATION NUMBER (CRN)

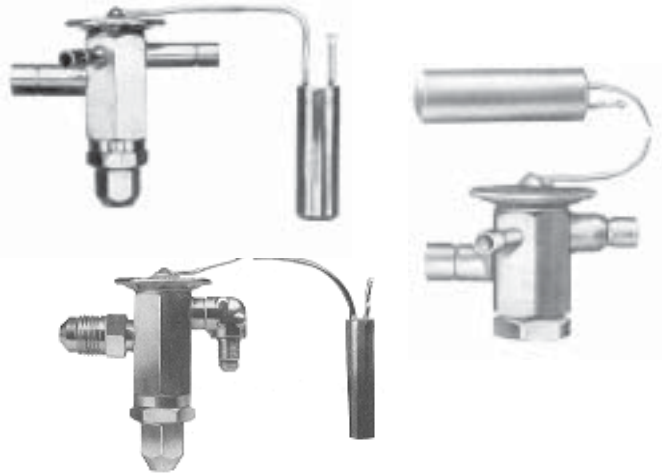
ALL FITTINGS USED IN PRESSURIZED REFRIGERATION SYSTEMS (OPERATING ABOVE 15 PSIG) MUST BE REGISTERED WITH A VALID CRN BY THE BOILER AND PRESSURE VESSELS SAFETY DIVISION IN ACCORDANCE WITH CSA B51 STANDARD. AT TIME OF PRINT CRN'S HAVE BEEN ISSUED FOR THE FOLLOWING PROVINCES PE, NL, NS, NB, YT, NT, NU (9087YTN RESPECTIVELY). NATIONAL REGISTRATION WILL BE COMPLETED 2004. PLEASE CONTACT EMERSON CLIMATE TECHNOLOGIES CANADA FOR AN UPDATED LIST

A-SERIES THERMO® EXPANSION VALVE

COMPACT DESIGN - ¼ thru 5 Nominal Capacity R22

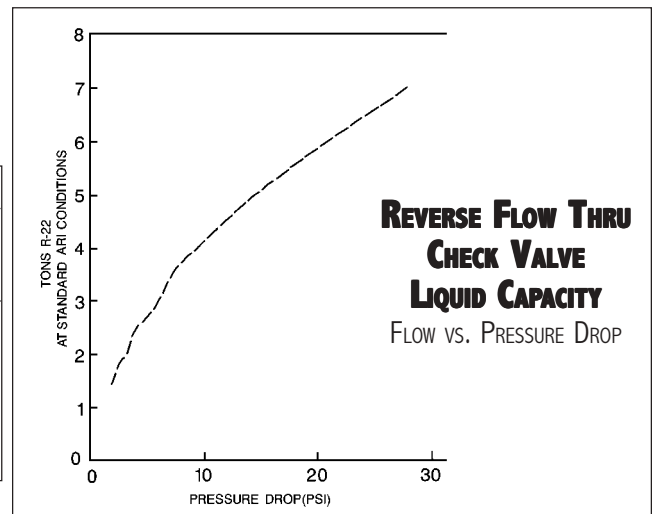
FEATURES AND SPECIFICATIONS

- ☞ Hermetic construction eliminates external leakage
- ☞ Compact size allows installation in limited spaces
- ☞ Stainless steel power element eliminates corrosion
- ☞ Optional Non-Adjustable superheat prevents unauthorized field tampering
- ☞ ZW155 charge available for R-410A systems
- ☞ SAE or ODF connections standard – chatleff or aeroquip are available
- ☞ Available externally or internally equalized
- ☞ Available with internal check valve
- ☞ AA Series has inlet strainer
- ☞ Bleed type pressure equalization available
- ☞ Pressure limiting charges (MOP) available
- ☞ AFA has replaceable strainer and SAE connections only
- ☞ Maximum Working Pressure 700 PSIG
- ☞ UL file number: SA5312
- ☞ CRN file number: OC0824.9 (see page A)



Evaporator Temperature	Refrigerant				
	R12	R134a	R22 R407C	R507, R404A, R502	R410A
Air Conditioning / Heat Pump Med temp (- 20 to +50°F)	FC	MC	*CA	*C	ZW155
Low temp (- 40 to +10°F)	FZ	MZ	*Z	*Z	
MOP low temp (- 40 to 0°F)	FW15	MW15	*W35	*W45	
MOP med temp (- 40 to +25°F)	—	MW35	*W65	*W65	
MOP high temp (- 40 to +50°F)			*W100		

* Add refrigerant code: "H" for R22, "N" for R407C, "R" for R502, "S" for R404A, "P" for R507. F=M, R=S=P, H=N



NOMENCLATURE EXAMPLE: AACEB 2 HC 30 IN 3/8 x 1/2 ODF ANG

A	A	C	E	B	2	H	C	30 IN	3/8 x 1/2	ODF	ANG
Valve Series Economy, Hermetic Design AF	Superheat Adjustment A = Adjustable N = Non-Adjustable	Internal Check Valve (optional) Reverse Flow Bypass Application	Equalizer E=External (Omit for Internal)	Bleed Hole (optional) Omit for no bleed hole	Capacity Nominal Rating in Tons See nominal capacity table below	Refrigerant Code F = R12 H = R22 M = R134a N = R407C P = R507 R = R502 S = R404A Z = R410A	Charge Code C = medium temp CA = heat pump W(MOP)=press. limiting Z = low temp AA = wide range	Capillary Tube Length 30 IN (std) other lengths are available	Inlet x Outlet Connection Sizes 1/4 3/8 3/8 1/2 1/2 5/8 5/8 7/8	Connection Type SAE = flare ODF = solder Chatleff (optional) Aeroquip (optional)	Configuration S/T = straight-thru ANG = 90° angle

A-SERIES — NOMINAL CAPACITY TABLE IN TONS (kWatts)

R12	R134a	R22	R410A	R502	R507/R404A	R407C
—	1/8 (0.4)	1/5 (0.7)	—	—	1/8 (0.4)	1/5 (0.7)
1/8 (0.4)	1/4 (0.9)	1/4 (0.9)	1/4 (0.9)	1/8 (0.4)	1/4 (0.9)	1/4 (0.9)
1/4 (0.9)	1/2 (1.8)	1/2 (1.8)	1/2 (1.8)	1/4 (0.9)	1/2 (1.8)	1/2 (1.8)
1/2 (1.8)	3/4 (2.7)	1 (3.5)	1 (3.5)	1/2 (1.8)	3/4 (2.7)	1 (3.5)
1 (3.5)	1 (3.5)	1½ (5.3)	1½ (5.3)	1 (3.5)	1 (3.5)	1¼ (4.4)
—	1½ (5.3)	2 (7.0)	2 (7.0)	—	1¼ (4.4)	2 (7.0)
1½ (5.3)	2 (7.0)	2½ (8.8)	3 (11.0)	1½ (5.3)	2 (7.0)	2½ (8.8)
2 (7.0)	2½ (9.0)	3 (11.0)	4 (14.0)	2 (7.0)	2½ (8.0)	3¼ (11.5)
2½ (9.0)	3 (11.0)	4 (14.0)	5 (17.0)	2½ (9.0)	2½ (9.0)	4 (14.0)
3 (11.0)	4 (14.0)	5 (17.0)	—	3 (11.0)	3½ (12.0)	5¼ (19.0)

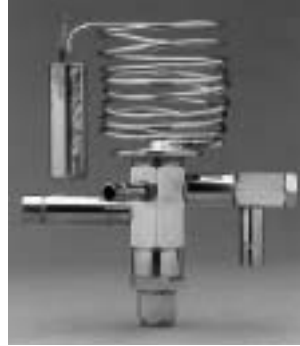
Extended Capacity Tables in Tons begin on page 12

BA(E)S/BN(E)S THERMO[®] EXPANSION VALVE

Balanced Port - 1/2 thru 6 Nominal Tons R22

FEATURES AND SPECIFICATIONS

- ☑ Hermetic construction eliminates external leakage
- ☑ Compact size allows installation in limited spaces
- ☑ Stainless steel power element eliminates corrosion
- ☑ Bi-Flow capability allows one valve to control the superheat in both cooling and heating modes for heat pump applications
- ☑ Balanced port construction eliminates unwanted force from acting on pin caused by refrigerant pressure differential across port
- ☑ Optional Non-Adjustable superheat prevents unauthorized field tampering
- ☑ ZW155 charge available for R-410A systems
- ☑ Available externally or internally equalized
- ☑ Bleed type pressure equalization available
- ☑ Maximum Working Pressure 600 PSIG
BAES 450 PSIG
- ☑ UL file number: SA5312
- ☑ CRN file number: OC0824.9 (see page A)



Evaporator Temperature	Refrigerant				
	R12	R134a	R22 R407C	R502, R404A, R507	R410A
Air Conditioning / Heat Pump Med temp (- 20 to +50°F)	FC	MC	*CA	*C	ZW155
Low temp (- 40 to +10°F)	FZ	MZ	*Z	*Z	
MOP low temp (- 40 to 0°F)	FW15	MW15	*W35	*W45	
MOP med temp (- 40 to +25°F)	—	MW35	*W65	*W65	
MOP high temp (- 40 to +50°F)			*W100		

* Add refrigerant code: "H" for R22, "N" for R407C, "R" for R502, "S" for R404A, "P" for R507. F=M, R=S=P, H=N

NOMENCLATURE EXAMPLE: BAESB 1/2 HC 5 FT 3/8 x 1/2 ODF

B	A	E	S	B	1/2	H	C	5 FT	3/8 x 1/2	ODF
Valve Series Hermetic Balanced Port Design	Superheat Adjustment A = Adjustable N = Non-Adjustable	Equalizer E=External (Omit for Internal)	Strainer Removable Inlet Screen	Bleed Hole (optional) Omit for no bleed hole	Capacity Nominal Rating in Tons See nominal capacity table (below)	Refrigerant Code F = R12 H = R22 M = R134a N = R407C P = R507 R = R502 S = R404A Z = R410A	Charge Code C = medium temp CA = heat pump W(MOP)=press. limiting Z = low temp	Capillary Tube Length 30 IN and 5 FT are standard	Inlet x Outlet Connection Sizes ! 0 1/4 3/8 3/8 1/2 1/2 5/8 5/8 7/8	Connection Type ODF = solder

BA/BN SERIES – NOMINAL CAPACITY TABLE IN TONS (kWatts)

R12	R134a	R22/R407C	R410A*	R502	R507/R404A
1/4 (0.9)	1/2 (1.8)	1/2 (1.8)	1/2 (1.8)	1/4 (0.9)	1/4 (0.9)
1/2 (1.8)	3/4	1 (3.5)	1 (3.5)	1/2 (1.8)	1/2 (1.8)
1 (3.5)	1 (3.5)	1½ (5.3)	1½ (5.3)	1 (3.5)	1 (3.5)
1¼ (4.4)	1½ (5.3)	2 (7.0)	2 (7.0)	1¼ (4.4)	1¼ (4.4)
1½ (5.3)	2 (7.0)	2½ (9.0)	3 (11.0)	1½ (5.3)	1½ (5.3)
2 (7.0)	2¼ (8.0)	3 (11.0)	3½ (12.0)	2 (7.0)	2 (7.0)
2½ (9.0)	3 (11.0)	4 (14.0)	4½ (16.0)	2½ (9.0)	2½ (9.0)
3 (11.0)	3½ (12.0)	5 (17.0)	6 (21.0)	3 (11.0)	3 (11.0)
3½ (12.0)	4¼ (15.0)	6 (21.0)	7½ (26.0)	4 (14.0)	4 (14.0)

* BAES Not available for R410A applications

Extended Capacity Tables in Tons begin on page 12

B SERIES BLEED HOLE FOR USE WITH PSC COMPRESSORS

VALVE TYPE				BLEED HOLE DIAMETER ¹ FOR % CAPACITY BYPASS					
R134a	R12	R22 R407C	R502 R404A R507	10%	15%	20%	25%	30%	40%
				DIA. IN.	DIA. IN.	DIA. IN.	DIA. IN.	DIA. IN.	DIA. IN.
1/2	1/4	1/2	1/2	—	—	.0145	—	—	—
3/4	1/2	1	1/2	.0145	.016	.018	.020	.023	—
1	1	1-1/2	1	.016	.020	.023	.026	.028	—
1-1/2	1-1/4	2	1-1/4	.019	.023	.027	.030	.033	—
2	1-1/2	2-1/2	1-1/2	.022	.027	.030	.033	.038	—
2-1/4	2	3	2	.023	.030	.033	.038	.041	—
3	2-1/2	4	2-1/2	.029	.036	.041	.046	.052	—
3-1/2	3	5	3	.033	.039	.046	.052	.055	—
4	3-1/2	6	4-1/4	—	—	—	—	—	—

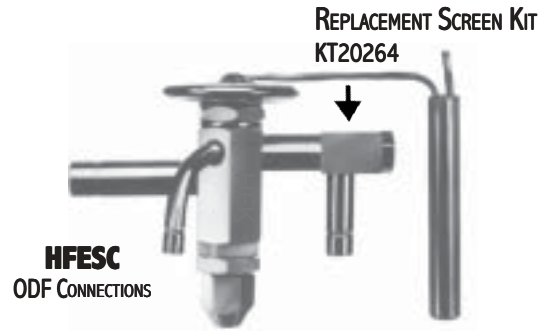
¹ Bleed hole sizes shown above are based on a percent of full effective port area of the valve. This does not necessarily indicate the percent of valve capacity that will be bypassed. The hole sizes shown above should be used for reference only. Normal practice is to equalize systems 3 to 5 minutes.

HF/HFK THERMO® EXPANSION VALVE

BALANCED PORT - ¼ thru 20 Nominal Tons R22

FEATURES AND SPECIFICATIONS

- 1 Removeable stainless steel power element for maximum corrosion resistance
- 1 Balanced port construction eliminates unwanted force from acting on pin caused by refrigerant pressure differential across port
- 1 Two body sizes provide capacities from 1/4 to 20 tons
- 1 Bi-Flow capability up to 5-1/2 tons R22, allows one valve to control the superheat in both cooling and heating modes for package unit heat pump applications
- 1 Wrench flats on inlets and outlets (SAE only) for easy installation
- 1 Bleed type pressure equalization available
- 1 ODF or SAE connections
- 1 Removeable inlet strainer available on HF(K)SC, HF(K)ESC, HF(K), HF(K)E
- 1 Optional Non-Adjustable superheat prevents unauthorized field tampering
- 1 Maximum Working Pressure: 450 psig
- 1 Operating Temperature: -40°F to 50°F
- 1 5' capillary tube length (standard)
- 1 CRN file number: OC0824.9 (see page A)



Evaporator Temperature	Refrigerant				
	R12	R134a	R22 R407C	R502, R404A, R507	Liquid Injection
Air Conditioning / Heat Pump Med temp (- 20 to +50°F)	FC	MC	*CA	*C	CL / GL
Low temp (- 40 to +10°F)	FZ	MZ	*Z	*Z	refer to chart on
MOP low temp (- 40 to 0°F)	FW15	MW15	*W35	*W45	page 05
MOP med temp (- 40 to +25°F)	—	MW35	*W65	*W65	for temp
MOP high temp (- 40 to +50°F)			*W100		

* Add refrigerant code: "H" for R22, "N" for R407C, "R" for R502, "S" for R404A, "P" for R507. F=M, R=S=P, H=N

**'HF' SERIES VALVES WITH DATE CODES R0310 OR NEWER HAVE BEEN
ASSEMBLED WITH "HFK" REMOVEABLE CAGES AS STANDARD**

NOMENCLATURE EXAMPLE: HFESC 2 HC 5 FT 3/8 x 1/2 ODF S/T

HF	E	S	C	2	H	C	5 FT	3/8 x 1/2	ODF	S/T
Valve Series	Equalizer E=External (Omit for Internal)	Connection Type S=Solder (Omit for SAE Flare)	Removable Inlet Strainer (optional) C=Inlet Strainer (ODF only)	Capacity Nominal Rating in Tons See nominal capacity table below	Refrigerant Code F = R12 H = R22 M = R134a N = R407C P = R507 R = R502 S = R404A	Charge Code C = medium temp CA = heat pump W(MOP)=press. limiting Z = low temp	Capillary Tube Length 5 FT (std) other lengths are available	Inlet x Outlet Connection Sizes See Body Table on page 4	Connection Type SAE = flare ODF = solder	Configuration S/T = straight-thru ANG = 90° angle

HF SERIES — NOMINAL CAPACITY TABLE IN TONS (kW)

R12	R134a	R22/R407C	R502	R507/R404A	VALVE TYPE	
1/8 (0.4)	1/4 (0.9)	1/4 (0.9)	1/8 (0.4)	1/8 (0.4)	HF	
1/4 (0.9)	1/2 (1.8)	1/2 (1.8)	1/4 (0.9)	1/4 (0.9)		
1/2 (1.8)	3/4 (2.7)	1 (3.5)	1/2 (1.8)	1/2 (1.8)		
1 (3.5)	1 (3.5)	1½ (5.3)	1 (3.5)	1 (3.5)		
1¼ (4.4)	1½ (5.3)	2 (7.0)	1¼ (4.4)	1¼ (4.4)		
1½ (5.3)	1¾ (6.2)	2½ (8.8)	1½ (5.3)	1½ (5.3)		
2 (7.0)	2½ (8.8)	3 (11.0)	2 (7.0)	2 (7.0)		
3½ (12.0)	4 (14.0)	5½ (20.0)	3½ (12.0)	3½ (12.0)		
5 (17.0)	6 (21.0)	8 (28.0)	5 (17.0)	5 (17.0)		HF cage not removable
6 (21.0)	7½ (27.0)	10 (35.0)	7 (25.0)	7 (25.0)		
9 (32.0)	11 (39.0)	15 (53.0)	10 (35.0)	10 (35.0)		
12 (42.0)	14 (50.0)	20 (70.0)	13 (46.0)	13 (46.0)		

Extended Capacity Tables in Tons begin on page 12

NEW! HFK BALANCED PORT THERMO® EXPANSION VALVE

- ¶ The new HFK Kit features interchangeable bodies, cages, and power elements providing maximum flexibility for ¼ to 5½ ton applications (R-22).
- ¶ The HFK is offered as:
 - Pre-packaged service kits
 - Individual components
- ¶ All HFK valves have the same features and specifications as the HF Series Valve

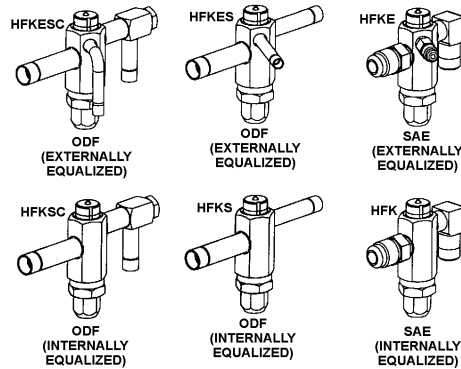


HFK SELECTION PROCESS

Step 1: Body Selection

Body Selection Table			
PCN	Description	Type	Connections (Inlet x Outlet)
064881	KT-20298-1	HFK	1/4 x 1/2 SAE Ang Inlet
064882	KT-20298-2	HFK	3/8 x 1/2 SAE Ang Inlet
064883	KT-20298-3	HFKE	1/4 x 1/2 SAE Ang Inlet
064884	KT-20298-4	HFKE	3/8 x 1/2 SAE Ang Inlet
064885	KT-20298-5	HFKSC	3/8 x 1/2 ODF Ang Inlet w/ Strainer
064886	KT-20298-6	HFKESC	3/8 x 1/2 ODF Ang Inlet w/ Strainer
064887	KT-20298-7	HFKS	3/8 x 1/2 ODF S/T
064888	KT-20298-8	HFKS	3/8 x 5/8 ODF S/T
064889	KT-20298-9	HFKS	1/2 x 5/8 ODF S/T
064890	KT-20298-10	HFKS	1/2 x 7/8 ODF S/T
064891	KT-20298-11	HFKES	3/8 x 1/2 ODF S/T
064892	KT-20298-12	HFKES	3/8 x 5/8 ODF S/T
064895	KT-20298-13	HFKES	1/2 x 5/8 ODF S/T
064896	KT-20298-14	HFKES	1/2 x 7/8 ODF S/T

'HF' SERIES VALVES WITH DATE CODES R0310 OR NEWER HAVE BEEN ASSEMBLED WITH "HFK" REMOVEABLE CAGES AS STANDARD

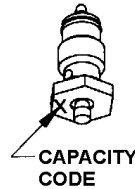


Step 2: Power Element Selection

Replacement Power Element Table ^①			
PCN	Description	Refrigerant(s)	Application
054798	X26300-FW35-1	R-12/R-134a	Low Temp MOP
058074	X26300-MC-1	R-12/R-134a	Medium Temp
058076	X26300-MZ-1	R-12/R-134a	Low Temp
057764	X26300-HW100-1	R-22/R-407C	High Temp MOP
057834	X26300-HCA-1	R-22/R-407C	A/C - Heat Pump
053764	X26300-HC-1	R-22/R-407C	A/C Med. Temp
053767	X26300-HZ-1	R-22/R-407C	Low Temp
058085	X26300-SW45-1	R-404/ R-507/ R-502	Low Temp MOP
058083	X26300-SC-1	R-404/ R-507/ R-502	Medium Temp
058082	X26300-SZ-1	R-404/ R-507/ R-502	Low Temp
055974	X26300-CL-1	Liquid Injection	Desuperheating
055976	X26300-GL-1	Liquid Injection	Desuperheating

^① Additional power element charges available, call for availability.

SAE Kit (PCN 064876)		ODF Kit (PCN 064877)	
Item	Qty	Item	Qty
HFK 1/4 X 1/2 Body	1	HFKSC 3/8 X 1/2 Body	1
HFK 3/8 X 1/2 Body	1	HFKES 3/8 X 1/2 Body	1
HFKE 3/8 X 1/2 Body	2	HFKESC 3/8 X 1/2 Body	2
FC Power Element	2	FC Power Element	2
HC Power Element	1	HC Power Element	1
HZ Power Element	1	HZ Power Element	1
SZ Power Element	2	SZ Power Element	2
Cage Kit (PCN 064879)	1	Cage Kit (PCN 064879)	1



Step 3: Cage Selection

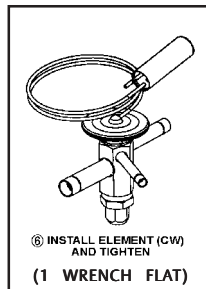
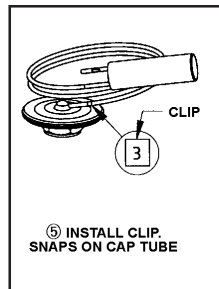
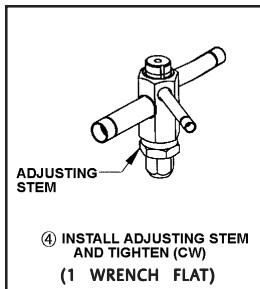
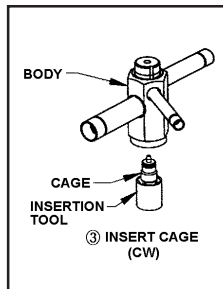
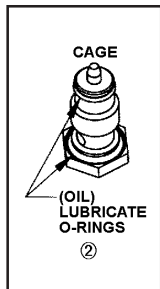
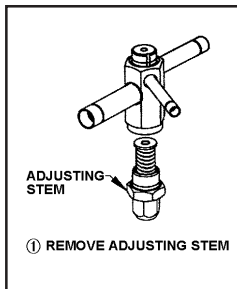
Cage Capacity Table (Nominal)									
PCN	Description	Cage Code	Refrigerant						
			R-12	R-22	R-407C	R-404	R-507	R-502	R-134a
064868	KT-20299-0	0	1/8	1/4	1/4	1/8	1/8	1/8	1/4
064869	KT-20299-1	1	1/4	1/2	1/2	1/4	1/4	1/4	1/2
064870	KT-20299-2	2	1/2	1	1	1/2	1/2	1/2	3/4
064871	KT-20299-3	3	1	1 1/2	1 1/2	1	1	1	1
064872	KT-20299-4	4	1 1/4	2	2	1 1/4	1 1/4	1 1/4	1 1/2
064873	KT-20299-5	5	1 1/2	2 1/2	2 1/2	1 1/2	1 1/2	1 1/2	1 3/4
064874	KT-20299-6	6	2	3	3	2	2	2	2 1/2
064875	KT-20299-7	7	3 1/2	5 1/2	5 1/2	3 1/2	3 1/2	3 1/2	4

¹Cage Kit includes Cage, Insertion Tool KT-20304 PCN 064898 and ID Clips.

ODF/SAE Mix Kit (PCN 064878)	
Item	Qty
HFK 3/8 X 1/2 Body	1
HFKE 3/8 X 1/2 Body	1
HFKSC 3/8 X 1/2 Body	1
HFKESC 3/8 X 1/2 Body	1
FC Power Element	2
HC Power Element	1
HZ Power Element	1
SZ Power Element	2
Cage Kit (PCN 064879)	1

CAGE KIT (PCN 064879)	
Contains	
2 of each cage capacity, Insertion Tool, Oil Bottle, Cage ID Tags	

HF ASSEMBLY PROCEDURE



PCN Description		Power Element		Body Style		Cage		
PCN	Description	PCN	Description	PCN	Description	PCN	Description	
057572	HFESC1/4MC	058074	X26300-MC-1	R-134a	064886	KT-20298-6	064868	KT-20299-0
058089	HFESC1/2MC	058074	X26300-MC-1	R-134a	064886	KT-20298-6	064869	KT-20299-1
058070	HFESC3/4MC	058074	X26300-MC-1	R-134a	064886	KT-20298-6	064870	KT-20299-2
057570	HFESC1MC	058074	X26300-MC-1	R-134a	064886	KT-20298-6	064871	KT-20299-3
057568	HFESC11/2MC	058074	X26300-MC-1	R-134a	064886	KT-20298-6	064872	KT-20299-4
058421	HFESC21/2MC	058074	X26300-MC-1	R-134a	064886	KT-20298-6	064874	KT-20299-6
057409	HFESC1/4HC	053764	X26300-HC-1	R-22 / R407C	064886	KT-20298-6	064868	KT-20299-0
057291	HFESC1/2HC	053764	X26300-HC-1	R-22 / R407C	064886	KT-20298-6	064869	KT-20299-1
057410	HFESC1 HC	053764	X26300-HC-1	R-22 / R407C	064886	KT-20298-6	064870	KT-20299-2
057292	HFESC11/2HC	053764	X26300-HC-1	R-22 / R407C	064886	KT-20298-6	064871	KT-20299-3
057294	HFESC2 HC	053764	X26300-HC-1	R-22 / R407C	064886	KT-20298-6	064872	KT-20299-4
057411	HFESC21/2HC	053764	X26300-HC-1	R-22 / R407C	064886	KT-20298-6	064873	KT-20299-5
057412	HFESC3 HC	053764	X26300-HC-1	R-22 / R407C	064886	KT-20298-6	064874	KT-20299-6
057781	HFESC51/2HC	053764	X26300-HC-1	R-22 / R407C	064886	KT-20298-6	064875	KT-20299-7
---	HFESC1/4"RC" or "SC"	058083	X26300-SC-1	R-404A / R-507	064886	KT-20298-6	064869	KT-20299-1
---	HFESC1/4"RW45" or "SW45"	058085	X26300-SW45-1	R-404A / R-507	064886	KT-20298-6	064869	KT-20299-1
---	HFESC1/2"RC" or "SC"	058083	X26300-SC-1	R-404A / R-507	064886	KT-20298-6	064870	KT-20299-2
---	HFESC1/2"RW45" or "SW45"	058085	X26300-SW45-1	R-404A / R-507	064886	KT-20298-6	064870	KT-20299-2
---	HFESC1"RC" or "SC"	058083	X26300-SC-1	R-404A / R-507	064886	KT-20298-6	064871	KT-20299-3
---	HFESC1"RW45" or "SW45"	058085	X26300-SW45-1	R-404A / R-507	064886	KT-20298-6	064871	KT-20299-3
---	HFESC11/4"RC" or "SC"	058083	X26300-SC-1	R-404A / R-507	064886	KT-20298-6	064872	KT-20299-4
---	HFESC11/4"RW45" or "SW45"	058085	X26300-SW45-1	R-404A / R-507	064886	KT-20298-6	064872	KT-20299-4
---	HFESC11/2"RC" or "SC"	058083	X26300-SC-1	R-404A / R-507	064886	KT-20298-6	064873	KT-20299-5
---	HFESC11/2"RW45" or "SW45"	058085	X26300-SW45-1	R-404A / R-507	064886	KT-20298-6	064872	KT-20299-4
---	HFESC2"RC" or "SC"	058083	X26300-SC-1	R-404A / R-507	064886	KT-20298-6	064874	KT-20299-6
---	HFESC2"RW45" or "SW45"	058085	X26300-SW45-1	R-404A / R-507	064886	KT-20298-6	064874	KT-20299-6
---	HFESC31/2"RC" or "SC"	058083	X26300-SC-1	R-404A / R-507	064886	KT-20298-6	064875	KT-20299-7
---	HFESC31/2"RW45" or "SW45"	058085	X26300-SW45-1	R-404A / R-507	064886	KT-20298-6	064875	KT-20299-7
---	HFSC1/2CL	055974	X26300-CL-1	De-Superheating	064885	KT-20298-5	064869	KT-20299-1
---	HFSC1CL	055974	X26300-CL-1	De-Superheating	064885	KT-20298-5	064870	KT-20299-2
---	HFSC11/2CL	055974	X26300-CL-1	De-Superheating	064885	KT-20298-5	064871	KT-20299-3
---	HFSC2CL	055974	X26300-CL-1	De-Superheating	064885	KT-20298-5	064872	KT-20299-4
---	HFSC21/2CL	055974	X26300-CL-1	De-Superheating	064885	KT-20298-5	064873	KT-20299-5
---	HFSC3CL	055974	X26300-CL-1	De-Superheating	064885	KT-20298-5	064874	KT-20299-6
---	HFSC51/2CL	055974	X26300-CL-1	De-Superheating	064885	KT-20298-5	064875	KT-20299-7
---	HFSC1/2GL	055976	X26300-GL-1	De-Superheating	064885	KT-20298-5	064869	KT-20299-1
---	HFSC1GL	055976	X26300-GL-1	De-Superheating	064885	KT-20298-5	064870	KT-20299-2
---	HFSC11/2GL	055976	X26300-GL-1	De-Superheating	064885	KT-20298-5	064871	KT-20299-3
---	HFSC2GL	055976	X26300-GL-1	De-Superheating	064885	KT-20298-5	064872	KT-20299-4
---	HFSC21/2GL	055976	X26300-GL-1	De-Superheating	064885	KT-20298-5	064873	KT-20299-5
---	HFSC3GL	055976	X26300-GL-1	De-Superheating	064885	KT-20298-5	064874	KT-20299-6
---	HFSC51/2GL	055976	X26300-GL-1	De-Superheating	064885	KT-20298-5	064875	KT-20299-7

LIQUID INJECTION APPLICATION CHARGE CODES

SAT'D SUCTION TEMP.	REFRIGERANT					
	R-134a		R-22		R-404A/R-507	
	REQUIRED SUCTION GAS TEMP		REQUIRED SUCTION GAS		REQUIRED SUCTION GAS	
	45°F	65°F	45°F	65°F	45°F	65°F
40°F	-	B (GL)	-	A (CL)	-	-
30°F	B (GL)	B (GL)	-	A (CL)	-	A (CL)
20°F	B (GL)	-	A (CL)	B (GL)	-	A (CL)
10°F	B (GL)	-	B (GL)	B (GL)	A (CL)	B (GL)
0°F	-	-	B (GL)	B (GL)	A (CL)	B (GL)
-10°F	-	-	B (GL)	-	B (GL)	B (GL)
-20°F	-	-	B (GL)	-	B (GL)	-
-30°F	-	-	-	-	B (GL)	-
-40°F	-	-	-	-	B (GL)	-

TRAE(+)[®] THERMO[®] EXPANSION VALVE

BALANCED PORT - 10 thru 70 Nominal Tons R22

FEATURES AND SPECIFICATIONS

- ¶ Large, stainless steel removable power element
- ¶ Double-Balanced port construction eliminates unwanted force from acting on pin caused by refrigerant pressure differential across port
- ¶ Bi-Flow capability allows one valve to control the superheat in both cooling and heating modes for heat pump applications
- ¶ Replaceable power assembly and cage through to 40 tons for easy field service
- ¶ ODF connections
- ¶ Maximum Working Pressure: 450 psig
- ¶ Operating Temperature: -40°F to 50°F
- ¶ 10' capillary tube length (standard)
- ¶ CRN file number: OC0824.9 (see page A)



SEAL NUT
27676-1 →

Evaporator Temperature	Refrigerant			
	R12	R134a	R22 R407C	R502, R404A, R507
Air Conditioning / Heat Pump Med temp (- 20 to +50°F)	FC	MC	*CA *C	*C
Low temp (- 40 to +10°F)	FZ	MZ	*Z	*Z
MOP low temp (- 40 to 0°F)	FW15	MW15	*W35	*W45
MOP med temp (- 40 to +25°F)	—	MW35	*W65	*W65
MOP high temp (- 40 to +50°F)			*W100	

* Add code: "H" for R22, "N" for R407C, "R" for R502, "S" for R404A, "P" for R507. F=M, R=S=P, H=N

NOMENCLATURE EXAMPLE: TRAE+ 30 HC 10 FT 7/8 x 1/8 ODF S/T

TRA	E	+	30	H	C	10 FT	7/8 x 1/8	ODF	S/T
Valve Series	Equalizer E=External 1/4" SAE	Replaceable Components Cage and Power Assembly	Capacity Nominal Rating in Tons See nominal capacity table (below)	Refrigerant Code F = R12 H = R22 M = R134a N = R407C P = R507 R = R502 S = R404A	Charge Code C = medium temp CA = heat pump W(MOP)=press. limiting Z = low temp	Capillary Tube Length 10 FT (standard)	Inlet x Outlet Connection Sizes I O 5/8 7/8 7/8 1 1/8 1 1/8 1 3/8	Connection Type ODF = solder (Only)	Configuration S/T = Straight-thru (Only)

TRAE SERIES — NOMINAL CAPACITY TABLE IN TONS (kWatts)

R12	R407C	R22	R502	R507/R404A	R134a	Valve Type
7½ (27)	10 (35)	10 (35)	8 (28)	8 (28)	9 (32)	TRAE+ removable cage and power element
10 (35)	15 (53)	15 (53)	12 (42)	12 (42)	13 (46)	
12 (42)	20 (71)	20 (71)	14 (50)	14 (50)	14 (50)	
18 (64)	30 (106)	30 (106)	20 (71)	20 (71)	22 (78)	
25 (88)	40 (142)	40 (142)	30 (106)	30 (106)	30 (106)	
30 (106)	50 (177)	50 (177)	35 (124)	35 (124)	40 (142)	TRAE
35 (124)	60 (212)	60 (212)	40 (142)	40 (142)	45 (159)	
40 (142)	70 (248)	70 (248)	50 (177)	50 (177)	50 (177)	

TRAE+ and TRAE Series Extended Capacity Tables begin on page 12.

PCN	Description	Refrigerant(s)	Application
093593	X28458-MC-3	R-12/R-134a	Medium Temp
063413	X28458-HC-2	R-22/R-407C	Medium Temp
063416	X28458-HW100-2	R-22/R-407C	High Temp MOP
063414	X28458-HCA-2	R-22/R-407C	A/C - Heat Pump
065439	X28458-SC-2	R-404/ R-507/ R-502	Medium Temp
065298	X28458-SW45-2	R-404/ R-507/ R-502	Low Temp MOP
064578	X28458-RZ-2	R-404A/ R-507/ R-502	Low Temp

[®] Additional power element charges available, call for availability.

- ¶ Torque Power Assembly: 375 - 425 in. lb. (1 wrench flat)

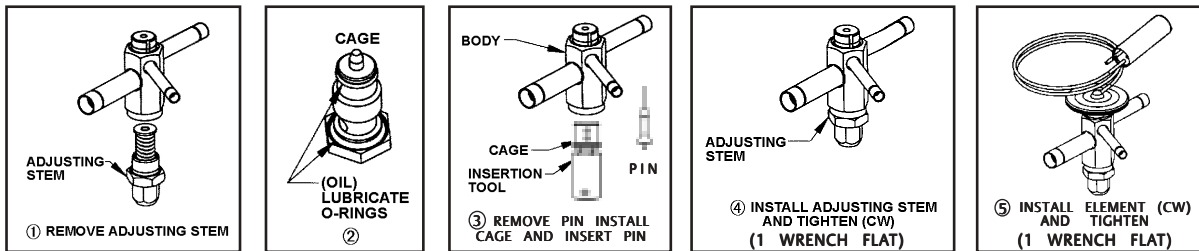
PCN	Description	Connections (Inlet x Outlet)
065830	TRAE+	5/8 x 7/8 ODF S/T
065831	TRAE+	7/8 x 11/8 ODF S/T
065832	TRAE+	11/8 x 13/8 ODF S/T

PCN	TRAE+ KIT	NOMINAL CAPACITY — TONS			
		R-22	R-12/R-134a	R-507/R-404A	R-502
063387	KT-20289 CAGE KIT	10	9	8	8
063388	KT-20290 CAGE KIT	15	13	12	12
063389	KT-20291 CAGE KIT	20	14	14	14
063390	KT-20292 CAGE KIT	30	22	20	20
063391	KT-20293 CAGE KIT	40	30	30	30
063392	KT-20294 CAGE WRENCH KIT				

- ¶ Torque Cage: 60 in. lb. (1 wrench flat)

Description	Power Element				Body Style		Cage	
	PCN	Description	Refrigerant	Cap tube	PCN	Connection	PCN	Description
TRAE+9 MC	063593	X28458-MC-3	R-134a	15Ft	065830	5/8X7/8 ODFS/T	039687	KT-20289
TRAE+13 MC	063593	X28458-MC-3	R-134a	15Ft	065830	5/8X7/8 ODFS/T	063388	KT-20290
TRAE+14 MC	063593	X28458-MC-3	R-134a	15Ft	065831	7/8X1-1/8 ODFS/T	063389	KT-20291
TRAE+22 MC	063593	X28458-MC-3	R-134a	15Ft	065832	1-1/8X1-3/8ODFS/T	063390	KT-20292
TRAE+30 MC	063593	X28458-MC-3	R-134a	15Ft	065832	1-1/8X1-3/8ODFS/T	063391	KT-20293
TRAE+10 HC	063413	X28458-HC-2	R-22 / R407C	10Ft	065830	5/8X7/8 ODFS/T	039687	KT-20289
TRAE+10 HW100	063416	X28458-HW100-2	R-22 / R407C	10Ft	065830	5/8X7/8 ODFS/T	039687	KT-20289
TRAE+15 HC	063413	X28458-HC-2	R-22 / R407C	10Ft	065831	7/8X1-1/8 ODFS/T	063388	KT-20290
TRAE+15 HW100	063416	X28458-HW100-2	R-22 / R407C	10Ft	065831	7/8X1-1/8 ODFS/T	063388	KT-20290
TRAE+20 HC	063413	X28458-HC-2	R-22 / R407C	10Ft	065831	7/8X1-1/8 ODFS/T	063389	KT-20291
TRAE+20 HW100	063416	X28458-HW100-2	R-22 / R407C	10Ft	065831	7/8X1-1/8 ODFS/T	063389	KT-20291
TRAE+30 HC	063413	X28458-HC-2	R-22 / R407C	10Ft	065832	1-1/8X1-3/8ODFS/T	063390	KT-20292
TRAE+30 HW100	063416	X28458-HW100-2	R-22 / R407C	10Ft	065832	1-1/8X1-3/8ODFS/T	063390	KT-20292
TRAE+40 HC	063413	X28458-HC-2	R-22 / R407C	10Ft	065832	1-1/8X1-3/8ODFS/T	063391	KT-20293
TRAE+40 HW100	063416	X28458-HW100-2	R-22 / R407C	10Ft	065832	1-1/8X1-3/8ODFS/T	063391	KT-20293
TRAE+8 SC or "RC"	065439	X28458-SC-2	R-404A / R-507	10Ft	065831	7/8X1-1/8 ODFS/T	039687	KT-20289
TRAE+8 SW45 or "RW45"	065298	X28458-SW45-2	R-404A / R-507	10Ft	065831	7/8X1-1/8 ODFS/T	039687	KT-20289
TRAE+12 SC or "RC"	065439	X28458-SC-2	R-404A / R-507	10Ft	065831	7/8X1-1/8 ODFS/T	063388	KT-20290
TRAE+12 SW45 or "RW45"	065298	X28458-SW45-2	R-404A / R-507	10Ft	065831	7/8X1-1/8 ODFS/T	063388	KT-20290
TRAE+14 SW45 or "RW45"	065298	X28458-SW45-2	R-404A / R-507	10Ft	065831	7/8X1-1/8 ODFS/T	063389	KT-20291
TRAE+14 SC or "RC"	065439	X28458-SC-2	R-404A / R-507	10Ft	065831	7/8X1-1/8 ODFS/T	063389	KT-20291
TRAE+20 SC or "RC"	065439	X28458-SC-2	R-404A / R-507	10Ft	065832	1-1/8X1-3/8ODFS/T	063390	KT-20292
TRAE+20 SW45 or "RW45"	065298	X28458-SW45-2	R-404A / R-507	10Ft	065832	1-1/8X1-3/8ODFS/T	063390	KT-20292
TRAE+30 SC or "RC"	065439	X28458-SC-2	R-404A / R-507	10Ft	065832	1-1/8X1-3/8ODFS/T	063391	KT-20293
TRAE+30 SW45 or "RW45"	065298	X28458-SW45-2	R-404A / R-507	10Ft	065832	1-1/8X1-3/8ODFS/T	063391	KT-20293

TRAE+ ASSEMBLY PROCEDURE



T-SERIES TAKE-A-PART THERMO® VALVE

TAKE-A-PART - 1/4 thru 100 Nominal Tons R22

FEATURES AND SPECIFICATIONS

- External superheat adjustment
- Bi-Flow capability
- Stainless steel power assembly up to 20 ton
- Replaceable power assembly and cage for easy field service (1/4 to 100 tons capacity R22)
- Charges for other applications available
- Torque Bolts: 300 in. lb.
- Maximum working pressure: 450 psig
- CRN file number: OC0824.9 (see page A)



FIELD REPLACEMENT OF VALVE TYPES TL(E), TLX

For field replacement of valve types TLX & TL(E), substitute a valve type TCL(E) of equivalent tonnage and re-use the existing flange.

NOMENCLATURE EXAMPLE: TCLEB 5 HC 5 FT 3/8 x 1/2 SAE ANG

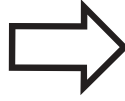
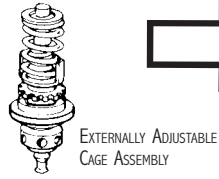
TCL	E	B	5	H	C	5 FT	3/8 x 1/2	SAE	ANG
Valve Series Take-A-Part Adjustable	Equalizer E=External Omit for Internal	Bleed Hole (optional) B = Bleed Hole Omit for no bleed hole	Capacity Nominal Rating in Tons See Cage Assembly Interchangeability Tables (pages 8-9)	Refrigerant Code F = R12 H = R22 M = R134a N = R407C P = R507 R = R502 S = R404A Q = R124	Charge Code C = medium temp CA = heat pump W(MOP)=press. limiting Z = low temp L = liquid charge	Capillary Tube Length Various lengths are available (see p.8-9)	Inlet x Outlet Connection Sizes Various sizes are available (see p.8-9) also, valve is available less flange	Connection Type SAE = flare ODF = solder	Config-uration ANG = 90° Angle S/T = Straight-thru

T-Series extended capacity tables begin on page 12

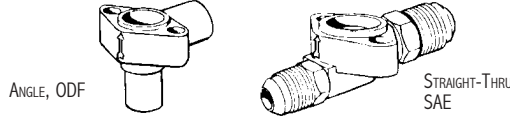
T-SERIES TAKE-A-PART VALVE SMALL CAPACITY 1/2 TO 18 TONS

(R22 NOMINAL – BI FLOW)

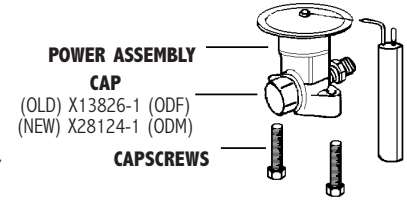
STEP 1: SELECT CAGE FROM CAPACITY TABLE



STEP 2: SELECT FLANGE



STEP 3: SELECT POWER ASSEMBLY



NOTE: Nominal capacities shown here are based on 40°F evaporator temperature and 100°F vapor-free liquid refrigerant entering the valve. R-12 and R-134a rated at 60 PSID. All other refrigerants rated at 100 PSID.

VALVE TYPE	NOMINAL CAPACITY—TONS						CAGE ASSEMBLY ¹	
	R12	R134a	R22	R404A/R507	R502	R407C	PART #	PCN
TCL TCLC	1/4	1/4	1/2	1/4	1/4	1/2	X22440B1B	037035
	1/2	3/4	1	1/2	1/2	1	X22440B2B	037037
	1	1-1/2	2	1	1	2	X22440B3B	037039
	2	2-1/2	3	2	2	3	X22440B4B	037041
	3	3-1/2	5	3	3	5	X22440B5B	037043
	4	5-1/2	7-1/2	4-1/2	4-1/2	7-1/2	X22440B6B	037045
	6-1/2	7-1/2	10	7	7	10	X22440B7B	037047
	7-1/2	9	12	8	8	12	X22440B8B	037049

Standard Product Offering

VALVE TYPE	NOMINAL CAPACITY—TONS						CAGE ASSEMBLY ¹	
	R12	R134a	R22	R404A/R507	R502	R407C	PART #	PCN
TILE	7	9	11	7	7	11	XC724B4B	093343
	8	11	14	9	9	14	XC724B5B	038699

VALVE TYPE	NOMINAL CAPACITY—TONS						CAGE ASSEMBLY ¹	
	R12	R134a	R22	R404A/R507	R502	R407C	PART #	PCN
TJR	8	11	14	9	9	14	X11873B4B	088837
	11	13	18	12	12	18	X11873B5B	089058

¹ Gaskets included on cage.

Gasket strip X13455-1 replaces all older T-Series Gasket kits.

VALVE TYPE	FLOW	SIZE & STYLE CONNECTIONS		BODY FLANGE PART	
		INLET	OUTLET	NUMBER	PCN
TCL TCLC	ANGLE	3/8 SAE	1/2 SAE	C500-4	056932
		3/8 SAE	5/8 SAE	C500-5	057153
		1/2 SAE	5/8 SAE	C500-6	056294
		1/4 ODF	3/8 ODF	C501-1	045401
		3/8 ODF	1/2 ODF	C501-4	065527
		3/8 ODF	5/8 ODF	C501-5	065748
		1/2 ODF	5/8 ODF	C501-7	065861
	STRAIGHT-THRU	5/8 ODF or 7/8 ODM	7/8 ODF or 1-1/8 ODM	A576	027764
		3/8 SAE	1/2 SAE	X6669-4	051176
		3/8 SAE	5/8 SAE	X6669-1	050563
		1/2 SAE	1/2 SAE	X6669-5	083378
		1/2 SAE	5/8 SAE	X6669-2	050842
		3/8 ODF	1/2 ODF	9761-5	027769
		3/8 ODF	5/8 ODF	9761-3	027771
R134a	1/2 ODF	1/2 ODF	9761-6	027766	
	1/2 ODF	5/8 ODF	9761-4	027268	
	1/2 ODF	7/8 ODF	9761-2	027770	
	5/8 ODF	5/8 ODF	X6346-16	044733	
	5/8 ODF	7/8 ODF	X6346-17	044846	
	5/8 ODF	1-1/8 ODF	X6346-18	094038	
R407C	7/8 ODF	1-1/8 ODF	X6346-34	071757	

VALVE TYPE	FLOW	SIZE & STYLE CONNECTIONS		BODY FLANGE PART	
		INLET	OUTLET	NUMBER	PCN
TILE ¹	ANGLE	5/8 ODF or 7/8 ODM	7/8 ODF or 1-1/8 ODM	B504	044984
		5/8 ODF	1-1/8 ODF	X6347-2	094289
	STRAIGHT-THRU	7/8 ODF	1-1/8 ODF	X6347-6	057210
		7/8 ODF	1-3/8 ODF	X6347-7	057323

VALVE TYPE	FLOW	SIZE & STYLE CONNECTIONS		BODY FLANGE PART	
		INLET	OUTLET	NUMBER	PCN
TJRE ^{1,2}	ANGLE	7/8 ODF or 1-1/8 ODM	7/8 ODF or 1-1/8 ODM	10331	029411
	STRAIGHT-THRU	7/8 ODF or 1-1/8 ODM	7/8 ODF or 1-1/8 ODM	10332	032988

¹ TILE and TJRE Flanges are interchangeable

² TJR is balanced ported. TJR flange includes extended length capscrews.

REFRIG-ERANT	EQUALIZER TYPE	CAP TUBE LENGTH	APPLICATION		POWER ASSEMBLY	PCN
			TEMP RANGE	MOP ⁴ (psi)		
R12	Internal	5 FT.	-20 to +50	NONE	XB-1019 FC 1A	052951
	1/4 SAE	5 FT.	-20 to +50	NONE	XB-1019 FC 1B	049881
	Internal	10 FT.	-20 to +50	NONE	XB-1019 FC 2A	032374
	1/4 SAE	10 FT.	-20 to +50	NONE	XB-1019 FC 2B	052954
	1/4 SAE	15 FT.	-20 to +50	NONE	XB-1019 FC 3B	058569
	1/4 SAE	5 FT.	-50 to +30	35	XB-1019 FW 35 1B	079346
	1/4 SAE	5 FT.	-50 to +50	55	XB-1019 FW 55 1B	057432
	1/4 SAE	10 FT.	-50 to +50	55	XB-1019 FW 55 2B	050981
	1/4 SAE	5 FT.	-50 to +10	NONE	XB-1019 FZ 1B	040422
	R22	Internal	5 FT.	-20 to +50	NONE	XB-1019 HC 1A
1/4 SAE		5 FT.	-20 to +50	NONE	XB-1019 HC 1B	053416
1/4 SAE		10 FT.	-20 to +50	NONE	XB-1019 HC 2B	054390
1/4 SAE		5 FT.	-50 to +5	35	XB-1019 HW35 1B	089975
1/4 SAE		5 FT.	-50 to +20	55	XB-1019 HW55 1B	039152
1/4 SAE		5 FT.	-50 to +30	65	XB-1019 HW65 1B	089445
1/4 SAE		5 FT.	-20 to +50	100	XB-1019 HW100 1B	062437
1/4 SAE		10 FT.	-20 to +50	100	XB-1019 HW100 2B	062658
1/4 SAE		5 FT.	-50 to +10	NONE	XB-1019 HZ 1B	040568
1/4 SAE		10 FT.	-50 to +10	NONE	XB-1019 HZ 2B	054105
R134a	1/4 SAE	5 FT.	-20 to +50	NONE	XB-1019 MC 1B	057878
	1/4 SAE	10 FT.	-20 to +50	NONE	XB-1019 MC 2B	059548
	1/4 SAE	10 FT.	-50 to +30	35	XB-1019 MW35 2B	062257
	1/4 SAE	5 FT.	-50 to +50	55	XB-1019 MW55 1B	057370
	1/4 SAE	10 FT.	-50 to +50	55	XB-1019 MW55 2B	057371
	1/4 SAE	5 FT.	-50 to +10	NONE	XB-1019 MZ 1B	061946
	1/4 SAE	10 FT.	-50 to +10	NONE	XB-1019 MZ 2B	061947
	R407C	1/4 SAE	5 FT.	-20 to +50	NONE	XB-1019 NC 1B
1/4 SAE		5 FT.	-20 to +50	100	XB-1019 NW100 1B	063069
R507	1/4 SAE	5 FT.	-20 to +50	NONE	XB-1019 PC 1B	061949
	1/4 SAE	10 FT.	-20 to +50	NONE	XB-1019 PC 2B	061950
	1/4 SAE	5 FT.	-50 to 0	40	XB-1019 PW40 1B	064200
	1/4 SAE	5 FT.	-50 to +10	NONE	XB-1019 PZ 1B	061951
R502	1/4 SAE	10 FT.	-50 to +10	NONE	XB-1019 PZ 2B	061952
	1/4 SAE	5 FT.	-20 to +50	NONE	XB-1019 RC 1B	052955
	1/4 SAE	10 FT.	-20 to +50	NONE	XB-1019 RC 2B	054415
	1/4 SAE	5 FT.	-50 to -20	15	XB-1019 RW 151B	070346
	1/4 SAE	5 FT.	-50 to 0	35	XB-1019 RW 351B	063644
	1/4 SAE	5 FT.	-50 to +5	45	XB-1019 RW 451B	055881
	1/4 SAE	10 FT.	-50 to +5	45	XB-1019 RW 452B	055704
	1/4 SAE	5 FT.	-50 to +25	65	XB-1019 RW 651B	063114
R404A	1/4 SAE	5 FT.	-50 to +10	NONE	XB-1019 RZ 1B	046474
	1/4 SAE	10 FT.	-50 to +10	NONE	XB-1019 RZ 2B	047358
	1/4 SAE	5 FT.	-20 to +50	NONE	XB-1019 SC 1B	059189
	1/4 SAE	5 FT.	-50 to 0	40	XB-1019 SW40 1B	059130
R404A	1/4 SAE	5 FT.	-50 to +25	65	XB-1019 SW65 1B	063541
	1/4 SAE	10 FT.	-50 to +10	NONE	XB-1019 SZ 2B	061948

³ Capscrews included with Power Assembly

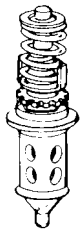
⁴ Maximum Operating Pressure Limit to prevent motor overload E-642 (039862) "T" Series Glad Packing Wrench

NOTE: Nominal capacities shown here are based on 40°F evaporator temperature and 100°F vapor-free liquid refrigerant entering the valve. R-12 and R-134a rated at 60 PSID. All other refrigerants rated at 100 PSID.

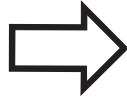
T-SERIES TAKE-A-PART VALVE LARGE CAPACITY 22 TO 100 TONS

(R22 NOMINAL – BALANCED PORTED AND BI FLOW)

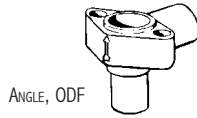
STEP 1: SELECT CAGE FROM CAPACITY TABLE



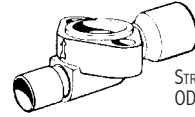
EXTERNALLY ADJUSTABLE
DOUBLE PORTED
CAGE ASSEMBLY



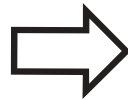
STEP 2: SELECT FLANGE



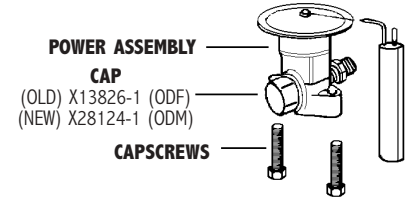
ANGLE, ODF



STRAIGHT-THRU
ODF



STEP 3: SELECT POWER ASSEMBLY



POWER ASSEMBLY
CAP
(OLD) X13826-1 (ODF)
(NEW) X28124-1 (ODM)

CAPSCREWS

VALVE TYPE	NOMINAL CAPACITY—TONS						CAGE ASSEMBLY ¹	
	R12	R134a	R22	R404A/R507	R502	R407C	PART #	PCN
TER	13	16	22	14	14	22	X9117B6B	077896
	15	19	26	16	16	26	X9117B7B	078117
	20	25	35	21	21	35	X9117B8B	071155
	25	31	45	27	27	45	X9117B9B	029429

VALVE TYPE	NOMINAL CAPACITY—TONS						CAGE ASSEMBLY ¹	
	R12	R134a	R22	R404A/R507	R502	R407C	PART #	PCN
TIR	35	45	55	37	37	55	X9166B10B	070738

VALVE TYPE	NOMINAL CAPACITY—TONS						CAGE ASSEMBLY ¹	
	R12	R134a	R22	R404A/R507	R502	R407C	PART #	PCN
THR	45	55	70	48	48	70	X9144B11B	020846
	55	68	85	60	57	85	X9144B13B	021067

VALVE TYPE	NOMINAL CAPACITY—TONS						CAGE ASSEMBLY ¹	
	R12	R134a	R22	R404A/R507	R502	R407C	PART #	PCN
TMR	63	75	100	65	—	100	X9144B14B	065123

VALVE TYPE	FLOW	SIZE & STYLE CONNECTIONS		BODY FLANGE	
		INLET	OUTLET	PART NUMBER	PCN
TER ^{1,2}	ANGLE	7/8 ODF or 1-1/8 ODM	7/8 ODF or 1-1/8 ODM	9153	027919
	STRAIGHT-THRU	7/8 ODF or 1-1/8 ODM	7/8 ODF or 1-1/8 ODM	9152	027918

VALVE TYPE	FLOW	SIZE & STYLE CONNECTIONS		BODY FLANGE	
		INLET	OUTLET	PART NUMBER	PCN
TIR ¹	ANGLE	7/8 ODF or 1-1/8 ODM	7/8 ODF or 1-1/8 ODM	9151	027926
	STRAIGHT-THRU	7/8 ODF or 1-1/8 ODM	7/8 ODF or 1-1/8 ODM	9150	028849

VALVE TYPE	FLOW	SIZE & STYLE CONNECTIONS		BODY FLANGE	
		INLET	OUTLET	PART NUMBER	PCN
THR	ANGLE	1-1/8 ODM	1-1/8 ODM	9149	028030
	STRAIGHT-THRU	1-1/8 ODM	1-1/8 ODM	9148	028032
		1-1/8 ODM	1-1/8 ODM		

VALVE TYPE	FLOW	SIZE & STYLE CONNECTIONS		BODY FLANGE	
		INLET	OUTLET	PART NUMBER	PCN
TMR	ANGLE	1-1/8 ODM	1-1/8 ODF	9149-1	065124
	STRAIGHT-THRU	1-1/8 ODM	1-1/8 ODM	9148-1	065125
		1-1/8 ODM	1-1/8 ODM		

REFRIG-ERANT	EQUALIZER TYPE	CAP TUBE LENGTH	APPLICATION		POWER ASSEMBLY	PCN
			TEMP RANGE	MOP ⁴ (psi)		
R12	1/4 SAE	10 FT.	-20 to +40	NONE	XC-726 FC 2B	052957
	1/4 SAE	10 FT.	-50 to 0	15	XC-726 FW15 2B	023362
	1/4 SAE	10 FT.	-50 to +50	55	XC-726 FW55 2B	035000
	1/4 SAE	10 FT.	-50 to 0	NONE	XC-726 FZ 2B	054849
R22	1/4 SAE	10 FT.	-20 to +50	NONE	XC-726 HC 2B	056421
	1/4 SAE	10 FT.	-50 to +5	35	XC-726 HW35 2B	024511
	1/4 SAE	10 FT.	-50 to +30	65	XC-726 HW65 2B	025011
	1/4 SAE	10 FT.	-20 to +50	100	XC-726 HW100 2B	036750
R134a	1/4 SAE	10 FT.	-50 to +10	NONE	XC-726 HZ 2B	040569
	1/4 SAE	10 FT.	-20 to +50	NONE	XC-726 MC 2B	057235
	1/4 SAE	10 FT.	-50 to +50	55	XC-726 MW55 2B	057372
	1/4 SAE	10 FT.	-50 to +10	NONE	XC-726 MZ 2B	063075
R502	1/4 SAE	10 FT.	-20 to +50	NONE	XC-726 RC 2B	052958
	1/4 SAE	10 FT.	-50 to -20	15	XC-726 RW15 2B	023351
	1/4 SAE	10 FT.	-50 to +5	35	XC-726 RW35 2B	070866
	1/4 SAE	10 FT.	-50 to +25	65	XC-726 RW65 2B	071421
R404A	1/4 SAE	10 FT.	-50 to +10	NONE	XC-726 RZ 2B	046692
	1/4 SAE	10 FT.	-20 to +50	NONE	XC-726 SC 2B	062303
	1/4 SAE	10 FT.	-50 to +10	40	XC-726 SW40 2B	063127
	1/4 SAE	10 FT.	-50 to +25	65	XC-726 SW65 2B	061692
1/4 SAE	10 FT.	-50 to +10	NONE	XC-726 SZ 2B	063974	

³ Capscrews included with Power Assembly

⁴ Maximum Operating Pressure Limit to prevent motor overload
E-642 PCN (039862) "T" Series Glad Packing Wrench

¹ Gaskets included on cage.

Gasket strip X13455-1 replaces all older T-Series Gasket kits.

¹ TER and TIR Flanges are interchangeable

² TER flange includes extended length capscrews.

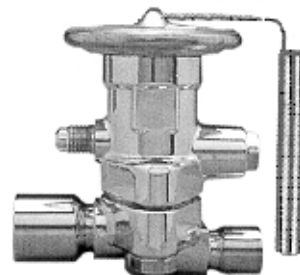
Standard Product Offering

ZZ THERMO® EXPANSION VALVE FOR ULTRA LOW TEMPS

TAKE-A-PART ULTRA LOW TEMPERATURE APPLICATIONS

FEATURES AND SPECIFICATIONS

- ¶ Take-A-Part construction for easy field service
- ¶ Improved internal construction extends valve life
- ¶ External equalizer standard
- ¶ Exclusive cage bellows eliminates friction at low temperatures
- ¶ External superheat adjustment
- ¶ Stainless steel power element for maximum corrosion resistance.
- ¶ Maximum working pressure 450 psig
- ¶ CRN file number: OC0824.9 (see page A)



NOMENCLATURE EXAMPLE: ZZC 6 B G125 10 FT 3/8 x 1/2 ODF ANG

ZZC	6	B	G125	10 FT	3/8 x 1/2	ODF	ANG
Valve Series Ultra Low Temperature Take-A-Part	Capacity (nominal @ - 40°F)	Refrigerant Code B = R13/R23 H = R22 O = R508 R = R502	Charge Code Z = low temp G(MOP) = press. limiting	Capillary Tube Length 10 FT (standard)	Inlet x Outlet Connection Sizes Various connections sizes available	Connection Type SAE = flare ODF = solder	Configuration ANG = 90° angle S/T = straight-thru

R13/R23 VALVE TYPE	R22 VALVE TYPE	Standard Connections
ZZC 1BG	ZZC 3/4HZ	3/8 ODF x 5/8 ODF
ZZC 2-1/2BG	ZZC 1-1/2HZ	
ZZC 4BG	ZZC 2-1/2HZ	
ZZC 6BG	ZZC 4HZ	1/2 ODF x 5.8 ODF
ZZC 9BG	ZZC 6HZ	
ZZC 13BG	ZZC 8HZ	
ZZER20BG		7/8 ODF x 1-1/8 ODM

NOTE: Nominal capacities shown here are based upon the following conditions:

R23 evaporator temp = - 40°F, liquid temp at valve inlet = 0°F, 150 psig pressure drop

R22 evaporator temp = - 40°F, liquid temp at valve inlet = 20°F, 150 psig pressure drop

NOTE: For valve capacities or refrigerants not listed, consult Emerson Climate Technologies' Applications Engineering.

ZZ REPLACEMENT GASKET SET – X13455-1

Gasket Set includes necessary body flange gasket & seat gasket.

ZZ CAGE ASSEMBLY AND GASKETS

VALVE	PART NUMBER	PCN
ZZC1BG, ZZC3/4HW, ZZC3/4RW	X10110-B1B	021288
ZZC2½BG, ZZC1½HW, ZZC1½RW	X10110-B2B	020871
ZZC4BG, ZZC2½HW, ZZC2½RW	X10110-B3B	096091
ZZC6BG, ZZC4HW, ZZC3½RW	X10110-B4B	096312
ZZC9BG, ZZC6HW, ZZC5RW	X10110-B5B	096425
ZZC13BG, ZZC8HW, ZZC8RW	X10110-B6B	096646
ZZER6BG, ZZER4HW, ZZER3½RW	X10059-B4B	045362
ZZER9BG, ZZER6HW, ZZER5RW	X10059-B5B	033697
ZZER20BG, ZZER12HW, ZZER11RW	X10059-B6B	030071
ZZER21BG, ZZER13HW, ZZER13RW	X10059-B7B	025100
ZZER29BG, ZZER18HW, ZZER18RW	X10059-B8B	025101
ZZIR48BG, ZZIR30HW, ZZIR29RW	X10060-B10B	025090
ZZJR16BG, ZZJR10HW, ZZJR9RW	X10111-B5B	089306

ZZ REPLACEMENT POWER ASSEMBLY – XC726

VALVE	PCN
XC-726 BG 30-2B 10FT SAE EE	094594
XC-726 BG 125-2B 10FT SAE EE	039130
XC-726 HW 35-2B 10FT SAE EE	024511
XC-726 HW 65-2B 10FT SAE EE	025011
XC-726 HW 85-2B 10FT SAE EE	023357
XC-726 HW 100-2B 10FT SAE EE	036750
XC-726 HZ - 2B 10FT SAE EE	040569

ZZ FLANGE INFORMATION

DESCRIPTION	CONNECTIONS	PCN
9761-2	1/2" x 7/8" ODF S/T	027770
9761-3	3/8" X 5/8" ODF S/T	027771
9761-4	1/2" X 5/8" ODF S/T	027268
9761-5	3/8" X 1/2" ODF S/T	027769
9761-6	1/2" X 1/2" ODF S/T	027766
A-576	5/8" X 7/8" ODF ANG	027764
C-500-4	3/8" X 1/2" SAE ANG	056932
C-500-5	3/8" X 5/8" SAE ANG	057153
C-500-6	1/2" X 5/8" SAE ANG	056294
C-501-1	1/4" X 3/8" ODF ANG	045401
C-501-4	3/8" X 1/2" ODF ANG	065527
C-501-5	3/8" X 5/8" ODF ANG	065748
C-501-7	1/2" X 5/8" ODF ANG	065861
X-6346-16	5/8" X 5/8" ODF S/T	044733
X-6346-17	5/8" X 7/8" ODF S/T	044846
X-6346-18	5/8" X 11/8" ODF S/T	094038
X-6346-34	7/8" X 11/8" ODF S/T	071757
X-6669-1	3/8" X 5/8" SAE S/T	050563
X-6669-2	1/2" X 5/8" SAE S/T	050842
X-6669-4	3/8" X 1/2" SAE S/T	051176
X-6669-5	1/2" X 1/2" SAE S/T	083378

ACP(E) AUTOMATIC EXPANSION VALVE

Emerson Climate Technologies' ACP is an Automatic Expansion Valve developed for small cooling units where the heat load is reasonably constant. The ACP is ideal for room air conditioners, domestic refrigerators, drink or food dispensers, ice cream cabinets, bottle coolers, home freezers, ice cube makers, ice cream freezers, and milk coolers.



FEATURES AND SPECIFICATIONS

- ☞ Small, compact size adapts to any installation
- ☞ Friction-free floating design
- ☞ Can be used as a small capacity hot gas bypass valve
- ☞ Covers multiple capacity ranges
- ☞ Angle or straight-thru style
- ☞ Internal or external equalizer
- ☞ SAE or ODF connections
- ☞ Fully adjustable from 0-80 psig (factory setting 40 psig)
- ☞ Wrench flats on inlets and outlets
- ☞ Available with fixed setting/non-adjustable
- ☞ Maximum working pressure: 450 psig
- ☞ Maximum working temperature: 300°F
- ☞ UL file number: SA5312
- ☞ CSA file number: LR44005
- ☞ CRN file number: OC0824.9 (see page A)

ACP(E) NOMINAL CAPACITY* TABLE IN TONS AND (kWatts)

VALVE	R12/R134a	R407C/R22	R502/R404A/R507	R410A
	PRESSURE DROP ACROSS VALVE — PSI			
	60	100	100	160
ACP(E)1	.31(1.1)	.44(1.5)	.29(1.0)	.38
ACP(E)2	.41(1.4)	.57(2.0)	.38(1.3)	.51
ACP(E)3	.65(2.3)	.91(3.2)	.61(2.1)	.80
ACP(E)4	.90(3.1)	1.30(4.5)	.87(3.0)	1.10
ACP(E)5	1.40(4.9)	1.96(6.8)	1.31(4.5)	1.70
ACP(E)6	1.90(6.6)	2.67(9.3)	1.78(6.2)	2.30
ACP(E)7	2.30(8.0)	3.28(11.4)	2.19(7.6)	2.80
ACP(E)8	2.70(9.4)	3.75(13.0)	2.50(8.7)	3.30
ACP(E)9	3.80(13.2)	5.32(18.5)	3.55(12.3)	4.70

*All capacities shown are at 100°F Condensing, 40°F Evaporator Temperature, with a solid column of liquid at the valve inlet.

NOMENCLATURE EXAMPLE: ACPE 6 SAE EE 1/4 x 3/8 ODF ANG

ACP	E	6	SAE EE	1/4	x	3/8	ODF	ANG
Valve Series	External Equalizer (optional)	Port Size (diameter) see table below	External Equalizer Type	Inlet Connection Size (inches)		Outlet Connection Size (inches)	Connection Type ODF or SAE	Body Style ANG = Angle S/T = Straight-thru

ACP(E) DIRECT ACTING, HOT GAS REGULATOR

Direct acting, hot gas bypass regulator is designed for small capacity systems.

HOT GAS BYPASS NOMINAL CAPACITY TABLE IN TONS (kW)

VALVE	PORT DIA. (inches)	R-12	R-134a	R-22	R-407C	R-507/404A	R-502
ACP(E)-1	.047	0.05 (0.17)	0.07 (0.24)	0.09 (0.31)	0.09 (0.31)	0.09 (0.31)	0.08 (0.28)
ACP(E)-2	.059	0.07 (0.24)	0.09 (0.31)	0.12 (0.42)	0.12 (0.42)	0.11 (0.38)	0.11 (0.38)
ACP(E)-3	.101	0.12 (0.42)	0.16 (0.56)	0.22 (0.76)	0.22 (0.76)	0.20 (0.69)	0.20 (0.69)
ACP(E)-4	.113	0.18 (0.62)	0.23 (0.80)	0.32 (1.11)	0.32 (1.11)	0.28 (0.97)	0.29 (1.01)
ACP(E)-5	.125	0.28 (0.97)	0.37 (1.28)	0.50 (1.74)	0.50 (1.74)	0.45 (1.56)	0.45 (1.56)
ACP(E)-6	.140	0.38 (1.32)	0.50 (1.74)	0.69 (2.39)	0.69 (2.39)	0.60 (2.08)	0.63 (2.19)
ACP(E)-7	.169	0.55 (1.91)	0.71 (2.46)	0.98 (3.40)	0.98 (3.40)	0.90 (3.12)	0.89 (3.09)
ACP(E)-8	.196	0.65 (2.26)	0.84 (2.91)	1.20 (4.16)	1.20 (4.16)	1.00 (3.47)	1.00 (3.47)
ACP(E)-9	.228	0.75 (2.60)	0.98 (3.40)	1.40 (4.86)	1.40 (4.86)	1.20 (4.16)	1.20 (4.16)

All capacities shown are at 40°F Evaporator Temperature, 100°F Condensing temperature, Valve Full Open, Compressor Discharge Temperature is 50°F higher than Isentropic Compression and 25°F Superheat at the compressor inlet.

The R-12, R-134a capacities ▲P = 80 psi (560 kPa)
The R-22, R-407C capacities ▲P = 125 psi (875 kPa)
The R-404A, R-507, R-502 capacities ▲P = 135 psi (945 kPa)

For conditions other than nominal, divide required capacity by the appropriate multiplier found on page 68.

ORDERING INFORMATION

PCN	DESCRIPTION
046838	ACP 1 IE 1/4 x 3/8-1/2 SAE ANG
057233	ACP 1 IE 1/4 x 3/8 ODF S/T
047680	ACP 1 IE 1/4 x 3/8 ODF S/T
047651	ACP 2 IE 1/4 x 3/8 ODF ANG
046840	ACP 3 IE 1/4 x 3/8 SAE ANG
047105	ACP 4 IE 1/4 x 3/8 ODF ANG
047284	ACP 5 IE 1/4 x 3/8 ODF ANG
053374	ACP 5 IE 3/8 x 3/8 ODF ANG
047653	ACP 6 IE 1/4 x 3/8 SAE ANG
047654	ACP 7 IE 3/8 x 1/2 ODF ANG
047285	ACP 7 IE 3/8 x 3/8-1/2 SAE ANG
047655	ACP 8 IE 3/8 x 1/2 ODF ANG
057771	ACP 9 IE 1/2 x 5/8 ODF ANG
047658	ACP 9 IE 3/8 x 3/8-1/2 SAE ANG
047280	ACPE 1 SAE EE 1/4 x 3/8 SAE S/T
047790	ACPE 7 SAE EE 3/8 x 1/2 ODF ANG
047657	ACP 9 IE 3/8 x 1/2 ODF ANG
058674	ACPE 9 SAE EE 1/2 x 5/8 ODF S/T

EXTENDED CAPACITY TABLES

R-12 BALANCED PORTED VALVES (TONS)– A, B, HF, TFE, TRAE AND T SERIES

Valve Type	Nominal Rating	EVAPORATOR TEMPERATURE																	
		50°F						40°F						20°F					
		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)	
		60	80	100	125	150	175	60	80	100	125	150	175	60	80	100	125	150	175
A *	1/8	0.20	0.23	0.26	0.29	0.32	0.34	0.20	0.23	0.26	0.29	0.32	0.34	0.19	0.22	0.25	0.27	0.30	0.32
A *	1/4	0.35	0.40	0.45	0.51	0.55	0.60	0.34	0.39	0.44	0.49	0.54	0.58	0.33	0.38	0.43	0.48	0.52	0.56
A *	1/2	0.56	0.65	0.72	0.81	0.89	0.96	0.55	0.64	0.71	0.79	0.87	0.94	0.53	0.61	0.68	0.76	0.84	0.91
A *	1	0.80	0.92	1.03	1.15	1.26	1.37	0.79	0.91	1.02	1.14	1.25	1.35	0.76	0.88	0.98	1.10	1.20	1.30
A *	1-1/2	1.66	1.92	2.14	2.40	2.62	2.83	1.63	1.88	2.10	2.35	2.58	2.78	1.56	1.80	2.01	2.25	2.47	2.66
A *	2	2.04	2.36	2.63	2.94	3.23	3.48	2.00	2.31	2.58	2.89	3.16	3.42	1.92	2.22	2.48	2.77	3.04	3.28
A *	2-1/2	2.42	2.79	3.12	3.49	3.83	4.13	2.37	2.74	3.06	3.42	3.75	4.05	2.28	2.63	2.94	3.29	3.60	3.89
A *	3	3.31	3.82	4.27	4.78	5.23	5.65	3.24	3.74	4.18	4.68	5.12	5.53	3.11	3.59	4.01	4.49	4.92	5.31
B	1/4	0.30	0.35	0.39	0.43	0.47	0.51	0.30	0.35	0.39	0.43	0.47	0.51	0.28	0.32	0.36	0.40	0.44	0.48
B	1/2	0.57	0.66	0.74	0.82	0.90	0.97	0.56	0.65	0.72	0.81	0.89	0.96	0.54	0.62	0.70	0.78	0.85	0.92
B	1	0.90	1.04	1.16	1.30	1.42	1.54	0.88	1.02	1.14	1.27	1.39	1.50	0.84	0.97	1.08	1.21	1.33	1.43
B	1-1/4	1.20	1.39	1.55	1.73	1.90	2.05	1.17	1.35	1.51	1.69	1.85	2.00	1.13	1.30	1.46	1.63	1.79	1.93
B	1-1/2	1.51	1.74	1.95	2.18	2.39	2.58	1.48	1.71	1.91	2.14	2.34	2.53	1.42	1.64	1.83	2.05	2.25	2.43
B	2	1.83	2.11	2.36	2.64	2.89	3.13	1.80	2.08	2.32	2.60	2.85	3.07	1.72	1.99	2.22	2.48	2.72	2.94
B	2-1/2	2.37	2.74	3.06	3.42	3.75	4.05	2.33	2.69	3.01	3.36	3.68	3.98	2.23	2.57	2.88	3.22	3.53	3.81
B	3	3.00	3.46	3.87	4.33	4.74	5.12	2.94	3.39	3.80	4.24	4.65	5.02	2.82	3.26	3.64	4.07	4.46	4.82
B	3-1/2	3.73	4.31	4.82	5.38	5.90	6.37	3.66	4.23	4.73	5.28	5.79	6.25	3.51	4.05	4.53	5.07	5.55	5.99
HF	1/8	0.17	0.20	0.22	0.25	0.27	0.29	0.17	0.20	0.22	0.25	0.27	0.29	0.16	0.18	0.21	0.23	0.25	0.27
HF	1/4	0.32	0.37	0.41	0.46	0.51	0.55	0.31	0.36	0.40	0.45	0.49	0.53	0.30	0.35	0.39	0.43	0.47	0.51
HF	1/2	0.57	0.66	0.74	0.82	0.90	0.97	0.56	0.65	0.72	0.81	0.89	0.96	0.54	0.62	0.70	0.78	0.85	0.92
HF	1	0.88	1.02	1.14	1.27	1.39	1.50	0.86	0.99	1.11	1.24	1.36	1.47	0.82	0.95	1.06	1.18	1.30	1.40
HF	1-1/4	1.18	1.36	1.52	1.70	1.87	2.02	1.16	1.34	1.50	1.67	1.83	1.98	1.11	1.28	1.43	1.60	1.76	1.90
HF	1-1/2	1.51	1.74	1.95	2.18	2.39	2.58	1.48	1.71	1.91	2.14	2.34	2.53	1.42	1.64	1.83	2.05	2.25	2.43
HF	2	2.00	2.31	2.58	2.89	3.16	3.42	1.96	2.26	2.53	2.83	3.10	3.35	1.88	2.17	2.43	2.71	2.97	3.21
HF	3-1/2	3.55	4.10	4.58	5.12	5.61	6.06	3.48	4.02	4.49	5.02	5.50	5.94	3.34	3.86	4.31	4.82	5.28	5.70
HF	5	4.94	5.70	6.38	7.13	7.81	8.44	4.85	5.60	6.26	7.00	7.67	8.28	4.65	5.37	6.00	6.71	7.35	7.94
HF	6	6.26	7.23	8.08	9.04	9.90	10.69	6.13	7.08	7.91	8.85	9.69	10.47	5.88	6.79	7.59	8.49	9.30	10.04
HF	9	9.28	10.72	11.98	13.39	14.67	15.85	9.10	10.51	11.75	13.13	14.39	15.54	8.73	10.08	11.27	12.60	13.80	14.91
HF	12	12.22	14.11	15.78	17.64	19.32	20.87	11.98	13.83	15.47	17.29	18.94	20.46	11.49	13.27	14.83	16.58	18.17	19.62
TCLE*	1/4	0.30	0.35	0.39	0.43	0.47	0.51	0.30	0.35	0.39	0.43	0.47	0.51	0.28	0.32	0.36	0.40	0.44	0.48
TCLE*	1/2	0.57	0.66	0.74	0.82	0.90	0.97	0.56	0.65	0.72	0.81	0.89	0.96	0.53	0.61	0.68	0.76	0.84	0.91
TCLE*	1	1.15	1.33	1.48	1.66	1.82	1.96	1.13	1.30	1.46	1.63	1.79	1.93	1.08	1.25	1.39	1.56	1.71	1.84
TCLE*	2	2.12	2.45	2.74	3.06	3.35	3.62	2.08	2.40	2.69	3.00	3.29	3.55	1.99	2.30	2.57	2.87	3.15	3.40
TCLE*	3	3.09	3.57	3.99	4.46	4.89	5.28	3.03	3.50	3.91	4.37	4.79	5.17	2.90	3.35	3.74	4.19	4.59	4.95
TCLE*	4	4.48	5.17	5.78	6.47	7.08	7.65	4.39	5.07	5.67	6.34	6.94	7.50	4.21	4.86	5.44	6.08	6.66	7.19
TCLE*	6-1/2	6.17	7.12	7.97	8.91	9.76	10.54	6.05	6.99	7.81	8.73	9.57	10.33	5.80	6.70	7.49	8.37	9.17	9.91
TCLE*	7-1/2	7.44	8.59	9.60	10.74	11.76	12.71	7.30	8.43	9.42	10.54	11.54	12.47	7.00	8.08	9.04	10.10	11.07	11.95
TJL*	7	6.59	7.61	8.51	9.51	10.42	11.25	6.47	7.47	8.35	9.34	10.23	11.05	6.20	7.16	8.00	8.95	9.80	10.59
TJL*	8	8.41	9.71	10.86	12.14	13.30	14.36	8.25	9.53	10.65	11.91	13.04	14.09	7.91	9.13	10.21	11.42	12.51	13.51
TRAE+	7-1/2	7.14	8.24	9.22	10.31	11.29	12.19	7.00	8.08	9.04	10.10	11.07	11.95	6.71	7.75	8.66	9.69	10.61	11.46
TRAE+	10	10.41	12.02	13.44	15.03	16.46	17.78	10.20	11.78	13.17	14.72	16.13	17.42	9.78	11.29	12.63	14.12	15.46	16.70
TRAE+	12	11.62	13.42	15.00	16.77	18.37	19.84	11.39	13.15	14.70	16.44	18.01	19.45	10.92	12.61	14.10	15.76	17.27	18.65
TRAE+	18	17.61	20.33	22.73	25.42	27.84	30.07	17.26	19.93	22.28	24.91	27.29	29.48	16.55	19.11	21.37	23.89	26.17	28.26
TRAE+	25	24.20	27.94	31.24	34.93	38.26	41.33	23.73	27.40	30.64	34.25	37.52	40.53	22.75	26.27	29.37	32.84	35.97	38.85
TRAE	30	32.67	37.72	42.18	47.16	51.66	55.79	32.03	36.99	41.35	46.23	50.64	54.70	30.72	35.47	39.66	44.34	48.57	52.46
TRAE	35	35.64	41.15	46.01	51.44	56.35	60.87	34.94	40.35	45.11	50.43	55.24	59.67	33.51	38.69	43.26	48.37	52.98	57.23
TRAE	40	42.41	48.97	54.75	61.21	67.06	72.43	41.58	48.01	53.68	60.02	65.74	71.01	39.88	46.05	51.48	57.56	63.06	68.11
TJR	8	8.89	10.27	11.48	12.83	14.06	15.18	8.72	10.07	11.26	12.59	13.79	14.89	8.36	9.65	10.79	12.07	13.22	14.28
TJR	11	10.65	12.30	13.75	15.37	16.84	18.19	10.44	12.06	13.48	15.07	16.51	17.83	10.01	11.56	12.92	14.45	15.83	17.10
TER	13	13.31	15.37	17.18	19.21	21.04	22.73	13.05	15.07	16.85	18.84	20.63	22.29	12.51	14.45	16.15	18.06	19.78	21.36
TER	15	15.73	18.16	20.31	22.70	24.87	26.86	15.42	17.81	19.91	22.26	24.38	26.33	14.79	17.08	19.09	21.35	23.39	25.26
TER	20	21.18	24.46	27.34	30.57	33.49	36.17	20.76	23.97	26.80	29.96	32.82	35.45	19.91	22.99	25.70	28.74	31.48	34.00
TER	25	27.23	31.44	35.15	39.30	43.05	46.50	26.69	30.82	34.46	38.52	42.20	45.58	25.60	29.56	33.05	36.95	40.48	43.72
TIR	35	31.29	36.13	40.40	45.16	49.47	53.44	23.63	27.29	30.51	34.11	37.36	40.36	31.29	36.13	40.40	45.16	49.47	53.44
THR	45	42.35	48.90	54.67	61.13	66.96	72.33	41.52	47.94	53.60	59.93	65.65	70.91	39.82	45.98	51.41	57.48	62.96	68.01
THR	55	51.43	59.39	66.40	74.23	81.32	87.83	50.42	58.22	65.09	72.78	79.72	86.11	48.35	55.83	62.42	69.79	76.45	82.57
TMR	55	60.50	69.86	78.11	87.32	95.66	103.32	59.32	68.50	76.58	85.62	93.79	101.31	56.89	65.69	73.44	82.11	89.95	97.16

* Note: Valve series not balanced port

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

	Refrigerant Liquid Temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R12 Correction Factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	.94	.88	.82	.75	
R134a Correction Factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	.93	.85	.78	.71	
R22 Correction Factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	.94	.88	.82	.76	
R404A/R507 Correction	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	.90	.80	.70	.50	

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average 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.

EXTENDED CAPACITY TABLES

R-12 BALANCED PORTED VALVES (TONS)– A, B, HF, TFE, TRAE AND T SERIES (CONT.)

Valve Type	Nominal Rating	EVAPORATOR TEMPERATURE																	
		0°F						-20°F						-40°F					
		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)	
60	80	100	125	150	175	80	100	125	150	175	200	80	100	125	150	175	200		
A *	1/8	0.17	0.20	0.22	0.25	0.27	0.29	0.13	0.15	0.16	0.18	0.19	0.21	0.08	0.09	0.10	0.11	0.12	0.13
A *	1/4	0.29	0.33	0.37	0.42	0.46	0.50	0.23	0.26	0.29	0.31	0.34	0.36	0.15	0.17	0.19	0.21	0.22	0.24
A *	1/2	0.47	0.54	0.61	0.68	0.74	0.80	0.37	0.41	0.46	0.51	0.55	0.59	0.24	0.27	0.30	0.33	0.35	0.38
A *	1	0.67	0.77	0.86	0.97	1.06	1.14	0.53	0.59	0.66	0.73	0.78	0.84	0.34	0.38	0.43	0.47	0.50	0.54
A *	1-1/2	1.39	1.61	1.79	2.01	2.20	2.37	1.09	1.22	1.36	1.49	1.61	1.72	0.71	0.79	0.89	0.97	1.05	1.12
A *	2	1.70	1.96	2.19	2.45	2.69	2.90	1.33	1.49	1.66	1.82	1.97	2.10	0.87	0.97	1.09	1.19	1.29	1.38
A *	2-1/2	2.02	2.33	2.61	2.92	3.19	3.45	1.58	1.77	1.98	2.16	2.34	2.50	1.03	1.15	1.29	1.41	1.52	1.63
A *	3	2.76	3.19	3.56	3.98	4.36	4.71	2.16	2.41	2.70	2.96	3.19	3.42	1.40	1.57	1.75	1.92	2.07	2.21
B	1/4	0.25	0.29	0.32	0.36	0.40	0.43	0.20	0.22	0.25	0.27	0.30	0.32	0.13	0.15	0.16	0.18	0.19	0.21
B	1/2	0.48	0.55	0.62	0.69	0.76	0.82	0.38	0.42	0.48	0.52	0.56	0.60	0.24	0.27	0.30	0.33	0.35	0.38
B	1	0.75	0.87	0.97	1.08	1.19	1.28	0.58	0.65	0.73	0.79	0.86	0.92	0.38	0.42	0.48	0.52	0.56	0.60
B	1-1/4	1.00	1.15	1.29	1.44	1.58	1.71	0.78	0.87	0.98	1.07	1.15	1.23	0.51	0.57	0.64	0.70	0.75	0.81
B	1-1/2	1.26	1.45	1.63	1.82	1.99	2.15	0.99	1.11	1.24	1.36	1.46	1.57	0.64	0.72	0.80	0.88	0.95	1.01
B	2	1.53	1.77	1.98	2.21	2.42	2.61	1.20	1.34	1.50	1.64	1.77	1.90	0.78	0.87	0.98	1.07	1.15	1.23
B	2-1/2	1.98	2.29	2.56	2.86	3.13	3.38	1.55	1.73	1.94	2.12	2.29	2.45	1.01	1.13	1.26	1.38	1.49	1.60
B	3	2.50	2.89	3.23	3.61	3.95	4.27	1.96	2.19	2.45	2.68	2.90	3.10	1.27	1.42	1.59	1.74	1.88	2.01
B	3-1/2	3.11	3.59	4.01	4.49	4.92	5.31	2.44	2.73	3.05	3.34	3.61	3.86	1.58	1.77	1.98	2.16	2.34	2.50
HF/HN	1/8	0.14	0.16	0.18	0.20	0.22	0.24	0.11	0.12	0.14	0.15	0.16	0.17	0.07	0.08	0.09	0.10	0.10	0.11
HF/HN	1/4	0.27	0.31	0.35	0.39	0.43	0.46	0.21	0.23	0.26	0.29	0.31	0.33	0.14	0.16	0.18	0.19	0.21	0.22
HF/HN	1/2	0.48	0.55	0.62	0.69	0.76	0.82	0.38	0.42	0.48	0.52	0.56	0.60	0.24	0.27	0.30	0.33	0.35	0.38
HF/HN	1	0.73	0.84	0.94	1.05	1.15	1.25	0.57	0.64	0.71	0.78	0.84	0.90	0.37	0.41	0.46	0.51	0.55	0.59
HF/HN	1-1/4	0.98	1.13	1.27	1.41	1.55	1.67	0.77	0.86	0.96	1.05	1.14	1.22	0.50	0.56	0.63	0.68	0.74	0.79
HF/HN	1-1/2	1.26	1.45	1.63	1.82	1.99	2.15	0.99	1.11	1.24	1.36	1.46	1.57	0.64	0.72	0.80	0.88	0.95	1.01
HF/HN	2	1.66	1.92	2.14	2.40	2.62	2.83	1.30	1.45	1.63	1.78	1.92	2.06	0.85	0.95	1.06	1.16	1.26	1.34
HF/HN	3-1/2	2.96	3.42	3.82	4.27	4.68	5.06	2.32	2.59	2.90	3.18	3.43	3.67	1.51	1.69	1.89	2.07	2.23	2.39
HF/HN	5	4.12	4.76	5.32	5.95	6.51	7.04	3.23	3.61	4.04	4.42	4.78	5.11	2.10	2.35	2.63	2.88	3.11	3.32
HF/HN	6	5.21	6.02	6.73	7.52	8.24	8.90	4.08	4.56	5.10	5.59	6.03	6.45	2.66	2.97	3.33	3.64	3.93	4.21
HF/HN	9	7.73	8.93	9.98	11.16	12.22	13.20	6.06	6.78	7.58	8.30	8.96	9.58	3.94	4.41	4.93	5.40	5.83	6.23
HF/HN	12	10.17	11.74	13.13	14.68	16.08	17.37	7.97	8.91	9.96	10.91	11.79	12.60	5.18	5.79	6.48	7.09	7.66	8.19
TCLE*	1/4	0.25	0.29	0.32	0.36	0.40	0.43	0.20	0.22	0.25	0.27	0.30	0.32	0.13	0.15	0.16	0.18	0.19	0.21
TCLE*	1/2	0.47	0.54	0.61	0.68	0.74	0.80	0.37	0.41	0.46	0.51	0.55	0.59	0.24	0.27	0.30	0.33	0.35	0.38
TCLE*	1	0.96	1.11	1.24	1.39	1.52	1.64	0.75	0.84	0.94	1.03	1.11	1.19	0.49	0.55	0.61	0.67	0.72	0.77
TCLE*	2	1.76	2.03	2.27	2.54	2.78	3.01	1.38	1.54	1.73	1.89	2.04	2.18	0.90	1.01	1.13	1.23	1.33	1.42
TCLE*	3	2.57	2.97	3.32	3.71	4.06	4.39	2.01	2.25	2.51	2.75	2.97	3.18	1.31	1.46	1.64	1.79	1.94	2.07
TCLE*	4	3.73	4.31	4.82	5.38	5.90	6.37	2.92	3.26	3.65	4.00	4.32	4.62	1.90	2.12	2.38	2.60	2.81	3.00
TCLE*	6-1/2	5.14	5.94	6.64	7.42	8.13	8.78	4.03	4.51	5.04	5.52	5.96	6.37	2.62	2.93	3.28	3.59	3.88	4.14
TCLE*	7-1/2	6.20	7.16	8.00	8.95	9.80	10.59	4.86	5.43	6.08	6.65	7.19	7.68	3.16	3.53	3.95	4.33	4.67	5.00
TJL*	7	5.49	6.34	7.09	7.92	8.68	9.38	4.30	4.81	5.38	5.89	6.36	6.80	2.80	3.13	3.50	3.83	4.14	4.43
TJL*	8	7.00	8.08	9.04	10.10	11.07	11.95	5.49	6.14	6.86	7.52	8.12	8.68	3.57	3.99	4.46	4.89	5.28	5.64
TRAE+	7-1/2	5.95	6.87	7.68	8.59	9.41	10.16	4.66	5.21	5.83	6.38	6.89	7.37	3.03	3.39	3.79	4.15	4.48	4.79
TRAE+	10	8.67	10.01	11.19	12.51	13.71	14.81	6.79	7.59	8.49	9.30	10.04	10.74	4.42	4.94	5.53	6.05	6.54	6.99
TRAE+	12	9.67	11.17	12.48	13.96	15.29	16.51	7.58	8.47	9.48	10.38	11.21	11.99	4.93	5.51	6.16	6.75	7.29	7.80
TRAE+	18	14.66	16.93	18.93	21.16	23.18	25.04	11.49	12.85	14.36	15.73	16.99	18.17	7.47	8.35	9.34	10.23	11.05	11.81
TRAE+	25	20.15	23.27	26.01	29.08	31.86	34.41	15.80	17.66	19.75	21.64	23.37	24.98	10.27	11.48	12.84	14.06	15.19	16.24
TRAE	30	27.21	31.42	35.13	39.27	43.02	46.47	21.33	23.85	26.66	29.21	31.55	33.73	13.87	15.51	17.34	18.99	20.51	21.93
TRAE	35	29.68	34.27	38.32	42.84	46.93	50.69	23.26	26.01	29.08	31.85	34.40	36.78	15.13	16.92	18.91	20.72	22.38	23.92
TRAE	40	35.32	40.78	45.60	50.98	55.85	60.32	27.68	30.95	34.60	37.90	40.94	43.77	18.00	20.12	22.50	24.65	26.62	28.46
TJR	8	7.41	8.56	9.57	10.70	11.72	12.65	5.81	6.50	7.26	7.96	8.59	9.19	3.77	4.21	4.71	5.16	5.58	5.96
TJR	11	8.87	10.24	11.45	12.80	14.02	15.15	6.95	7.77	8.69	9.52	10.28	10.99	4.52	5.05	5.65	6.19	6.69	7.15
TER	13	11.08	12.79	14.30	15.99	17.52	18.92	8.69	9.72	10.86	11.90	12.85	13.74	5.65	6.32	7.06	7.74	8.36	8.93
TER	15	13.10	15.13	16.91	18.91	20.71	22.37	10.27	11.48	12.84	14.06	15.19	16.24	6.68	7.47	8.35	9.15	9.88	10.56
TER	20	17.64	20.37	22.77	25.46	27.89	30.13	13.82	15.45	17.28	18.92	20.44	21.85	8.99	10.05	11.24	12.31	13.30	14.21
TER	25	22.67	26.18	29.27	32.72	35.84	38.72	17.77	19.87	22.21	24.33	26.28	28.10	11.56	12.92	14.45	15.83	17.10	18.28
TER	35	27.71	32.00	35.77	40.00	43.81	47.32	21.72	24.28	27.15	29.74	32.12	34.34	14.12	15.79	17.65	19.33	20.88	22.33
THR	45	35.27	40.73	45.53	50.91	55.77	60.23	27.64	30.90	34.55	37.85	40.88	43.70	17.98	20.10	22.48	24.62	26.59	28.43
THR	55	42.83	49.46	55.29	61.82	67.72	73.15	33.57	37.53	41.96	45.97	49.65	53.08	21.83	24.41	27.29	29.89	32.29	34.52
TMR	55	50.39	58.19	65.05	72.73	79.67	86.06	39.49	44.15	49.36	54.07	58.41	62.44	25.68	28.71	32.10	35.16	37.98	40.60

* Note: Valve series not balanced port

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

	Refrigerant Liquid Temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R12 Correction Factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	.94	.88	.82	.75
R134a Correction Factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	.93	.85	.78	.71
R22 Correction Factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	.94	.88	.82	.76
R404A/R507 Correction	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	.90	.80	.70	.50

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average 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.

EXTENDED CAPACITY TABLES

R-22/R-407C BALANCED PORTED VALVES (TONS)– A, B, HF, TRAE AND T SERIES

Valve Type	Nominal Rating	EVAPORATOR TEMPERATURE																	
		50°F						40°F						20°F					
		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)	
60	80	100	125	150	175	60	80	100	125	150	175	60	80	100	125	150	175		
A *	1/5	0.15	0.17	0.19	0.22	0.24	0.26	0.15	0.17	0.19	0.21	0.23	0.25	0.14	0.16	0.18	0.20	0.22	0.24
A *	1/4	0.26	0.30	0.34	0.38	0.41	0.44	0.26	0.30	0.33	0.37	0.40	0.44	0.25	0.29	0.32	0.36	0.40	0.43
A *	1/2	0.46	0.53	0.59	0.66	0.73	0.79	0.45	0.52	0.58	0.65	0.71	0.77	0.44	0.51	0.57	0.64	0.70	0.75
A *	1	0.73	0.84	0.94	1.05	1.15	1.25	0.72	0.83	0.93	1.04	1.14	1.23	0.70	0.81	0.90	1.01	1.11	1.20
A *	1-1/2	1.05	1.21	1.36	1.52	1.66	1.79	1.03	1.19	1.33	1.49	1.63	1.76	1.01	1.17	1.30	1.46	1.60	1.72
A *	2	1.54	1.78	1.99	2.22	2.43	2.63	1.52	1.75	1.96	2.19	2.40	2.59	1.48	1.71	1.91	2.14	2.34	2.53
A *	2-1/2	2.16	2.49	2.79	3.12	3.42	3.69	2.13	2.46	2.75	3.07	3.37	3.64	2.08	2.40	2.69	3.00	3.29	3.55
A *	3	2.65	3.06	3.42	3.82	4.19	4.53	2.61	3.01	3.37	3.77	4.13	4.46	2.55	2.94	3.29	3.68	4.03	4.35
A *	4	3.14	3.63	4.05	4.53	4.96	5.36	3.10	3.58	4.00	4.47	4.90	5.29	3.03	3.50	3.91	4.37	4.79	5.17
A *	5	4.30	4.97	5.55	6.21	6.80	7.34	4.24	4.89	5.47	6.12	6.70	7.24	4.14	4.78	5.34	5.98	6.55	7.07
B	1/2	0.39	0.45	0.50	0.56	0.62	0.67	0.39	0.45	0.50	0.56	0.61	0.66	0.38	0.44	0.49	0.55	0.60	0.65
B	1	0.75	0.87	0.97	1.08	1.19	1.28	0.74	0.85	0.95	1.06	1.16	1.26	0.72	0.83	0.93	1.04	1.14	1.23
B	1-1/2	1.16	1.34	1.50	1.67	1.83	1.98	1.15	1.32	1.48	1.65	1.81	1.96	1.12	1.29	1.45	1.62	1.77	1.91
B	2	1.56	1.80	2.01	2.25	2.47	2.66	1.53	1.77	1.98	2.21	2.42	2.62	1.50	1.73	1.94	2.17	2.37	2.56
B	2-1/2	1.96	2.26	2.53	2.83	3.10	3.35	1.94	2.24	2.50	2.80	3.06	3.31	1.89	2.18	2.44	2.73	2.99	3.23
B	3	2.38	2.75	3.07	3.44	3.76	4.06	2.35	2.71	3.03	3.39	3.71	4.01	2.29	2.64	2.96	3.31	3.62	3.91
B	4	3.08	3.56	3.98	4.45	4.87	5.26	3.04	3.51	3.92	4.38	4.80	5.19	2.97	3.43	3.83	4.29	4.70	5.07
B	5	3.90	4.50	5.03	5.63	6.17	6.66	3.85	4.45	4.97	5.56	6.09	6.57	3.75	4.33	4.84	5.41	5.93	6.40
B	6	4.85	5.60	6.26	7.00	7.67	8.28	4.78	5.52	6.17	6.90	7.56	8.16	4.67	5.39	6.03	6.74	7.38	7.98
HF	1/4	0.22	0.25	0.28	0.32	0.35	0.38	0.22	0.25	0.28	0.31	0.34	0.37	0.21	0.24	0.27	0.30	0.33	0.36
HF	1/2	0.42	0.48	0.54	0.61	0.66	0.72	0.41	0.47	0.53	0.59	0.65	0.70	0.40	0.46	0.52	0.58	0.63	0.68
HF	1	0.75	0.87	0.97	1.08	1.19	1.28	0.74	0.85	0.95	1.06	1.16	1.26	0.72	0.83	0.93	1.04	1.14	1.23
HF	1-1/2	1.14	1.32	1.47	1.65	1.80	1.95	1.12	1.30	1.45	1.62	1.78	1.92	1.10	1.27	1.42	1.59	1.74	1.88
HF	2	1.53	1.77	1.98	2.21	2.42	2.61	1.52	1.75	1.96	2.19	2.40	2.59	1.48	1.71	1.91	2.14	2.34	2.53
HF	2-1/2	1.96	2.26	2.53	2.83	3.10	3.35	1.94	2.25	2.51	2.81	3.07	3.32	1.89	2.18	2.44	2.73	2.99	3.23
HF	3	2.59	2.99	3.34	3.74	4.10	4.42	2.56	2.96	3.31	3.70	4.05	4.38	2.50	2.89	3.23	3.61	3.95	4.27
HF	5-1/2	4.61	5.32	5.95	6.65	7.29	7.87	4.56	5.27	5.89	6.59	7.21	7.79	4.44	5.13	5.73	6.41	7.02	7.58
HF	8	6.42	7.41	8.29	9.27	10.15	10.96	6.34	7.33	8.19	9.16	10.03	10.83	6.18	7.14	7.98	8.92	9.77	10.55
HF	10	8.13	9.39	10.50	11.73	12.85	13.88	8.06	9.30	10.40	11.63	12.74	13.76	7.83	9.04	10.11	11.30	12.38	13.37
HF	15	12.05	13.91	15.56	17.39	19.05	20.58	11.91	13.77	15.40	17.22	18.86	20.37	11.61	13.41	14.99	16.76	18.36	19.83
HF	20	15.87	18.33	20.49	22.91	25.09	27.10	15.68	18.07	20.20	22.58	24.74	26.72	15.28	17.64	19.73	22.05	24.16	26.10
TCLE*	1/2	0.39	0.45	0.50	0.56	0.62	0.67	0.39	0.45	0.50	0.56	0.61	0.66	0.38	0.44	0.49	0.55	0.60	0.65
TCLE*	1	0.74	0.85	0.96	1.07	1.17	1.26	0.73	0.84	0.94	1.05	1.15	1.24	0.71	0.82	0.92	1.02	1.12	1.21
TCLE*	2	1.49	1.72	1.92	2.15	2.36	2.54	1.47	1.70	1.90	2.12	2.33	2.51	1.44	1.66	1.86	2.08	2.28	2.46
TCLE*	3	2.75	3.18	3.55	3.97	4.35	4.70	2.71	3.13	3.50	3.91	4.29	4.63	2.65	3.06	3.42	3.82	4.19	4.53
TCLE*	5	4.01	4.63	5.18	5.79	6.34	6.85	3.95	4.56	5.10	5.70	6.25	6.75	3.86	4.46	4.98	5.57	6.10	6.59
TCLE*	7-1/2	5.82	6.72	7.51	8.40	9.20	9.94	5.75	6.64	7.42	8.30	9.09	9.82	5.60	6.47	7.23	8.08	8.85	9.56
TCLE*	10	8.02	9.26	10.35	11.58	12.68	13.70	7.92	9.15	10.23	11.44	12.53	13.53	7.72	8.91	9.97	11.14	12.21	13.18
TCLE*	12	9.67	11.17	12.48	13.96	15.29	16.51	9.55	11.03	12.33	13.79	15.10	16.31	9.31	10.75	12.02	13.44	14.72	15.90
TJL*	11	8.57	9.90	11.06	12.37	13.55	14.64	8.47	9.78	10.93	12.22	13.39	14.46	8.25	9.53	10.65	11.91	13.04	14.09
TJL*	14	10.92	12.61	14.10	15.76	17.27	18.65	10.80	12.47	13.94	15.59	17.07	18.44	10.52	12.15	13.58	15.18	16.63	17.97
TRAE+	10	9.27	10.70	11.97	13.38	14.66	15.83	9.16	10.58	11.83	13.23	14.49	15.65	8.93	10.31	11.53	12.89	14.12	15.25
TRAE+	15	13.52	15.61	17.45	19.51	21.38	23.09	13.36	15.43	17.25	19.29	21.13	22.82	13.02	15.03	16.81	18.79	20.59	22.24
TRAE+	20	15.09	17.42	19.48	21.78	23.86	25.77	14.91	17.22	19.25	21.52	23.58	25.47	14.53	16.78	18.76	20.97	22.97	24.81
TRAE+	30	22.87	26.41	29.53	33.01	36.16	39.06	22.60	26.10	29.18	32.62	35.74	38.60	22.02	25.43	28.43	31.78	34.82	37.61
TRAE+	40	31.43	36.29	40.58	45.37	49.70	53.68	31.07	35.88	40.11	44.84	49.12	53.06	30.27	34.95	39.08	43.69	47.86	51.70
TRAE	50	42.43	48.99	54.78	61.24	67.09	72.46	41.94	48.42	54.14	60.53	66.31	71.62	40.87	47.19	52.76	58.99	64.62	69.80
TRAE	60	46.28	53.44	59.75	66.80	73.18	79.04	45.75	52.82	59.06	66.03	72.33	78.13	44.58	51.48	57.55	64.35	70.49	76.13
TRAE	70	55.09	63.61	71.12	79.52	87.10	94.08	54.45	62.87	70.29	78.59	86.09	92.98	53.06	61.27	68.50	76.59	83.90	90.62
TJR	14	11.55	13.34	14.91	16.67	18.26	19.73	11.42	13.18	14.74	16.48	18.05	19.50	11.13	12.85	14.37	16.06	17.60	19.01
TJR	18	13.83	15.97	17.85	19.96	21.87	23.62	13.67	15.79	17.65	19.73	21.62	23.35	13.32	15.38	17.20	19.23	21.06	22.75
TER	22	17.29	19.96	22.32	24.96	27.34	29.53	17.09	19.73	22.06	24.66	27.02	29.18	16.65	19.23	21.50	24.03	26.33	28.44
TER	26	20.43	23.59	26.38	29.49	32.30	34.89	20.19	23.32	26.07	29.15	31.93	34.49	19.68	22.72	25.41	28.41	31.12	33.61
TER	35	27.50	31.75	35.50	39.69	43.48	46.97	27.18	31.39	35.09	39.23	42.98	46.42	26.49	30.59	34.20	38.24	41.88	45.24
TER	45	35.36	40.83	45.65	51.04	55.91	60.39	34.95	40.36	45.12	50.45	55.26	59.69	34.06	39.33	43.97	49.16	53.85	58.17
TIR	55	43.22	49.91	55.80	62.38	68.34	73.81	42.72	49.33	55.15	61.66	67.54	72.96	41.63	48.07	53.74	60.09	65.82	71.10
THR	75	55.01	63.52	71.02	79.40	86.98	93.95	54.37	62.78	70.19	78.47	85.96	92.85	52.98	61.18	68.40	76.47	83.77	90.48
THR	100	66.79	77.12	86.23	96.40	105.60	114.07	66.02	76.23	85.23	95.29	104.39	112.75	64.33	74.28	83.05	92.85	101.71	109.86
TMR	100	78.58	90.74	101.45	113.42	124.25	134.20	77.67	89.68	100.27	112.11	122.81	132.64	75.69	87.40	97.72	109.25	119.68	129.27

* Note: Valve series not balanced port

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

	Refrigerant Liquid Temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R12 Correction Factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	.94	.88	.82	.75
R134a Correction Factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	.93	.85	.78	.71
R22 Correction Factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00</				

EXTENDED CAPACITY TABLES

R-22/R-407C BALANCED PORTED VALVES (TONS)– A, B, HF, TRAE AND T SERIES (CONT.)

Valve Type	Nominal Rating	EVAPORATOR TEMPERATURE																	
		0°F						-20°F						-40°F					
		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)	
60	80	100	125	150	175	80	100	125	150	175	200	80	100	125	150	175	200		
A *	1/5	0.13	0.15	0.17	0.19	0.21	0.22	0.10	0.11	0.13	0.14	0.15	0.16	0.07	0.08	0.09	0.10	0.10	0.11
A *	1/4	0.23	0.27	0.30	0.33	0.36	0.39	0.18	0.20	0.23	0.25	0.27	0.28	0.12	0.13	0.15	0.16	0.18	0.19
A *	1/2	0.40	0.46	0.52	0.58	0.63	0.68	0.32	0.36	0.40	0.44	0.47	0.51	0.21	0.23	0.26	0.29	0.31	0.33
A *	1	0.64	0.74	0.83	0.92	1.01	1.09	0.51	0.57	0.64	0.70	0.75	0.81	0.34	0.38	0.43	0.47	0.50	0.54
A *	1-1/2	0.91	1.05	1.17	1.31	1.44	1.55	0.73	0.82	0.91	1.00	1.08	1.15	0.48	0.54	0.60	0.66	0.71	0.76
A *	2	1.35	1.56	1.74	1.95	2.13	2.31	1.07	1.20	1.34	1.47	1.58	1.69	0.71	0.79	0.89	0.97	1.05	1.12
A *	2-1/2	1.89	2.18	2.44	2.73	2.99	3.23	1.51	1.69	1.89	2.07	2.23	2.39	0.99	1.11	1.24	1.36	1.46	1.57
A *	3	2.31	2.67	2.98	3.33	3.65	3.95	1.85	2.07	2.31	2.53	2.74	2.93	1.22	1.36	1.53	1.67	1.80	1.93
A *	4	2.75	3.18	3.55	3.97	4.35	4.70	2.19	2.45	2.74	3.00	3.24	3.46	1.44	1.61	1.80	1.97	2.13	2.28
A *	5	3.75	4.33	4.84	5.41	5.93	6.40	3.00	3.35	3.75	4.11	4.44	4.74	1.97	2.20	2.46	2.70	2.91	3.11
B	1/2	0.34	0.39	0.44	0.49	0.54	0.58	0.27	0.30	0.34	0.37	0.40	0.43	0.18	0.20	0.23	0.25	0.27	0.28
B	1	0.65	0.75	0.84	0.94	1.03	1.11	0.52	0.58	0.65	0.71	0.77	0.82	0.34	0.38	0.43	0.47	0.50	0.54
B	1-1/2	1.02	1.18	1.32	1.47	1.61	1.74	0.81	0.91	1.01	1.11	1.20	1.28	0.53	0.59	0.66	0.73	0.78	0.84
B	2	1.36	1.57	1.76	1.96	2.15	2.32	1.08	1.21	1.35	1.48	1.60	1.71	0.71	0.79	0.89	0.97	1.05	1.12
B	2-1/2	1.72	1.99	2.22	2.48	2.72	2.94	1.37	1.53	1.71	1.88	2.03	2.17	0.90	1.01	1.13	1.23	1.33	1.42
B	3	2.08	2.40	2.69	3.00	3.29	3.55	1.66	1.86	2.08	2.27	2.46	2.62	1.09	1.22	1.36	1.49	1.61	1.72
B	4	2.69	3.11	3.47	3.88	4.25	4.59	2.15	2.40	2.69	2.94	3.18	3.40	1.41	1.58	1.76	1.93	2.09	2.23
B	5	3.40	3.93	4.39	4.91	5.38	5.81	2.72	3.04	3.40	3.72	4.02	4.30	1.79	2.00	2.24	2.45	2.65	2.83
B	6	4.23	4.88	5.46	6.11	6.69	7.22	3.38	3.78	4.23	4.63	5.00	5.34	2.23	2.49	2.79	3.05	3.30	3.53
HF	1/4	0.19	0.22	0.25	0.27	0.30	0.32	0.15	0.17	0.19	0.21	0.22	0.24	0.10	0.11	0.13	0.14	0.15	0.16
HF	1/2	0.36	0.42	0.46	0.52	0.57	0.61	0.29	0.32	0.36	0.40	0.43	0.46	0.19	0.21	0.24	0.26	0.28	0.30
HF	1	0.65	0.75	0.84	0.94	1.03	1.11	0.52	0.58	0.65	0.71	0.77	0.82	0.34	0.38	0.43	0.47	0.50	0.54
HF	1-1/2	1.00	1.15	1.29	1.44	1.58	1.71	0.79	0.88	0.99	1.08	1.17	1.25	0.52	0.58	0.65	0.71	0.77	0.82
HF	2	1.34	1.55	1.73	1.93	2.12	2.29	1.07	1.20	1.34	1.47	1.58	1.69	0.70	0.78	0.88	0.96	1.04	1.11
HF	2-1/2	1.72	1.99	2.22	2.48	2.72	2.94	1.37	1.53	1.71	1.88	2.03	2.17	0.90	1.01	1.13	1.23	1.33	1.42
HF	3	2.26	2.61	2.92	3.26	3.57	3.86	1.81	2.02	2.26	2.48	2.68	2.86	1.19	1.33	1.49	1.63	1.76	1.88
HF	5-1/2	4.03	4.65	5.20	5.82	6.37	6.88	3.22	3.60	4.03	4.41	4.76	5.09	2.12	2.37	2.65	2.90	3.14	3.35
HF	8	5.61	6.48	7.24	8.10	8.87	9.58	4.48	5.01	5.60	6.13	6.63	7.08	2.95	3.30	3.69	4.04	4.36	4.66
HF	10	7.10	8.20	9.17	10.25	11.23	12.13	5.67	6.34	7.09	7.76	8.39	8.97	3.73	4.17	4.66	5.11	5.52	5.90
HF	15	10.53	12.16	13.59	15.20	16.65	17.98	8.40	9.39	10.50	11.50	12.42	13.28	5.53	6.18	6.91	7.57	8.18	8.74
HF	20	13.86	16.00	17.89	20.01	21.91	23.67	11.06	12.37	13.83	15.14	16.36	17.49	7.28	8.14	9.10	9.97	10.77	11.51
TCLE*	1/2	0.34	0.39	0.44	0.49	0.54	0.58	0.27	0.30	0.34	0.37	0.40	0.43	0.18	0.20	0.23	0.25	0.27	0.28
TCLE*	1	0.65	0.75	0.84	0.94	1.03	1.11	0.52	0.58	0.65	0.71	0.77	0.82	0.34	0.38	0.43	0.47	0.50	0.54
TCLE*	2	1.30	1.50	1.68	1.88	2.06	2.22	1.04	1.16	1.30	1.42	1.54	1.64	0.69	0.77	0.86	0.94	1.02	1.09
TCLE*	3	2.40	2.77	3.10	3.46	3.79	4.10	1.92	2.15	2.40	2.63	2.84	3.04	1.26	1.41	1.58	1.73	1.86	1.99
TCLE*	5	3.50	4.04	4.52	5.05	5.53	5.98	2.79	3.12	3.49	3.82	4.13	4.41	1.84	2.06	2.30	2.52	2.72	2.91
TCLE*	7-1/2	5.08	5.87	6.56	7.33	8.03	8.68	4.05	4.53	5.06	5.55	5.99	6.40	2.67	2.99	3.34	3.66	3.95	4.22
TCLE*	10	7.00	8.08	9.04	10.10	11.07	11.95	5.59	6.25	6.99	7.65	8.27	8.84	3.68	4.11	4.60	5.04	5.44	5.82
TCLE*	12	8.44	9.75	10.90	12.18	13.34	14.41	6.74	7.54	8.43	9.23	9.97	10.66	4.44	4.96	5.55	6.08	6.57	7.02
TJL*	11	7.48	8.64	9.66	10.80	11.83	12.77	5.97	6.67	7.46	8.17	8.83	9.44	3.93	4.39	4.91	5.38	5.81	6.21
TJL*	14	9.54	11.02	12.32	13.77	15.08	16.29	7.62	8.52	9.53	10.43	11.27	12.05	5.02	5.61	6.28	6.87	7.42	7.94
TRAE+	10	8.10	9.35	10.46	11.69	12.81	13.83	6.47	7.23	8.09	8.86	9.57	10.23	4.26	4.76	5.33	5.83	6.30	6.74
TRAE+	15	11.80	13.63	15.23	17.03	18.66	20.15	9.42	10.53	11.78	12.90	13.93	14.89	6.21	6.94	7.76	8.50	9.18	9.82
TRAE+	20	13.18	15.22	17.02	19.02	20.84	22.51	10.52	11.76	13.15	14.41	15.56	16.63	6.93	7.75	8.66	9.49	10.25	10.96
TRAE+	30	19.97	23.06	25.78	28.82	31.58	34.11	15.94	17.82	19.93	21.83	23.58	25.20	10.50	11.74	13.13	14.38	15.53	16.60
TRAE+	40	27.45	31.70	35.44	39.62	43.40	46.88	21.92	24.51	27.40	30.02	32.42	34.66	14.43	16.13	18.04	19.76	21.34	22.82
TRAE	50	37.06	42.79	47.84	53.49	58.60	63.29	29.59	33.08	36.99	40.52	43.76	46.79	19.48	21.78	24.35	26.67	28.81	30.80
TRAE	60	40.42	46.67	52.18	58.34	63.91	69.03	32.27	36.08	40.34	44.19	47.73	51.02	21.25	23.76	26.56	29.10	31.43	33.60
TRAE	70	48.11	55.55	62.11	69.44	76.07	82.16	38.41	42.94	48.01	52.60	56.81	60.73	25.29	28.28	31.61	34.63	37.40	39.99
TJR	14	10.09	11.65	13.03	14.56	15.95	17.23	8.05	9.00	10.06	11.02	11.91	12.73	5.30	5.93	6.63	7.26	7.84	8.38
TJR	18	12.08	13.95	15.60	17.44	19.10	20.63	9.64	10.78	12.05	13.20	14.26	15.24	6.35	7.10	7.94	8.70	9.39	10.04
TER	22	15.10	17.44	19.49	21.79	23.88	25.79	12.05	13.47	15.06	16.50	17.82	19.05	7.94	8.88	9.93	10.87	11.74	12.55
TER	26	17.84	20.60	23.03	25.75	28.21	30.47	14.25	15.93	17.81	19.51	21.08	22.53	9.38	10.49	11.73	12.84	13.87	14.83
TER	35	24.02	27.74	31.01	34.67	37.98	41.02	19.18	21.44	23.98	26.26	28.37	30.33	12.63	14.12	15.79	17.29	18.68	19.97
TER	45	30.88	35.66	39.87	44.57	48.83	52.74	24.66	27.57	30.83	33.77	36.47	38.99	16.24	18.16	20.30	22.24	24.02	25.68
TIR	55	37.75	43.59	48.74	54.49	59.69	64.47	30.13	33.69	37.66	41.26	44.56	47.64	19.84	22.18	24.80	27.17	29.34	31.37
THR	75	48.04	55.47	62.02	69.34	75.96	82.04	38.35	42.88	47.94	52.51	56.72	60.64	25.26	28.24	31.58	34.59	37.36	39.94
THR	100	58.33	67.35	75.30	84.19	92.23	99.62	46.57	52.07	58.21	63.77	68.88	73.63	30.67	34.29	38.34	42.00	45.36	48.49
TMR	100	68.63	79.25	88.60	99.06	108.51	117.21	54.79	61.26	68.49	75.02	81.04	86.63	36.08	40.34	45.10	49.40	53.36	57.05

* Note: Valve series not balanced port

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

	Refrigerant Liquid Temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R12 Correction Factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	.94	.88	.82	.75
R134a Correction Factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	.93	.85	.78	.71
R22 Correction Factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	.94	.88	.82	.76
R404A/R507 Correction	2.00	1.90	1.80	1.70	1.60										

EXTENDED CAPACITY TABLES

R-134a BALANCED PORTED VALVES (TONS)– A, B, HF, TRAE AND T SERIES

Valve Type	Nominal Rating	EVAPORATOR TEMPERATURE																	
		50°F						40°F						20°F					
		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)	
60	80	100	125	150	175	60	80	100	125	150	175	60	80	100	125	150	175		
A *	1/8	0.14	0.16	0.18	0.20	0.22	0.24	0.14	0.16	0.18	0.20	0.22	0.24	0.13	0.15	0.17	0.19	0.21	0.22
A *	1/4	0.25	0.29	0.32	0.36	0.40	0.43	0.24	0.28	0.31	0.35	0.38	0.41	0.23	0.27	0.30	0.33	0.36	0.39
A *	1/2	0.43	0.50	0.56	0.62	0.68	0.73	0.43	0.50	0.56	0.62	0.68	0.73	0.41	0.47	0.53	0.59	0.65	0.70
A *	3/4	0.70	0.81	0.90	1.01	1.11	1.20	0.68	0.79	0.88	0.98	1.08	1.16	0.65	0.75	0.84	0.94	1.03	1.11
A *	1	1.00	1.15	1.29	1.44	1.58	1.71	0.98	1.13	1.27	1.41	1.55	1.67	0.93	1.07	1.20	1.34	1.47	1.59
A *	1-1/2	1.47	1.70	1.90	2.12	2.32	2.51	1.44	1.66	1.86	2.08	2.28	2.46	1.38	1.59	1.78	1.99	2.18	2.36
A *	2	2.06	2.38	2.66	2.97	3.26	3.52	2.02	2.33	2.61	2.92	3.19	3.45	1.93	2.23	2.49	2.79	3.05	3.30
A *	2-1/2	2.53	2.92	3.27	3.65	4.00	4.32	2.47	2.85	3.19	3.57	3.91	4.22	2.37	2.74	3.06	3.42	3.75	4.05
A *	3	3.00	3.46	3.87	4.33	4.74	5.12	2.94	3.39	3.80	4.24	4.65	5.02	2.81	3.24	3.63	4.06	4.44	4.80
A *	4	4.10	4.73	5.29	5.92	6.48	7.00	4.02	4.64	5.19	5.80	6.36	6.87	3.84	4.43	4.96	5.54	6.07	6.56
B	1/2	0.37	0.43	0.48	0.53	0.59	0.63	0.37	0.43	0.48	0.53	0.59	0.63	0.35	0.40	0.45	0.51	0.55	0.60
B	3/4	0.71	0.82	0.92	1.02	1.12	1.21	0.70	0.81	0.90	1.01	1.11	1.20	0.67	0.77	0.86	0.97	1.06	1.14
B	1	1.11	1.28	1.43	1.60	1.76	1.90	1.09	1.26	1.41	1.57	1.72	1.86	1.04	1.20	1.34	1.50	1.64	1.78
B	1-1/2	1.48	1.71	1.91	2.14	2.34	2.53	1.45	1.67	1.87	2.09	2.29	2.48	1.39	1.61	1.79	2.01	2.20	2.37
B	2	1.87	2.16	2.41	2.70	2.96	3.19	1.84	2.12	2.38	2.66	2.91	3.14	1.76	2.03	2.27	2.54	2.78	3.01
B	2-1/4	2.27	2.62	2.93	3.28	3.59	3.88	2.22	2.56	2.87	3.20	3.51	3.79	2.13	2.46	2.75	3.07	3.37	3.64
B	3	2.94	3.39	3.80	4.24	4.65	5.02	2.88	3.33	3.72	4.16	4.55	4.92	2.75	3.18	3.55	3.97	4.35	4.70
B	3-1/2	3.72	4.30	4.80	5.37	5.88	6.35	3.64	4.20	4.70	5.25	5.76	6.22	3.48	4.02	4.49	5.02	5.50	5.94
B	4-1/4	4.62	5.33	5.96	6.67	7.30	7.89	4.53	5.23	5.85	6.54	7.16	7.74	4.33	5.00	5.59	6.25	6.85	7.39
HF	1/4	0.21	0.24	0.27	0.30	0.33	0.36	0.21	0.24	0.27	0.30	0.33	0.36	0.20	0.23	0.26	0.29	0.32	0.34
HF	1/2	0.40	0.46	0.52	0.58	0.63	0.68	0.39	0.45	0.50	0.56	0.62	0.67	0.37	0.43	0.48	0.53	0.59	0.63
HF	3/4	0.71	0.82	0.92	1.02	1.12	1.21	0.70	0.81	0.90	1.01	1.11	1.20	0.67	0.77	0.86	0.97	1.06	1.14
HF	1	1.09	1.26	1.41	1.57	1.72	1.86	1.06	1.22	1.37	1.53	1.68	1.81	1.02	1.18	1.32	1.47	1.61	1.74
HF	1-1/2	1.46	1.69	1.88	2.11	2.31	2.49	1.43	1.65	1.85	2.06	2.26	2.44	1.37	1.58	1.77	1.98	2.17	2.34
HF	1-3/4	1.87	2.16	2.41	2.70	2.96	3.19	1.84	2.12	2.38	2.66	2.91	3.14	1.76	2.03	2.27	2.54	2.78	3.01
HF	2-1/2	2.47	2.85	3.19	3.57	3.91	4.22	2.42	2.79	3.12	3.49	3.83	4.13	2.32	2.68	3.00	3.35	3.67	3.96
HF	4	4.40	5.08	5.68	6.35	6.96	7.51	4.31	4.98	5.56	6.22	6.81	7.36	4.12	4.76	5.32	5.95	6.51	7.04
HF	6	6.12	7.07	7.90	8.83	9.68	10.45	6.00	6.93	7.75	8.66	9.49	10.25	5.74	6.63	7.41	8.28	9.08	9.80
HF	7-1/2	7.75	8.95	10.01	11.19	12.25	13.24	7.59	8.76	9.80	10.96	12.00	12.96	7.26	8.38	9.37	10.48	11.48	12.40
HF	11	11.50	13.28	14.85	16.60	18.18	19.64	11.26	13.00	14.54	16.25	17.80	19.23	10.77	12.44	13.90	15.55	17.03	18.39
HF	14	15.13	17.47	19.53	21.84	23.92	25.84	14.82	17.11	19.13	21.39	23.43	25.31	14.18	16.37	18.31	20.47	22.42	24.22
TCLE*	1/4	0.37	0.43	0.48	0.53	0.59	0.63	0.37	0.43	0.48	0.53	0.59	0.63	0.35	0.40	0.45	0.51	0.55	0.60
TCLE*	3/4	0.70	0.81	0.90	1.01	1.11	1.20	0.69	0.80	0.89	1.00	1.09	1.18	0.66	0.76	0.85	0.95	1.04	1.13
TCLE*	1-1/2	1.42	1.64	1.83	2.05	2.25	2.43	1.39	1.61	1.79	2.01	2.20	2.37	1.33	1.54	1.72	1.92	2.10	2.27
TCLE*	2-1/2	2.62	3.03	3.38	3.78	4.14	4.47	2.57	2.97	3.32	3.71	4.06	4.39	2.46	2.84	3.18	3.55	3.89	4.20
TCLE*	3-1/2	3.82	4.41	4.93	5.51	6.04	6.52	3.74	4.32	4.83	5.40	5.91	6.39	3.58	4.13	4.62	5.17	5.66	6.11
TCLE*	5-1/2	5.55	6.41	7.17	8.01	8.78	9.48	5.43	6.27	7.01	7.84	8.59	9.27	5.20	6.00	6.71	7.51	8.22	8.88
TCLE*	7-1/2	7.65	8.83	9.88	11.04	12.10	13.06	7.49	8.65	9.67	10.81	11.84	12.79	7.16	8.27	9.24	10.33	11.32	12.23
TCLE*	9	9.22	10.65	11.90	13.31	14.58	15.75	9.03	10.43	11.66	13.03	14.28	15.42	8.64	9.98	11.15	12.47	13.66	14.76
TJL*	9	8.17	9.43	10.55	11.79	12.92	13.95	8.00	9.24	10.33	11.55	12.65	13.66	7.65	8.83	9.88	11.04	12.10	13.06
TJL*	11	10.42	12.03	13.45	15.04	16.48	17.80	10.20	11.78	13.17	14.72	16.13	17.42	9.76	11.27	12.60	14.09	15.43	16.67
TRAE+	9	8.84	10.21	11.41	12.76	13.98	15.10	8.66	10.00	11.18	12.50	13.69	14.79	8.29	9.57	10.70	11.97	13.11	14.16
TRAE+	13	12.89	14.88	16.64	18.61	20.38	22.01	12.63	14.58	16.31	18.23	19.97	21.57	12.08	13.95	15.60	17.44	19.10	20.63
TRAE+	14	14.39	16.62	18.58	20.77	22.75	24.58	14.09	16.27	18.19	20.34	22.28	24.06	13.48	15.57	17.40	19.46	21.31	23.02
TRAE+	22	21.81	25.18	28.16	31.48	34.48	37.25	21.36	24.66	27.58	30.83	33.77	36.48	20.43	23.59	26.38	29.49	32.30	34.89
TRAE+	30	29.98	34.62	38.70	43.27	47.40	51.20	29.36	33.90	37.90	42.38	46.42	50.14	28.09	32.44	36.26	40.54	44.41	47.97
TRAE	40	40.48	46.74	52.26	58.43	64.00	69.13	39.64	45.77	51.18	57.22	62.68	67.70	37.92	43.79	48.95	54.73	59.96	64.76
TRAE	45	44.15	50.98	57.00	63.73	69.81	75.40	43.24	49.93	55.82	62.41	68.37	73.85	41.36	47.76	53.40	59.70	65.40	70.64
TRAE	50	52.54	60.67	67.83	75.83	83.07	89.73	51.46	59.42	66.43	74.28	81.37	87.88	49.22	56.83	63.54	71.04	77.82	84.06
TJR	11	11.02	12.72	14.23	15.91	17.42	18.82	10.79	12.46	13.93	15.57	17.06	18.43	10.32	11.92	13.32	14.90	16.32	17.62
TJR	13	13.19	15.23	17.03	19.04	20.86	22.53	12.92	14.92	16.68	18.65	20.43	22.07	12.36	14.27	15.96	17.84	19.54	21.11
TER	16	16.49	19.04	21.29	23.80	26.07	28.16	16.15	18.65	20.85	23.31	25.54	27.58	15.45	17.84	19.95	22.30	24.43	26.39
TER	19	19.49	22.51	25.16	28.13	30.82	33.29	19.09	22.04	24.65	27.55	30.18	32.60	18.26	21.08	23.57	26.36	28.87	31.18
TER	25	26.23	30.29	33.86	37.86	41.47	44.80	25.69	29.66	33.17	37.08	40.62	43.87	24.58	28.38	31.73	35.48	38.86	41.98
TER	31	33.73	38.95	43.55	48.69	53.33	57.60	33.03	38.14	42.64	47.67	52.23	56.41	31.60	36.49	40.80	45.61	49.96	53.97
TIR	45	41.23	47.61	53.23	59.51	65.19	70.41	40.37	46.62	52.12	58.27	63.83	68.94	38.62	44.59	49.86	55.74	61.06	65.96
THR	55	52.47	60.59	67.74	75.73	82.96	89.61	51.38	59.33	66.33	74.16	81.24	87.75	49.15	56.75	63.45	70.94	77.71	83.94
THR	68	63.71	73.57	82.25	91.96	100.73	108.81	62.40	72.05	80.56	90.07	98.66	106.57	59.69	68.92	77.06	86.16	94.38	101.94
TMR	68	74.95	86.54	96.76	108.18	118.51	128.00	73.41	84.77	94.77	105.96	116.07	125.37	70.22	81.08	90.65	101.35	111.03	119.92

* Note: Valve series not balanced port

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

	Refrigerant Liquid Temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R12 Correction Factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	.94	.88	.82	.75
R134a Correction Factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	.93	.85	.78	.71
R22 Correction Factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06</					

EXTENDED CAPACITY TABLES

R-134a BALANCED PORTED VALVES (TONS)– A, B, HF, TRAE AND T SERIES (CONT.)

Valve Type	Nominal Rating	EVAPORATOR TEMPERATURE																	
		0°F						-20°F						-40°F					
		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)	
60	80	100	125	150	175	80	100	125	150	175	200	80	100	125	150	175	200		
A *	1/8	0.11	0.13	0.14	0.16	0.17	0.19	0.08	0.09	0.10	0.11	0.12	0.13	0.05	0.06	0.06	0.07	0.07	0.08
A *	1/4	0.19	0.22	0.25	0.27	0.30	0.32	0.14	0.16	0.18	0.19	0.21	0.22	0.09	0.10	0.11	0.12	0.13	0.14
A *	1/2	0.34	0.39	0.44	0.49	0.54	0.58	0.25	0.28	0.31	0.34	0.37	0.40	0.15	0.17	0.19	0.21	0.22	0.24
A *	3/4	0.54	0.62	0.70	0.78	0.85	0.92	0.40	0.45	0.50	0.55	0.59	0.63	0.25	0.28	0.31	0.34	0.37	0.40
A *	1	0.77	0.89	0.99	1.11	1.22	1.32	0.57	0.64	0.71	0.78	0.84	0.90	0.35	0.39	0.44	0.48	0.52	0.55
A *	1-1/2	1.13	1.30	1.46	1.63	1.79	1.93	0.85	0.95	1.06	1.16	1.26	1.34	0.52	0.58	0.65	0.71	0.77	0.82
A *	2	1.59	1.84	2.05	2.29	2.51	2.72	1.19	1.33	1.49	1.63	1.76	1.88	0.73	0.82	0.91	1.00	1.08	1.15
A *	2-1/2	1.95	2.25	2.52	2.81	3.08	3.33	1.45	1.62	1.81	1.99	2.14	2.29	0.89	1.00	1.11	1.22	1.32	1.41
A *	3	2.31	2.67	2.98	3.33	3.65	3.95	1.72	1.92	2.15	2.36	2.54	2.72	1.06	1.19	1.33	1.45	1.57	1.68
A *	4	3.16	3.65	4.08	4.56	5.00	5.40	2.36	2.64	2.95	3.23	3.49	3.73	1.45	1.62	1.81	1.99	2.14	2.29
B	1/2	0.29	0.33	0.37	0.42	0.46	0.50	0.22	0.25	0.28	0.30	0.33	0.35	0.13	0.15	0.16	0.18	0.19	0.21
B	3/4	0.55	0.64	0.71	0.79	0.87	0.94	0.41	0.46	0.51	0.56	0.61	0.65	0.25	0.28	0.31	0.34	0.37	0.40
B	1	0.86	0.99	1.11	1.24	1.36	1.47	0.64	0.72	0.80	0.88	0.95	1.01	0.39	0.44	0.49	0.53	0.58	0.62
B	1-1/2	1.14	1.32	1.47	1.65	1.80	1.95	0.85	0.95	1.06	1.16	1.26	1.34	0.52	0.58	0.65	0.71	0.77	0.82
B	2	1.44	1.66	1.86	2.08	2.28	2.46	1.08	1.21	1.35	1.48	1.60	1.71	0.66	0.74	0.83	0.90	0.98	1.04
B	2-1/4	1.75	2.02	2.26	2.53	2.77	2.99	1.31	1.46	1.64	1.79	1.94	2.07	0.80	0.89	1.00	1.10	1.18	1.26
B	3	2.27	2.62	2.93	3.28	3.59	3.88	1.69	1.89	2.11	2.31	2.50	2.67	1.04	1.16	1.30	1.42	1.54	1.64
B	3-1/2	2.87	3.31	3.71	4.14	4.54	4.90	2.14	2.39	2.68	2.93	3.17	3.38	1.31	1.46	1.64	1.79	1.94	2.07
B	4-1/4	3.57	4.12	4.61	5.15	5.64	6.10	2.66	2.97	3.33	3.64	3.93	4.21	1.63	1.82	2.04	2.23	2.41	2.58
HF	1/4	0.16	0.18	0.21	0.23	0.25	0.27	0.12	0.13	0.15	0.16	0.18	0.19	0.07	0.08	0.09	0.10	0.10	0.11
HF	1/2	0.31	0.36	0.40	0.45	0.49	0.53	0.23	0.26	0.29	0.31	0.34	0.36	0.14	0.16	0.18	0.19	0.21	0.22
HF	3/4	0.55	0.64	0.71	0.79	0.87	0.94	0.41	0.46	0.51	0.56	0.61	0.65	0.25	0.28	0.31	0.34	0.37	0.40
HF	1	0.84	0.97	1.08	1.21	1.33	1.43	0.63	0.70	0.79	0.86	0.93	1.00	0.38	0.42	0.48	0.52	0.56	0.60
HF	1-1/2	1.13	1.30	1.46	1.63	1.79	1.93	0.84	0.94	1.05	1.15	1.24	1.33	0.52	0.58	0.65	0.71	0.77	0.82
HF	1-3/4	1.44	1.66	1.86	2.08	2.28	2.46	1.08	1.21	1.35	1.48	1.60	1.71	0.66	0.74	0.83	0.90	0.98	1.04
HF	2-1/2	1.91	2.21	2.47	2.76	3.02	3.26	1.42	1.59	1.78	1.94	2.10	2.25	0.87	0.97	1.09	1.19	1.29	1.38
HF	4	3.39	3.91	4.38	4.89	5.36	5.79	2.53	2.83	3.16	3.46	3.74	4.00	1.55	1.73	1.94	2.12	2.29	2.45
HF	6	4.72	5.45	6.09	6.81	7.46	8.06	3.52	3.94	4.40	4.82	5.21	5.57	2.16	2.41	2.70	2.96	3.19	3.42
HF	7-1/2	5.98	6.91	7.72	8.63	9.46	10.21	4.46	4.99	5.58	6.11	6.60	7.05	2.74	3.06	3.43	3.75	4.05	4.33
HF	11	8.87	10.24	11.45	12.80	14.02	15.15	6.62	7.40	8.28	9.06	9.79	10.47	4.06	4.54	5.08	5.56	6.00	6.42
HF	14	11.67	13.48	15.07	16.84	18.45	19.93	8.71	9.74	10.89	11.93	12.88	13.77	5.34	5.97	6.68	7.31	7.90	8.44
TCLE*	1/4	0.29	0.33	0.37	0.42	0.46	0.50	0.22	0.25	0.28	0.30	0.33	0.35	0.13	0.15	0.16	0.18	0.19	0.21
TCLE*	3/4	0.54	0.62	0.70	0.78	0.85	0.92	0.41	0.46	0.51	0.56	0.61	0.65	0.25	0.28	0.31	0.34	0.37	0.40
TCLE*	1-1/2	1.10	1.27	1.42	1.59	1.74	1.88	0.82	0.92	1.03	1.12	1.21	1.30	0.50	0.56	0.63	0.68	0.74	0.79
TCLE*	2-1/2	2.02	2.33	2.61	2.92	3.19	3.45	1.51	1.69	1.89	2.07	2.23	2.39	0.93	1.04	1.16	1.27	1.38	1.47
TCLE*	3-1/2	2.95	3.41	3.81	4.26	4.66	5.04	2.20	2.46	2.75	3.01	3.25	3.48	1.35	1.51	1.69	1.85	2.00	2.13
TCLE*	5-1/2	4.28	4.94	5.53	6.18	6.77	7.31	3.19	3.57	3.99	4.37	4.72	5.04	1.96	2.19	2.45	2.68	2.90	3.10
TCLE*	7-1/2	5.90	6.81	7.62	8.52	9.33	10.08	4.40	4.92	5.50	6.02	6.51	6.96	2.70	3.02	3.38	3.70	3.99	4.27
TCLE*	9	7.11	8.21	9.18	10.26	11.24	12.14	5.30	5.93	6.63	7.26	7.84	8.38	3.26	3.64	4.08	4.46	4.82	5.15
TJL*	9	6.30	7.27	8.13	9.09	9.96	10.76	4.70	5.25	5.88	6.44	6.95	7.43	2.89	3.23	3.61	3.96	4.27	4.57
TJL*	11	8.03	9.27	10.37	11.59	12.70	13.71	5.99	6.70	7.49	8.20	8.86	9.47	3.68	4.11	4.60	5.04	5.44	5.82
TRAE+	9	6.82	7.88	8.80	9.84	10.78	11.65	5.09	5.69	6.36	6.97	7.53	8.05	3.12	3.49	3.90	4.27	4.61	4.93
TRAE+	13	9.94	11.48	12.83	14.35	15.72	16.98	7.42	8.30	9.28	10.16	10.97	11.73	4.55	5.09	5.69	6.23	6.73	7.19
TRAE+	14	11.1	12.82	14.33	16.02	17.55	18.96	8.28	9.26	10.35	11.34	12.25	13.09	5.08	5.68	6.35	6.96	7.51	8.03
TRAE+	22	16.82	19.42	21.71	24.28	26.59	28.73	12.55	14.03	15.69	17.18	18.56	19.84	7.70	8.61	9.63	10.54	11.39	12.17
TRAE+	30	23.12	26.70	29.85	33.37	36.56	39.48	17.25	19.29	21.56	23.62	25.51	27.27	10.59	11.84	13.24	14.50	15.66	16.74
TRAE	40	31.21	36.04	40.29	45.05	49.35	53.30	23.29	26.04	29.11	31.89	34.45	36.82	14.29	15.98	17.86	19.57	21.14	22.59
TRAE	45	34.04	39.31	43.95	49.13	53.82	58.13	25.40	28.40	31.75	34.78	37.57	40.16	15.59	17.43	19.49	21.35	23.06	24.65
TRAE	50	40.52	46.79	52.31	58.49	64.07	69.20	30.23	33.80	37.79	41.39	44.71	47.80	18.55	20.74	23.19	25.40	27.44	29.33
TJR	11	8.50	9.81	10.97	12.27	13.44	14.52	6.34	7.09	7.93	8.68	9.38	10.02	3.89	4.35	4.86	5.33	5.75	6.15
TJR	13	10.17	11.74	13.13	14.68	16.08	17.37	7.59	8.49	9.49	10.39	11.23	12.00	4.66	5.21	5.83	6.38	6.89	7.37
TER	16	12.72	14.69	16.42	18.36	20.11	21.72	9.49	10.61	11.86	12.99	14.04	15.01	5.82	6.51	7.28	7.97	8.61	9.20
TER	19	15.03	17.36	19.40	21.69	23.76	25.67	11.21	12.53	14.01	15.35	16.58	17.72	6.88	7.69	8.60	9.42	10.18	10.88
TER	25	20.23	23.36	26.12	29.20	31.99	34.55	15.09	16.87	18.86	20.66	22.32	23.86	9.26	10.35	11.58	12.68	13.70	14.64
TER	31	26.01	30.03	33.58	37.54	41.13	44.42	19.41	21.70	24.26	26.58	28.71	30.69	11.91	13.32	14.89	16.31	17.62	18.83
TIR	45	31.79	36.71	41.04	45.88	50.26	54.29	23.72	26.52	29.65	32.48	35.08	37.50	14.56	16.28	18.20	19.94	21.53	23.02
THR	55	40.46	46.72	52.23	58.40	63.97	69.10	30.19	33.75	37.74	41.34	44.65	47.73	18.53	20.72	23.16	25.37	27.41	29.30
THR	68	49.13	56.73	63.43	70.91	77.68	83.91	36.66	40.99	45.83	50.20	54.22	57.96	22.50	25.16	28.13	30.81	33.28	35.58
TMR	68	57.80	66.74	74.62	83.43	91.39	98.71	43.12	48.21	53.90	59.04	63.78	68.18	26.47	29.59	33.09	36.25	39.15	41.85

* Note: Valve series not balanced port

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

	Refrigerant Liquid Temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R12 Correction Factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	.94	.88	.82	.75
R134a Correction Factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	.93	.85	.78	.71
R22 Correction Factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	.94	.88	.82	.76
R404A/R507 Correction	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30</							

EXTENDED CAPACITY TABLES

R-404A/R-507/R-502 BALANCED PORTED VALVES (TONS)– A, B, HF, TRAE AND T SERIES

Valve Type	Nominal Rating	EVAPORATOR TEMPERATURE																	
		50°F						40°F						20°F					
		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)	
60	80	100	125	150	175	60	80	100	125	150	175	60	80	100	125	150	175		
A *	1/8	0.11	0.13	0.14	0.16	0.17	0.19	0.11	0.13	0.14	0.16	0.17	0.19	0.10	0.12	0.13	0.14	0.16	0.17
A *	1/4	0.19	0.22	0.25	0.27	0.30	0.32	0.19	0.22	0.25	0.27	0.30	0.32	0.18	0.21	0.23	0.26	0.28	0.31
A *	1/2	0.33	0.38	0.43	0.48	0.52	0.56	0.33	0.38	0.43	0.48	0.52	0.56	0.31	0.36	0.40	0.45	0.49	0.53
A *	3/4	0.54	0.62	0.70	0.78	0.85	0.92	0.52	0.60	0.67	0.75	0.82	0.89	0.50	0.58	0.65	0.72	0.79	0.85
A *	1	0.77	0.89	0.99	1.11	1.22	1.32	0.75	0.87	0.97	1.08	1.19	1.28	0.71	0.82	0.92	1.02	1.12	1.21
A *	1-1/4	1.13	1.30	1.46	1.63	1.79	1.93	1.10	1.27	1.42	1.59	1.74	1.88	1.05	1.21	1.36	1.52	1.66	1.79
A *	2	1.58	1.82	2.04	2.28	2.50	2.70	1.55	1.79	2.00	2.24	2.45	2.65	1.47	1.70	1.90	2.12	2.32	2.51
A *	2-1/4	1.94	2.24	2.50	2.80	3.07	3.31	1.89	2.18	2.44	2.73	2.99	3.23	1.80	2.08	2.32	2.60	2.85	3.07
A *	2-1/2	2.30	2.66	2.97	3.32	3.64	3.93	2.25	2.60	2.90	3.25	3.56	3.84	2.14	2.47	2.76	3.09	3.38	3.65
A *	3-1/2	3.15	3.64	4.07	4.55	4.98	5.38	3.08	3.56	3.98	4.45	4.87	5.26	2.92	3.37	3.77	4.21	4.62	4.99
B	1/4	0.29	0.33	0.37	0.42	0.46	0.50	0.28	0.32	0.36	0.40	0.44	0.48	0.27	0.31	0.35	0.39	0.43	0.46
B	1/2	0.55	0.64	0.71	0.79	0.87	0.94	0.53	0.61	0.68	0.76	0.84	0.91	0.51	0.59	0.66	0.74	0.81	0.87
B	1	0.85	0.98	1.10	1.23	1.34	1.45	0.83	0.96	1.07	1.20	1.31	1.42	0.79	0.91	1.02	1.14	1.25	1.35
B	1-1/4	1.14	1.32	1.47	1.65	1.80	1.95	1.11	1.28	1.43	1.60	1.76	1.90	1.06	1.22	1.37	1.53	1.68	1.81
B	1-1/2	1.44	1.66	1.86	2.08	2.28	2.46	1.41	1.63	1.82	2.04	2.23	2.41	1.34	1.55	1.73	1.93	2.12	2.29
B	2	1.74	2.01	2.25	2.51	2.75	2.97	1.70	1.96	2.19	2.45	2.69	2.90	1.62	1.87	2.09	2.34	2.56	2.77
B	2-1/2	2.26	2.61	2.92	3.26	3.57	3.86	2.20	2.54	2.84	3.18	3.48	3.76	2.09	2.41	2.70	3.02	3.30	3.57
B	3	2.85	3.29	3.68	4.11	4.51	4.87	2.79	3.22	3.60	4.03	4.41	4.76	2.65	3.06	3.42	3.82	4.19	4.53
B	4	3.55	4.10	4.58	5.12	5.61	6.06	3.47	4.01	4.48	5.01	5.49	5.93	3.29	3.80	4.25	4.75	5.20	5.62
HF	1/8	0.16	0.18	0.21	0.23	0.25	0.27	0.16	0.18	0.21	0.23	0.25	0.27	0.15	0.17	0.19	0.22	0.24	0.26
HF	1/4	0.31	0.36	0.40	0.45	0.49	0.53	0.30	0.35	0.39	0.43	0.47	0.51	0.28	0.32	0.36	0.40	0.44	0.48
HF	1/2	0.55	0.64	0.71	0.79	0.87	0.94	0.53	0.61	0.68	0.76	0.84	0.91	0.51	0.59	0.66	0.74	0.81	0.87
HF	1	0.83	0.96	1.07	1.20	1.31	1.42	0.82	0.95	1.06	1.18	1.30	1.40	0.77	0.89	0.99	1.11	1.22	1.32
HF	1-1/4	1.12	1.29	1.45	1.62	1.77	1.91	1.10	1.27	1.42	1.59	1.74	1.88	1.04	1.20	1.34	1.50	1.64	1.78
HF	1-1/2	1.44	1.66	1.86	2.08	2.28	2.46	1.41	1.63	1.82	2.04	2.23	2.41	1.34	1.55	1.73	1.93	2.12	2.29
HF	2	1.90	2.19	2.45	2.74	3.00	3.24	1.86	2.15	2.40	2.68	2.94	3.18	1.76	2.03	2.27	2.54	2.78	3.01
HF	3-1/2	3.38	3.90	4.36	4.88	5.34	5.77	3.30	3.81	4.26	4.76	5.22	5.64	3.13	3.61	4.04	4.52	4.95	5.35
HF	5	4.70	5.43	6.07	6.78	7.43	8.03	4.59	5.30	5.93	6.63	7.26	7.84	4.36	5.03	5.63	6.29	6.89	7.45
HF	7	5.95	6.87	7.68	8.59	9.41	10.16	5.81	6.71	7.50	8.39	9.19	9.92	5.52	6.37	7.13	7.97	8.73	9.43
HF	10	8.83	10.20	11.40	12.75	13.96	15.08	8.62	9.95	11.13	12.44	13.63	14.72	8.19	9.46	10.57	11.82	12.95	13.99
HF	13	11.62	13.42	15.00	16.77	18.37	19.84	11.35	13.11	14.65	16.38	17.95	19.38	10.78	12.45	13.92	15.56	17.04	18.41
TCLE*	1/4	0.29	0.33	0.37	0.42	0.46	0.50	0.28	0.32	0.36	0.40	0.44	0.48	0.27	0.31	0.35	0.39	0.43	0.46
TCLE*	1/2	0.54	0.62	0.70	0.78	0.85	0.92	0.53	0.61	0.68	0.76	0.84	0.91	0.50	0.58	0.65	0.72	0.79	0.85
TCLE*	1	1.09	1.26	1.41	1.57	1.72	1.86	1.07	1.24	1.38	1.54	1.69	1.83	1.01	1.17	1.30	1.46	1.60	1.72
TCLE*	2	2.01	2.32	2.59	2.90	3.18	3.43	1.97	2.27	2.54	2.84	3.11	3.36	1.87	2.16	2.41	2.70	2.96	3.19
TCLE*	3	2.94	3.39	3.80	4.24	4.65	5.02	2.87	3.31	3.71	4.14	4.54	4.90	2.72	3.14	3.51	3.93	4.30	4.65
TCLE*	4-1/2	4.26	4.92	5.50	6.15	6.74	7.28	4.16	4.80	5.37	6.00	6.58	7.10	3.95	4.56	5.10	5.70	6.25	6.75
TCLE*	7	5.87	6.78	7.58	8.47	9.28	10.02	5.73	6.62	7.40	8.27	9.06	9.79	5.45	6.29	7.04	7.87	8.62	9.31
TCLE*	8	7.08	8.18	9.14	10.22	11.19	12.09	6.91	7.98	8.92	9.97	10.93	11.80	6.57	7.59	8.48	9.48	10.39	11.22
TJL*	7	6.27	7.24	8.09	9.05	9.91	10.71	6.13	7.08	7.91	8.85	9.69	10.47	5.82	6.72	7.51	8.40	9.20	9.94
TJL*	9	8.00	9.24	10.33	11.55	12.65	13.66	7.81	9.02	10.08	11.27	12.35	13.34	7.42	8.57	9.58	10.71	11.73	12.67
TRAE+	8	6.79	7.84	8.77	9.80	10.74	11.60	6.63	7.66	8.56	9.57	10.48	11.32	6.30	7.27	8.13	9.09	9.96	10.76
TRAE+	12	9.90	11.43	12.78	14.29	15.65	16.91	9.67	11.17	12.48	13.96	15.29	16.51	9.19	10.61	11.86	13.26	14.53	15.69
TRAE+	14	11.05	12.76	14.27	15.95	17.47	18.87	10.79	12.46	13.93	15.57	17.06	18.43	10.25	11.84	13.23	14.79	16.21	17.51
TRAE+	20	16.75	19.34	21.62	24.18	26.48	28.61	16.36	18.89	21.12	23.61	25.87	27.94	15.54	17.94	20.06	22.43	24.57	26.54
TRAE+	30	23.02	26.58	29.72	33.23	36.40	39.31	22.49	25.97	29.03	32.46	35.56	38.41	21.36	24.66	27.58	30.83	33.77	36.48
TRAE	35	31.08	35.89	40.12	44.86	49.14	53.08	30.36	35.06	39.19	43.82	48.00	51.85	28.84	33.30	37.23	41.63	45.60	49.25
TRAE	40	33.90	39.14	43.76	48.93	53.60	57.90	33.11	38.23	42.74	47.79	52.35	56.55	31.45	36.32	40.60	45.39	49.73	53.71
TRAE	50	40.34	46.58	52.08	58.23	63.78	68.89	39.41	45.51	50.88	56.88	62.31	67.31	37.44	43.23	48.33	54.04	59.20	63.94
TJR	9	8.46	9.77	10.92	12.21	13.38	14.45	8.26	9.54	10.66	11.92	13.06	14.11	7.85	9.06	10.13	11.33	12.41	13.41
TJR	12	10.13	11.70	13.08	14.62	16.02	17.30	9.89	11.42	12.77	14.27	15.64	16.89	9.40	10.85	12.14	13.57	14.86	16.05
TER	14	12.66	14.62	16.34	18.27	20.02	21.62	12.37	14.28	15.97	17.85	19.56	21.13	11.75	13.57	15.17	16.96	18.58	20.07
TER	16	14.96	17.27	19.31	21.59	23.65	25.55	14.62	16.88	18.87	21.10	23.12	24.97	13.88	16.03	17.92	20.03	21.95	23.70
TER	21	20.14	23.26	26.00	29.07	31.84	34.40	19.68	22.72	25.41	28.41	31.12	33.61	18.69	21.58	24.13	26.98	29.55	31.92
TER	27	25.90	29.91	33.44	37.38	40.95	44.23	25.30	29.21	32.66	36.52	40.00	43.21	24.03	27.75	31.02	34.68	37.99	41.04
TIR	37	31.65	36.55	40.86	45.68	50.04	54.05	30.92	35.70	39.92	44.63	48.89	52.81	29.37	33.91	37.92	42.39	46.44	50.16
THR	48	40.29	46.52	52.01	58.15	63.70	68.81	39.35	45.44	50.80	56.80	62.22	67.20	37.38	43.16	48.26	53.95	59.10	63.84
THR	60	48.92	56.49	63.16	70.61	77.35	83.55	47.78	55.17	61.68	68.96	75.55	81.60	45.39	52.41	58.60	65.51	71.77	77.52
TMR	60	57.55	66.45	74.30	83.07	90.99	98.29	56.22	64.92	72.58	81.15	88.89	96.01	53.40	61.66	68.94	77.08	84.43	91.20

* Note: Valve series not balanced port

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

	Refrigerant Liquid Temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R12 Correction Factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	.94	.88	.82	.75
R134a Correction Factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	.93	.85	.78	.71
R22 Correction Factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	.94	.88	.82	.76
R404A/R507 Correction	2.00	1.90													

EXTENDED CAPACITY TABLES

R-404A/R-507/R-502 BALANCED PORTED VALVES (TONS)– A, B, HF, TRAE AND T SERIES

Valve Type	Nominal Rating	EVAPORATOR TEMPERATURE																	
		0°F						-20°F						-40°F					
		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)		PRESSURE		DROP		ACROSS VALVE (PSI)	
60	80	100	125	150	175	80	100	125	150	175	200	80	100	125	150	175	200		
A *	1/8	0.09	0.10	0.12	0.13	0.14	0.15	0.07	0.08	0.09	0.10	0.10	0.11	0.05	0.06	0.06	0.07	0.07	0.08
A *	1/4	0.16	0.18	0.21	0.23	0.25	0.27	0.12	0.13	0.15	0.16	0.18	0.19	0.08	0.09	0.10	0.11	0.12	0.13
A *	1/2	0.28	0.32	0.36	0.40	0.44	0.48	0.22	0.25	0.28	0.30	0.33	0.35	0.14	0.16	0.18	0.19	0.21	0.22
A *	3/4	0.44	0.51	0.57	0.64	0.70	0.75	0.35	0.39	0.44	0.48	0.52	0.55	0.23	0.26	0.29	0.31	0.34	0.36
A *	1	0.63	0.73	0.81	0.91	1.00	1.08	0.50	0.56	0.63	0.68	0.74	0.79	0.32	0.36	0.40	0.44	0.47	0.51
A *	1-1/4	0.93	1.07	1.20	1.34	1.47	1.59	0.73	0.82	0.91	1.00	1.08	1.15	0.48	0.54	0.60	0.66	0.71	0.76
A *	2	1.31	1.51	1.69	1.89	2.07	2.24	1.03	1.15	1.29	1.41	1.52	1.63	0.67	0.75	0.84	0.92	0.99	1.06
A *	2-1/4	1.61	1.86	2.08	2.32	2.55	2.75	1.26	1.41	1.58	1.73	1.86	1.99	0.82	0.92	1.03	1.12	1.21	1.30
A *	2-1/2	1.91	2.21	2.47	2.76	3.02	3.26	1.50	1.68	1.88	2.05	2.22	2.37	0.98	1.10	1.23	1.34	1.45	1.55
A *	3-1/2	2.61	3.01	3.37	3.77	4.13	4.46	2.04	2.28	2.55	2.79	3.02	3.23	1.34	1.50	1.68	1.83	1.98	2.12
B	1/4	0.24	0.28	0.31	0.35	0.38	0.41	0.19	0.21	0.24	0.26	0.28	0.30	0.12	0.13	0.15	0.16	0.18	0.19
B	1/2	0.45	0.52	0.58	0.65	0.71	0.77	0.36	0.40	0.45	0.49	0.53	0.57	0.23	0.26	0.29	0.31	0.34	0.36
B	1	0.71	0.82	0.92	1.02	1.12	1.21	0.55	0.61	0.69	0.75	0.81	0.87	0.36	0.40	0.45	0.49	0.53	0.57
B	1-1/4	0.94	1.09	1.21	1.36	1.49	1.61	0.74	0.83	0.93	1.01	1.09	1.17	0.48	0.54	0.60	0.66	0.71	0.76
B	1-1/2	1.19	1.37	1.54	1.72	1.88	2.03	0.93	1.04	1.16	1.27	1.38	1.47	0.61	0.68	0.76	0.84	0.90	0.96
B	2	1.44	1.66	1.86	2.08	2.28	2.46	1.13	1.26	1.41	1.55	1.67	1.79	0.74	0.83	0.93	1.01	1.09	1.17
B	2-1/2	1.87	2.16	2.41	2.70	2.96	3.19	1.47	1.64	1.84	2.01	2.17	2.32	0.96	1.07	1.20	1.31	1.42	1.52
B	3	2.36	2.73	3.05	3.41	3.73	4.03	1.85	2.07	2.31	2.53	2.74	2.93	1.21	1.35	1.51	1.66	1.79	1.91
B	4	2.94	3.39	3.80	4.24	4.65	5.02	2.31	2.58	2.89	3.16	3.42	3.65	1.51	1.69	1.89	2.07	2.23	2.39
HF	1/8	0.13	0.15	0.17	0.19	0.21	0.22	0.10	0.11	0.13	0.14	0.15	0.16	0.07	0.08	0.09	0.10	0.10	0.11
HF	1/4	0.25	0.29	0.32	0.36	0.40	0.43	0.20	0.22	0.25	0.27	0.30	0.32	0.13	0.15	0.16	0.18	0.19	0.21
HF	1/2	0.45	0.52	0.58	0.65	0.71	0.77	0.36	0.40	0.45	0.49	0.53	0.57	0.23	0.26	0.29	0.31	0.34	0.36
HF	1	0.69	0.80	0.89	1.00	1.09	1.18	0.54	0.60	0.68	0.74	0.80	0.85	0.35	0.39	0.44	0.48	0.52	0.55
HF	1-1/4	0.93	1.07	1.20	1.34	1.47	1.59	0.73	0.82	0.91	1.00	1.08	1.15	0.48	0.54	0.60	0.66	0.71	0.76
HF	1-1/2	1.19	1.37	1.54	1.72	1.88	2.03	0.93	1.04	1.16	1.27	1.38	1.47	0.61	0.68	0.76	0.84	0.90	0.96
HF	2	1.57	1.81	2.03	2.27	2.48	2.68	1.23	1.38	1.54	1.68	1.82	1.94	0.81	0.91	1.01	1.11	1.20	1.28
HF	3-1/2	2.80	3.23	3.61	4.04	4.43	4.78	2.19	2.45	2.74	3.00	3.24	3.46	1.43	1.60	1.79	1.96	2.11	2.26
HF	5	3.89	4.49	5.02	5.61	6.15	6.64	3.05	3.41	3.81	4.18	4.51	4.82	2.00	2.24	2.50	2.74	2.96	3.16
HF	7	4.93	5.69	6.36	7.12	7.80	8.42	3.87	4.33	4.84	5.30	5.72	6.12	2.53	2.83	3.16	3.46	3.74	4.00
HF	10	7.31	8.44	9.44	10.55	11.56	12.48	5.73	6.41	7.16	7.85	8.47	9.06	3.75	4.19	4.69	5.13	5.55	5.93
HF	13	9.62	11.11	12.42	13.89	15.21	16.43	7.55	8.44	9.44	10.34	11.17	11.94	4.93	5.51	6.16	6.75	7.29	7.80
TCLE*	1/4	0.24	0.28	0.31	0.35	0.38	0.41	0.19	0.21	0.24	0.26	0.28	0.30	0.12	0.13	0.15	0.16	0.18	0.19
TCLE*	1/2	0.45	0.52	0.58	0.65	0.71	0.77	0.36	0.40	0.44	0.48	0.52	0.55	0.23	0.26	0.29	0.31	0.34	0.36
TCLE*	1	0.91	1.05	1.17	1.31	1.44	1.55	0.71	0.79	0.89	0.97	1.05	1.12	0.46	0.51	0.58	0.63	0.68	0.73
TCLE*	2	1.67	1.93	2.16	2.41	2.64	2.85	1.31	1.46	1.64	1.79	1.94	2.07	0.86	0.96	1.08	1.18	1.27	1.36
TCLE*	3	2.43	2.81	3.14	3.51	3.84	4.15	1.91	2.14	2.39	2.62	2.82	3.02	1.25	1.40	1.56	1.71	1.85	1.98
TCLE*	4-1/2	3.53	4.08	4.56	5.10	5.58	6.03	2.77	3.10	3.46	3.79	4.10	4.38	1.81	2.02	2.26	2.48	2.68	2.86
TCLE*	7	4.86	5.61	6.27	7.01	7.68	8.30	3.81	4.26	4.76	5.22	5.64	6.02	2.49	2.78	3.11	3.41	3.68	3.94
TCLE*	8	5.86	6.77	7.57	8.46	9.27	10.01	4.60	5.14	5.75	6.30	6.80	7.27	3.01	3.37	3.76	4.12	4.45	4.76
TJL*	7	5.19	5.99	6.70	7.49	8.21	8.86	4.07	4.55	5.09	5.57	6.02	6.44	2.66	2.97	3.33	3.64	3.93	4.21
TJL*	9	6.62	7.64	8.55	9.56	10.47	11.31	5.20	5.81	6.50	7.12	7.69	8.22	3.40	3.80	4.25	4.66	5.03	5.38
TRAE+	8	5.62	6.49	7.26	8.11	8.89	9.60	4.41	4.93	5.51	6.04	6.52	6.97	2.88	3.22	3.60	3.94	4.26	4.55
TRAE+	12	8.20	9.47	10.59	11.84	12.97	14.00	6.43	7.19	8.04	8.80	9.51	10.17	4.20	4.70	5.25	5.75	6.21	6.64
TRAE+	14	9.15	10.57	11.81	13.21	14.47	15.63	7.18	8.03	8.98	9.83	10.62	11.35	4.69	5.24	5.86	6.42	6.94	7.42
TRAE+	20	13.87	16.02	17.91	20.02	21.93	23.69	10.88	12.16	13.60	14.90	16.09	17.20	7.11	7.95	8.89	9.74	10.52	11.24
TRAE+	30	19.06	22.01	24.61	27.51	30.14	32.55	14.95	16.71	18.69	20.47	22.11	23.64	9.77	10.92	12.21	13.38	14.45	15.45
TRAE	35	25.73	29.71	33.22	37.14	40.68	43.94	20.19	22.57	25.24	27.65	29.86	31.92	13.19	14.75	16.49	18.06	19.51	20.86
TRAE	40	28.07	32.41	36.24	40.52	44.38	47.94	22.02	24.62	27.53	30.15	32.57	34.82	14.39	16.09	17.99	19.70	21.28	22.75
TRAE	50	33.41	38.58	43.13	48.22	52.83	57.06	26.20	29.29	32.75	35.88	38.75	41.43	17.13	19.15	21.41	23.46	25.34	27.08
TJR	9	7.01	8.09	9.05	10.12	11.08	11.97	5.50	6.15	6.88	7.53	8.13	8.70	3.59	4.01	4.49	4.92	5.31	5.68
TJR	12	8.39	9.69	10.83	12.11	13.27	14.33	6.58	7.36	8.23	9.01	9.73	10.40	4.30	4.81	5.38	5.89	6.36	6.80
TER	14	10.48	12.10	13.53	15.13	16.57	17.90	8.22	9.19	10.28	11.26	12.16	13.00	5.30	5.93	6.63	7.26	7.84	8.38
TER	16	12.39	14.31	16.00	17.88	19.59	21.16	9.72	10.87	12.15	13.31	14.38	15.37	6.35	7.10	7.94	8.70	9.39	10.04
TER	21	16.68	19.26	21.53	24.08	26.37	28.49	13.08	14.62	16.35	17.91	19.35	20.68	8.55	9.56	10.69	11.71	12.65	13.52
TER	27	21.45	24.77	27.69	30.96	33.92	36.63	16.82	18.81	21.03	23.03	24.88	26.59	11.00	12.30	13.75	15.06	16.27	17.39
TIR	37	26.21	30.26	33.84	37.83	41.44	44.76	20.56	22.99	25.70	28.15	30.41	32.51	13.44	15.03	16.80	18.40	19.88	21.25
THR	48	33.36	38.52	43.07	48.15	52.75	56.97	26.17	29.26	32.71	35.83	38.71	41.38	17.10	19.12	21.38	23.42	25.29	27.04
THR	60	40.51	46.78	52.30	58.47	64.05	69.18	31.77	35.52	39.71	43.50	46.99	50.23	20.77	23.22	25.96	28.44	30.72	32.84
TMR	60	47.66	55.03	61.53	68.79	75.36	81.39	37.38	41.79	46.73	51.18	55.29	59.10	24.43	27.31	30.54	33.45	36.13	38.63

* Note: Valve series not balanced port

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

	Refrigerant Liquid Temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R12 Correction Factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	.94	.88	.82	.75
R134a Correction Factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	.93	.85	.78	.71
R22 Correction Factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	.94	.88	.82	.76
R404A/R507 Correction	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	.90			

EXTENDED CAPACITY TABLES

R-410A CONVENTIONAL VALVES (TONS)— A SERIES

Valve Type	Nominal Rating	EVAPORATOR TEMPERATURE																	
		50°F						40°F						20°F					
		110	140	160	210	245	285	110	140	160	210	245	285	110	140	160	210	245	285
A	1/4	0.34	0.38	0.41	0.47	0.51	0.55	0.34	0.38	0.41	0.47	0.51	0.55	0.33	0.37	0.40	0.46	0.49	0.53
A	1/2	0.60	0.68	0.72	0.83	0.90	0.97	0.59	0.67	0.71	0.82	0.88	0.95	0.58	0.65	0.70	0.80	0.87	0.93
A	1	0.96	1.08	1.16	1.33	1.43	1.55	0.95	1.07	1.15	1.31	1.42	1.53	0.93	1.05	1.12	1.28	1.39	1.50
A	1-1/2	1.38	1.56	1.66	1.91	2.06	2.22	1.36	1.53	1.64	1.88	2.03	2.19	1.33	1.50	1.60	1.84	1.98	2.14
A	2	2.03	2.29	2.45	2.80	3.03	3.27	2.01	2.27	2.42	2.78	3.00	3.24	1.96	2.21	2.36	2.71	2.93	3.15
A	3	2.85	3.22	3.44	3.94	4.25	4.59	2.82	3.18	3.40	3.90	4.21	4.54	2.74	3.09	3.30	3.79	4.09	4.41
A	4	3.49	3.94	4.21	4.82	5.21	5.62	3.45	3.89	4.16	4.77	5.15	5.55	3.36	3.79	4.05	4.64	5.01	5.41
A	5	4.14	4.67	4.99	5.72	6.18	6.66	4.10	4.63	4.94	5.66	6.12	6.60	3.99	4.50	4.81	5.51	5.95	6.42

Valve Type	Nominal Rating	EVAPORATOR TEMPERATURE																	
		0°F						-20°F						-40°F					
		140	160	210	245	285	330	140	160	210	245	285	330	140	160	210	245	285	330
A	1/4	0.34	0.36	0.42	0.45	0.49	0.52	0.24	0.26	0.29	0.32	0.34	0.37	0.16	0.17	0.20	0.21	0.23	0.25
A	1/2	0.60	0.64	0.73	0.79	0.86	0.92	0.41	0.44	0.50	0.54	0.58	0.63	0.27	0.29	0.33	0.36	0.39	0.41
A	1	0.95	1.02	1.16	1.26	1.36	1.46	0.66	0.71	0.81	0.87	0.94	1.01	0.44	0.47	0.54	0.58	0.63	0.68
A	1-1/2	1.36	1.45	1.67	1.80	1.94	2.09	0.95	1.02	1.16	1.26	1.36	1.46	0.63	0.67	0.77	0.83	0.90	0.97
A	2	2.01	2.15	2.46	2.66	2.87	3.09	1.40	1.50	1.71	1.85	2.00	2.15	0.93	0.99	1.14	1.23	1.33	1.43
A	3	2.82	3.01	3.45	3.73	4.02	4.33	1.96	2.10	2.40	2.59	2.80	3.01	1.30	1.39	1.59	1.72	1.85	2.00
A	4	3.46	3.70	4.24	4.58	4.94	5.31	2.40	2.57	2.94	3.17	3.42	3.68	1.60	1.71	1.96	2.12	2.28	2.46
A	5	4.10	4.38	5.02	5.42	5.85	6.29	2.85	3.05	3.49	3.77	4.07	4.38	1.89	2.02	2.31	2.50	2.70	2.90

EXTENDED CAPACITY TABLES

R-410A BALANCED PORTED VALVES (TONS)— B SERIES

Valve Type	Nominal Rating	EVAPORATOR TEMPERATURE																	
		50°F						40°F						20°F					
		110	140	160	210	245	285	110	140	160	210	245	285	110	140	160	210	245	285
B	1/2	0.52	0.59	0.63	0.72	0.78	0.84	0.51	0.58	0.62	0.70	0.76	0.82	0.50	0.56	0.60	0.69	0.75	0.80
B	1	0.98	1.11	1.18	1.35	1.46	1.58	0.97	1.09	1.17	1.34	1.45	1.56	0.95	1.07	1.15	1.31	1.42	1.53
B	1-1/2	1.53	1.73	1.85	2.11	2.28	2.46	1.52	1.71	1.83	2.10	2.27	2.45	1.48	1.67	1.78	2.04	2.21	2.38
B	2	2.05	2.31	2.47	2.83	3.06	3.30	2.03	2.29	2.45	2.80	3.03	3.27	1.98	2.23	2.39	2.74	2.95	3.19
B	3	2.59	2.92	3.12	3.58	3.87	4.17	2.56	2.89	3.09	3.54	3.82	4.12	2.49	2.81	3.00	3.44	3.72	4.01
B	3-1/2	3.14	3.54	3.79	4.34	4.69	5.05	3.10	3.50	3.74	4.28	4.63	4.99	3.02	3.41	3.64	4.17	4.51	4.86
B	4-1/2	4.06	4.58	4.90	5.61	6.06	6.54	3.96	4.47	4.78	5.47	5.91	6.37	3.91	4.41	4.72	5.40	5.84	6.29
B	6	5.13	5.79	6.19	7.09	7.66	8.26	5.08	5.73	6.13	7.02	7.58	8.18	4.95	5.58	5.97	6.84	7.39	7.97
B	7-1/2	6.36	7.18	7.67	8.79	9.49	10.24	6.32	7.13	7.62	8.73	9.43	10.17	6.15	6.94	7.42	8.50	9.18	9.90

Valve Type	Nominal Rating	EVAPORATOR TEMPERATURE																	
		0°F						-20°F						-40°F					
		140	160	210	245	285	330	140	160	210	245	285	330	140	160	210	245	285	330
B	1/2	0.51	0.55	0.62	0.67	0.73	0.78	0.36	0.38	0.44	0.48	0.51	0.55	0.24	0.26	0.29	0.32	0.34	0.37
B	1	0.97	1.04	1.19	1.28	1.38	1.49	0.68	0.73	0.83	0.90	0.97	1.04	0.45	0.48	0.55	0.60	0.64	0.69
B	1-1/2	1.52	1.62	1.86	2.01	2.17	2.33	1.05	1.12	1.29	1.39	1.50	1.61	0.70	0.75	0.86	0.93	1.00	1.07
B	2	2.03	2.17	2.49	2.69	2.90	3.12	1.41	1.51	1.73	1.87	2.01	2.16	0.94	1.00	1.15	1.24	1.34	1.44
B	3	2.56	2.74	3.14	3.39	3.65	3.93	1.78	1.90	2.18	2.35	2.54	2.73	1.18	1.26	1.45	1.56	1.68	1.81
B	3-1/2	3.11	3.32	3.81	4.11	4.44	4.77	2.16	2.31	2.65	2.86	3.08	3.32	1.44	1.54	1.76	1.90	2.05	2.21
B	4-1/2	4.02	4.30	4.92	5.32	5.74	6.17	2.79	2.98	3.42	3.69	3.98	4.28	1.86	1.99	2.28	2.46	2.65	2.86
B	6	5.09	5.44	6.23	6.73	7.26	7.81	3.53	3.77	4.32	4.67	5.04	5.42	2.35	2.51	2.88	3.11	3.35	3.61
B	7-1/2	6.33	6.77	7.75	8.37	9.03	9.72	4.39	4.69	5.38	5.81	6.26	6.74	2.92	3.12	3.58	3.86	4.17	4.48

703RC UNLOADER VALVE

FEATURES AND SPECIFICATIONS

- ☑ Stainless steel and brass construction
- ☑ OEM drop-in replacement
- ☑ Maximum working pressure: 500 psig
- ☑ MOPD: 300 psig
- ☑ CRN file number: 0C0824.9 (see page A)
- ☑ Drop-in replacement for Copeland part number 510-0212-00



NOMENCLATURE

Example: 703RC VLC

703RC	VLC
Valve Series	Coil*

*NOTE: Valves are shipped without the solenoid coils (VLC = Valve Less Coil). See page 35 for available coils.

ORDERING INFORMATION

PCN	DESCRIPTION
065131	703RC-001 AMC 120/50-60
065132	703RC-001 AMC 208-240/50-60
065126	703RC-001 VLC
065273	KS30371 Repair Kit

NOTE: Body gasket not included. Consult compressor manufacturer for body gasket information.

50RB SOLENOID VALVES

FEATURES AND SPECIFICATIONS

- ☑ Direct-acting, 2-way, normally closed valves
- ☑ Long-life screw on molded coil with 30" leads
- ☑ Extended ends angle or straight through for easy installation (standard)
- ☑ Teflon seat material
- ☑ 100 Mesh Inlet Screen Standard
- ☑ Maximum fluid temp: 250°F
- ☑ Maximum working pressure: 500 psig
- ☑ MOPD: 300 psig
- ☑ UL file number: MH25894
- ☑ Guide number: Y10Z
- ☑ CRN file number: 0C0824.9 (see page A)



NOTE: Mounting enclosing tube more than 90° off vertical up position is not recommended.

NOMENCLATURE

Example: 50RB 4T22 120/50-60

50R	B	4	T	2	2	120/50-60
Basic Valve Type	Design Series	Port Size (in 1/64")	Connection Type T=ODF straight thru B=ODF right angle	Inlet Connection Size (In 1/8")	Outlet Connection Size (In 1/8")	Coil Voltages

ORDERING INFORMATION AND NOMINAL LIQUID CAPACITY TABLE FOR 50RB VALVES - TONS (kW)

PCN	DESCRIPTION	CONNECTION SIZE	COIL VOLTAGE/HZ	R-12	R-134a	R-22	R-407C	R-404A/R-507	R-502
063452	50RB 4 B 2 2 SML	1/4" ODF	120/50-60						
063511	50RB 4 B 2 2 SML		220/50-60						
063587	50RB 4 T 2 2 SML		24/50-60	.34 (1.2)	.41 (1.5)	.54 (1.9)	.51 (1.8)	.34 (1.2)	.35 (1.2)
063454	50RB 4 T 2 2 SML		120/50-60						
063585	50RB 4 B 2 2 SML		24/50-60						
063585	50RB 4 B 2 2 SML		24/50-60						
063513	50RB 4 T 2 2 SML		220/50-60						

Capacities based on 100°F liquid and 40°F saturated evaporator for ARI standard 760-87.

EXTENDED CAPACITIES BEGINNING ON PAGE 30

100RB SOLENOID VALVES

APPLICATION

- Used for liquid or discharge gas refrigerant service
- Direct-acting, 2-way, normally closed valve

FEATURES AND SPECIFICATIONS

- One coil fits all valve sizes
- Extended ends for easy installation (standard)
- SAE or ODF connection sizes in 1/4" and 3/8", 1/4 NPTF
- Long-life molded coils provide water, shock, and vibration protection in coil winding
- Maximum fluid temp: 250°F
- Maximum working pressure: 500 psig
- MOPD: 300 psig
- CV and TUV approved
- UL file number: MP604
- CSA file number: LR44912
- CRN file number: OC0824.9 (see page A)



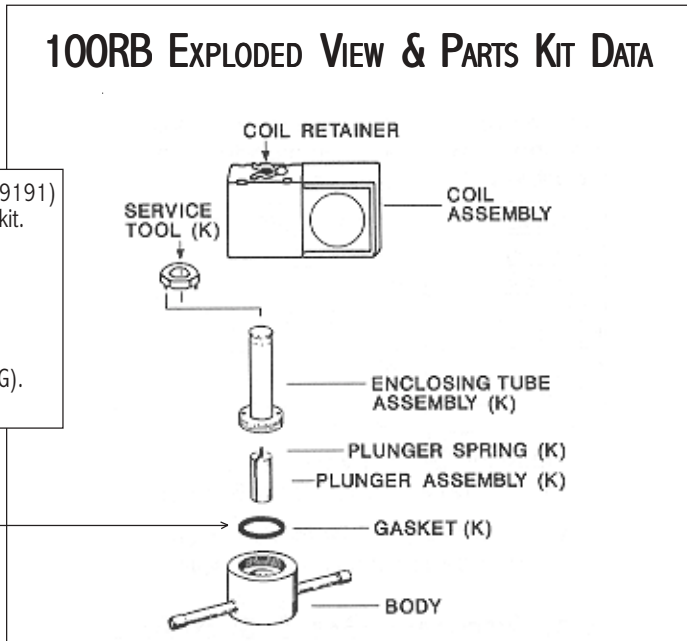
NOTE: Coil sold separately - see page 35.
See Nomenclature for ordering information.

NOTE: Mounting enclosing tube more than 90° off vertical up position is not recommended.

"K" indicates part is supplied in valve repair kit **KS30112**. (049191)
Note: Spanner wrench X11981-1 included in complete valve kit.
PCN 027451
New Teflon gasket requires new 3 pin spanner wrench for increased torque

COIL ASSEMBLY
Consists of coil, coil nameplate, and conversion spacer (AMG).
For voltages and frequencies available see page 35.

USE New TEFLON Gasket, provides the best external seal in the industry
225 in/lbs Torque
(black neoprene gaskets torque 75-100 in/lbs)



note: Old neoprene gasket 75-100 inch lbs torque

NOMENCLATURE

Example: 100RB 2F2 VLC

100R	B	2	F	2	VLC
Valve Series	Design Series	Port Size (in 1/16")	Connection Type F = SAE S = ODF P = FPT	Connection Size (in 1/8")	Coil*

ORDERING INFORMATION AND NOMINAL CAPACITY TABLE FOR 100RB VALVES - TONS (kW)

PCN	PRODUCT DESCRIPTION	CONNECTION SIZE	R-12	R-134a	R-22	R-407C	R-404A/R-507	R-502
047503	100RB 2S2 VLC	1/4" ODF						
047504	100RB 2S3 VLC	3/8" ODF						
047505	100RB 2S4 VLC	1/2" ODF						
047500	100RB 2F2 VLC	1/4" SAE	.80 (2.8)	.96 (3.4)	1.27 (4.5)	1.21 (4.3)	.85 (3.0)	.83 (2.9)
047501	100RB 2F3 VLC	3/8" SAE						
047502	100RB 2P2 VLC	1/4" NPTF						

Capacities based on 100°F liquid and 40°F saturated evaporator for ARI standard 760-87.

EXTENDED CAPACITIES BEGINNING ON PAGE 30.

200RB SOLENOID VALVES

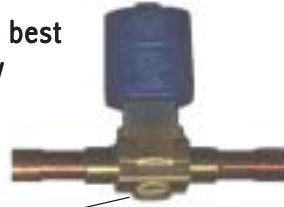
New TEFLON Gasket provides the best external seal in the industry

APPLICATION

- ☑ Pilot-operated, 2-way, normally closed valves
- ☑ Ideal for liquid, discharge or suction gas refrigerant

FEATURES AND SPECIFICATIONS

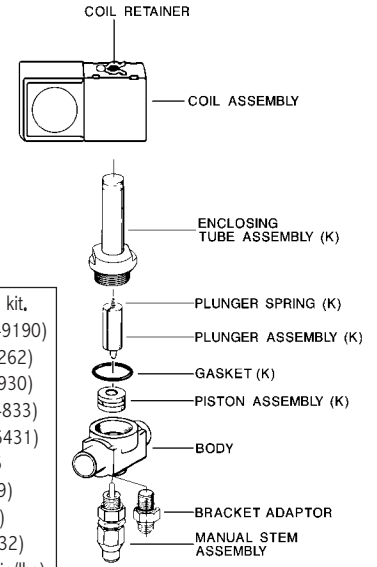
- ☑ One coil fits all valve sizes
- ☑ Extended ends for easy installation (standard) do not dis-assemble, wet rag when brazing
- ☑ Low pressure differential required for opening
- ☑ Connection sizes to fit your system
- ☑ 200RB 2 to 6 Can be converted for bi-flo applications
- ☑ Available in 8 orifice sizes
- ☑ Manual stem or mounting bracket adapter available
- ☑ Maximum fluid temp: 250°F
- ☑ Maximum working pressure: 500 psig
- ☑ MOPD: 300 psig
- ☑ UL file number: MP604
- ☑ CSA file number: LR44912
- ☑ CRN file number: OC0824.9 (see page A)



'O' on bottom of valve designates new TEFLON gasket start date code R0420 (gaskets are not reverse compatible) TEFLON Gaskets are one time use only

"K" indicates part is supplied in complete valve repair kit,
 *Gasket kit (12 pieces) 200RB 2 - 6 **KG10025** (PCN 049190)
 *Gasket kit (12 pieces) 200RB 7 **KG00002** (PCN 064262)
 *Gasket kit (12 pieces) 200RB 9 **KG00003** (PCN 064930)
 *Gasket kit (12 pieces) 200RB 12 **KG00004** (PCN 064833)
 Bi-Flo Conversion Kit 200RB 2 - 6 **KS30293** (PCN 056431)
 Manual stem kit 200RB 3 **KS30377** (PCN 065695)
 Manual stem kit 200RB 4-6 **KS30117** (PCN 053959)
 Manual stem kit 200RB 7 **KS30361** (PCN 064831)
 Manual stem kit 200RB 9 - 12 **KS30364** (PCN 064832)
 * gasket kits are shipped with 12 Teflon (torque to 250 in/lbs) and 12 Neoprene gaskets (torque to 100 in/lbs)

200RB EXPLODED VIEW & PARTS KIT DATA



NOMENCLATURE

Example: 200RB 4T3M VLC

200R	B	4	T	3	M	VLC
Valve Series	Design Series	Port Size (in 1/16")	Connection Type F = SAE S = ODF P = FPT T = Copper Extended Ends	Connection Size (in 1/8")	M = manual stem T = mounting bracket adaptor (M & T optional)	Coil

NOTE: Coil sold separately - see page 35.

200RB VALVE KITS

VALVE	COMPLETE KIT	PCN	Enclosing Tube Kit
200RB2- 6	KS30115	049194	KS30305
200RB7	KS30354	064263	KS30360
200RB9	KS30362	064825	KS30363
200RB12	KS30365	064826	KS30366

ORDERING INFORMATION AND NOMINAL CAPACITY TABLE FOR 200RB VALVES - TONS (kW)

Standard Valve	PCN		Description	Connection Size	R-12	R-134a	R-22	R-407C	R-404A/R-507	R-502
	Mounting Stud ¹	Manual Stem ²								
053104	056437	N/A	200RB 2 F 2	1/4 SAE						
062611	-	N/A	200RB 2 F 3	3/8 SAE	2.0 (7.1)	2.4 (8.5)	3.1 (11)	2.9 (10.3)	2.1 (7.4)	2.0 (7.1)
053105	053236	N/A	200RB 2 T 2	1/4 ODF						
053106	054170	N/A	200RB 2 T 3	3/8 ODF						
052725	-	N/A	200RB 3 F 2	1/4 SAE						
052726	056438	N/A	200RB 3 F 3	3/8 SAE						
052727	055855	N/A	200RB 3 F 4	1/2 SAE	3.0 (10.6)	3.6 (12.7)	4.8 (17)	4.5 (16)	3.2 (11.3)	3.1 (11)
049608	-	N/A	200RB 3 T 2	1/4 ODF						
049609	049585	N/A	200RB 3 T 3	3/8 ODF						
049692	-	N/A	200RB 3 T 4	1/2 ODF						
047506	047508	047507	200RB 4 F 3	3/8 SAE						
059728	047510	047509	200RB 4 P 3	3/8 NPTF						
047511	047513	047512	200RB 4 S 3	3/8 ODF x 1/2 ODM	3.6 (12.7)	4.3 (15.2)	5.6 (19.8)	5.3 (18.8)	3.7 (13.1)	3.6 (10.6)
047516	047515	047516	200RB 4 S 4	1/2 ODF x 5/8 ODM						
047517	049162	049186	200RB 4 T 3	3/8 ODF						
047518	049163	049187	200RB 4 T 4	1/2 ODF						
058950	058045	056518	200RB 4 T 5	5/8 ODF						
047519	047521	047520	200RB 5 F 4	1/2 SAE						
059729	047523	047522	200RB 5 F 5	5/8 ODF						
047524	047526	047525	200RB 5 S 4	1/2 ODF x 5/8 ODM						
049201	047528	047527	200RB 5 S 5	5/8 ODF	5.3 (18.8)	6.4 (22.7)	8.2 (29)	7.8 (27.6)	5.4 (19.1)	5.3 (18.8)
061227	054343	-	200RB 5 T 3	3/8 ODF						
057206	049164	049188	200RB 5 T 4	1/2 ODF						
059730	049165	049189	200RB 5 T 5	5/8 ODF						
059731	047531	047530	200RB 6 F 4	1/2 SAE						
059732	047534	047533	200RB 6 F 5	5/8 SAE						
059733	047536	047535	200RB 6 P 3	3/8 NPTF						
047537	047539	047538	200RB 6 S 4	1/2 ODF x 5/8 ODM	6.4 (22.7)	7.7 (27.3)	10.0 (35.4)	9.5 (33.6)	6.5 (23)	6.5 (23)
047540	047542	047541	200RB 6 S 5	5/8 ODF						
047544	047546	047545	200RB 6 T 4	1/2 ODF						
056766	047548	047547	200RB 6 T 5	5/8 ODF						
064037	-	-	200RB 7 S 5	5/8 ODF x 7/8 ODM						
064062	-	-	200RB 7 T 4	1/2 ODF	10.0 (35.4)	12.1 (42.8)	15.6 (55.2)	14.8 (52.4)	10.3 (36.5)	10.1 (35.8)
064063	064562	064267	200RB 7 T 5	5/8 ODF						
064282	064284	064283	200RB 7 T 7	7/8 ODF						
064762	064764	064763	200RB 9 T 5	5/8 ODF	14.9 (52.8)	18.0 (63.2)	23.3 (82.5)	22.2 (78.6)	15.3 (54.2)	15.1 (53.0)
064645	064766	064765	200RB 9 T 7	7/8 ODF	19.6 (69.4)	23.6 (83.5)	30.5 (108)	29.0 (103)	20.1 (71.1)	19.8 (70.1)
064767	064769	064768	200RB 9 T 9	1 1/8 ODF						
064818	064820	064819	200RB 12 T 7	7/8 ODF	22.5 (79.7)	27.1 (96)	34.9 (124)	33.2 (128)	23.0 (81.4)	22.7 (80.4)
064821	064823	064822	200RB 12 T 9	1 1/8 ODF						

¹ Add "T" to the end of description for Mounting Stud
² Add "M" to the end of the description for Manual Stem

EXTENDED CAPACITIES BEGINNING ON PAGE 30.

240RA SOLENOID VALVES

APPLICATION

- ☞ 2-way, normally closed pilot operated diaphragm valves
- ☞ Ideal for liquid, suction and hot gas service

FEATURES AND SPECIFICATIONS

- ☞ One coil fits all valve sizes
- ☞ Can be brazed into the line without disassembly
- ☞ Reinforced PTFE diaphragm with woven fiberglass for superior control
- ☞ Durable, stainless enclosing tube
- ☞ Extended ends for easy installation (standard)
- ☞ Low pressure differential required for full opening
- ☞ Connection sizes to fit your system
- ☞ Manual stem or mounting bracket adapter
- ☞ Maximum fluid temp: 250°F
- ☞ Maximum working pressure: 500 psig
- ☞ MOPD: 300 psig
- ☞ UL file number: MP604
- ☞ CSA file number: LR44912
- ☞ CRN file number: OC0824.9 (see page A)



NOTE: Coil sold separately - see page 35. See Nomenclature for ordering information.

NOTE: Mounting enclosing tube more than 90° off vertical up position is not recommended.

240RA VALVE KITS

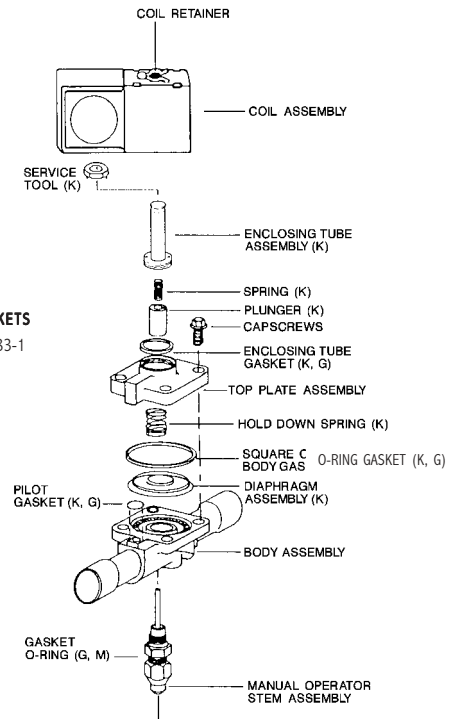
VALVE	COMPLETE KIT	PCN	MANUAL OPENER KIT	PCN
240RA8	KS30321	060626	KS30066	044657
240RA9	KS30322	060627	KS30067	044658
240RA12	KS30323	060628	KS30067	044658
240RA16	KS30324	060629	KS30068	044491
240RA20	KS30325	060630	KS30098	047723

Gasket Kit all 240RA valves is KG10028 PCN 054356

240RA EXPLODED VIEW & PARTS KIT DATA

MOUNTING BRACKETS

240RA8, 9, 12: X13983-1
240RA16: X13983-3



"K" indicates part is supplied in complete valve repair kit.
"M" indicates part is supplied in manual opener kit.
"G" indicates gasket is supplied in gasket kit.
Note: Spanner wrench (X11981-1 service tool) included in complete valve kit.

NOMENCLATURE

Example: 240RA 8T5M VLC

240R	A	8	T	5	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 (optional) T = mounting bracket adapter (optional)	Coil*

ORDERING INFORMATION AND NOMINAL LIQUID CAPACITY TABLE FOR 240RA VALVES - TONS (kW)

PCN			Description	Connection Size	R-12	R-134a	R-22	R-407C	R-404A/R-507	R-502
Standard Valve	Mounting Stud ¹	Manual Stem ²								
060374	040846	040845	240RA 8 T 5	5/8 ODF	10.0 (35.4)	12.1 (42.8)	15.6 (55.2)	14.8 (52.4)	10.3 (36.5)	10.1 (35.0)
060375	044860	045753	240RA 8 T 7	7/8 ODF						
060376	040848	040847	240RA 9 T 5	5/8 ODF	14.9 (52.7)	18.0 (63.7)	23.3 (82.5)	22.1 (78.2)	15.3 (54.2)	15.1 (53.5)
060377	043205	043204	240RA 9 T 7	7/8 ODF						
060378	044861	045752	240RA 9 T 9	1 1/8 ODF	19.6 (69.4)	23.6 (83.5)	30.5 (108)	29.0 (103)	21.0 (71.1)	19.8 (70.1)
060379	040850	040849	240RA 12 T 7	7/8 ODF						
060380	043959	045549	240RA 12 T 9	1 1/8 ODF	22.5 (79.7)	27.1 (96)	34.9 (124)	33.2 (118)	23.0 (81.4)	22.7 (80.4)
060381	042549	042548	240RA 16 T 9	1 1/8 ODF						
060382	044428	044788	240RA 16 T 11	1 3/8 ODF	37.3 (132)	45.0 (159)	58.0 (205)	55.2 (195)	38.3 (136)	37.7 (133)
060383	047761	046636	240RA 20 T 11	1 3/8 ODF						
060384	047747	046637	240RA 20 T 13	1 5/8 ODF	58.8 (208)	70.9 (251)	95.4 (338)	90.8 (321)	65.7 (230)	62.0 (219)
060385	054297	046638	240RA 20 T 17	2 1/8 ODF						

¹ Add "T" to the end of description for Mounting Stud

² Add "M" to the end of the description for Manual Stem

EXTENDED CAPACITIES BEGINNING ON PAGE 30.

500RB SOLENOID VALVES

APPLICATION

- ☒ Pilot-operated, 2-way, **normally open** valves
- ☒ Ideal for liquid or discharge gas refrigerant service

FEATURES AND SPECIFICATIONS

- ☒ One coil fits all valve sizes
- ☒ Extended ends for easy installation
- ☒ Low pressure differential required for full opening
- ☒ Connection sizes to fit your system
- ☒ Maximum fluid temp: 250°F
- ☒ Maximum working pressure: 500 psig
- ☒ MOPD: 300 psig
- ☒ UL file number: MP604
- ☒ CSA file number: LR44912
- ☒ CRN file number: OC0824.9 (see page A)



NOTE: Coil sold separately - see page 35. See Nomenclature for ordering information.

NOTE: This valve requires a DM or ASC2 style coil assembly.

NOTE: Mounting enclosing tube more than 90° off vertical up position is not recommended.

NOMENCLATURE

FOR EXTENDED CAPACITY TABLES OF 500RB VALVES REFER TO 200RB CAPACITIES BEGINNING ON PAGE 30

Example: 500RB 4T3 VLC

500R	B	4	T	3	VLC
Valve Series	Design Series	Port Size (in 1/16")	Connection Type F = SAE T = ODF (Extended Copper Fittings) P = FPT S = ODF inlet/ODM outlet	Connection Size (in 1/8")	Coil*

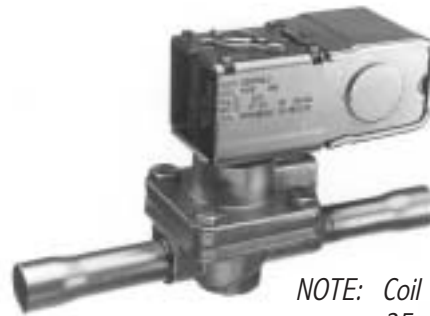
540RA SOLENOID VALVES

APPLICATION

- ☒ 2-way, **normally open** diaphragm valves
- ☒ Ideal for liquid, suction and hot gas service

FEATURES AND SPECIFICATIONS

- ☒ One coil fits all valve sizes
- ☒ Can be brazed into the line without disassembly
- ☒ Reinforced PTFE diaphragm with woven fiberglass for superior control
- ☒ Durable, stainless enclosing tube
- ☒ Extended ends for easy installation
- ☒ Connection sizes to fit your system
- ☒ Low pressure differential required for full opening
- ☒ Maximum fluid temp: 250°F
- ☒ Maximum working pressure: 500 psig
- ☒ MOPD: 250 psig
- ☒ UL file number: MP604
- ☒ CSA file number: LR44912
- ☒ CRN file number: OC0824.9 (see page A)



NOTE: Coil sold separately - see page 35. See Nomenclature for ordering information.

NOTE: Mounting enclosing tube more than 90° off vertical up position is not recommended.

NOMENCLATURE

FOR EXTENDED CAPACITY TABLES OF 540RA VALVES REFER TO 240RA CAPACITIES BEGINNING ON PAGE 30

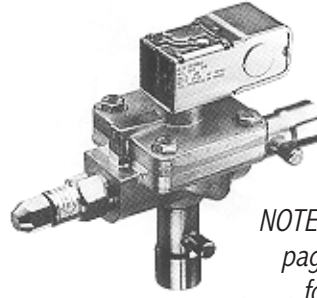
example: 540RA 8T5 VLC

540R	A	8	T	5	VLC
Valve Series	Design Series	Port Size (in 1/16")	Connection Type T = copper extended ends	Connection Size (in 1/8")	Coil*

710/713RA SOLENOID VALVES

APPLICATION

- ☞ Liquid pressure differential control for gas defrost
- ☞ 2-way, diaphragm valves
- ☞ 710RA series are normally closed valves
- ☞ 713RA series are normally open valves
- ☞ When the solenoid coil is de-energized (710RA)/energized (713RA), both series function as adjustable pressure regulating devices which modulate to maintain a predetermined pressure drop across the valve
- ☞ When energized (710RA)/de-energized (713RA), the main valve port opens for full flow



NOTE: Coil sold separately - see page 35. See Nomenclature for ordering information.

NOTE: Mounting enclosing tube more than 90° off vertical up position is not recommended.

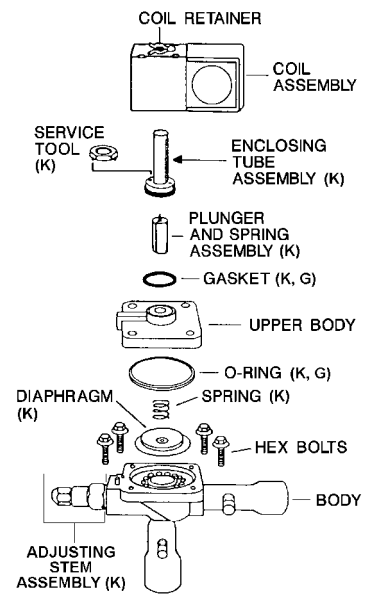
FEATURES AND SPECIFICATIONS

- ☞ Differential adjustable from 8-40 psi
- ☞ Angle style construction eliminates the need for an elbow fitting at the liquid header
- ☞ Extended ends for easy installation (standard)
- ☞ Long-life molded coils provide water, shock, and vibration protection in coil winding
- ☞ These valves eliminate the need for an external check valve and the associated piping needed on supermarket racks with gas defrost
- ☞ Maximum fluid temp: 250°F
- ☞ Maximum working pressure: 500 psig
- ☞ UL file number: MP604
- ☞ CSA file number: LR3204
- ☞ CRN file number: OC0824.9 (see page A)

NOTE: The 710RA and the 713RA valves can not be used as pump-down solenoid valves.

NOTE: The 710RA24 requires a pilot connection between the valve and suction line.

710RA EXPLODED VIEW & PARTS KIT DATA



"K" indicates part is supplied in valve repair kit.

"G" indicates part is supplied in gasket kit **KG10028** [PCN-054356].

Note: Spanner wrench (X11981-1 [PCN-027451] service tool)

included in complete valve kit.

COIL ASSEMBLY

For voltages and frequencies available see the tables on pages 35.

710RA VALVE KITS

VALVE	KIT #	PCN
710RA12	KS30154	053564
710RA16	KS30155	053565
710RA20	KS30156	053566
713RA12	KS30330	060635
713RA16	KS30331	060636
713RA20	KS30332	060637
710RA24	KS30279	054994
Gasket Kit for all 710RA valves is KG10028		054356

NOMENCLATURE

Example: 710RA 16T11 VLC

710R	A	16	T	11	VLC
Valve Series	Design Series	Port Size (in 1/16")	Connection Type T = copper extended ends	Connection Size (in 1/8")	Coil*

ORDERING INFORMATION AND NOMINAL LIQUID CAPACITY TABLE FOR 710/713RA VALVES - TONS (kW)

PCN	PRODUCT DESCRIPTION	CONNECTION SIZE	R-12	R-134a	R-22	R-407C	R-404A/R-507	R-502
053215	710RA 12 T 9 VLC	1 1/8 ODF	18.6 (65.8)	23.8 (84.2)	32.9 (116)	31.3 (111)	21.9 (77.5)	21.4 (75.8)
052825	710RA 16 T 9 VLC	1 1/8 ODF	24.9 (88.1)	30.0 (106)	45.4 (161)	43.2 (153)	30.3 (107)	29.5 (104)
052915	710RA 16 T 11 VLC	1 3/8 ODF						
048411	710RA 16 T 13 VLC	1 5/8 ODF	43.2 (153)	52.0 (184)	69.6 (246)	66.3 (235)	46.5 (165)	45.2 (160)
052826	710RA 20 T 11 VLC	1 3/8 ODF						
049901	710RA 20 T 13 VLC	1 5/8 ODF	62.3 (220)	74.0 (266)	100.0 (354)	65.0 (230)	66.7 (236)	65.0 (230)
054153	710RA 24 T 17 VLC	2 1/8 ODF						
053216	713RA 12 T 9 VLC	1 1/8 ODF	18.6 (65.8)	23.8 (84.2)	32.9 (116)	31.3 (111)	21.9 (77.5)	21.4 (75.8)
053099	713RA 16 T 11 VLC	1 3/8 ODF	24.9 (88.1)	30.0 (106)	45.4 (161)	43.2 (153)	30.3 (107)	29.5 (104)

All capacities shown are at 40°F Evaporator Temperature. For other temperatures, refer to correction factor table on page 30.

EXTENDED CAPACITIES BEGINNING ON PAGE 30.

702RA SOLENOID VALVES

APPLICATION

- ☑ Direct-acting, 3-way, normally open valves
- ☑ Compatible with all CFC, HCFC and HFC refrigerants
- ☑ Used in conjunction with externally equalized Expansion Valve to provide positive shut-off

***NOTE: 702RA valves require coil type AMG N or ASC2.**

FEATURES AND SPECIFICATIONS

- ☑ High capacity, low pressure drop
- ☑ Rugged internal construction with bar stock brass body
- ☑ Tight-seating Rulon seat disc
- ☑ Provides quick, positive shifting and operates in any position
- ☑ Maximum fluid temp: 250° F
- ☑ Maximum working pressure: 500 psig
- ☑ MOPD: 300 psi
- ☑ CRN file number: OC0824.9 (see page A)

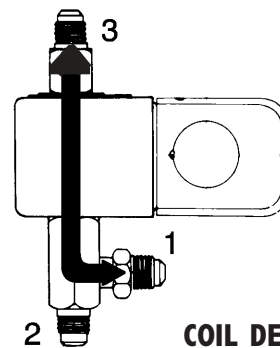
702RA SERIES SELECTION TABLE

PCN	Valve	Connection Size	Port Size	Service	Coil Type
029781	702RA01	1/4 SAE MALE FLARE	1/16	Common Refrigerants	AMGN or ASC2

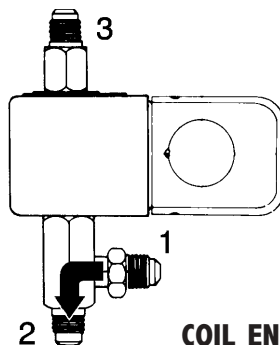
NOMENCLATURE

702R	A	01	VLC
Valve	Design	Port Size	Coil*
Series	Series	(in 1/16")	
Above example: 702RA 01 VLC			

702RA FLOW DIRECTION DIAGRAMS



COIL DE-ENERGIZED



COIL ENERGIZED

207CB SOLENOID VALVES (ICE MACHINES)

APPLICATION

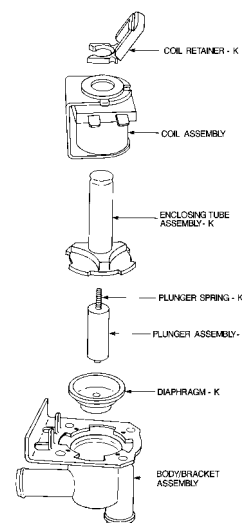
- ☑ Designed to meet the rugged requirements of ice machine applications

FEATURES AND SPECIFICATIONS

- ☑ Serviceable
- ☑ Mounting bracket standard
- ☑ Direct acting
- ☑ Three coil orientations (135°, 180°, 225°) 180° is standard
- ☑ Four mounting bracket configurations (0°, 90°, 180° and 270°) 0° is standard
- ☑ MWP: 5 psig
- ☑ MOPD: 3 psid
- ☑ Flow Rating: 5.3 GPM @ 3 psid
- ☑ Operating Water: Medium
- ☑ Maximum fluid temp: 90°F
- ☑ Outlet (self-retaining for plastic tubing): 11/16" x 5/8"
- ☑ NSF Approved (National Sanitation Foundation): Meets standard 51
- ☑ Body: G.E. Noryl
- ☑ Seat Material (diaphragm): C'Flex
- ☑ Weight: 1/4 lb
- ☑ Rated for 50% duty at 8 minute cycles



207CB EXPLODED VIEW & PARTS KIT DATA



REPAIR PARTS KIT

X-1292 (PCN-056617) includes: same as K-1289 less the coil retainer and enclosing tube assembly.

ORDERING INFORMATION FOR 207CB VALVES

PCN	DESCRIPTION
062403	207CB EBS 120/50-60
062404	207CB EBS 208-240/50-60

NOMENCLATURE Example: 207CB

<u>2</u>	<u>07</u>	<u>C</u>	<u>B</u>
Two-Way Valve	Product Group	Normally Closed	Design Series

M36 3-WAY SOLENOID VALVES

APPLICATION

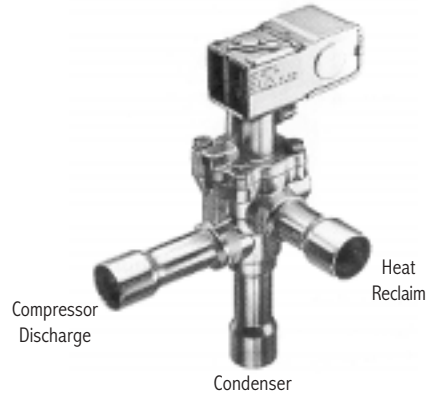
- ¶ 3-Way heat reclaim application valve
- ¶ With the solenoid coil de-energized, the valve is in the normal operating mode and the refrigerant gas is diverted to the normal condenser
- ¶ During normal operation, the piston assembly is shifted upward, shutting the heat reclaim coil port and opening the normal condenser port
- ¶ For heat reclaim operation, the solenoid coil is energized and discharge gas is diverted to the auxiliary condenser

AVAILABLE JULY 2005

NOTE: Coil sold separately - see page 35. See Nomenclature for ordering information.

FEATURES AND SPECIFICATIONS

- ¶ Superior control in diverting discharge gas to an auxiliary condenser for heat reclaim
- ¶ Angle style connection
- ¶ Extended copper ends for easy brazing and installation
- ¶ High capacity, low pressure drop
- ¶ Rugged internal construction with heavy-duty forged brass bodies
- ¶ Pilot is field replaceable
- ¶ CUL file number: Pending
- ¶ CRN file number: Pending (see page A)



M36 VALVE REPAIR KIT

VALVE	PCN
M36	801440

ORDERING INFORMATION AND NOMINAL DISCHARGE CAPACITY TABLE FOR M36 VALVES - TONS (kW)

PCN	PRODUCT DESCRIPTION	CONNECTION SIZE	R-12	R-134a	R-22	R-407C	R-404A/R-507	R-502
801420	M36-078	7/8"	8.2 (28.9)	8.2 (28.9)	10 (35.1)	10 (35.1)	8.9 (31.3)	8.9 (31.3)
801421	M36-118	1 1/8"						

DISCHARGE GAS SERVICE									
REFRIGERANT	EVAPORATOR TEMPERATURE °F								
	40	30	20	10	0	- 10	- 20	- 30	- 40
R-12	1.00	0.98	0.96	0.93	0.91	0.88	0.86	0.83	0.81
R-22	1.00	0.98	0.96	0.94	0.92	0.9	0.88	0.87	0.83
R-134a	1.00	0.98	0.95	0.93	0.90	0.88	0.85	0.82	0.80
R-404A	1.00	0.97	0.94	0.91	0.88	0.85	0.81	0.78	0.75
R-407C	1.00	0.98	0.95	0.93	0.90	0.88	0.85	0.82	0.80
R-410A	1.00	0.98	0.97	0.95	0.93	0.91	0.89	0.85	0.84

All capacities and factors shown are based on normal condensing temperatures (100°F), isentropic compression plus 50°, 40°F evaporator, 65°F suction gas and saturated liquid entering an expansion device per ARI Standard 760-80. For capacities at other operating conditions, use the appropriate correction factor given in above table.

RV BRASS REVERSING VALVES

APPLICATION

- Designed for use on heat pump systems
- Reverse cycle gas defrost

FEATURES AND SPECIFICATIONS

- High strength low heat transfer slide carrier
- Fewer parts
- High capacity pilot
 - Greater tolerance to contaminants
- Greater wear resistance of seals
- Stainless steel pilot bracket
- Maximum working pressure RVS(A)1-6: 680 psig
RVS 10: 500 psig
- MOPD: 400 psig
- Minimum operating pressure differential: 10 psi
- Maximum operating temperature: 250°F
- External leakage: 0.1 oz/yr
- UL file number: MP604
- CSA file number: LR44912
- CRN file number: OC0824.9 (see page A)



RM-Series coil only

Coil sold separately - see page 35.

NOMENCLATURE

Example: RVA 4F46

RVA	4	F	4	6
Valve Series	Nominal Rating (in tons)	F=ODF connections (omit for ODM)	Discharge Connection (in 1/8")	Suction Connection (in 1/8")

RV SUCTION GAS EXTENDED CAPACITY TABLE IN TONS FOR R22 AND R410A

ORDERING INFORMATION FOR RV SERIES VALVES

PCN	DESCRIPTION
065503	RVS 1 - F 34 VLC
065504	RVS 2 - F 34 VLC
065505	RVS 2 - F 35 VLC
065506	RVS 2 - F 45 VLC
064598	RVS 3 - F 35 VLC
065507	RVS 3 - F 45 VLC
065165	RVA 4 - F 46 VLC
065495	RVA 4 - F 47 VLC
065683	RVA 4 - F 56 VLC
065496	RVA 4 - F 57 VLC
065497	RVA 6 - F 46 VLC
065498	RVA 6 - F 47 VLC
065499	RVA 6 - F 57 VLC
065519	RVS 10 - F 47 VLC
065518	RVS 10 - F 69 VLC
065515	RVS 10 - F 79 VLC
065516	RVS 10 - F 711 VLC

Evaporator Temperature •F	Nominal Rating (in tons)	PRESSURE DROP ACROSS THE VALVE - PSI									
		R22/R407C					R410A				
		1	2	3	4	5	1	2	3	4	5
+45°F	1	0.99	1.4	1.71	1.97	2.21	1.28	1.8	2.21	2.55	2.77
	2	1.66	2.35	2.87	3.32	3.71	2.14	3.03	3.71	4.29	4.56
	3	2.23	3.15	3.86	4.46	4.99	2.88	4.07	4.99	5.76	6.16
	4	3.24	4.58	5.61	6.48	7.25	4.19	5.92	7.25	8.37	8.69
	6	4.51	6.38	7.81	9.02	10.08	5.83	8.24	10.09	11.65	12.31
	10	7.56	10.69	13.09	15.12	16.9	9.77	13.81	16.92	19.54	20.75
+25°F	1	0.81	1.14	1.4	1.61	1.81	1.04	1.47	1.81	2.08	2.33
	2	1.36	1.92	2.35	2.71	3.03	1.75	2.48	3.03	3.50	3.92
	3	2.57	3.63	4.45	5.13	5.74	3.42	4.84	5.93	6.84	7.65
	4	2.65	3.75	4.59	5.30	5.92	2.35	3.33	4.08	4.71	5.26
	6	3.69	5.21	6.39	7.37	8.25	4.76	6.73	8.25	9.52	10.65
	10	6.18	8.74	10.71	12.36	13.82	7.98	11.29	13.83	15.96	17.85
+5°F	1	0.65	0.91	1.12	1.25	1.38	0.84	1.18	1.45	1.61	1.76
	2	1.09	1.54	1.88	2.06	2.27	1.41	1.99	2.44	2.64	2.90
	3	1.46	2.07	2.53	2.78	3.02	1.89	2.67	3.27	3.54	3.83
	4	2.12	3.00	3.68	3.93	4.27	2.75	3.88	4.76	5.01	5.42
	6	2.95	4.18	5.12	5.57	6.08	3.82	5.41	6.62	7.11	7.75
	10	4.95	7	8.58	9.38	10.25	6.41	9.06	11.1	11.99	13.04
-15°F	1	0.51	0.72	0.85	0.95	1.04	0.66	0.93	1.08	1.21	1.32
	2	0.86	1.21	1.39	1.56	1.70	1.11	1.57	1.77	1.98	2.14
	3	1.15	1.63	1.87	2.06	2.19	1.49	2.10	2.35	2.57	2.71
	4	1.67	2.37	2.64	2.91	3.11	2.16	3.06	3.33	3.65	3.86
	6	2.33	3.29	3.75	4.17	4.49	3.01	4.26	4.75	5.26	5.62
	10	3.91	5.52	6.31	7.03	7.56	5.04	7.13	8	8.84	9.44

Valve capacities are based on 120°F liquid, saturated evaporator, and 10°F superheat at the valve inlet.

SOLENOID SUCTION GAS CAPACITIES

TONS					
SUCTION GAS CAPACITIES @ 2 PSI PRESSURE DROP					
VALVE SERIES	Evaporator Temperature - F				
	40	20	0	-20	-40
R-12					
240/540RA8	1.0	0.8	0.6	0.5	0.4
240/540RA9T5	1.3	1.1	0.9	0.7	0.5
240/540RA9	1.6	1.3	1.0	0.8	0.6
240/540RA12	2.0	1.6	1.2	1.0	0.7
240/540RA16	3.9	3.2	2.5	1.9	1.5
240/540RA20	5.5	4.5	3.5	2.7	2.1
R-22/R-407C					
240/540RA8	1.5	1.2	1.0	0.8	0.6
240/540RA9T5	2.0	1.6	1.3	1.0	0.8
240/540RA9	2.4	2.0	1.6	1.2	1.0
240/540RA12	2.9	2.4	1.9	1.5	1.2
240/540RA16	5.8	4.7	3.8	3.0	2.3
240/540RA20	8.2	6.7	5.4	4.2	3.3

TONS					
SUCTION GAS CAPACITIES @ 2 PSI PRESSURE DROP					
VALVE SERIES	Evaporator Temperature - F				
	40	20	0	-20	-40
R-134a					
240/540RA8	0.8	0.6	0.5	0.4	0.3
240/540RA9T5	1.4	1.1	0.8	0.6	0.4
240/540RA9	1.7	1.4	1.1	0.8	0.5
240/540RA12	1.9	1.5	1.2	0.9	0.6
240/540RA16	3.2	2.5	1.9	1.4	1.0
240/540RA20	4.4	3.5	2.7	2.0	1.6
R-404A/R-507					
240/540RA8	0.9	0.7	0.5	0.4	0.3
240/540RA9T5	1.5	1.2	0.9	0.7	0.5
240/540RA9	1.9	1.5	1.2	0.9	0.6
240/540RA12	2.2	1.8	1.4	1.0	0.8
240/540RA16	3.4	2.7	2.1	1.6	1.2
240/540RA20	4.8	3.8	2.9	2.2	1.6

LIQUID CORRECTION FACTORS FOR SOLENOIDS

EVAPORATOR TEMPERATURE CORRECTION FACTORS FOR LIQUID, DISCHARGE AND SUCTION SERVICE REFRIGERATION ONLY

LIQUID SERVICE									
EVAPORATOR TEMPERATURE °F	40	30	20	10	0	- 10	- 20	- 30	- 40
MULTIPLIER	1.00	.96	.92	.88	.84	.80	.77	.74	.71

SOLENOID LIQUID CAPACITIES

TONS				
LIQUID CAPACITIES				
Pressure Drop Across Valve - psi				
VALVE SERIES	1	2	3	4
R-12				
710RA/713RA12	13.1	19.7	25.3	33.2
710RA/713RA16	19.9	24.9	34.9	44.8
710RA/713RA20	27.7	43.2	53.1	68.9
710RA24	44.0	62.3	76.4	99.6
R-22				
710RA/713RA12	17.2	25.8	32.9	43.6
710RA/713RA16	25.7	36.8	45.4	58.3
710RA/713RA20	36.3	56.7	69.6	89.8
710RA24	56.7	80.8	100.0	133.3
R-134a				
710RA/713RA12	15.8	23.8	3.4	40.0
710RA/713RA16	24.0	30.0	42.0	54.0
710RA/713RA20	33.4	52.0	64.0	83.0
710RA24	53.0	75.0	92.0	120.0
R-404A/R-507				
710RA/713RA12	11.5	17.2	21.9	29.1
710RA/713RA16	17.2	24.6	30.3	38.9
710RA/713RA20	24.3	37.9	46.5	60.0
710RA24	38.3	54.2	66.7	87.5
R-407C				
710RA/713RA12	16.4	24.5	31.3	41.5
710RA/713RA16	24.4	35.0	43.2	55.5
710RA/713RA20	34.5	54.0	66.3	84.4
710RA24	54.0	76.9	95.2	126.9

TONS				
LIQUID CAPACITIES				
Pressure Drop Across Valve - psi				
VALVE SERIES	2	3	4	5
R-22				
50RB	0.44	0.54	0.62	0.69
100RB	1.04	1.27	1.47	1.64
200RB2	2.5	3.1	3.6	4.0
200RB3	3.9	4.8	5.5	6.2
200/500RB4	4.6	5.6	6.5	7.2
200/500RB5	6.7	8.2	9.5	10.6
200/500RB6	8.2	10.0	11.5	12.9
200/500RB7	12.7	15.6	18.0	20.1
200RB9 (5/8)	19.0	23.3	26.9	30.1
200RB9 (7/8, 1 1/2)	24.9	30.5	35.2	39.4
200RB12	28.5	34.9	40.3	45.1
240/540RA8	12.7	15.6	18.0	20.1
240/540RA9T (5/8)	19.0	23.3	26.9	30.1
240/540RA9T (7/8, 1 1/2)	24.9	30.5	35.2	39.4
240/540RA12	28.5	34.9	40.3	45.1
240/540RA16	47.4	58.0	67.0	74.9
240/540RA20	77.9	95.4	110.2	123.2

All liquid capacities are based on a 40°F Evaporator Temperature and 100°F Liquid Temperature.

SOLENOID LIQUID CAPACITIES CONTINUED

TONS

LIQUID CAPACITIES				
Pressure Drop Across Valve - psi				
VALVE SERIES	2	3	4	5
R-134a				
50RB	0.41	0.5	0.6	0.6
100RB	0.96	1.2	1.4	1.5
200RB2	2.4	2.9	3.4	3.8
200RB3	3.6	4.4	5.1	5.7
200/500RB4	4.3	5.3	6.1	6.8
200/500RB5	6.4	7.8	9.1	10.1
200/500RB6	7.7	9.4	10.9	12.2
200/500RB7	12.1	14.8	17.1	19.1
200RB9 (5/8)	18.0	22.0	25.5	28.5
200RB9 (7/8, 1 1/2)	23.6	28.9	33.4	37.3
200RB12	27.1	33.2	38.3	42.8
240/540RA8	12.1	14.8	17.1	19.1
240/540RA9T (5/8)	18.0	22.0	25.5	28.5
240/540RA9T (7/8, 1 1/2)	23.6	28.9	33.4	37.3
240/540RA12	27.1	33.2	38.3	42.8
240/540RA16	45.0	55.1	63.6	71.2
240/540RA20	70.9	86.8	100.3	112.1

TONS

LIQUID CAPACITIES				
Pressure Drop Across Valve - psi				
VALVE SERIES	2	3	4	5
R-404A/R-507				
50RB	0.3	0.34	0.4	0.4
100RB	0.7	0.85	1.0	1.1
200RB2	1.7	2.1	2.4	2.7
200RB3	2.6	3.2	3.7	4.1
200/500RB4	3.0	3.7	4.3	4.8
200/500RB5	4.4	5.4	6.2	7.0
200/500RB6	5.3	6.5	7.5	8.4
200/500RB7	8.4	10.3	11.9	13.3
200RB9 (5/8)	12.5	15.3	17.7	19.8
200RB9 (7/8, 1 1/2)	16.4	20.1	23.2	25.9
200RB12	18.8	23.0	26.6	29.7
240/540RA8	8.4	10.3	11.9	13.3
240/540RA9T (5/8)	12.5	15.3	17.7	19.8
240/540RA9T (7/8, 1 1/2)	16.4	20.1	23.2	25.9
240/540RA12	18.8	23.0	26.6	29.7
240/540RA16	31.3	38.3	44.2	49.4
240/540RA20	53.6	65.7	75.9	84.8

TONS

LIQUID CAPACITIES				
Pressure Drop Across Valve - psi				
VALVE SERIES	2	3	4	5
R-407C				
50RB	0.4	0.51	0.6	0.7
100RB	1.0	1.21	1.4	1.6
200RB2	2.4	2.9	3.3	3.7
200RB3	3.7	4.5	5.2	5.8
200/500RB4	4.3	5.3	6.1	6.8
200/500RB5	6.4	7.8	9.0	10.1
200/500RB6	7.8	9.5	11.0	12.3
200/500RB7	12.1	14.8	17.1	19.1
200RB9 (5/8)	18.1	22.2	25.6	28.7
200RB9 (7/8, 1 1/2)	23.7	29.0	33.5	37.4
200RB12	27.1	33.2	38.3	42.9
240/540RA8	12.1	14.8	17.1	19.1
240/540RA9T (5/8)	18.0	22.1	25.5	28.5
240/540RA9T (7/8, 1 1/2)	23.7	29.0	33.5	37.4
240/540RA12	27.1	33.2	38.3	42.9
240/540RA16	45.1	55.2	63.7	71.3
240/540RA20	74.1	90.8	104.8	117.2

TONS

LIQUID CAPACITIES				
Pressure Drop Across Valve - psi				
VALVE SERIES	2	3	4	5
R-12				
50RB	0.34	0.42	0.48	0.54
100RB	0.8	1	1.16	1.2
200RB2	2.0	2.4	2.8	3.2
200RB3	3.0	3.7	4.2	4.7
200/500RB4	3.6	4.4	5.1	5.7
200/500RB5	5.3	6.5	7.5	8.4
200/500RB6	6.4	7.8	9.1	10.1
200/500RB7	10.0	12.2	14.1	15.8
200RB9 (5/8)	14.9	18.2	21.1	23.6
200RB9 (7/8, 1 1/2)	19.6	24.0	27.7	31.0
200RB12	22.5	27.6	31.8	35.6
240/540RA8	10.0	12.2	14.1	15.8
240/540RA9T (5/8)	14.9	18.2	21.1	23.6
240/540RA9T (7/8, 1 1/2)	19.6	24.0	27.7	31.0
240/540RA12	22.5	27.6	31.8	35.6
240/540RA16	37.4	45.7	52.8	59.1
240/540RA20	58.8	72.0	83.3	93.0

SOLENOID DISCHARGE CAPACITIES

50RB DISCHARGE GAS CAPACITIES

	PRESSURE DROP ACROSS VALVE (PSI)									
	1	2	3	4	5	6	7	8	9	10
R134a	0.05	0.07	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16
R22	0.06	0.09	0.10	0.12	0.14	0.15	0.16	0.17	0.18	0.19
R404A/R507	0.05	0.07	0.09	0.10	0.12	0.13	0.14	0.15	0.15	0.16

All capacities and factors shown are based on normal condensing temperatures (100°F), isentropic compression plus 50°, 40°F evaporator, 65°F suction gas and saturated liquid entering an expansion device per ARI Standard 760-80. For capacities at other operating conditions, use the appropriate correction factor given in above table.

SOLENOID DISCHARGE CAPACITIES CONTINUED

TONS						
DISCHARGE GAS CAPACITIES						
Pressure Drop Across Valve - psi						
VALVE SERIES	2	5	10	25	50	100
R-12						
100RB	0.1	0.2	0.3	0.5	0.5	0.5
200/500RB2	0.4	0.6	0.8	1.3	1.5	1.3
200/500RB3	0.5	0.8	1.2	1.7	2.0	1.6
200/500RB4	0.7	1.1	1.5	2.2	2.9	3.3
200/500RB5	1.0	1.6	2.2	3.2	4.1	4.3
200/500RB6	1.1	1.7	2.4	3.5	4.6	5.4
200/500RB7	1.5	2.4	3.3	5.2	6.6	7.2
200RB9 (5/8)	2.5	4.0	5.6	8.3	10.4	11.2
200RB9 (7/8, 1 1/2)	3.2	5.0	7.1	10.1	12.1	11.1
200RB12	3.5	5.5	7.8	11.7	14.0	12.4
240/540RA8	1.5	2.4	3.3	5.2	6.6	7.2
240/540RA9T5	2.5	4.0	5.6	8.3	10.4	11.2
240/540RA9	3.2	5.0	7.1	10.1	12.1	11.1
240/540RA12	3.5	5.5	7.8	11.7	14.0	12.4
240/540RA16	5.8	9.1	12.9	18.9	23.6	24.3
240/540RA20	8.1	12.8	18.1	28.2	34.4	33.1
R-22						
100RB	0.2	0.3	0.4	0.6	0.8	1.0
200/500RB2	0.5	0.9	1.2	1.9	2.5	2.8
200/500RB3	0.8	1.2	1.7	2.6	3.4	3.4
200/500RB4	1.0	1.6	2.2	3.4	4.5	5.7
200/500RB5	1.4	2.3	3.2	4.9	6.5	7.9
200/500RB6	1.6	2.5	3.5	5.3	7.1	9.1
200/500RB7	2.1	3.4	4.8	7.8	10.4	12.8
200RB9 (5/8)	3.6	5.7	8.1	12.5	16.6	20.4
200RB9 (7/8, 1 1/2)	4.6	7.2	10.2	15.4	20.0	23.1
200RB12	5.1	8.0	11.3	18.1	23.4	26.6
240/540RA8	2.1	3.4	4.8	7.8	10.4	12.8
240/540RA9T5	3.6	5.7	8.1	12.5	16.6	20.4
240/540RA9	4.6	7.2	10.2	15.4	20.0	23.1
240/540RA12	5.1	8.0	11.3	18.1	23.4	26.6
240/540RA16	8.3	13.2	18.7	28.6	37.8	45.6
240/540RA20	11.7	18.4	26.1	43.0	56.1	66.0
R-407C						
100RB	0.2	0.3	0.4	0.6	0.8	1.0
200/500RB2	0.5	0.9	1.2	1.9	2.5	2.9
200/500RB3	0.8	1.2	1.7	2.6	3.4	3.8
200/500RB4	1.0	1.6	2.2	3.3	4.5	5.7
200/500RB5	1.4	2.2	3.2	4.9	6.5	8.0
200/500RB6	1.5	2.4	3.5	5.2	7.1	9.1
200/500RB7	2.1	3.3	4.7	7.7	10.3	13.0
200RB9 (5/8)	3.6	5.6	8.0	12.4	16.5	20.6
200RB9 (7/8, 1 1/2)	4.5	7.1	10.1	15.3	20.0	22.5
200RB12	6.0	9.5	13.4	21.2	29.6	37.1
240/540RA8	2.1	3.3	4.7	7.7	10.3	13.0
240/540RA9T5	3.6	5.6	8.0	12.4	16.5	20.6
240/540RA9	4.5	7.1	10.1	15.3	20.0	22.5
240/540RA12	6.0	9.5	13.4	21.2	29.6	37.1
240/540RA16	8.2	13.0	18.4	28.4	37.7	46.2
240/540RA20	11.5	18.2	25.7	42.7	56.1	67.2

TONS						
DISCHARGE GAS CAPACITIES						
Pressure Drop Across Valve - psi						
VALVE SERIES	2	5	10	25	50	100
R-134a						
100RB	0.2	0.2	0.3	0.5	0.6	0.6
200/500RB2	0.5	0.7	1.0	1.5	1.8	1.7
200/500RB3	0.6	1.0	1.4	2.1	2.4	2.1
200/500RB4	0.8	1.3	1.8	2.7	3.5	4.1
200/500RB5	1.2	1.9	2.6	3.9	4.9	5.3
200/500RB6	1.3	2.1	2.9	4.3	5.6	6.6
200/500RB7	1.8	2.8	4.0	6.2	8.0	8.9
200RB9 (5/8)	3.0	4.7	6.7	10.0	12.7	13.9
200RB9 (7/8, 1 1/2)	3.8	6.0	8.5	12.2	14.8	14.2
200RB12	4.2	6.6	9.4	14.2	17.1	15.9
240/540RA8	1.8	2.8	4.0	6.2	8.0	8.9
240/540RA9T5	3.0	4.7	6.7	10.0	12.7	13.9
240/540RA9	3.8	6.0	8.5	12.2	14.8	14.2
240/540RA12	4.2	6.6	9.4	14.2	17.1	15.9
240/540RA16	6.9	10.9	15.4	22.8	28.6	30.4
240/540RA20	9.7	15.3	21.6	34.0	41.9	41.9
R-404A/R-507						
100RB	0.2	0.3	0.4	0.6	0.7	0.9
200/500RB2	0.5	0.7	1.0	1.7	2.2	2.5
200/500RB3	0.7	1.0	1.5	2.3	2.9	3.4
200/500RB4	0.9	1.3	1.9	2.9	3.9	5.0
200/500RB5	1.2	1.9	2.7	4.2	5.6	7.0
200/500RB6	1.3	2.1	3.0	4.5	6.1	7.9
200/500RB7	1.8	2.9	4.1	5.7	8.9	11.3
200RB9 (5/8)	3.1	4.9	6.9	10.7	14.3	17.9
200RB9 (7/8, 1 1/2)	3.9	6.2	8.7	13.3	17.4	20.2
200RB12	4.3	6.8	9.6	15.5	20.3	23.9
240/540RA8	1.8	2.9	4.1	6.7	8.9	11.3
240/540RA9T5	3.1	4.9	6.9	10.7	14.3	17.9
240/540RA9	3.9	6.2	8.7	13.3	17.4	20.2
240/540RA12	4.3	6.8	9.6	15.5	20.3	23.9
240/540RA16	7.1	11.3	16.0	23.6	30.8	36.2
240/540RA20	9.9	15.7	22.2	36.9	48.7	58.9

DISCHARGE CORRECTION FACTORS FOR SOLENOIDS

DISCHARGE GAS SERVICE									
REFRIGERANT	EVAPORATOR TEMPERATURE °F								
	40	30	20	10	0	- 10	- 20	- 30	- 40
R-12	1.00	0.98	0.96	0.93	0.91	0.88	0.86	0.83	0.81
R-22	1.00	0.98	0.96	0.94	0.92	0.9	0.88	0.87	0.83
R-134a	1.00	0.98	0.95	0.93	0.90	0.88	0.85	0.82	0.80
R-404A	1.00	0.97	0.94	0.91	0.88	0.85	0.81	0.78	0.75
R-407C	1.00	0.98	0.95	0.93	0.90	0.88	0.85	0.82	0.80
R-410A	1.00	0.98	0.97	0.95	0.93	0.91	0.89	0.85	0.84

All capacities and factors shown are based on normal condensing temperatures (100°F), isentropic compression plus 50°, 40°F evaporator, 65°F suction gas and saturated liquid entering an expansion device per ARI Standard 760-80. For capacities at other operating conditions, use the appropriate correction factor given in above table.

INDUSTRIAL SOLENOIDS APPLICATION

APPLICATION

- ☑ Air, Water & Steam
- ☑ 2 or 3-way Normally Opened or Closed
- ☑ Direct Acting or Pilot Operated

FEATURES

- ☑ Stainless Steel Coil Retainer and Enclosing Tube
- ☑ Completely Serviceable Without Disturbing System Piping
- ☑ Optional Voltages: 12-24 V DC & 24-120-240- 480-575 V AC

In addition to air, water and steam, the following is a listing of secondary loop fluids that are compatible with our valves:

FLUID NAME	MANUFACTURER
Ethylene & Propylene Glycol	Various
Tyfoxit	Spauschus Associates (Distributor)
Siltherm XLT	Dow
HFE	3M
Dowfrost	Dow
Pekasol	Unknown

NOMENCLATURE

SERIES			B	1/2	B	1/2	B
2	22	C	B	1/2	B	1/2	B
Valve Type	Product Group	Form of Flow	Design Series	Pipe N.P.T.	Body Material	Body Orifice	Elastomer Code
2 = 2 Way	Two digits to Define Group	C = Normally Closed O = Normally Open U = Universal	Letter will be advanced to identify product changes	1/8" thru 2" GS indicates non-standard	B = Brass S = Stainless Steel T = Stainless Steel with Silver Shading Band	3/65" thru 2"	B = Buna-N

Above example: 222CB 1/2 B 1/2 B

204C INDUSTRIAL SOLENOIDS

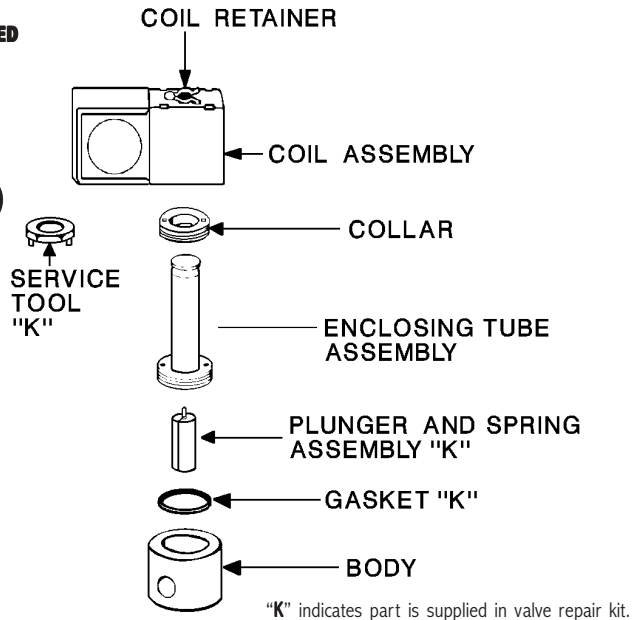
SPECIFICATIONS

- ☑ 1/4" NPT Solenoid Valve
- ☑ Watts: 12 A.C., 15 D.C.
- ☑ VA Inrush / Holding: 31 / 19
- ☑ M.W.P. 500 psi (1000 psi – 3/64" Orifice Only)
- ☑ Shipping Weight: 1 lb. 3 oz.
- ☑ Vacuum to 950 PS.I.
- ☑ CSA file number: LR3204
- ☑ UL file number: MP604
- ☑ CRN file number: OC0824.9 (see page A)



Coil sold separately see page 35.

EXPLODED VIEW 204C



204C VALVE REPAIR KITS

SEAT MATERIAL	KIT #	1/4" ORIFICE ONLY		PCN
		KIT #		
Buna-N	K-1072	K-1162		021105
Viton	K-1074	K-1164		021106
Teflon	K-1077	K-1167		021107
Ethylene Propylene	K-1076	K-1166		032154

210C/211C INDUSTRIAL SOLENOIDS

SPECIFICATIONS

- ⌚ Watts: 12 A.C.
- ⌚ VA Inrush / Holding: 31 / 19
- ⌚ M.W.P. 300 psi (250 psi on 1" 210C only)
- ⌚ Shipping Weight: 1 lb.
- ⌚ Diaphragm Operated Solenoid Valve:
210C - from 5 to 150 psi. 3/8" to 1" NPT
211C - from 0 to 100 psi. 3/8" to 3/4" NPT
- ⌚ CSA file number: LR3204
- ⌚ UL file number: MP604
- ⌚ CRN file number: OC0824.9 (see page A)

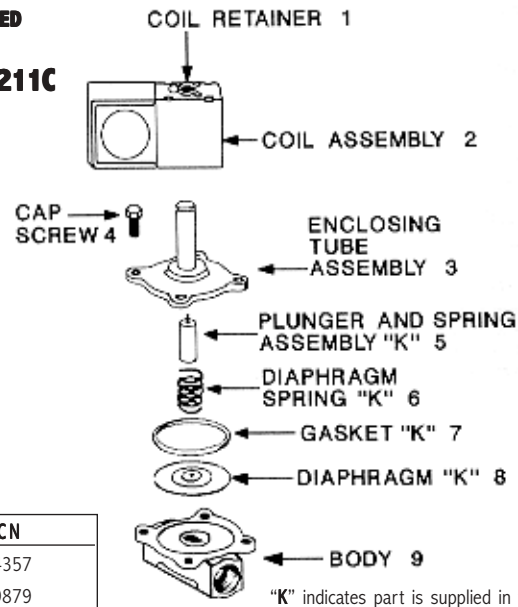


Coil sold separately see page 35.

211C VALVE REPAIR KITS

SEAT MATERIAL	KIT #	PCN
Buna-N	K-1157	034357
Ethylene Propylene	K-1158	039879

EXPLODED VIEW 210C/211C



"K" indicates part is supplied in valve repair kit.

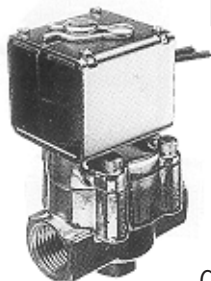
210C VALVE REPAIR KITS

SEAT MATERIAL	ORIFICE SIZE					
	3/8 & 1/2	PCN	3/4	PCN	1	PCN
Buna-N	K-1155	028964	K-1231	045072	K-1177	038934
Ethylene Propylene	K-1156	029856	--	--	--	--

222C INDUSTRIAL SOLENOIDS

SPECIFICATIONS

- ⌚ 3/8" to 1 1/2" NPT Solenoids
- ⌚ Watts: 12 A.C.
- ⌚ VA Inrush / Holding: 38 / 19
- ⌚ M.W.P. 300 psi
- ⌚ Minimum Operating Pressure Differential: 5 psi
- ⌚ Pilot Operated: 5 to 250 P.S.I.
- ⌚ CSA file number: LR3204
- ⌚ UL file number: MP604
- ⌚ CRN file number: OC0824.9 (see page A)



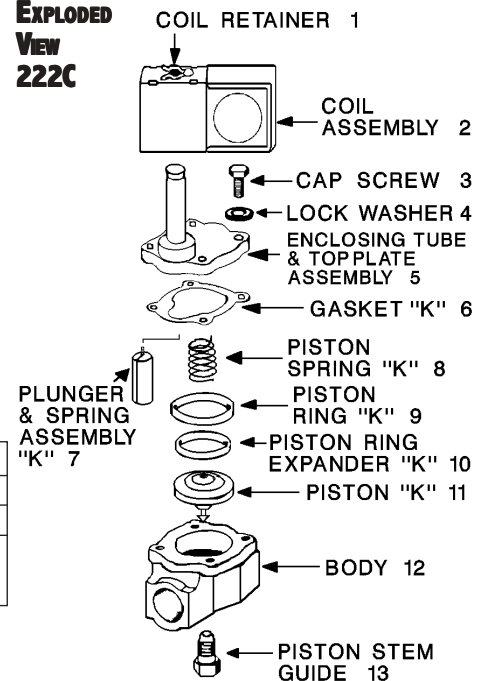
Coil sold separately see page 35.

222C MANUAL OVERRIDE KITS

For field installation only.

SEAT MATERIAL	ORIFICE SIZE - NPT					
	1/2 & 3/4	PCN	1 & 1-1/4	PCN	1-1/2	PCN
Buna-N	K-1057	021099	--	--	--	--
Teflon or Ethylene Propylene	K-1058	021100	K-1060	034330	K-1062	034331

EXPLODED VIEW 222C



222C VALVE REPAIR KITS

SEAT MATERIAL	ORIFICE SIZE - NPT									
	3/8 & 1/2	PCN	3/4	PCN	1	PCN	1-1/4	PCN	1-1/2	PCN
Buna-N	K-1116	030765	K-1120	037558	K-1124	028955	K-1128	031349	K-1132	028956
Teflon	K-1118	029235	K-1122	021109	K-1126	034178	K-1130	034047	K-1134	032334
Ethylene Propylene	--	--	K-1121	040680	--	--	--	--	--	--

COILS FOR SOLENOID VALVES

FEATURES

- Space-saving designs
- Coil windings are insulated to provide water, shock and vibration protection

ORDERING INFORMATION FOR COILS

ELECTRICAL CONNECTION APPLICATION	Junction Box		Lead Wires		Open Frame/Spaded	
	6" Leads		18" Leads			
VOLTAGE/FREQUENCY	DESCRIPTION	PCN	DESCRIPTION	PCN	DESCRIPTION	PCN
24V 50/60 Hz	AHG 24/50-60	057699	AMC 24/50-60	057631	AMF 24/50-60	057539
	AMG 24/50-60	057341	--	--	AMF 24/50-60	057538
	DMG 24/50-60	055129	--	--	t RMF 24/50-60	065677
	--	--	--	--	AMS 24/50-60	057603
	--	--	--	--	t RMS 24/50-60	065680
120V 50/60 Hz	AHG 120/50-60	057673	AMC 120/50-60	057598	t RMF 120/50-60	065678
	AMG 120/50-60	057331	--	--	AMS 120/50-60	057349
	DMG 120/50-60	057342	--	--	t RMS 120/50-60	065204
120-240V 50-60 Hz	AHG 208-240/50-60	057671	AHC 208-240/50-60	057441	AMF 208-240/50-60	057540
	AMG 208-240/50-60	057342	AMC 208-240/50-60	057594	t RMF 208-240/50-60	065679
	DMG 208-240/50-60	054764	--	--	AMS 208-240/50-60	057531
	--	--	--	--	t RMS 208-240/50-60	065861
	--	--	--	--	DMS 208-240/50-60	062013
480V 50/60 Hz	AMG 480/50-60	057527	--	--	AMF 480/50-60	057534
120-240V 50/60 Hz	AMG 120-240/50-60	057343	AMC 120-240/50-60	057730	AMF 120-240/50-60	062410
277V 50/60 Hz	AMG 277/50-60	057528	--	--	AMS 277/50-60	057714
12 VDC	AMG 12 VDC	057521	AMC 12 VDC	057596	--	--
24 VDC	AMG 24/DC	057523	AMC 24 VDC	057633	--	--

ELECTRICAL CONNECTION APPLICATION	Molded		Open Frame/Low Watt DC	
	DESCRIPTION	PCN	DESCRIPTION	PCN
24V 50/60 Hz	ASC2 24/50-60	063542	--	--
120V 50/60 Hz	ASC2 120/50-60	062462	--	--
120V 50-60 Hz	ASC2 GS-2562-1	015384	--	--
208-220/208-240 V 50-60 Hz	ASC2 208-240 50-60	062463	--	--
208-220/208-240 V 50-60 Hz	ASC2 GS-2562-2	015383	--	--
200V 50-60 Hz	ASC2 200/50-60	062467	--	--
12V DC	ASC2 12/DC	062464	MMG 12/DC	063524
	--	--	MMF 12/DC	062972
24V DC	ASC2 24/DC	064375	MMG 24/DC	063526
	--	--	MMF 24/DC	062974

REPLACEMENT COILS FOR OBSOLETE VALVES

PCN	DESCRIPTION	VALVE
041579	X - 8321-87 18 208-240/60 COIL KIT	4 W
039166	X - 8321-72 18 120/50-60 COIL KIT	
039244	X - 8321-71 18 24/50-60 COIL KIT	
032096	X - 22164-71 18 24/50-60	S Series/ DS2184
031340	X - 22164-72 18 120/50-60	
032095	X - 22164-82 18 208/50-60	
032027	X - 22164-69 18 240/50-60	
033675	X - 22164-88 18 480/50-60	
038947	X - 22164-17 18 230/DC	R Series
032139	X - 22200-72 18 120/50-60	
032242	X - 22200-82 18 208/50-60	
032813	X - 22200-69 18 240/50-60	M Series
035036	X - 22606-72 18 120/50-60	
034944	X - 22606-72 24 120/50-60	
036069	X - 22606-82 18 208/50-60	
035348	X - 22606-82 24 208/50-60	
035020	X - 22606-69 18 240/50-60	

t For 50RB, RVS and RVA only. Enclosing tube opening is smaller and will not fit other solenoid valves

u ASC2 female connector S.S.K. 1.5 Cable (PCN 801252).

COIL ENCLOSURE OPTIONS

OPTIONS	CODE
Junction Box	G
Conduit - 18" leads	C
Open Frame - 18" leads	F
Open Frame - Spades	S

ABV REFRIGERATION BALL VALVE

FEATURES AND SPECIFICATIONS

- ☞ Hermetic forged brass body
- ☞ Compatible with new refrigerants and lubricants
- ☞ Full flow and Bi-directional
- ☞ Cap has pressure relief hole
- ☞ Extension Stubs: 100% Copper Connections
- ☞ Maximum working pressure: 500 psig
- ☞ Valve stem cap retained by strap attached to main body
- ☞ Integrated access port available on all sizes
- ☞ Not for use with R-123
- ☞ Fluid temperature range: +300°F to -40°F
- ☞ UL File Number: SA 5312
- ☞ CSA File Number: LR 701890
- ☞ CRN File Number: 0C0824.9 (see page A)



NOMENCLATURE

Example: ABV 5A

A	BV	5	A
Alco	Ball Valve	Connection Size (in 1/8")	Access Valve (optional)

SELECTION AND ORDERING INFORMATION FOR ABV

PCN without Access Valve	PCN with Access Valve	Valve	Port Size	Connection Size	Cross Reference	
					Superior	Henry
064383	064384	ABV 2	1/2	1/4 ODF		
062104	062114	ABV 3	1/2	3/8 ODF	586WA8ST	906204
062105	062115	ABV 4	1/2	1/2 ODF	586WA8ST	906205
062106	062116	ABV 5	1/2	5/8 ODF	586WA10ST	906205
064385	064386	ABV 6	3/4	3/4 ODF	587WA12ST	
062107	062117	ABV 7	3/4	7/8 ODF	587WA14ST	906307
062108	062118	ABV 9	1	1 1/8 ODF	591WA11ST	906409
062109	062119	ABV 11	1 1/4	1 3/8 ODF	592WA13ST	906511
062110	062120	ABV 13	1 1/2	1 5/8 ODF	593WA15ST	906613
062111	062121	ABV 17	2	2 1/8 ODF	594WA21ST	906717
062112	062122	ABV 21 [‡]	2	2 5/8 ODF	594WA25ST	906721
062113	062123	ABV 25 [‡]	2	3 1/8 ODF	594WA31ST	906725

Standard Product Offering

[‡] Reduced port

SC2 COMPRESSOR SHUT-OFF VALVES

FEATURES AND SPECIFICATIONS

- ☞ Cast iron body with optimized flow characteristic
- ☞ High temperature resistant pure graphite packing
- ☞ Compatible with CFC/HFC/HCFC all lubricants
- ☞ Available for ammonia applications
- ☞ UL approved: File no. SA 6668
- ☞ Maximum Operating Pressure: 500 psig
- ☞ Fluid Temperature Range: -40 to 265°F standard
- ☞ Ambient/Transport temperature: -40 to 150°F



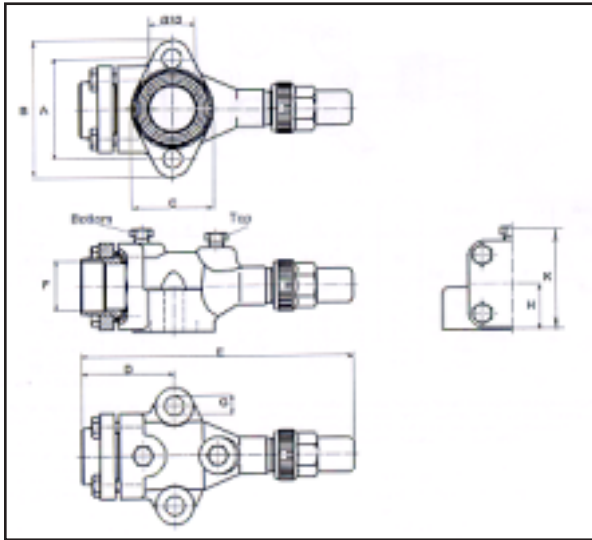
OPTIONS

- ☞ Up to three 1/4" or 1/8" NPTF connections

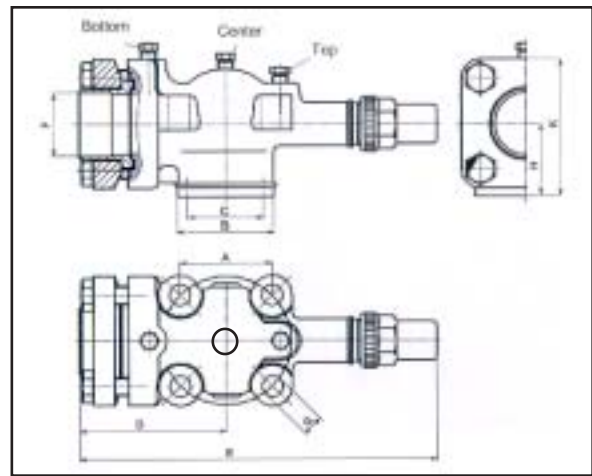
CONFIGURATION OF THE THREE NPTF CONNECTORS

Valve Stem Position	Position of Schraeder Connection	Top 1/4"-1/8" NPTF	Center 1/4"-1/8" NPTF	Bottom 1/4"-1/8" NPTF
	Fully Open		Sealed from System	Connected to System and Compressor
Closed by One Turn		Connected to System and Compressor	Connected to System and Compressor	Connected to System and Compressor
Fully Closed		Connected to Compressor	Connected to Compressor	Connected to System

DIMENSIONAL DATA (mm)



PCN*	TYPE	ORDER NO.	D	E	F	Gauge Connection	Weight kg
064925	SC2-SJ5	400.000.44			0 7/8" 22mm		1,64
064926	SC2-SK5	400.000.22			0 28mm		
064927	SC2-SL5	400.000.23			0 1-1/8"		
064928	SC2-SM5	400.000.24			0 35mm- 1-3/8"		1,64
064929	SC2-S95	400.000.43	--	--	-WITHOUT-		1,36



SELECTION AND ORDERING INFORMATION

PCN*	TYPE	ORDER NO.**	A	B	C	D	E	F	G	H	K	Gauge Connection	Medium	Weight kg										
064930	SC4-SN1	400.000.25	63,6	070	054	109	251	0 42mm-1-5/8"	0 13,5	46	86	top	NH ₃	3,36										
064931	SC4-SO1	400.000.26						0 35mm-1-3/8"																
064932	SC4-SP1	400.000.27						0 42mm-1-5/8"																
064933	SC4-SM1	400.000.28						0 54mm-2-1/8"																
064934	SC4-S95	400.000.40						- WITHOUT -																
064935	SC4-WP5	400.000.29						0 42mm-1-5/8"																
064936	SC4-WN5	400.000.30						0 1-5/8"																
064937	SC4-WO5	400.000.31																						
064938	SC5-SM5	400.000.32						0 35mm- 1-3/8"																
064939	SC5-SO5	400.000.33						0 1-5/8"																
064940	SC5-SN5	400.000.34	77,8	081,5	064	125	302	0 42mm	0 18	62	117	top + bottom	NH ₃	??										
064941	SC5-S95	400.000.41						- WITHOUT -																
064942	SC5-SQ5	400.000.18						0 54mm- 2-1/8"																
064943	SC5-S55	400.000.35						0 64mm																
064944	SC5-SR1	400.000.36						0 2 5/8"																
064945	SC5-BN5	400.000.37						0 42mm																
064947	SC8-SR1	400.000.38						0 75				0 60					0 2-5/8"	0 18	76	146	top	NH ₃	13,72	
064948	SC8-S95	400.000.42						99				0105,5			0 85	168	365				- WITHOUT -			
064949	SC8-ST1	400.000.39						99				0 105,5			0 85	168	365	0 3-1/8"	0 18	76	146	top + bottom		9,94
																						top		13,78

*Product Code Number (North America)
** Order Number (Rest of the World)

Hand (ShutOff) Valves

FEATURES AND SPECIFICATIONS

- ☑ Brass valve body
- ☑ Compatible with new refrigerants and lubricants
- ☑ Stainless steel diaphragms ensure seal between shaft and inner walls
- ☑ Maximum working pressure: 425 psig
- ☑ Maximum fluid temperature: 212°F
- ☑ UL File Number: SA 12786
- ☑ CRN File Number: Pending (see page A)

SELECTION AND ORDERING INFORMATION

PCN	Valve	Connection Size	Kv	Cv
065699	RD 6 1/4 R	1/4 SAE	0.5	0.03
065700	RD 6 1/4 S	1/4 ODF	0.5	0.03
065701	RD 10 3/8 R	3/8 SAE	0.8	0.05
065702	RD 10 3/8 S	3/8 ODF	0.8	0.05
065703	RD 12 1/2 R	1/2 SAE	1.6	0.11
065704	RD 12 1/2 S	1/2 ODF	1.6	0.11
065705	RD 15 5/8 R	5/8 SAE	1.9	0.13
065706	RD 15 5/8 S	5/8 ODF	1.9	0.13
065707	RD 19 3/4 R	3/4 SAE	4.5	0.31
065708	RD 19 3/4 S	3/4 ODF	4.5	0.31
065709	RD 22 7/8 S	7/8 ODF	5.0	0.35



ACK Check Valves

APPLICATION

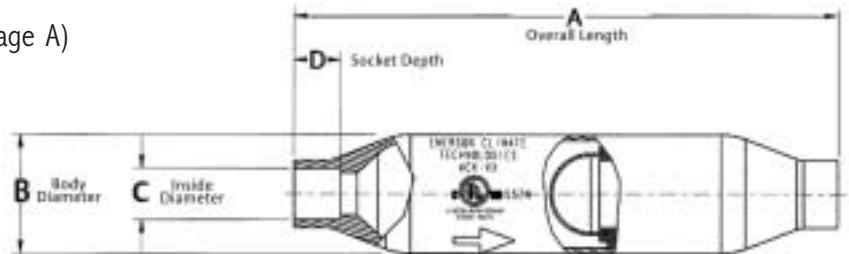
ACK Check Valves are designed to prevent reverse flow. The magnetic checking action provides a near zero leak rate. The ACK can be installed in any position without affecting its performance.



FEATURES

- ☑ Copper Connection Sizes 1/4" through 2-5/8"
- ☑ Near Zero Leak Rate
- ☑ Magnetic Checking Action
- ☑ Built-In Mesh Strainer
- ☑ Can Be Installed In Any Position
- ☑ UL/CUL File Number: SA 5312
- ☑ CRN File Number: Pending (see page A)

DIMENSIONAL DATA



NOMENCLATURE

EXAMPLE: ACK-4

A	CK	4
Series	Check Valve	Copper ODF Connection Size (in 1/16")

ORDERING INFORMATION

PCN	Description	Connection Size	A (in.)	B (in.)	C (in.)	D (in.)	Opening Pressure (psi)	MWP (psig)	Burst Pressure (psig)	Leak Rate CIM @ 60 psi	Nominal Tons R-22 Suction 40°F @ 1 psi	Nominal Tons R-22 Liquid 40°F @ 1 psi
064985	ACK-4	1/4 ODF	4	7/8	254 ± .002	0.19	0.075	800	4000	0.015	0.4	2.8
064986	ACK-6	3/8 ODF			.379 ± .002	0.40						
064987	ACK-8	1/2 ODF	5	1-1/8	.504 ± .002	0.31	0.219	640	3400	0.034	1.2	9.4
064988	ACK-10	5/8 ODF			.629 ± .002	0.50						
064989	ACK-12	3/4 ODF	7	1-5/8	.754 ± .002	0.63	0.238	560	2800	0.074	3.3	27
064990	ACK-14	7/8 ODF			.879 ± .003	0.42						
064991	ACK-18	1 1/8 ODF	8-3/8	2-1/8	1.130 ± .003	0.94	0.550	400	2000	0.122	6.0	51
064992	ACK-22	1 3/8 ODF	9-3/8	2-5/8	1.380 ± .003	1.04	0.638	440	2200	0.172	9.5	79
064993	ACK-26	1 5/8 ODF	10-1/2	3-1/8	1.630 ± .003	1.07	0.713	420	2100	0.272	17.0	102
064994	ACK-34	2 1/8 ODF	12	3-5/8	2.130 ± .003	1.34	1.131	400	2000	0.386	30.0	213
064995	ACK-42	2 5/8 ODF	13	4-1/8	2.630 ± .003	1.50	1.438	380	1900	0.512	50.0	375

CROSS REFERENCE

Emerson	A-1 Components	Superior
ACK-4	MS-4	900M-4S
ACK-6	MS-6	900M-6S
ACK-8	MS-8	900M-8S
ACK-10	MS-10	900M-10S
ACK-12	MS-12	900M-12S
ACK-14	MS-14	900M-14S
ACK-18	MS-18	N/A
ACK-22	MS-22	N/A
ACK-26	MS-26	N/A
ACK-34	MS-34	N/A
ACK-42	MS-42	N/A



QUICK SELECTION GUIDE SYSTEM PROTECTORS

TAKE APART LIQUID LINE FILTER DRIERS

Description	Refrigeration, Low Temp. & Commercial Installations			Air Conditioning			
				Field Replacement & Field Installations		OEM Self Contained Equipment	
	R-12/134a	R-22/407C	R-404A/507A	R-12/134a	R-22/407C	R-12/134a	R-22/407C
STAS 485T	8	10	8	8	10	13	15
STAS 487T	10	13	10	10	12 1/2	15	20
STAS 489T	10	15	10	10	15	15	20
STAS 4811T	13	20	13	13	20	20	25
STAS 967T	20	25	15	20	25	25	35
STAS 969T	25	30	20	25	30	35	45
STAS 9611T	30	35	25	30	35	35	45
STAS 9613T	35	40	30	35	40	40	50
A-TD-9625S-V	40	45	35	40	45	50	60
STAS 1449T	30	40	30	30	40	40	55
STAS 14411T	40	50	35	40	50	50	65
STAS 14413T	45	55	40	45	55	55	75
STAS 14417T	60	50	45	50	60	60	80
STAS 19211T	50	70	45	50	70	60	80
STAS 19213T	60	80	55	60	80	75	100
STAS 19217T	65	85	60	65	85	80	110
ADKS 30013T	50	65	45	50	65	55	70
ADKS 30017T	60	80	50	60	80	65	90
ADKS 40017T	65	85	55	65	85	70	95
ADKS 40021T	75	100	65	75	100	80	105

HERMETIC LIQUID LINE FILTER DRIERS (EKP, ADK, EBF, BFK)

Description	Refrigeration, Low Temp. & Commercial Installations			Air Conditioning	
				Field Replacement & Field Installations	
	R-12/134a	R-22/407C/R-410A	R-404A/507A	R-12/134a	R-22/407C/R-410A
032	1/2	1/2	1/2	1	1 1/2
032S					
033					
033S	3/4	3/4			
052					
052S	1 1/2	2	1 1/2	3	4
053					
053S					
082	1	1	3/4	1 1/2	2
082S					
0825S					
083	2	3	2	4	5
083S					
084					
084S					
162	1 1/2	2	1	1 1/2	2
162S					
1625S					
163	3	5	3	5	10
163S					
164					
164S					
165					
165S					
303	4	5	4	7 1/2	12
303S					
304					
304S	7 1/2	10	5	10	15
305					
305S					
307S	4	10	5	18	24
309S					
413					
414	4	5	5	5	5
414S					
415					
415S	7 1/2	7 1/2	7 1/2	12	18
417S					
419S					
757S	10	12	10	20	27
759S					
757S	20	25	15	22	30
759S					
759S	22	30	20	25	34



EKP EXTRA-KLEAN LIQUID LINE FILTER-DRIER

FEATURES AND SPECIFICATIONS

- ☞ Copeland approved for POE Lubricants
- ☞ Premium Universal replacement liquid line filter-drier for CFC, HCFC and HFC refrigerants including R-410A for all sizes
- ☞ Filtration first for more effective use of surface area of desiccant
- ☞ High moisture and acid removal
- ☞ Solid copper fittings
- ☞ Corrosion resistant epoxy powder paint finish
- ☞ Desiccant blend 75% molecular sieve and 25% activated alumina
- ☞ Maximum working pressure: 680 psig
- ☞ Filtration: 20 microns
- ☞ CRN file number: OE0844.9 (see page A)
- ☞ CSA file number: LR 100624
LR 32462
- ☞ UL file number: SA 3124



NOMENCLATURE

Example: EKP-083S

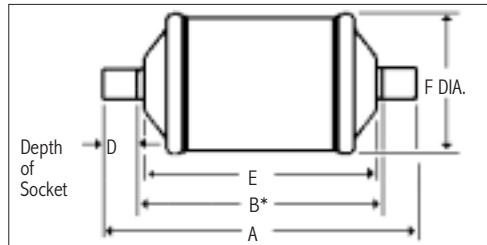
EKP	08	3	S
Drier Series	Unit Size (in cu. in.)	Connection Size (in 1/8")	S = ODF connections (omit for SAE)

ORDERING INFORMATION FOR EKP

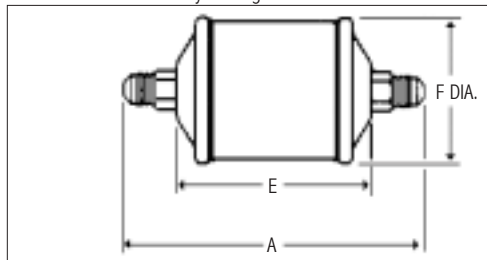
PCN	MODEL NUMBER	DIMENSIONS					SHIP WT. LBS.
		A	B	D	E	Ft	
062427	EKP-032	4 3/8	--	--	2 9/16	1 5/8	1/2
062429	EKP-032S	3 7/8	3 1/8	3/8			
063908	EK-032SV						
013893	EK-032SV C	Capillary Tube Outlet Connection					
060011	EK-032FM	3 1/2	--	--	3	2 5/8	7/8
060010	EK-032MF	3 1/2	--	--			
062431	EKP-033	4 11/16	--	--			
062433	EKP-033S	4 1/16	3 3/16	7/16	3 13/16	2 5/8	1 1/4
062435	EKP-052	4 13/16	--	--			
057013	EKP-052MF	4 1/2	--	--			
062438	EKP-052S	4 7/16	3 11/16	3/8	4 3/4	2 5/8	1 1/2
062440	EKP-053	5 1/8	--	--			
062442	EKP-053S	4 1/2	3 5/8	7/16			
062444	EKP-082	5 5/8	--	--	7 1/2	3 1/16	3 3/4
062446	EKP-082S	5 1/4	4 1/2	3/8			
062448	EKP-083	5 15/16	--	--			
062450	EKP-083S	5 5/16	4 7/16	7/16	7 5/8	3 11/16	4 3/4
062452	EKP-084	6 3/16	--	--			
062454	EKP-084S	5 3/8	4 3/8	1/2			
062493	EKP-162	6 9/16	--	--	13 1/16	3 11/16	7 1/2
062495	EKP-162S	6 3/16	5 7/16	3/8			
056045	EKP-1625S	5 15/16	5 5/16	5/16			
062497	EKP-163	6 7/8	--	--	7 5/8	3 11/16	4 3/4
062499	EKP-163S	6 1/4	5 7/16	7/16			
062501	EKP-164	7 1/16	--	--			
062503	EKP-164S	6 5/16	5 5/16	1/2	7 1/2	3 1/16	3 3/4
062505	EKP-165	7 1/2	--	--			
062507	EKP-165S	6 9/16	5 5/16	5/8			
062509	EKP-303	9 5/8	--	--	7 1/2	3 1/16	3 3/4
062511	EKP-303S	9	8 1/8	7/16			
062513	EKP-304	9 7/8	--	--			
062515	EKP-304S	9 1/8	8 1/8	1/2	7 1/2	3 1/16	3 3/4
062517	EKP-305	10 5/16	--	--			
062519	EKP-305S	9 5/16	8 1/16	5/8			
063449	EKP-306S	9 11/16	8 7/16	5/8	7 5/8	3 11/16	4 3/4
062523	EKP-307S	9 7/8	8 3/8	3/4			
062525	EKP-309S	10 1/4	8 7/16	15/16			
062527	EKP-413	9 3/4	--	--	7 5/8	3 11/16	4 3/4
062531	EKP-414	10	--	--			
062533	EKP-414S	9 1/4	8 1/4	1/2			
062535	EKP-415	10 7/16	--	--	7 5/8	3 11/16	4 3/4
062537	EKP-415S	9 7/16	8 3/16	5/8			
062539	EKP-417S	10	8 1/2	3/4			
062541	EKP-419S	10 5/16	8 1/2	3/4	13 1/16	3 11/16	7 1/2
062543	EKP-757S	15 7/16	13 15/16	3/4			
062545	EKP-759S	15 3/4	13 7/8	15/16			

t Does not include weld bead

DIMENSIONAL DATA



* Indicates Lay-in Length



LIQUID REFRIGERANT HOLDING CAPACITY - OUNCES

Unit Size	R-12		R-134a		R-22		R-407C		R-410A		R-404A/507		R-502	
	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F
03	2.9	2.6	2.6	2.3	2.6	2.3	2.5	2.1	2.3	1.9	2.3	1.9	2.7	2.3
05	6.5	5.9	6.0	5.4	5.9	5.3	5.6	4.9	5.3	4.4	5.2	4.4	6.0	5.3
08	8.3	7.6	7.6	6.9	7.5	6.8	7.2	6.3	6.7	5.7	6.6	5.6	7.7	6.8
16	10.2	9.4	9.4	8.6	9.3	8.4	8.9	7.8	8.3	7.0	8.2	6.9	9.5	8.4
30	28.7	26.3	26.4	23.9	26.1	23.5	24.9	21.9	23.3	19.6	22.9	19.4	26.7	23.4
41	40.0	36.4	36.9	33.1	36.4	32.5	34.7	30.3	32.5	27.2	31.9	26.8	37.2	32.4
75	72.4	66.3	66.7	60.3	65.8	59.2	62.8	55.2	58.7	49.5	57.7	48.9	67.2	59.0

ADK BLOCK STYLE LIQUID LINE FILTER-DRIER

FEATURES AND SPECIFICATIONS

- ☑ Economy solid core liquid line filter-drier ideal for use with CFC and HCFC refrigerants including R-410A for all sizes
- ☑ Solid copper fittings
- ☑ Shock resistant steel shell construction
- ☑ High moisture and acid removal capacity
- ☑ Corrosion resistant epoxy powder paint finish
- ☑ Desiccant Blend: Activated Alumina with Molecular Sieve
- ☑ Filtration: 40 microns
- ☑ Maximum working pressure: 680 psig
- ☑ UL file number: SA 3124
- ☑ CSA file number: LR 100624
LR 32462
- ☑ CRN file number: OE0844.9 (see page A)



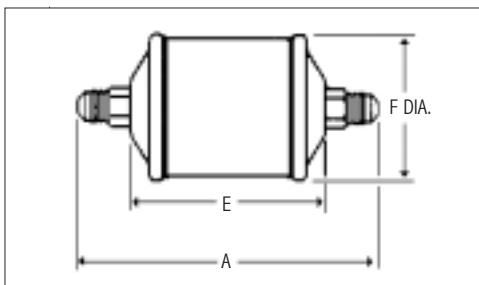
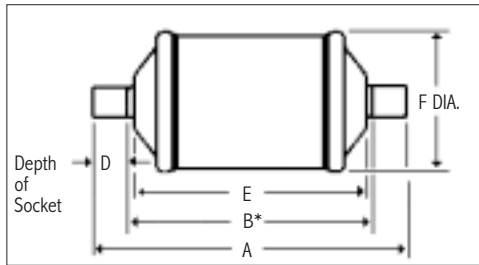
NOMENCLATURE

Example: ADK 083S

ADK	08	3	S
Series	Unit Size (in cu. in.)	Connection Size (in 1/8")	S = ODF connection (Omit for SAE)

ORDERING INFORMATION FOR ADK

DIMENSIONAL DATA



PCN	PART NUMBER	DIMENSIONS						
		CONNECTION SIZE	A	B	D	E	F [⊙]	SHIP WT. LBS
059874	ADK-032	1/4 SAE	4 3/8	--	--	2 9/16	1 5/8	1/2
052451	ADK-032S	1/4 ODF	3 7/8	3 1/8	3/8			
063910	ADK-032SV	1/4 ODF	3 7/8	3 1/8	3/8			
063909	ADK-032SV CAP	1/4 ODF - CAP OUT	--	--	--	3	2 5/8	3/4
023157	ADK-033	3/8 SAE	4 11/16	--	--			
053172	ADK-033S	3/8 ODF	4 1/16	3 3/16	7/16			
060125	ADK-052	1/4 SAE	4 13/16	--	--	3 13/16	2 5/8	1 1/4
060126	ADK-052S	1/4 ODF	4 7/16	3 11/16	3/8			
060127	ADK-053	3/8 SAE	5 1/8	--	--			
060128	ADK-053S	3/8 ODF	4 1/2	3 5/8	7/16	4 5/8	2 5/8	2
060129	ADK-082	1/4 SAE	5 5/8	--	--			
060130	ADK-082S	1/4 ODF	5 1/4	4 1/2	3/8			
060131	ADK-083	3/8 SAE	5 15/16	--	--	7 1/2	3 1/16	3 3/4
060132	ADK-083S	3/8 ODF	5 5/16	4 7/16	7/16			
060133	ADK-084	1/2 SAE	6 3/16	--	--			
060134	ADK-084S	1/2 ODF	5 3/8	4 3/8	1/2	7 5/8	3 11/16	4 3/4
059820	ADK-085	5/8 SAE	6 5/8	--	--			
059839	ADK-162	1/4 SAE	6 7/16	--	--			
060795	ADK-163	3/8 SAE	6 3/4	--	--	13 1/16	3 11/16	7 1/2
059840	ADK-163S	3/8 ODF	6 1/8	5 1/4	7/16			
059841	ADK-164	1/2 SAE	6 15/16	--	--			
059842	ADK-164S	1/2 ODF	6 3/16	5 3/16	1/2	10	10	10
059843	ADK-165	5/8 SAE	7 7/16	--	--			
060796	ADK-165S	5/8 ODF	6 3/8	5 1/8	5/8			
060172	ADK-167S	7/8 ODF	6 15/16	5 7/16	3/4	10 5/16	8 1/2	3/4
058507	ADK-303	3/8 SAE	9 5/8	--	--			
058507	ADK-303S	5/8 ODF	9	8 1/8	7/16			
060173	ADK-304	1/2 SAE	9 7/8	--	--	10 5/16	8 1/2	3/4
060176	ADK-304S	1/2 ODF	9 1/8	8 1/8	1/2			
060174	ADK-305	5/8 SAE	10 5/16	--	--			
060177	ADK-305S	5/8 ODF	9 5/16	8 1/16	5/8	10 5/16	8 1/2	3/4
060178	ADK-307S	7/8 ODF	9 7/8	8 3/8	3/4			
060179	ADK-309S	1 1/8 ODF	10 3/16	8 3/8	15/16			
060182	ADK-413	3/8 SAE	9 3/4	--	--	10 5/16	8 1/2	15/16
060183	ADK-414	1/2 SAE	10	--	--			
060185	ADK-414S	1/2 ODF	9 1/4	8 1/4	1/2			
060184	ADK-415	5/8 SAE	10 7/16	--	--	10 5/16	8 1/2	3/4
060186	ADK-415S	5/8 ODF	9 7/16	8 3/16	5/8			
060187	ADK-417S	7/8 ODF	10	8 1/2	3/4			
060188	ADK-419S	1 1/8 ODF	10 5/16	8 1/2	15/16	10 5/16	8 1/2	15/16
060190	ADK-757S	7/8 ODF	15 7/16	13 15/16	3/4			
060191	ADK-759S	1 1/8 ODF	15 3/4	13 7/8	15/16			

⊙ Does not include weld bead

LIQUID REFRIGERANT HOLDING CAPACITY - OUNCES

Unit Size	R-12		R-134a		R-22		R-407C		R-410A		R-404A/507		R-502	
	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F
03	2.4	2.2	2.2	2.0	2.2	2.0	2.1	1.9	2.0	1.7	1.9	1.7	2.2	2.0
05	5.9	6.0	5.5	5.5	5.4	5.4	5.2	5.0	4.8	4.5	4.7	4.5	5.5	5.4
08	8.0	7.4	7.4	6.7	7.3	6.6	7.0	6.2	6.5	5.5	6.4	5.5	7.5	6.6
16	14.5	12.5	13.4	11.4	13.2	11.2	12.6	10.4	11.7	9.4	11.6	9.3	13.5	11.2
30	21.8	19.9	20.1	18.1	19.8	17.8	18.9	16.6	17.4	14.9	17.4	14.7	20.2	17.7
41	29.3	26.8	26.9	24.4	26.6	23.9	25.4	22.3	23.7	20.0	23.3	19.7	27.2	23.8
75	52.8	48.3	48.6	43.9	48.0	43.1	45.8	40.2	42.8	36.0	42.1	35.6	49.1	43.0

SFD SUCTION LINE FILTER-DRIER

FEATURES AND SPECIFICATIONS

- ☑ Flow Control's standard compacted bead suction filter-drier for moisture, acid and contaminant removal after a burnout or when major work has been performed
- ☑ For use with CFC, HCFC and HFC refrigerants
- ☑ Solid copper fittings
- ☑ Dual access valves
- ☑ Corrosion resistant epoxy powder paint finish
- ☑ Filtration: 40 microns
- ☑ Maximum working pressure: 400 psig
- ☑ CRN file number: OE0844.9 (see page A)
- ☑ CSA file number: LR 100624
LR 32462
- ☑ UL file number: SA 3124



NOMENCLATURE

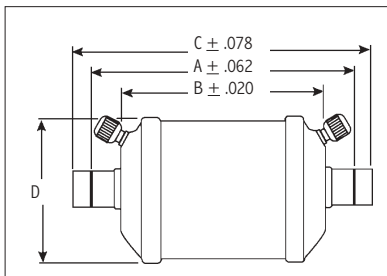
Example: SFD 13S5-VV

SFD	13	S	5	VV
Series	Unit Size (in cu. in.)	S = ODF Connections F = SAE	Connection Size (in 1/8")	Dual Access Valves

ORDERING INFORMATION FOR SFD

PCN	CATALOG NUMBER	CONNECTION SIZE	DIMENSIONS				SHIPPING WEIGHT LBS.		
			A	B	C	D			
064042	SFD 08F3-VV	3/8 SAE	N/A	3 3/8	5 1/2	3 1/8	2		
064044	SFD 08S3-VV	3/8 ODF	5 5/16		6 3/16				
064043	SFD 08F4-VV	1/2 SAE	N/A		5 3/4				
064045	SFD 08S4-VV	1/2 ODF	3 15/16		5				
064046	SFD 08S5-VV	5/8 ODF	3 29/32		5 5/32				
064047	SFD 08S6-VV	3/4 ODF	4 5/16		5 9/16				
060244	SFD 13F3-VV	3/8 SAE	--		5 1/2			3 11/16	2
060245	SFD 13S3-VV	3/8 ODF	3 31/32		4 27/32				
060246	SFD 13F4-VV	1/2 SAE	--		5 3/4				
060247	SFD 13S4-VV	1/2 ODF	3 15/16		4 15/16				
060248	SFD 13F5-VV	5/8 SAE	--	6 1/8					
060249	SFD 13S5-VV	5/8 ODF	3 29/32	5 5/32					
060250	SFD 13S6-VV	3/4 ODF	4	5 1/4					
060262	SFD 13S7-VV	7/8 ODF	4 1/4	5 3/4					
056505	SFD 27S6-VV	3/4 ODF	5 3/4	7	5 1/8	3			
060251	SFD 27S7-VV	7/8 ODF	6	7 1/2					
060252	SFD 27S9-VV	1 1/8 ODF	5 13/16	7 5/8					
060253	SFD 54S11-VV	1 3/8 ODF	10 5/16	12 1/4			8 1/4	4 1/2	
056504	SFD 54S13-VV	1 5/8 ODF	9 29/32	12 5/32					

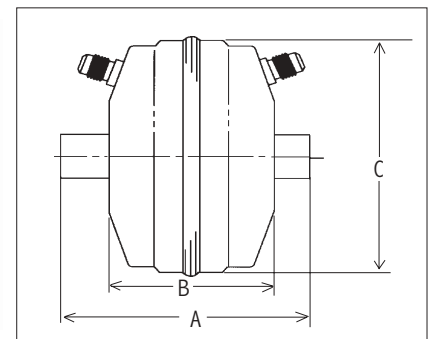
DIMENSIONAL DATA



CSFD COMPACT SUCTION LINE FILTER-DRIER

FEATURES AND SPECIFICATIONS

- ☑ The CSFD has a compact 14 cubic inch, solid block desiccant core, design that is perfect for short lay-ins
- ☑ For use with CFC, HCFC and HFC refrigerants
- ☑ Dual access valves
- ☑ Solid copper fittings
- ☑ Corrosion resistant epoxy powder paint finish
- ☑ Filtration: 40 micron
- ☑ Maximum working pressure: 500 psig
- ☑ UL file number: SA 3124
- ☑ CSA file number: LR 100624
- ☑ CRN file number: OE0844.9 (see page A)



NOMENCLATURE

Example: CSFD 14S4-VV

CSFD	14	S	4	VV
Series	Unit Size	S = ODF Connection	Connection Size (in 1/8")	Dual Access Valves

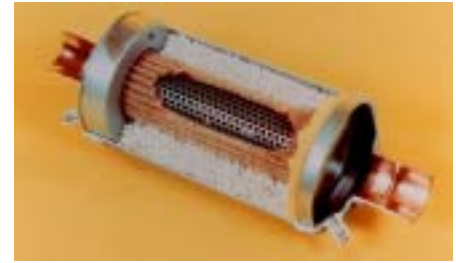
PCN	MODEL	CONNECTION TYPE (in)	DIMENSIONS (in)		
			A	B	C
062231	CSFD-14S4-VV	1/2 SOLDER	4 1/4	2 3/4	4 5/8
062232	CSFD-14S5-VV	5/8 SOLDER	4 1/2		
062233	CSFD-14S6-VV	3/4 SOLDER	4 3/8		
062234	CSFD-14S7-VV	7/8 SOLDER	4 9/16		
062235	CSFD-14S9-VV**	1 1/8 SOLDER	4 7/8		

** 400 Maximum Working Pressure

ASD Premium SUCTION LINE FILTER-DRIER

FEATURES AND SPECIFICATIONS

- ¶ Premium suction line filter drier for moisture, acid and contaminant removal
- ¶ For use with CFC, HCFC and HFC refrigerants
- ¶ Dual access valves
- ¶ Solid copper fittings
- ¶ Corrosion resistant epoxy powder paint finish
- ¶ Filtration: 40 microns
- ¶ Maximum working pressure: 500 psig
- ¶ UL file number: SA 3124
- ¶ CSA file number: LR 100624
LR 32462
- ¶ CRN file number: OE0844.9 (see page A)



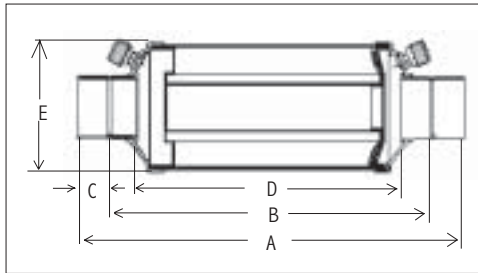
NOMENCLATURE

ASD	35	S	5	VV
Series	Unit Size (in cu. in.)	S = ODF connections F = SAE	Connection Size (in 1/8")	Dual Access Valves

Above example: ASD 35S5V

ORDERING INFORMATION FOR ASD

DIMENSIONAL DATA



PCN	CATALOG NUMBER	CONNECTION SIZE	DIMENSIONS					SHIP WT. LBS
			A	B	C	D	E [Ⓢ]	
049168	ASD 28S3-VV	3/8 ODF	5 19/32	4 23/32	7/16	4 1/8	3 11/16	2
049169	ASD 28S4-VV	1/2 ODF	5 11/16	4 11/16	1/2	4 3/4		2 1/2
049170	ASD 35F5-VV	5/8 SAE	7 9/16	--	--		5 9/16	3
049171	ASD 35S5-VV	5/8 ODF	6 17/32	5 9/32	5/8			
049172	ASD 45S6-VV	3/4 ODF	7 3/4	6 1/2	5/8	8 1/4	5	5
049173	ASD 45S7-VV	7/8 ODF	7 15/16	6 7/16	3/4			
049174	ASD 50S9-VV	1 1/8 ODF	8 27/32	7 1/32	29/32	6 1/8	5	5
049175	ASD 75S11-VV	1 3/8 ODF	12 1/4	10 5/16	31/32			
049176	ASD 75S13-VV	1 5/8 ODF	12 5/32	9 29/32	1 1/8	8 1/4		

[Ⓢ] Does not include weld bead

ASF SUCTION LINE FILTER

FEATURES AND SPECIFICATIONS

- ¶ ASF suction line filters are specifically designed to protect the compressor from solid contaminants
- ¶ Dual access valves
- ¶ Solid copper fittings
- ¶ Corrosion resistant epoxy powder paint finish
- ¶ Filtration: 40 microns
- ¶ Maximum working pressure: 500 psig
- ¶ CRN file number: OE0844.9 (see page A)
- ¶ CSA file number: LR 100624
LR 32462
- ¶ UL file number: SA 3124

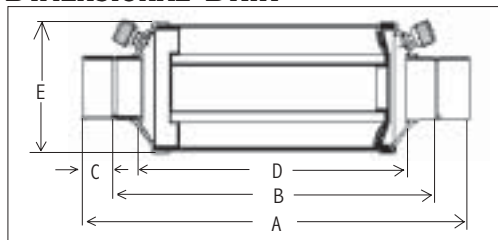


NOMENCLATURE

ASF	35	S	5	VV
Series	Unit Size (in cu. in.)	S = ODF connections F = SAE	Connection Size (in 1/8")	Dual Access Valve

ORDERING INFORMATION FOR ASF

DIMENSIONAL DATA



PCN	CATALOG NUMBER	CONNECTION SIZE	DIMENSIONS					SHIP WT. LBS
			A	B	C	D	E [Ⓢ]	
062961	ASF 11S4	1/2 ODF	4 3/8	3 3/8	1/2	2 7/8	2 5/8	1 1/2
062962	ASF 11S5	5/8 ODF	4 5/8	3 3/8	5/8			
049177	ASF 28S3-VV	3/8 ODF	5 19/32	4 23/32	7/16	4 1/8	3 11/16	2
049178	ASF 28S4-VV	1/2 ODF	5 11/16	4 11/16	1/2			
049179	ASF 35F5-VV	5/8 SAE	7 9/16	--	--	4 3/4	3	2 1/2
049180	ASF 35S5-VV	5/8 ODF	6 17/32	5 9/32	5/8			
059999	ASF 45F3-VV	3/8 SAE	7.68	--	--	5 9/16	3	3 1/2
049181	ASF 45S6-VV	3/4 ODF	7 3/4	6 1/2	5/8			
049182	ASF 45S7-VV	7/8 ODF	7 15/16	6 7/16	3/4	8 1/4	5	5
049183	ASF 50S9-VV	1 1/8 ODF	8 27/32	7 1/32	29/32			
063113	ASF 64S17-V	2 1/8 ODF	11 3/4	9 1/16	1 5/16	7 5/8	6 1/2	6 1/2
063115	ASF 64S21-V	2 5/8 ODF	13	10	1 1/2	7 7/8		
049184	ASF 75S11-VV	1 3/8 ODF	12 1/4	10 5/16	31/32	8 1/4	5	5
049185	ASF 75S13-VV	1 5/8 ODF	12 5/32	9 29/32	1 1/8			

[Ⓢ] Does not include weld bead

BFK/EBF LIQUID LINE BI-DIRECTIONAL HEAT PUMP

FEATURES AND SPECIFICATIONS

- ☞ 16 cubic inches in a 2 1/2" diameter shell
- ☞ For use with CFC, HCFC, HFC refrigerants including R-410A for all sizes
- ☞ Internal check valves allow flow and filtration in either direction. External check valves eliminated
- ☞ High moisture and acid removal
- ☞ Solid copper fittings
- ☞ Corrosion resistant epoxy powder paint finish
- ☞ Copeland approved for POE oils
- ☞ Desiccant blend 75% molecular sieve and 25% activated alumina
- ☞ Filtration 40 microns
- ☞ Maximum working pressure: 680 psig
- ☞ UL file number: SA 3124
- ☞ CSA file number: LR 100624 LR 32462
- ☞ CRN file number OE0844.9 (see page A)

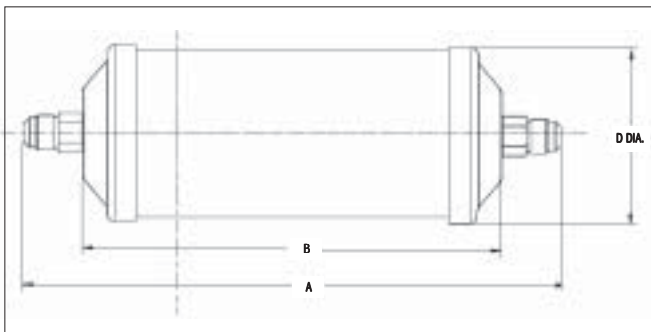
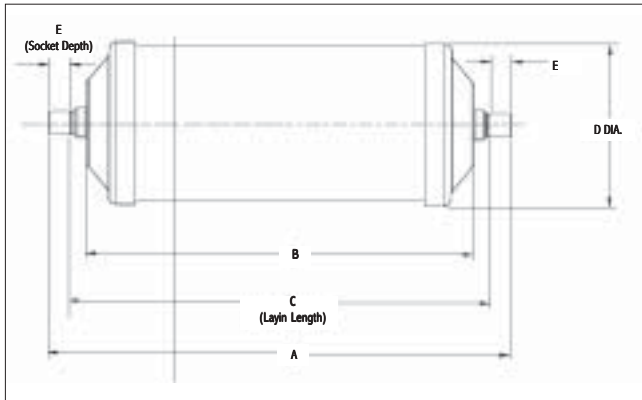


NOMENCLATURE

Example: BFK 16S5

BFK	16	5	S
Series	Unit Size (in cu. in.)	Connection Size (in 1/8")	S = ODF connections (omit for SAE)

DIMENSIONAL DATA

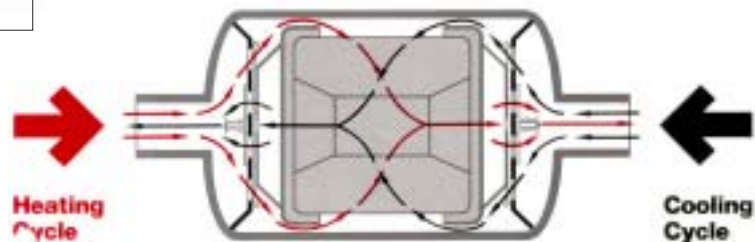


PCN	CATALOG NUMBER	CONNECTION SIZE & STYLE	DIMENSIONS (in Inches)					SHIP WT. LBS.
			A	B	C	D	E	
062300	BFK-052	1/4 SAE	4.82	3.00	3.69	2.62	.38	1
062425	BFK-052S	1/4 ODF	4.44					
062254	BFK-053	3/8 SAE	5.13					
062255	BFK-053S	3/8 ODF	4.48	3.82	4.48	.40	1	
043321	BFK-083	3/8 SAE	5.94					
043323	BFK-083S	3/8 ODF	5.29					
043325	BFK-084	1/2 SAE	6.16	4.38	.50	2		
043327	BFK-084S	1/2 ODF	5.38					
043728	BFK-085	5/8 SAE	6.62					
043730	BFK-085S	5/8 ODF	5.60	4.61	4.35	.63	2	
043330	BFK-163	3/8 SAE	6.74					
064411	EBF-163	3/8" SAE	6.34					4 5/8
043333	BFK-163S	3/8 ODF	6.08	4.61	5.28	.40	2	
064412	EBF-163S	3/8" ODF	6.18	4 5/8	5 1/4	7/16		
043335	BFK-164	1/2 SAE	6.96	4.61	--	--		
064413	EBF-164	1/2" SAE	6 15/16	4 5/8	--	--		
043337	BFK-164S	1/2 ODF	6.17	4.61	5.17	.50	3.75	
064414	EBF-164S	1/2" ODF	6 3/16	4 5/8	5 3/16	1/2		
043732	BFK-165	5/8 SAE	7.41	4.61	--	--		
043734	BFK-165S	5/8 ODF	6.39	4.61	5.14	.63		
064415	EBF-165S	5/8" ODF	6.38	4 5/8	5 1/8	5/8		
063076	BFK-303	3/8 SAE	9.63	7.50	8.17	3.15	.40	3.75
063077	BFK-303S	3/8 ODF	8.97					
063078	BFK-304	1/2 SAE	9.84					
063079	BFK-304S	1/2 ODF	9.02	8.02	.50	.50	3.75	
063080	BFK-305	5/8 SAE	10.31					
063081	BFK-305S	5/8 ODF	9.31					
063083	BFK-306S	3/4 ODF	9.72	8.59	.63	.63	3.75	
063084	BFK-307S	7/8 ODF	9.91					
063451	BFK-309S	1 1/8 ODF	10.22					8.41

LIQUID REFRIGERANT HOLDING CAPACITY - OUNCES

Unit Size	R-22		R-407C		R-410A	
	75°F	125°F	75°F	125°F	75°F	125°F
05	4.6	4.2	4.4	3.9	4.1	3.5
08	7.7	6.9	7.3	6.4	6.9	5.8
16*	14.2	12.7	13.5	11.8	12.6	10.6
30*	21.0	18.7	20.0	17.4	--	--

*BKF Capacities



ALF LIQUID FILTER

FEATURES AND SPECIFICATIONS

- † Liquid Line Filter optimum for protecting against plugged orifices in POE system rendering components useless
- † Filtering media that maximizes removal of finer particles
- † Recovery, recycle and reclaim filter
- † Available with access fittings for easily determining pressure drop
- † Available with extended ends specifically for installation within supermarket cases
- † Corrosion resistant epoxy powder paint finish
- † Filtration: 40 microns
- † Maximum working pressure: 600 psig
- † UL file number: SA 3124
- † CSA file number: LR 100624 (32462)
- † CRN file number: OE0844.9 (see page A)

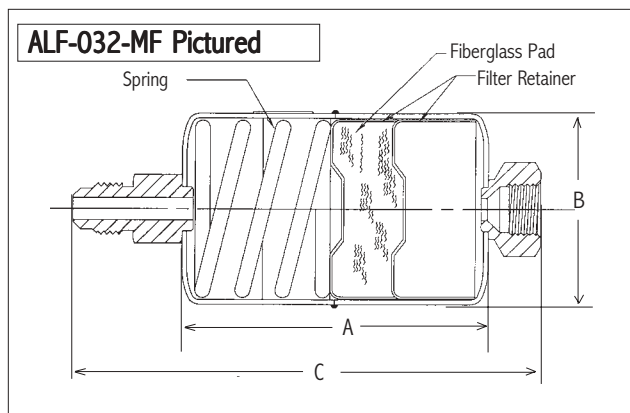


NOMENCLATURE

Example: ALF 033S

ALF	03	3	S
Series	Unit Size	Connection Size Inlet (in 1/8")	S = ODF Connection Style Omit for SAE (Male in-Male Out) MF = Male SAE in female SAE Out FM = Female SAE in - Male SAE Out

DIMENSIONAL DATA



SELECTION AND ORDERING INFORMATION FOR ALF

PCN	PART NUMBER	CONNECTION SIZE	DIMENSIONS		
			A	B [†]	C
058500	ALF-032	1/4 SAE	2 9/16	1 5/8	4 3/8
056618	ALF-032S	1/4 ODF	2 9/16	1 5/8	3 7/8
057193	ALF-032MF	1/4 SAE Male in 1/4 SAE Female out	2 9/16	1 5/8	4
057213	ALF-032FM	1/4 SAE Female in 1/4 SAE Male out	2 9/16	1 5/8	4
057140	ALF-033S	3/8 ODF	2 9/16	1 5/8	4
014754	ALF-033SV EXT*	3/8 ODF Extended Ends	2 9/16	1 5/8	
065386	ALF-033S EXT	3/8 ODF Extended Ends	2 9/16	1 5/8	
056645	ALF-034S	1/2 ODF	2 9/16	1 5/8	4 1/8
064777	ALF-052	1/4 SAE	3	2 5/8	4 7/8
064778	ALF-052MF	1/4 SAE Male in 1/4 SAE Female out	3	2 5/8	4 3/8

[†] Does not include weld bead

* Has access fitting on inlet

RECOVERY, RECYCLE AND RECLAIM REFRIGERANT FLOW CAPACITY (lbs./min. liquid)		
R-134a	R-22	R-404A/R-507
7.6	8.0	8.0

HERMETIC FILTER DRIERS

TYPE	FILTER DRIER	PAGE	RECOMMENDED USE	FUNCTION
Liquid	EKP	40	CFC, HCFC, HFC	Premium Universal Replacement
Liquid	ADK	41	CFC, HCFC	High Acid and Water Removal
Liquid	BFK	44	CFC, HCFC, HFC	Bi-Flow Heat Pump
Liquid	EBF	44	CFC, HCFC, HFC	Economy Bi-Flow Heat Pump
Suction	SFD	42	CFC, HCFC, HFC	Burnout Cleanup
Suction	CSFD	42	CFC, HCFC, HFC	Pancake Burnout Cleanup
Suction	ASD	43	CFC, HCFC, HFC	Premium Burnout Cleanup
Filter	ASF	43	CFC, HCFC, HFC	Filter Only

HERMETIC SUCTION LINE FILTER-DRIER FLOW CAPACITIES

DESCRIPTION	CONNECTIONS	FLOW CAPACITY IN TONS REFRIGERANT ^①														
		R-22/407C					R-12/134a					R-404A/507				
		EVAPORATOR TEMPERATURE (°F)														
		40	20	0	-20	-40	40	20	0	-20	-40	40	20	0	-20	-40
		Pressure Drop (PSI)														
3	2	1.5	1	0.5	2	1.5	1	0.5	3	2	1.5	1	0.5			
ASD 28S3-VV	3/8 ODF	2.3	1.3	0.9	0.6	0.5	1.1	0.6	0.5	0.4	2.1	1.1	0.7	0.5	0.3	
ASD 28S4-VV	1/2 ODF	3.8	2.1	1.4	1	0.8	1.9	1.2	0.8	0.6	3.6	1.8	1.1	0.7	0.5	
ASD 35F5-VV	5/8 SAE	4.4	2.5	1.7	1.2	0.9	2.2	1.4	1	0.8	4.1	2.1	1.3	0.9	0.6	
ASD 35S5-VV	5/8 ODF	5.8	3.2	2.2	1.6	1	2.9	1.9	1.3	1	5.4	2.8	1.7	1.1	0.8	
ASD 45S6-VV	3/4 ODF	7	4.6	3.2	2	1.1	3.9	2.5	1.7	1.1	6.4	3.7	2.5	1.6	1	
ASD 45S7-VV	7/8 ODF	9.2	6	4.1	2.6	1.4	5.1	3.5	2.2	1.3	7.5	4.8	3.3	2	1.1	
ASD 50S9-VV	1 1/8 ODF	13.2	8.5	5.7	3.5	1.8	7.3	4.9	3	1.6	11	6.9	4.6	2.8	1.4	
ASD 75S11-VV	1 3/8 ODF	16.2	10.2	6.7	4	2	8.8	5.8	3.5	1.8	14	8.4	5.4	3.2	1.6	
ASD 75S13-VV	1 5/8 ODF	17.3	10.7	7	4.2	2.1	9.3	6.1	3.7	1.9	15	8.9	5.7	3.4	1.7	
ASF 11S4	1/2 ODF	2.6	1.9	1.4	0.9	0.6	1.8	1.2	0.9	0.5	2.2	1.5	1.1	0.7	0.4	
ASF 11S5	5/8 ODF	4.2	3	2.3	1.5	1	2.9	2.1	1.5	0.9	3.5	2.4	1.8	1.2	0.7	
ASF 28S3-VV	3/8 ODF	2.4	1.3	0.9	0.7	0.5	1.2	0.8	0.5	0.4	2.2	1.1	0.7	0.5	0.3	
ASF 28S4-VV	1/2 ODF	4.1	2.3	1.6	1.2	0.9	2	1.3	0.9	0.7	3.8	2	1.2	0.8	0.6	
ASF 35F5-VV	5/8 SAE	4.7	2.6	1.8	1.3	1	2.3	1.5	1	0.8	4.4	2.3	1.4	0.9	0.7	
ASF 35S5-VV	5/8 ODF	6.6	3.7	2.6	1.9	1.6	3.3	2.2	1.5	1.2	6.1	3.2	2	1.4	1	
ASF 45S6-VV	3/4 ODF	9.8	5.5	3.7	2.7	2.2	4.8	3.1	2.2	1.6	9.1	4.7	2.9	1.9	1.4	
ASF 45S7-VV	7/8 ODF	12	8	5.6	3.6	3	6.7	4.7	3.1	1.7	9.8	6.3	4.5	2.8	1.5	
ASF 50S9-VV	1 1/8 ODF	19	12	8.2	4.9	2.6	9.5	6.7	4.3	2.3	16	10	6.7	4	2	
ASF 64S17-VV	2 1/8 ODF	41	27	19	12	6.9	26	18	12	6.4	35	23	15	9.7	5.2	
ASF 64S21-VV	2 5/8 ODF	46	31	22	14	8.6	31	21	14	7.9	40	26	18	12	6.5	
ASF 75S11-VV	1 3/8 ODF	24	15	10	6.5	3.2	12	8.7	5.6	3	20	13	8.3	5.1	2.6	
ASF 75S13-VV	1 5/8 ODF	15	16	11	6.7	3.3	14	9.5	6.3	3.4	21	13	8.4	5.2	2.7	
ASK 16S5-VV-HH	5/8 ODF	3.4	2.1	1.4	0.9	0.4	2	1.4	0.8	0.5	3.2	1.9	1.2	0.8	0.3	
ASK 16S6-VV-HH	3/4 ODF	4.2	2.6	1.7	1	0.5	2.5	1.7	1	0.6	3.9	2.4	1.6	0.9	0.5	
ASK 16S7-VV-HH	7/8 ODF	4.6	2.8	1.9	1.1	0.6	2.7	1.8	1.1	0.6	4.3	2.6	1.7	1	0.6	
ASK 30S6-VV-HH	3/4 ODF	5.5	3.5	2.3	1.4	0.8	3.4	2.3	1.4	0.8	5	3.2	2.2	1.2	0.7	
ASK 30S7-VV-HH	7/8 ODF	6.1	3.8	2.5	1.5	0.8	3.6	2.5	1.5	0.8	5.6	3.5	2.3	1.4	0.7	
ASK 30S9-VV-HH	1 1/8 ODF	6.5	4	2.6	1.6	0.8	3.9	2.6	1.6	0.8	6	3.7	2.4	1.5	0.7	
CSFD14S4-VV	1/2 ODF	2	1.3	0.9	0.6	0.3	1.3	0.9	0.5	0.3	1.3	0.8	0.5	0.3	0.2	
CSFD14S5-VV	5/8 ODF	3.6	2.4	1.6	1	0.5	2.3	1.5	0.9	0.5	2.6	1.7	1.1	0.7	0.3	
CSFD14S6-VV	3/4 ODF	4.9	3.2	2.2	1.4	0.7	3.1	2.1	1.3	0.7	3.6	2.3	1.5	0.9	0.5	
CSFD14S7-VV	7/8 ODF	5.2	3.4	2.3	1.5	0.8	3.3	2.2	1.4	0.7	3.9	2.4	1.6	1	0.5	
CSFD14S9-VV	1 1/8 ODF	7	4.6	3.1	2	1	4.5	3	1.8	1	4.9	3.1	2	1.3	0.7	
SFD 13F3-VV	3/8 SAE	1.4	0.8	0.4	0.2	0.1	0.7	0.4	0.2	0.1	1.3	0.7	0.4	0.2	0.1	
SFD 13S3-VV	3/8 ODF	2.2	1.3	0.8	0.5	0.2	1.3	0.8	0.5	0.2	1.9	1.1	0.7	0.4	0.2	
SFD 13F4-VV	1/2 SAE	2.4	1.6	1.1	0.7	0.4	1.5	1	0.6	0.3	2.1	1.3	0.9	0.5	0.3	
SFD 13S4-VV	1/2 ODF	3.5	2.3	1.6	1	0.6	2.3	1.5	1	0.5	3	1.9	1.3	0.8	0.4	
SFD 13F5-VV	5/8 SAE	3.7	2.4	1.6	1	0.6	2.5	1.7	1.1	0.6	3.2	2	1.4	0.9	0.5	
SFD 13S5-VV	5/8 ODF	4.9	3.2	2.2	1.4	0.8	3.1	2.1	1.3	0.7	4.2	2.7	1.8	1.1	0.6	
SFD 13S6-VV	3/4 ODF	6.4	4.2	2.8	1.8	1	4.1	2.7	1.7	0.9	5.6	3.5	2.3	1.4	0.7	
SFD 13S7-VV	7/8 ODF	7.2	4.6	3	1.9	1	4.4	3	1.9	1	6.3	3.9	2.6	1.5	0.8	
SFD 27S6-VV	3/4 ODF	6.4	4.2	2.8	1.8	1	4.1	2.7	1.7	0.9	5.6	3.5	2.3	1.4	0.7	
SFD 27S7-VV	7/8 ODF	7.5	4.8	3.2	2	1.1	4.7	3.1	1.9	1	6.5	4.1	2.7	1.6	0.8	
SFD 27S9-VV	1 1/8 ODF	8.5	5.4	3.5	2.1	1.1	5.2	3.4	2	1	7.5	4.6	3	1.7	0.9	
SFD 54S11-VV	1 3/8 ODF	7.3	4.6	3	1.8	1	4.5	2.9	1.7	0.9	6.4	3.9	2.5	1.5	0.7	
SFD 54S13-VV	1 5/8 ODF	7.4	4.7	3.2	2	1	4.6	3	1.8	0.9	6.5	4	2.6	1.6	0.8	

① All ratings in accordance with ARI Standard 730-86.

Example: 1.0 tons x 3.5 = 3.5 kW

② For 2 PSI ΔP, Multiply values by 1.4

STAS STEEL LIQUID AND SUCTION FILTER-DRIER

FEATURES AND SPECIFICATIONS

- ☑ Replaceable core filter-drier for use in large commercial air conditioning and refrigeration systems
- ☑ Unique internal hardware for hassle-free installation
- ☑ Full flow Solid copper fittings
- ☑ Corrosion resistant epoxy powder paint finish
- ☑ Sturdy steel shells for long life durability
- ☑ 100 mesh outlet screen
- ☑ Filtration (with block): 40 microns
- ☑ Maximum working pressure: 500 psig T (Liquid Line)
400 psig SV (Suction Line)
- ☑ Bolt torque: 25 foot-lbs
- ☑ UL file number: SA 3124
- ☑ CSA file number: LR 100624
LR 32462
- ☑ CRN file number: OE0844.9 (see page A)



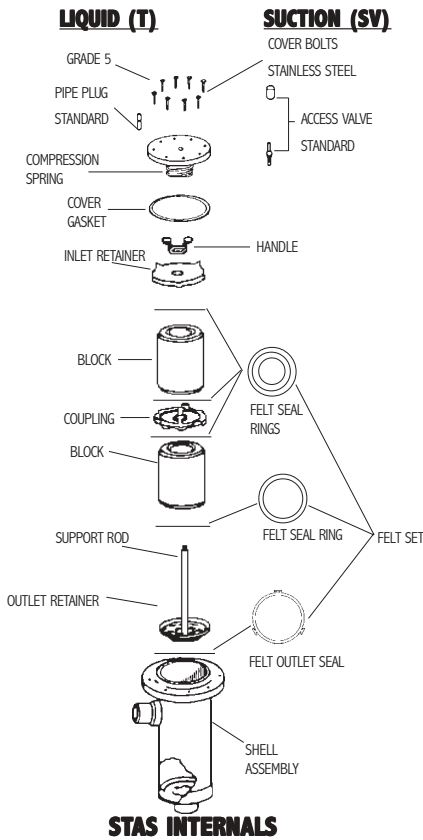
NOMENCLATURE

Example: STAS 489T

STAS	48	9	T
System Protector Series	Unit Size (in cu. in.)	Connection Size (in 1/8")	System Service T = Liquid Line Service SV = Suction Line Service

ORDERING INFORMATION FOR STAS

PCN	CATALOG NUMBER	CONNECTION SIZE & TYPE	NUMBER OF BLOCKS	DESICCANT VOLUME CU. IN.	DIMENSIONS			
					A	B	C	D
053001	STAS-485T	5/8 ODF	1	48	9 15/32	6	3 25/32	5/8
053003	STAS-487T	7/8 ODF			9 11/16	6 1/4	3 3/4	25/32
053005	STAS-489T	1 1/8 ODF			9 3/4	6 5/16	3 27/32	15/16
053007	STAS-4811T	1 3/8 ODF			9 27/32	6 7/16	3 31/32	15/16
053043	STAS-4813S-V*	1 5/8 ODF			9 7/8	6 1/2	4 1/32	1 1/8
053044	STAS-4817S-V*	2 1/8 ODF	2	96	10 1/16	6 9/16	4 9/16	1 11/32
053045	STAS-4821S-V*	2 5/8 ODF			10 7/16	7 1/32	4 3/4	1 1/2
053010	STAS-967T	7/8 ODF			15 3/16	11 23/32	3 3/4	25/32
053012	STAS-969T	1 1/8 ODF			15 7/32	11 25/32	3 27/32	15/16
053014	STAS-9611T	1 3/8 ODF			15 5/16	11 29/32	3 31/32	1 1/32
053017	STAS-9613T	1 5/8 ODF			15 3/8	11 31/32	4 1/32	1 1/8
053047	STAS-9617S-V*	2 1/8 ODF			15 9/16	12 1/32	4 9/16	1 11/32
053048	STAS-9621S-V*	2 5/8 ODF			15 15/16	12 1/2	4 3/4	1 1/2
059739	A-TD-9625S-V*	3 1/8 ODF			15 11/16	10 5/16	4 5/8	1 3/4
053020	STAS-1449T	1 1/8 ODF			3	144	21 1/4	17 3/8
053022	STAS-14411T	1 3/8 ODF	21 11/32	17 17/32			3 31/32	1 1/32
053024	STAS-14413T	1 5/8 ODF	21 3/8	17 19/32			4 1/32	1 1/8
053025	STAS-14417T	2 1/8 ODF	21 9/16	17 5/8			4 9/16	1 11/32
053028	STAS-19211T	1 3/8 ODF	26 29/32	23			3 31/32	1 1/32
053030	STAS-19213T	1 5/8 ODF	4	192	26 15/16	23 1/6	4 1/32	1 1/8
053031	STAS-19217T	2 1/8 ODF			27 1/8	23 1/8	4 9/16	1 11/32



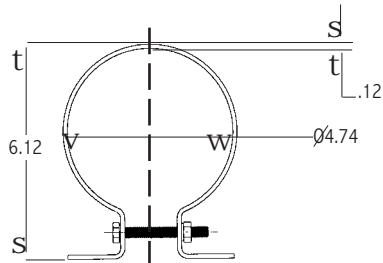
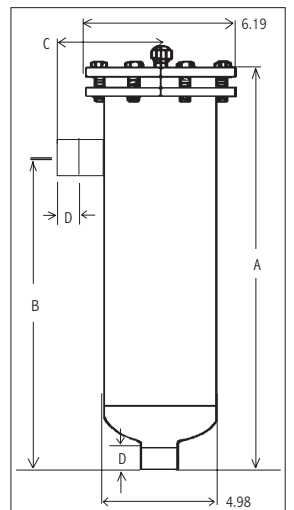
NOTE: "T" style can be used for suction by removing pipe plug and installing X-11562-2, access valve and stainless steel bolt kit X-2578-7

* "SV" style include stainless steel bolts and access valve.

REPLACEMENT PARTS

FLANGE COVER ASSEMBLY	PART NUMBER	PCN
ALL STAS DRIERS - INCLUDE FLANGE COVER, COMPRESSION SPRING AND PIPE PLUG	X12176-3	054046
SHELL STRAINER ASSEMBLY		
STAS-48	X27458-1	060274
STAS-96	X27458-2	060275
STAS-144	X27458-3	060276
STAS-192	X 27458-4	060277
MISCELLANEOUS PARTS		
COVER BOLTS (Stainless steel suction service)	X25787-7	053121
ACCESS VALVE (V Option)	X11562-2	037409
COVER GASKET (INCLUDES FELT SET)	X11983-1	027453
HANDLE	26446-1	053812
INLET RETAINER	26447-1	053813
SPRING	26439-1	060258
FELT SET (3 block set)	27394-1	060278
MOUNTING BRACKET	X28747-1	061715

DIMENSIONAL DATA



STAS MODELS ARE SHIPPED WITHOUT FILTER CORE OR FILTER-DRIER BLOCKS SEE PAGE 50 FOR BLOCK INFORMATION.

ADKS LIQUID AND SUCTION LINE FILTER-DRIER

FEATURES AND SPECIFICATIONS

- ☑ Replaceable core filter-drier for use in large commercial air conditioning and refrigeration systems
- ☑ Unique internal hardware for hassle-free installation
- ☑ Full flow Solid copper fittings
- ☑ Corrosion resistant epoxy powder paint finish
- ☑ Sturdy steel shells for long life durability
- ☑ 100 mesh outlet screen
- ☑ Filtration (with block): 40 microns
- ☑ Maximum working pressure: 500 psig
- ☑ Bolt torque: 25 foot-lbs
- ☑ UL file number: SA 3124
- ☑ CSA file number: LR 100624
LR 32462
- ☑ CRN file number: OE0844.9 (see page A)



NOMENCLATURE

Example: ADKS 30013T

ADKS	300	13	T
System Protector Series	Unit Size (in cu. in.)	Connection Size (in 1/8")	T = Tap Access Connection

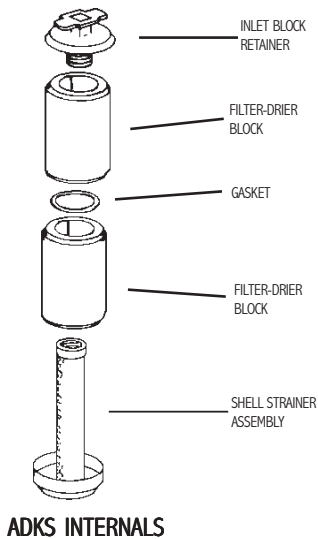
ORDERING INFORMATION FOR ADKS

PCN	CATALOG NUMBER	CONNECTIONS SIZE & TYPE	DIMENSIONS								SHIP WT. LBS.
			A	B	C	D	E	F*	G	H [Ⓢ]	
026570	ADKS-30013T	1 5/8 ODF	25 1/2	19 15/32	4 3/16	1 1/8	23 3/16	6	7 9/16	22 1/4	39
037978	ADKS-30017T	2 1/8 ODF	25 19/32	1 9	3 25/32	1 22/32				28 7/8	
032105	ADKS-40017T	2 1/8 ODF	32 3/32	25 1/2	3 25/32	1 21/32	29 31/32			28 7/8	46
037570	ADKS-40021T	2 5/8 ODF	33 1/8	26 23/32	4 13/16	1 15/32					

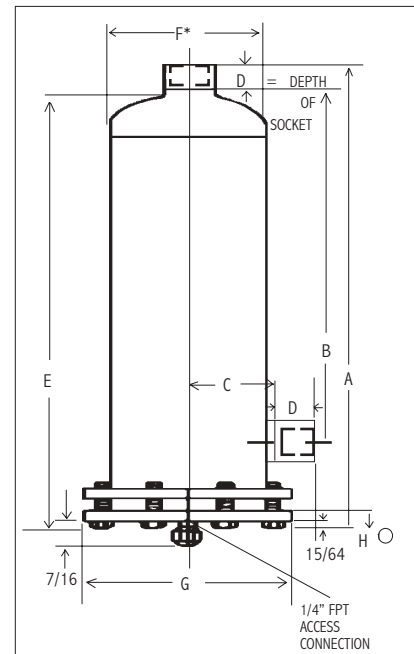
* Does not include weld bead

Ⓢ "H" Dimension is the clearance required to change the internal hardware assembly

T = 1/4" FPT access connection



DIMENSIONAL DATA



REPLACEMENT PARTS FOR ADKS

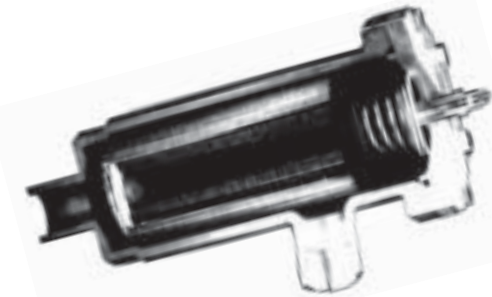
FLANGE COVER	PART NUMBER	PCN
ADKS-300, ADKS-400	X12176-2	027467
SHELL STRAINER ASSEMBLY	PART NUMBER	PCN
ADKS-300	X10574-5	039967
ADKS-400	X10574-6	038315

STAS MODELS ARE SHIPPED WITHOUT FILTER CORE OR FILTER-DRIER BLOCKS SEE PAGE 50 FOR BLOCK INFORMATION.

BTAS BRASS TAKE-APART SUCTION LINE FILTER-DRIER

FEATURES AND SPECIFICATIONS

- ☑ Replaceable core filter-drier for suction line service is ideal for commercial refrigeration applications (not for liquid line applications)
- ☑ Full flow fittings for low pressure drop
- ☑ Compact large capacity design
- ☑ Corrosion resistant brass body with stainless steel bolts
- ☑ Filtration (with cartridge) 40 microns
- ☑ Maximum working pressure: 400 psig
- ☑ UL file number: SA 3124
- ☑ CRN file number: OE0844.9 (see page A)

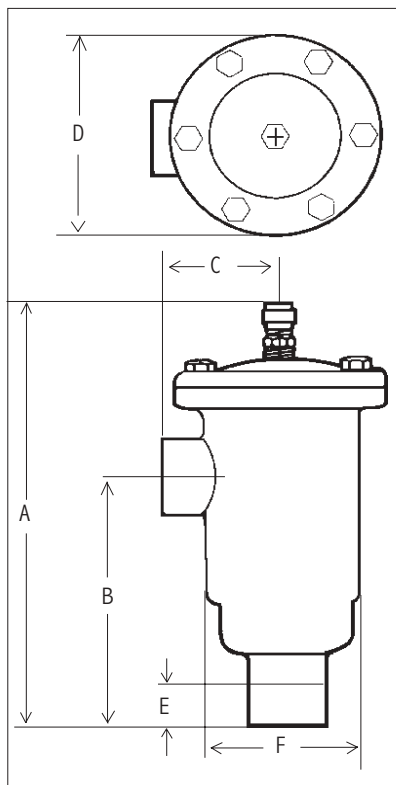


NOMENCLATURE

Example: BTAS 311SV

BTAS	3	11	SV
System Protector Series	Unit Size	Connection Size (in 1/8")	Suction Line Service

DIMENSIONAL DATA



ORDERING INFORMATION FOR BTAS

PCN	CATALOG NUMBER	CONNECTION SIZE	NOMINAL SHELL SIZE	DIMENSIONS						SHIP WT. LBS.	
				A	B	C	D	E	F		
049460	BTAS-25 S-V	5/8 ODF	2"		9 1/2	6 1/32	2 1/16	3 3/4	.500	2 23/32	6 1/2
049462	BTAS-27 S-V	7/8 ODF			9 3/4	6 21/32	2 3/16		.750		6 3/4
049465	BTAS-39 S-V	1 1/8 ODF			10 5/16	6 13/16	3 5/16		.910		10 1/4
049466	BTAS-311 S-V	1 3/8 ODF	3"		11 1/16	6 15/16	3 7/16	4 5/8	.970	3 15/32	10 1/2
049467	BTAS-313 S-V	1 5/8 ODF			11 1/4	7 1/8	3 5/8		1.090		11
049468	BTAS-317 S-V	2 1/8 ODF			11 1/2	7 3/8	3 7/8		1.340		11 1/2
064169	BTAS-411 S-V	1 3/8 ODF	4"		11 13/32	7 13/16	4 1/8	5 3/4	.780	4 15/32	11 1/2
049470	BTAS-413 S-V	1 5/8 ODF			12 1/32	7 13/16	4 1/8		1.090		16 3/4
049471	BTAS-417 S-V	2 1/8 ODF			12 9/32	8 1/16	4 3/8		1.340		17 1/2
049472	BTAS-421 S-V	2 5/8 ODF	5"		12 13/32	8 3/16	4 15/16	7 3/32	1.470	5 9/16	18
049473	BTAS-517 S-V	2 1/8 ODF			13 7/16	8 13/32	4 3/16		1.340		28 3/4
049474	BTAS-521 S-V	2 5/8 ODF			13 9/16	8 15/32	4 15/16		1.470		29
049475	BTAS-525 S-V	3 1/8 ODF			13 1/4	8 5/32	4 5/8	1.660			29 1/4

TYPE A-F REPLACEABLE FILTER CARTRIDGES

PCN	FILTER CORE	FOR SHELL No.	CORE O.D.	CORE LENGTH	FILTER AREA SQ. IN.	WEIGHT LB.
049479	A2F	BTAS-2	1 29/32"	6 3/8"	66	1/3
049480	A3F	BTAS-3	2 3/4	6 7/8	115	1/2
049481	A4F	BTAS-4	3 3/4	7 1/2	189	7/8
049482	A5F	BTAS-5	4 5/16	8 1/2	270	1

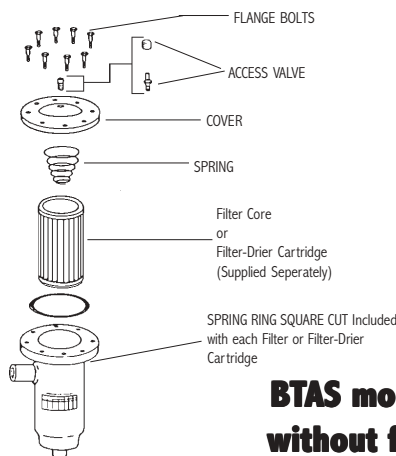
TYPE A-F-D REPLACEABLE FILTER-DRIER CARTRIDGES

PCN	FILTER-DRIER CARTRIDGE	FOR SHELL No.	CARTRIDGE O.D.	CARTRIDGE LENGTH	DESICCANT VOLUME CU. IN.	WEIGHT LB.
049483	A2F-D	BTAS-2	1 29/32"	6 3/8"	4.2	1/2
049484	A3F-D	BTAS-3	2 3/4	6 7/8	13.3	7/8
049485	A4F-D	BTAS-4	3 3/4	7 1/2	26.0	1 1/2
049486	A5F-D	BTAS-5	4 5/16	8 1/2	36.5	2

FILTER-DRIER CARTRIDGE FILTER AREA IS THE SAME AS THE CORRESPONDING FILTER CORE MODEL.

REPLACEMENT PARTS FOR BTAS

MISCELLANEOUS PARTS	PART NUMBER	PCN
Flange Bolts BTAS-2	X25787-1	--
Flange Bolts BTAS-3	X25787-2	
Flange Bolts BTAS-4	X25787-3	
Flange Bolts BTAS-5	X25787-4	
Access Valve	X11562-2	034709
Seal Ring BTAS-2	PS23380-2	053580
Seal Ring BTAS-3	PS23380-3	053581
Seal Ring BTAS-4	PS23380-4	053582
Seal Ring BTAS-5	PS23380-5	053583



BTAS INTERNALS

BTAS models are shipped without filter cartridge or filter-drier cartridge.

BLOCKS AND FILTER CORES

FEATURES AND SPECIFICATIONS

- Water capacities to suit specific system conditions
- Universal replacement cores for use in all take-apart type filter-drier shells
- Exceptional acid capacities for normal system protection, or to effectively clean-up following a compressor burnout
- Wax removal capabilities (W Series)



NOMENCLATURE

AH	48
Series	Cubic Inch

NOTE: BLOCKS ARE SUITABLE FOR USE WITH R-11 BUT FILTERS ARE NOT SUITABLE.

ORDERING INFORMATION AND CAPACITY TABLES

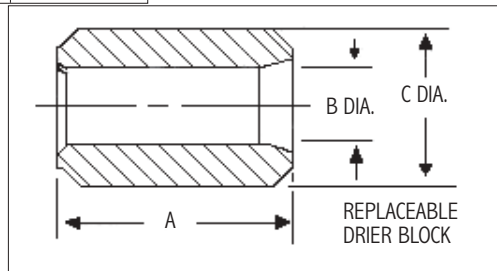
PCN	Description	Recommended Refrigerant Type	Function	WATER CAPACITY [⊙] DROPS OF WATER [⊙]											
				R-12		R-134a		R-22		R-407C		R-404A/507		R-502	
				75 F	125 F	75 F	125 F	75 F	125 F	75 F	125 F	75 F	125 F	75 F	125 F
056662	D-42	CFC, HCFC	HIGH ACID REMOVAL BURNOUT CLEANUP	782	515	493	384	432	303	320	196	528	378	473	339
056661	H-42	CFC, HCFC	HIGH ACID AND WATER REMOVAL	933	681	686	576	617	491	478	333	724	587	656	519
056835	W-42-HH	ALL	WAX REMOVAL	612	388	333	253	288	195	231	132	359	248	354	245
059098	AD-48	CFC, HCFC	HIGH ACID REMOVAL BURNOUT CLEANUP	810	453	415	340	363	254	225	95	457	343	388	225
059097	AH-48	CFC, HCFC	HIGH ACID AND WATER REMOVAL	1020	688	676	538	597	436	445	285	721	535	643	475
061235	W-48-HH	CFC, HCFC, HFC	WAX REMOVAL	772	488	387	294	335	226	290	165	417	289	444	306
061617	UK-48	CFC, HCFC, HFC	UNIVERSAL COPELAND SPECIFIED FOR POE	1579	1319	1272	1168	1181	1072	1033	786	1319	1241	1332	1150
062549	HX-48	CFC, HCFC, HFC	ULTRA HIGH WATER CAPACITY	1936	1757	1710	1600	1600	1491	1459	1161	1765	1710	1817	1638
061320	AB-48	CFC, HCFC	BURN-OUT CLEANUP	810	453	415	340	363	254	225	95	457	343	388	225
089338	H-100	CFC, HCFC	HIGH ACID AND WATER REMOVAL	1958	1225	1112	834	962	673	726	418	1199	839	1109	758
062424	UK-100	CFC, HCFC, HFC	UNIVERSAL COPELAND SPECIFIED FOR POE	3204	2740	2769	2550	2574	2345	2182	1682	2868	2710	2787	2437
043582	W-100-HH	CFC, HCFC, HFC	WAX REMOVAL	1668	1054	1077	812	938	621	629	363	1162	792	960	663
047664	F-48R	CFC, HCFC, HFC	FILTER (SUCTION ONLY) REVERSE FLOW	--	--	--	--	--	--	--	--	--	--	--	--
095762	F-100	CFC, HCFC, HFC	FILTER (SUCTION ONLY)	--	--	--	--	--	--	--	--	--	--	--	--

[⊙]Water Capacities are based on:
 Equilibrium Point Dryness (EPD) of:
 50 parts per million for R-134a, R404-A/507 and R-407C
 60 parts per million for R-22
 15 parts per million for R-12
 30 parts per million for R-502

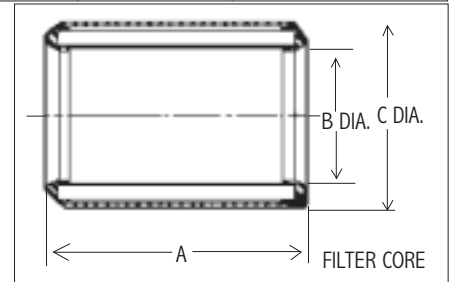
[⊙]20 drops of water = 1 gram = 1 cc

FILTER-DRIER BLOCK SIZE	DIMENSIONS			SHIP WT. LBS.
	A	B	C	
42	6	1.58	3.12	1
48	5.5	1.77	3.72	1 1/2
100	6.5	2.06	4.81	4

DIMENSIONAL DATA



CATALOG NUMBER	DIMENSIONS			SHIP WT. LBS.
	A	B	C	
F-48R	5 1/2	2 13/16	3 7/8	3/4
F-100	6 1/2	3 3/4	4 13/16	1 1/2



TAKE-A-PART FILTER-DRIER

TYPE	FILTER DRIER	PAGE	LIQUID	SUCTION
Take-Apart	STAS	47	X	X
Take-Apart	ADKS	48	X	X
Take-Apart	BTAS	49		X

TAKE-APART SUCTION LINE FILTER-DRIER FLOW CAPACITIES

DESCRIPTION	CONNECTIONS	FILTER DRIER CARTRIDGE	FLOW CAPACITY IN TONS REFRIGERANT ^①									
			R-22					R-407C				
			EVAPORATOR TEMPERATURE (°F)									
			40	20	0	-20	-40	40	20	0	-20	-40
			Pressure Drop (PSI)									
3	2	1.5	1	0.5	3	2	1.5	1	0.5			
ADKS 30013T	1 5/8 ODF	(3) F-100 Filter	45	30	20	13	7.0	50	34	24	16	9.4
ADKS 30017T	2 1/8 ODF	(3) F-100 Filter	77	50	35	22	12	86	57	42	27	16
ADKS 40017T	2 1/8 ODF	(4) F-100 Filter	80	53	37	23	13	89	61	45	28	17
ADKS 40021T	2 5/8 ODF	(4) F-100 Filter	122	80	55	34	19	136	92	66	42	25
ADKS 30013T	1 5/8 ODF	(3) 100 cu. in. Block	35	23	16	10	5.5	39	26	19	12	7.4
ADKS 30017T	2 1/8 ODF	(3) 100 cu. in. Block	56	37	25	16	8.8	62	42	30	20	12
ADKS 40017T	2 1/8 ODF	(4) 100 cu. in. Block	61	40	27	17	9.5	67	46	33	21	13
ADKS 40021T	2 5/8 ODF	(4) 100 cu. in. Block	88	58	40	25	14	98	67	48	31	19
BTAS-25 S-V	5/8 ODF	A2F Filter	5.1	3.3	2.2	1.4	0.7	5.7	3.8	2.7	1.7	0.9
BTAS-27 S-V	7/8 ODF	A2F Filter	8.8	5.7	3.9	2.5	1.3	9.8	6.5	4.7	3.1	1.7
BTAS-39 S-V	1 1/8 ODF	A3F Filter	14	8.8	5.9	3.7	2.0	15	10	7.1	4.6	2.7
BTAS-311 S-V	1 3/8 ODF	A3F Filter	15	10	6.6	4.1	2.2	17	11	8.0	5.1	3.0
BTAS-313 S-V	1 5/8 ODF	A3F Filter	24	16	11	6.6	3.5	27	18	13	8.1	4.7
BTAS-317 S-V	2 1/8 ODF	A3F Filter	29	19	13	8.1	4.3	32	22	15	10	5.8
BTAS-411 S-V	1 3/8 ODF	A4F Filter	38	25	17	11	5.7	42	29	21	13	7.6
BTAS-413 S-V	1 5/8 ODF	A4F Filter	31	20	14	8.7	4.6	35	23	17	11	6.2
BTAS-417 S-V	2 1/8 ODF	A4F Filter	53	34	23	15	7.8	59	39	28	18	10
BTAS-421 S-V	2 5/8 ODF	A4F Filter	64	42	29	18	10	71	48	35	22	13
BTAS-517 S-V	2 1/8 ODF	A5F Filter	63	41	28	18	9.4	70	47	34	22	13
BTAS-521 S-V	2 5/8 ODF	A5F Filter	84	54	37	23	12	93	62	45	28	17
BTAS-525 S-V	3 1/8 ODF	A5F Filter	103	67	46	29	15	115	77	56	36	21
BTAS-25 S-V	5/8 ODF	A2F-D Filter-drier	4.6	3.0	2.0	1.3	0.7	5.1	3.4	2.4	1.6	0.9
BTAS-27 S-V	7/8 ODF	A2F-D Filter-drier	7.5	4.9	3.3	2.1	1.1	8.3	5.6	4.0	2.6	1.5
BTAS-39 S-V	1 1/8 ODF	A3F-D Filter-drier	10	6.3	4.3	2.7	1.4	11	7.2	5.2	3.3	1.9
BTAS-311 S-V	1 3/8 ODF	A3F-D Filter-drier	14	8.9	6.0	3.8	2.0	15	10	7.2	4.7	2.7
BTAS-313 S-V	1 5/8 ODF	A3F-D Filter-drier	20	13	8.6	5.4	2.9	22	15	10	6.7	3.9
BTAS-317 S-V	2 1/8 ODF	A3F-D Filter-drier	23	15	10	6.3	3.4	26	17	12	7.8	4.6
BTAS-411 S-V	1 3/8 ODF	A4F-D Filter-drier	28	18	13	7.8	4.2	31	21	15	10	5.6
BTAS-413 S-V	1 5/8 ODF	A4F-D Filter-drier	29	19	13	8.1	4.3	32	22	15	10	5.8
BTAS-417 S-V	2 1/8 ODF	A4F-D Filter-drier	43	28	19	12	6.3	48	32	23	15	8.5
BTAS-421 S-V	2 5/8 ODF	A4F-D Filter-drier	44	29	19	12	6.5	49	33	23	15	8.7
BTAS-517 S-V	2 1/8 ODF	A5F-D Filter-drier	51	33	22	14	7.5	57	38	27	17	10
BTAS-521 S-V	2 5/8 ODF	A5F-D Filter-drier	61	40	27	17	9.0	68	46	33	21	12
BTAS-525 S-V	3 1/8 ODF	A5F-D Filter-drier	72	47	32	20	11	80	54	39	25	14
STAS-489 S-V	1 1/8 ODF	(1) F-48 Filter	22	14	10	6	2	24	16	12	7	3
STAS-4811 S-V	1 3/8 ODF	(1) F-48 Filter	28	17	12	7	3	31	19	14	9	4
STAS-4813 S-V	1 5/8 ODF	(1) F-48 Filter	35	20	15	8	4	39	23	18	10	5
STAS-4817 S-V	2 1/8 ODF	(1) F-48 Filter	47	30	20	10	5	52	34	24	12	7
STAS-4821 S-V	2 5/8 ODF	(1) F-48 Filter	60	40	25	15	7	67	46	30	19	9
STAS-9617 S-V	2 1/8 ODF	(2) F-48 Filter	50	30	20	12	6	56	34	24	15	8
STAS-9621 S-V	2 5/8 ODF	(2) F-48 Filter	70	43	28	17	8	78	49	34	21	11
A-TD-9625 S-V	3 1/8 ODF	(2) F-48 Filter	95	60	40	22	10	106	69	48	27	13
STAS-489 S-V	1 1/8 ODF	(1) 48 cu. in. Block	15	9	7	4	1	17	10	8	5	1
STAS-4811 S-V	1 3/8 ODF	(1) 48 cu. in. Block	18	11	8	5	2	20	13	10	6	3
STAS-4813 S-V	1 5/8 ODF	(1) 48 cu. in. Block	23	13	10	6	3	26	15	12	7	4
STAS-4817 S-V	2 1/8 ODF	(1) 48 cu. in. Block	31	20	13	7	3	35	23	16	9	4
STAS-4821 S-V	2 5/8 ODF	(1) 48 cu. in. Block	40	27	17	10	5	45	31	21	12	7
STAS-9617 S-V	2 1/8 ODF	(2) 48 cu. in. Block	33	20	13	8	4	37	23	16	10	5
STAS-9621 S-V	2 5/8 ODF	(2) 48 cu. in. Block	47	28	18	11	6	52	32	22	14	8
A-TD-9625 S-V	3 1/8 ODF	(2) 48 cu. in. Block	64	40	27	15	7	71	46	33	19	9

①All ratings in accordance with ARI Standard 730-86.

Example: 1.0 tons x 3.5 = 3.5 kW

②For 2 PSI ΔP, Multiply values by 1.4

TAKE-APART SUCTION LINE FILTER-DRIER FLOW CAPACITIES

DESCRIPTION	CONNECTIONS	FILTER DRIER CARTRIDGE	FLOW CAPACITY IN TONS REFRIGERANT ^① For kW, Multiply Tons by 3.5 ^②								
			R-134a				R-404A/R507				
			EVAPORATOR TEMPERATURE (°F)								
			40	20	0	-20	40	20	0	-20	-40
			Pressure Drop (PSI)								
2	1.5	1	0.5	3	2	1.5	1	0.5			
ADKS 30013T	1 5/8 ODF	(3) F-100 Filter	25	17	11	6.2	37	24	16	10	5.5
ADKS 30017T	2 1/8 ODF	(3) F-100 Filter	43	30	19	11	62	40	27	18	9.4
ADKS 40017T	2 1/8 ODF	(4) F-100 Filter	45	31	20	11	66	43	29	18	9.8
ADKS 40021T	2 5/8 ODF	(4) F-100 Filter	68	47	30	17	99	64	43	28	15
ADKS 30013T	1 5/8 ODF	(3) 100 cu. in. Block	20	14	8.7	4.9	29	19	13	8.0	4.3
ADKS 30017T	2 1/8 ODF	(3) 100 cu. in. Block	31	22	14	7.7	46	30	20	13	6.8
ADKS 40017T	2 1/8 ODF	(4) 100 cu. in. Block	34	23	15	8.4	49	32	22	14	7.4
ADKS 40021T	2 5/8 ODF	(4) 100 cu. in. Block	49	34	22	12	72	47	32	20	11
BTAS-25 S-V	5/8 ODF	A2F Filter	2.7	1.9	1.2	0.6	4.1	2.6	1.8	1.1	0.6
BTAS-27 S-V	7/8 ODF	A2F Filter	4.8	3.3	2.1	1.1	7.2	4.6	3.1	1.9	1
BTAS-39 S-V	1 1/8 ODF	A3F Filter	7.3	5.0	3.2	1.7	11	7.0	4.7	2.9	1.5
BTAS-311 S-V	1 3/8 ODF	A3F Filter	8.1	5.5	3.5	1.9	12	7.8	5.2	3.2	1.7
BTAS-313 S-V	1 5/8 ODF	A3F Filter	13	8.8	5.6	3.0	19	12	8.3	5.2	2.7
BTAS-317 S-V	2 1/8 ODF	A3F Filter	16	11	6.9	3.7	24	15	10	6.3	3.3
BTAS-411 S-V	1 3/8 ODF	A4F Filter	21	14	9.1	4.9	31	20	14	8.4	4.4
BTAS-413 S-V	1 5/8 ODF	A4F Filter	17	12	7.4	4.0	26	16	11	6.8	3.6
BTAS-417 S-V	2 1/8 ODF	A4F Filter	29	20	12	6.7	43	28	19	12	6
BTAS-421 S-V	2 5/8 ODF	A4F Filter	35	24	15	8.1	52	34	23	14	7.2
BTAS-517 S-V	2 1/8 ODF	A5F Filter	34	24	15	8.1	52	34	23	14	7.3
BTAS-521 S-V	2 5/8 ODF	A5F Filter	45	31	20	11	68	44	29	18	9.6
BTAS-525 S-V	3 1/8 ODF	A5F Filter	56	38	24	13	84	54	36	23	12
BTAS-25 S-V	5/8 ODF	A2F-D Filter-drier	2.5	1.7	1.1	0.6	3.8	2.4	1.6	1	0.5
BTAS-27 S-V	7/8 ODF	A2F-D Filter-drier	4.1	2.8	1.8	1.0	6.1	3.9	2.6	1.6	0.9
BTAS-39 S-V	1 1/8 ODF	A3F-D Filter-drier	5.3	3.6	2.3	1.2	7.9	5.1	3.4	2.1	1.1
BTAS-311 S-V	1 3/8 ODF	A3F-D Filter-drier	7.4	5.1	3.2	1.7	11	7.1	4.8	3	1.6
BTAS-313 S-V	1 5/8 ODF	A3F-D Filter-drier	11	7.3	4.6	2.5	16	10	6.8	4.2	2.2
BTAS-317 S-V	2 1/8 ODF	A3F-D Filter-drier	12	8.4	5.4	2.9	19	12	8.0	5	2.6
BTAS-411 S-V	1 3/8 ODF	A4F-D Filter-drier	15	11	6.7	3.6	23	15	10	6.1	3.2
BTAS-413 S-V	1 5/8 ODF	A4F-D Filter-drier	16	11	6.9	3.7	24	15	10	6.3	3.3
BTAS-417 S-V	2 1/8 ODF	A4F-D Filter-drier	23	16	10	5.4	35	22	15	9.3	4.9
BTAS-421 S-V	2 5/8 ODF	A4F-D Filter-drier	24	16	10	5.6	36	23	15	10	5.0
BTAS-517 S-V	2 1/8 ODF	A5F-D Filter-drier	28	19	12	6.4	41	27	18	11	5.0
BTAS-521 S-V	2 5/8 ODF	A5F-D Filter-drier	33	23	14	7.8	50	32	22	13	7.0
BTAS-525 S-V	3 1/8 ODF	A5F-D Filter-drier	39	27	17	9.2	59	38	25	16	8.3
STAS-489 S-V	1 1/8 ODF	(1) F-48 Filter	13	8	5	2	20	12	8	5	3
STAS-4811 S-V	1 3/8 ODF	(1) F-48 Filter	15	10	6	3	15	15	10	6	4
STAS-4813 S-V	1 5/8 ODF	(1) F-48 Filter	20	12	7	4	30	18	11	7	5
STAS-4817 S-V	2 1/8 ODF	(1) F-48 Filter	25	15	10	5	40	25	15	9	7
STAS-4821 S-V	2 5/8 ODF	(1) F-48 Filter	30	20	13	6	55	30	20	12	8
STAS-9617 S-V	2 1/8 ODF	(2) F-48 Filter	28	18	10	5	40	25	15	10	7
STAS-9621 S-V	2 5/8 ODF	(2) F-48 Filter	38	25	15	7	60	35	25	15	10
A-TD-9625 S-V	3 1/8 ODF	(2) F-48 Filter	50	30	20	10	80	50	30	20	12
STAS-489 S-V	1 1/8 ODF	(1) 48 cu. in. Block	8	6	4	1	13	8	6	4	2
STAS-4811 S-V	1 3/8 ODF	(1) 48 cu. in. Block	10	7	4	2	17	10	6	4	3
STAS-4813 S-V	1 5/8 ODF	(1) 48 cu. in. Block	13	8	5	3	20	12	7	5	4
STAS-4817 S-V	2 1/8 ODF	(1) 48 cu. in. Block	17	10	7	4	27	17	10	6	5
STAS-4821 S-V	2 5/8 ODF	(1) 48 cu. in. Block	20	13	8	4	37	20	13	8	6
STAS-9617 S-V	2 1/8 ODF	(2) 48 cu. in. Block	18	12	6	4	27	17	11	7	5
STAS-9621 S-V	2 5/8 ODF	(2) 48 cu. in. Block	25	17	10	5	40	23	17	10	7
A-TD-9625 S-V	3 1/8 ODF	(2) 48 cu. in. Block	33	20	13	6	53	33	20	13	8

①All ratings in accordance with ARI Standard 730-86.

Example: 1.0 tons x 3.5 = 3.5 kW

②For 2 PSI ΔP, Multiply values by 1.4

HMI MOISTURE-LIQUID INDICATORS

APPLICATION

- ¶ The HMI was designed to provide an accurate method of determining the moisture content of a system's refrigerant
- ¶ Unique 3% high accuracy moisture indicator for CFC, HCFC and HFC refrigerants, including R410A



FEATURES

- ¶ Fully Hermetic Design
- ¶ 3% relative humidity indication compared to 10% paper indicators
- ¶ 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
- ¶ Solid copper fittings

SPECIFICATIONS

- ¶ 3% relative humidity sensitivity
- ¶ Maximum Working Pressure: 680 psig
- ¶ UL File Number: SA 4876
- ¶ CSA File Number: LR 32462
- ¶ CRN File Number: OF0845.9 (see page A)

NOMENCLATURE

Example: HMI 1TT4

HMI	1	TT	4
Hermetic Moisture Indicator	Series	Connection Style TT - Sweat x Sweat	Connection Size (in 1/8")

ORDERING INFORMATION FOR HMI

PCN	CATALOG NUMBER	SERIES	CONNECTION SIZE	
065391	HMI-1MM2	Male Flare x Male Flare	1/4"	
065392	HMI-1MM3		3/8"	
065393	HMI-1MM4		1/2"	
065394	HMI-1MM5		5/8"	
065395	HMI-1MM6		3/4"	
065405	HM1-1TT2		Sweat x Sweat (ODF)	1/4"
065406	HMI-1TT3	3/8"		
065407	HMI-1TT4	1/2"		
065408	HMI-1TT5	5/8"		
065409	HMI-1TT6	3/4"		
065410	HMI-1TT7	7/8"		
065411	HMI-1TT9	1 1/8"		
065396	HMI-1FM2	Female Flare x Male Flare		1/4"
065397	HMI-1FM3			3/8"
065398	HMI-1FM4		1/2"	
065399	HMI-1MU2	Male Flare x Female Flare Swivel Nut	1/4"	
065400	HMI-1MU3		3/8"	
065401	HMI-1MU4		1/2"	
065402	HMI-1MU5		5/8"	
065403	HMI-1FU3		Female Flare x Female Flare Swivel Nut	3/8"
065404	HMI-1FU4	1/2"		
065412	HMI-1UU3	Swivel Nut x Swivel Nut	3/8"	
065413	HMI-1UU4		1/2"	
065414	HMI-1UU5		5/8"	

MOISTURE CONTENT COLOR CODE (ppm H₂O)

INDICATION	DRY (Dark Blue)			CAUTION (Purple)			WET (Salmon)		
	75°F	100°F	125°F	75°F	100°F	125°F	75°F	100°F	125°F
R-12	1.4	2.5	4	5	9	15	25	43	70
R-134A	20	35	60	35	55	85	130	160	190
R-22	25	35	50	40	65	90	145	205	290
R-407C	26	40	64	42	68	109	150	230	370
R-410A	30	55	75	50	85	120	165	290	420
R-404A/507	15	25	45	33	50	80	120	150	180
R-502	2.6	5	8	10	18	30	50	90	150

AMI MOISTURE-LIQUID INDICATORS

FEATURES AND SPECIFICATIONS

- ┌ 3% relative humidity indication compared to 10% paper indicators
- ┌ 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
- ┌ Solid copper fittings
- ┌ Maximum working pressure: 600 psig^t
- ┌ UL file number: SA 4876
- ┌ CSA file number: LR 32462
- ┌ CRN file number: OF0845.9 (see page A)



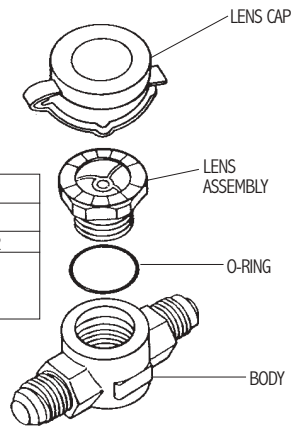
ORDERING INFORMATION FOR AMI

PCN	CATALOG NUMBER	SERIES	CONNECTION SIZE
048803	AMI-1MM2	Male Flare x Male Flare	1/4"
048804	AMI-1MM3		3/8"
048805	AMI-1MM4		1/2"
048806	AMI-1MM5		5/8"
048811	AMI-1SS2	Sweat x Sweat (OD Female)	1/4"
048812	AMI-1SS3		3/8"
048813	AMI-1SS4		1/2"
048814	AMI-1SS5		5/8"
048815	AMI-1SS7		7/8"
048816	AMI-1SS9		1 1/8"
047298	AMI-1TT2 EXTENDED ENDS		1/4"
042771	AMI-1TT3 EXTENDED ENDS		3/8"
022302	AMI-1TT4 EXTENDED ENDS		1/2"
031136	AMI-1TT5 EXTENDED ENDS	5/8"	
031357	AMI-1TT7 EXTENDED ENDS ^t	7/8"	
031578	AMI-1TT9 EXTENDED ENDS ^t	1 1/8"	
048800	AMI-1FM2	Female Flare x Male Flare	1/4"
048801	AMI-FM3		3/8"
048802	AMI-FM4		1/2"
048807	AMI-1MU2	Male Flare x Female Flare Swivel Nut	1/4"
048808	AMI-1MU3		3/8"
048809	AMI-1MU4		1/2"
048810	AMI-1MU5		5/8"
048817	AMI-1FU3	Female Flare x Female Flare Swivel Nut	3/8"
048818	AMI-1FU4		1/2"
048819	AMI-1SU2	Sweat x Female Flare Swivel Nut	1/4"
048820	AMI-1SU3		3/8"
048821	AMI-1SU4		1/2"
048822	AMI-1SU5	5/8"	
046647	AMI-1UU3	Swivel Nut x Swivel Nut	3/8"
046648	AMI-1UU4		1/2"
046649	AMI-1UU5		5/8"

^t 500 PSIG MWP

REPLACEMENT PARTS FOR AMI

PCN	PART	NUMBER
021371	LENS CAP	12740-1
020877	"O" RING	PS1525-2
027511	LENS ASSEMBLY KIT (Consists of lens assembly, lens cap and "O" ring)	X12978-1



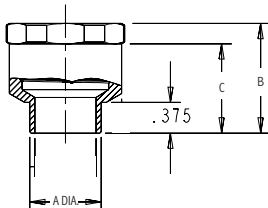
AMI INTERNALS

NOMENCLATURE

Example: AMI 1SS4

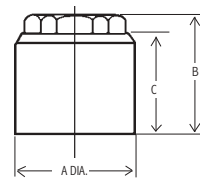
AMI	1	SS	4
Moisture Liquid Indicator Series	Design Series 1 = standard connection 2 = bushing style	Connection Style SS - Sweat x Sweat	Connection Size (in 1/8")

AMI-2 SERIES DIMENSIONS



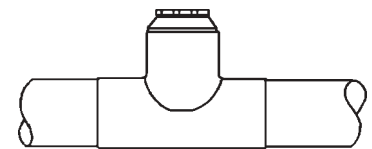
ROUGHING IN DIMENSIONS

SPECIFICATIONS					
PCN	TYPE NUMBER	CONNECTION SIZE	A DIA.	B	C
064857	AMI-2S5	5/8 ODM	.63	1.41	1.16
064167	AMI-2S7	7/8 ODM	.875	1.34	1.09
064168	AMI-2S9	1 1/8 ODM	1.13	1.25	1.00

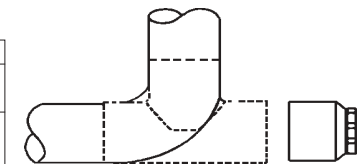


ROUGHING IN DIMENSIONS

SPECIFICATIONS					
PCN	TYPE NUMBER	CONNECTION SIZE	A DIA.	B	C
022303	AMI-2S11	1 3/8 ODM	1 3/8	1 9/16	1 5/16
028388	AMI-2S13	1 5/8 ODM	1 5/8	1 11/16	1 7/16
031219	AMI-2S17	2 1/8 ODM	2 1/8	1 15/16	1 11/16



AMI - 2 AND TEE STRAIGHT THRU CONFIGURATION



AMI - 2 AND TEE REPLACING AN ELBOW

MOISTURE CONTENT COLOR CODE (ppm H₂O)

INDICATION	VERY DRY (Dark Blue)			DRY /CAUTION (Purple)			CAUTION/WET (Pink)			WET (Salmon)		
	75°F	100°F	125°F	75°F	100°F	125°F	75°F	100°F	125°F	75°F	100°F	125°F
R-134A	20	35	60	35	55	85	90	120	150	130	160	190
R-12	1.4	2.5	4	5	9	15	15	27	45	25	43	70
R-22	25	35	50	40	65	90	90	130	185	145	205	290
R-407C	26	40	64	42	68	109	94	144	230	150	230	370
R-410A	30	55	75	50	85	120	110	190	270	165	290	420
R-404A/507	15	25	45	33	50	80	80	110	140	120	150	180
R-502	2.6	5	8	10	18	30	30	54	90	50	90	150

A minimum period of 12 hours is recommended after installation of the Moisture-Liquid Indicator before attempting to accurately determine system moisture content.

MIA MOISTURE LIQUID INDICATOR

FEATURES AND SPECIFICATIONS

- ¶ 3% relative humidity indicator compared to 10% paper indicators
- ¶ Fully hermetic
- ¶ Corrosion free stainless steel body
- ¶ Single indicator for CFC, HCFC, HFC refrigerants
- ¶ Accurate color calibration at low ppm levels and higher temperatures
- ¶ Solid copper fittings
- ¶ 3% relative humidity sensitivity
- ¶ Maximum working pressure: 600 psig
- ¶ UL file number: SA 4876
- ¶ CRN file number: OF0845.9 (see page A)



NOMENCLATURE Example: MIA 078

MIA	078
Moisture Liquid Indicator Series	Connection Sizes 7/8" ODF

TYPE	CONNECTION SIZE	HEIGHT A (in.)	LENGTH B (in.)
MIA 014	1/4" ODF	1.0	3.86
MIA 038	3/8" ODF	1.4	4.30
MIA 012	1/2" ODF	1.4	4.30
MIA 058	5/8" ODF	1.4	4.30
MIA 078	7/8" ODF	1.4	4.84

ORDERING INFORMATION FOR MIA

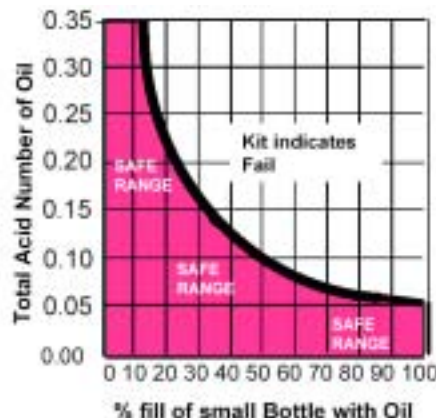
PCN	Product Description
064465	MIA 014
064464	MIA 038
064465	MIA 012
064466	MIA 058
064467	MIA 078

UNIVERSAL ACID TEST Kit

**FOR USE WITH MINERAL, ALKYL BENZENE AND POE OILS!
DETERMINE TAN (TOTAL ACID NUMBER)**

FEATURES

- ¶ Quick and easy test kit
- ¶ Universal acid test kit for use with all refrigeration lubricants
- ¶ By changing the percentage of oil sample taken, the acid number of the oil can be accurately determined
- ¶ Phase separation of the chemicals in the kit provide a positive color change regardless of the color and condition of the oil



Manufacturer	Oil Type	Total Acid No.	% Fill Small Bottle
	Mineral - Oil AB - Oil	0.05	100
Copeland	POE Ultra 22 CC	0.12	40
Copeland	POE Ultra 32 CC	0.12	40
Copeland	AB OE Ultra 200	0.05	100
ICI-Emkarate	POE RL 32 CF	0.07	80
ICI-Emkarate	RL22/32 68/100	0.02	100
CPI	Solest	0.10	50
Castrol	POE Icemetic Series	0.15	35
Shell	RL 1074 1569/1076/1092	0.04	100
Shell	Clavus 32/68/100	0.04	100

Data subject to change without notice, consult oil manufacturer for latest information.

ORDERING INFORMATION

PCN	DESCRIPTION
064427	AAU Universal Kit

MSDS Sheets are available upon request please contact
Emerson Climate Technologies

ELECTRONIC STEPPER REGULATOR

The ESR is a direct driven regulator that uses a linear actuating bi-polar stepper motor to move the piston. The stepper motor is actuated by a voltage pulse to energize each of the motor phases and move the piston in discrete .001 inch increments. When used as an EPR in individual super-market display cases, the ESR, along with appropriate control electronics, provides state-of-the-art temperature control within less than $\pm 1^\circ\text{F}$ of the desired setpoint temperature. The ESR is compatible with many control electronics widely available in the market today. Applications for the ESR include case control, line-up and rack mounted control, as well as transportation applications on refrigerated trucks, trailers and containers. ESRs are also acceptable for use as hot gas bypass and head pressure, liquid hold-back valves. An ESR can NOT be used as an expansion device.



FEATURES AND SPECIFICATIONS

- ☞ No external sealing o-rings
- ☞ Removable external connector
- ☞ Excellent repeatability
- ☞ Corrosion resistant design
- ☞ Solenoid tight shut-off
- ☞ Operating temperatures
 - Ambient: -40°F to $+150^\circ\text{F}$
 - Refrigerant: -40°F to $+280^\circ\text{F}$
- ☞ Maximum working pressure: 500 psi
- ☞ Linear actuating bi-polar stepper motor
- ☞ Direct drive with no hysteresis
- ☞ Step rate: 50 ± 10 steps per second
- ☞ Steps full travel: all current ESR 800 steps
 - NOTE:** Pre 0131 Date code ESR 12 has 500 steps
- ☞ Voltage tolerance: $+10\%$ and -15% of rated voltage
- ☞ .001 inch of linear travel per step
- ☞ Resistance (each phase): 29 ohms $\pm 10\%$ (12V) or 116 ohms $\pm 10\%$ (24V)
- ☞ Two motors available. 24V or 12V DC
- ☞ UL and CUL Recognized file number: MP604
- ☞ TÜV Bauart Mark Type Approval CE
- ☞ CRN file number: 0C0824.9 (see page A)

NOMENCLATURE EXAMPLE: ESR-12 T7 S/T 12V NC

ESR	12	T	7	S/T	12V	NC
ELECTRIC STEPPER REGULATOR	PORT DIAMETER IN 1/16" INCREMENTS ESR-12 = 3/4" DIA. ESR-20 = 1 1/4" DIA.	CONNECTION T = ODF	CONNECTION SIZE IN 1/8" INCREMENTS 7 = 7/8" 11 = 1 3/8"	BODY CONFIGURATION S/T = STRAIGHT-THRU ANG = ANGLE VLB = VALVE LESS BODY	12 VOLT ① 24 VOLT BIPOLAR STEPPER MOTOR	NO EXTERNAL CONNECTOR

① CPC Einstein requires 12V

NOMINAL EPR CAPACITY IN TONS (kW)

VALVE	R134a	R22	R507/R404A
ESR-12	5.3 (18.3)	5.8 (20.1)	5.7 (19.9)
ESR-20	10.3 (35.7)	13.4 (46.3)	11.0 (38.3)

VALVE	R12	R407C	R502
ESR-12	4.8 (17.0)	7.9 (28.0)	7.8 (27.6)
ESR-20	9.5 (33.6)	15.1 (53.5)	15.1 (53.5)

All capacities shown are at 40°F Evaporator Temperature and 2 psi pressure drop across the ESR, with the ESR full open 800 Steps. For capacities at other evaporator temperatures and pressure drops or other applications please contact your Flow Controls sales representative

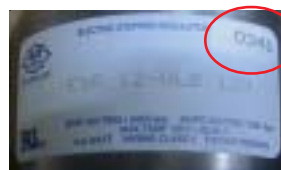
ESR DIMENSIONAL DATA

DIMENSIONS SHOWN ARE IN INCHES

ANGLE STYLE					
VALVE	A	B	C	D	E
ESR-12	8.5	6.2	5.4	3.1	3.1
ESR-20	9.4	6.3	5.3	4.1	4.1

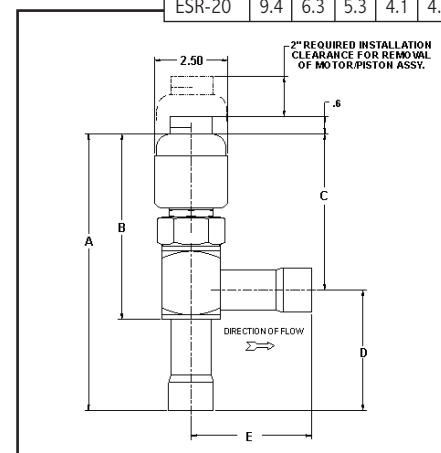
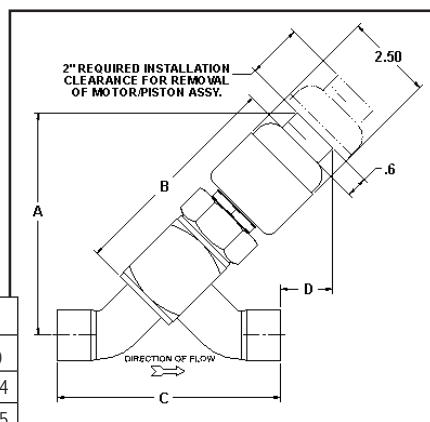
ORDERING INFORMATION FOR ESR

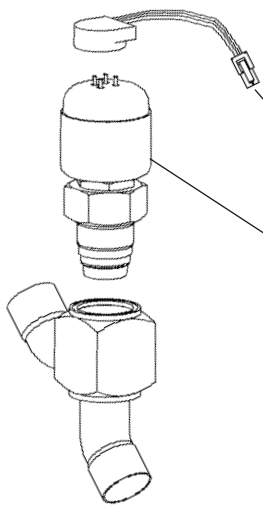
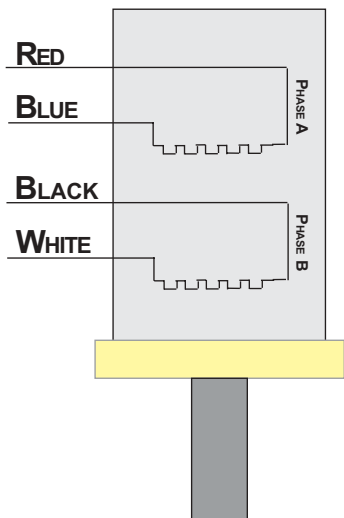
PCN	Description
064773	ESR 12 T 7 S/T 12V NC
064774	ESR 12 T 7 S/T 24V NC
062566	ESR 20 T 11 S/T 12V NC
062750	ESR 20 T 11 S/T 24V NC
064858	ESR 12 T 7 ANG 12V NC
064859	ESR 12 T 7 ANG 24V NC
064860	ESR 20 T 11 ANG 12V NC
064861	ESR 20 T 11 ANG 24V NC
062093	ESR EXTERNAL MOLDED CONNECTOR 5'
062094	ESR EXTERNAL MOLDED CONNECTOR 22'



DATE CODE
03 - YEAR
41 - WEEK

STRAIGHT-THRU				
VALVE	A	B	C	D
ESR-12	6.0	6.2	4.4	2.4
ESR-20	6.4	6.3	6.4	1.5





ESR REPLACEMENT PARTS EXPLODED VIEW

EXTERNAL CONNECTOR		
PCN	DESCRIPTION	PART #
062093	EXTERNAL CONNECTOR, 4-WIRE, 5 FT.	28963-1
062094	EXTERNAL CONNECTOR, 4-WIRE, 22 FT.	28963-2

VALVE LESS BODY	
PCN	DESCRIPTION
064771	ESR-12 VLB 12V NC
064772	ESR-12 VLB 24V NC
064556	ESR-20 VLB 12V NC
064641	ESR-20 VLB 24V NC

	STEPPER SEQUENCE			
	PHASE A		PHASE B	
STEP	RED	BLUE	BLACK	WHITE
1	+	-	-	+
2	-	+	-	+
3	-	+	+	-
4	+	-	+	-

FEATURES

- Operates all Alco stepper products
- Stepper check-out procedure directions on back of control



ORDERING INFORMATION FOR MTB-1

PCN	DESCRIPTION
063904	MTB-1 Handheld Stepper Driver

STEPPER VALVE SELECTION AND SERVICE

The ESR is a direct driven regulator that uses a linear actuating bi-polar stepper motor to move a piston. The stepper motor that drives the valve is much the same as any other electric motor and should be treated as such. It works, acts and behaves like an electric motor, only it operates utilizing a square wave instead of a sine wave like a standard AC motor. Selection of the valve requires the same information as any other regulator applied in a refrigeration application: refrigerant, load, application, pressure drop, saturated suction temperature, connection size. Along with the standard selection requirements the motor type must be matched exactly with the controller driving the valve. The ESR is available in both 12 VDC and 24 VDC motor. If a 24 VDC motor is mistakenly operated with a 12 VDC controller there will be a large reduction in valve performance due to torque loss at the lower voltage. With the loss of torque the valve may fail to operate against higher pressure differentials as well the controller may loose track of valve position or the number of steps. If a 12 VDC motor is mistakenly operated with a 24 VDC controller the current draw of the motor will increased by about four times. This increase in motor amperage draw can cause the controller board to fail. If the board does not fail the life cycle of the motor windings will be greatly reduced due to the excessive current.

TROUBLESHOOTING

VALVE WILL NOT OPEN OR CLOSE	<ul style="list-style-type: none"> CHECK MOTOR WINDING RESISTANCE FROM CONTROLLER (DISCONNECT EXTERNAL CONNECTOR AT BOARD) 29 OHMS ±10% (12 VDC) OR 116 OHMS ±10% (24 VDC) IF WINDINGS SHOW OPEN, REMOVE CONNECTOR FROM MOTOR AND CHECK AT MOTOR TERMINAL PINS, IF MOTOR WINDINGS FALL WITHIN SPECIFICATIONS, MOTOR IS GOOD. CHECK CONNECTIONS AT MOTOR AND/OR REPLACE CONNECTOR WITH YOUR DIGITAL MULTI METER SET TO AC VOLTAGE CHECK FOR NORMAL MOTOR VOLTAGE BETWEEN WHITE AND BLACK LEADS OR THE BLUE AND RED LEADS AT THE CONTROLLER OTHER LEAD COMBINATIONS WILL GIVE HALF THE NOMINAL VOLTAGE. IF VOLTAGE DOES NOT MATCH MOTOR VOLTAGE VERIFY VALVE SELCTION THEN CONFIRM CONTROLLER OPERATION
VALVE WILL NOT CLOSE	<ul style="list-style-type: none"> REVERSE FLOW MAY CAUSE SEAT LEAKAGE OVER-HEATING DURING INSTALLATION MAY HAVE DISFIGURED VALVE SEAT (WRAP VALVE BODY DURING BRAZING) EXCESSIVE DIRT AT SEAT MAY CAUSE SEAT LEAKAGE VALVE SELECTION DURING CONTROLLER SETUP MAY HAVE INCORRECT NUMBER OF STEPS
VALVE NOT OPENING FULLY	<ul style="list-style-type: none"> VALVE CONFIGURED INCORRECTLY IN CONTROLLER (500 STEPS FOR VALVES WITH DATE CODE PRE 0131, CURRENT VALVE REQUIRES 800 STEPS FOR FULL TRAVEL)

IPR INLET PRESSURE UPSTREAM REGULATOR

IPR Upstream Evaporator Pressure Regulators accurately maintains a predetermined minimum evaporator pressure, regardless of sudden load or suction pressure changes. These valves operate from an inlet pressure signal, opening on a rise in pressure above the valve set point and closing at any inlet pressure below the set point. The IPR is a hermetic valve supplied with a pressure tap in the inlet connection as standard.

FEATURES AND SPECIFICATIONS

- ☑ Compact design permits minimal space requirements
- ☑ Install in vertical or horizontal line
- ☑ Supplied with strainer in the inlet connection
- ☑ Supplied with copper line connections for installation ease
- ☑ 3 adjustment range options:
 - 0-50 psig (factory setting 30 psig) or
 - 30-100 psig (factory setting 60 psig)
 - 65-225 psig
- ☑ Maximum working pressure: 400 psig
- ☑ UL file number SA5312, Guide SFJQ
- ☑ CSA file number: LR44005
- ☑ CRN file number: OC0824.9 (see page A)

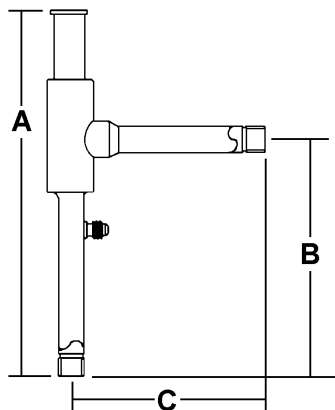
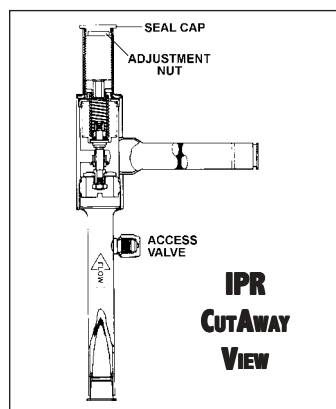
NOMINAL CAPACITY TABLE IN TONS (kW)

VALVE	R12	R134a	R22	R407C	R507/R404A	R502
IPR-6	0.8(2.8)	.94 (3.2)	1.2 (4.1)	1.3(4.7)	1.11 (3.8)	9.4(3.3)
IPR-10	2.0(7.1)	2.2(7.8)	3.0(10.6)	3.2(11.3)	2.5(8.9)	2.2(7.8)

All capacities shown are at 40°F Evaporator Temperature and 2 psi pressure drop across the valve. For capacities at other evaporator temperatures and pressure drops, see extended capacity tables in tons beginning on page 59..

IPR DIMENSIONAL DATA

VALVE	A	B	C
IPR-6	9.75	6.38	5.25
IPR-10	11.19	6.5	6.69



DIMENSIONS SHOWN ARE IN INCHES.



NOMENCLATURE

EXAMPLE: IPR-6 5/8 ODF 0-50 PSIG

IPR	6	5/8	ODF	0-50 psig
Valve Series	Port Size (in 1/8")	Connection Size	Connction Type (SAE optional)	Adjustment Range

ORDERING INFORMATION

PCN	DESCRIPTION	ADJUSTMENT RANGE
049239	IPR - 6 (1/2 ODF)	0 – 50 PSIG
047901	IPR - 6 (1/2 SAE)	0 – 50 PSIG
059125	IPR - 6 (1/2 ODF)	30 – 100 PSIG
047902	IPR - 6 (1/2 SAE)	30 – 100 PSIG
047300	IPR - 6 (5/8 ODF)	0 – 50 PSIG
047904	IPR - 6 (5/8 SAE)	0 – 50 PSIG
047303	IPR - 6 (5/8 ODF)	30 – 100 PSIG
047903	IPR - 6 (5/8 SAE)	30 – 100 PSIG
047301	IPR - 6 (7/8 ODF)	0 – 50 PSIG
047304	IPR - 6 (7/8 ODF)	30 – 100 PSIG
047302	IPR - 6 (1-1/8 ODF)	0 – 50 PSIG
047305	IPR - 6 (1-1/8 ODF)	30 – 100 PSIG

PCN	DESCRIPTION	ADJUSTMENT RANGE
047306	IPR - 10 (7/8 ODF)	0 – 50 PSIG
047309	IPR - 10 (7/8 ODF)	30 – 100 PSIG
047307	IPR - 10 (1-1/8 ODF)	0 – 50 PSIG
047310	IPR - 10 (1-1/8 ODF)	30 – 100 PSIG
047308	IPR - 10 (1-3/8 ODF)	0 – 50 PSIG
047311	IPR - 10 (1-3/8 ODF)	30 – 100 PSIG

IPR-6 EXTENDED CAPACITY TABLES IN TONS – SUCTION GAS

TYPE & ADJUSTMENT RANGE	EVAP. TEMP. °F	SATURATION PRESSURE PSIG			R134a				R22				R404A/R507			
		R-134A	R-22	R404A/R-507	PRESSURE DROP ACROSS VALVE – PSI											
					2	5	10	20	2	5	10	20	2	5	10	20
IPR-6 0/50 or 30/100 psig	40	35.0	68.5	85.7	0.94	1.35	1.57	1.57	1.2	2.0	3.0	4.4	1.11	1.67	2.18	2.56
	30	26.1	54.9	69.7	0.82	1.15	1.26	1.26	1.1	1.8	2.7	3.8	0.98	1.47	1.88	2.10
	20	18.4	43.0	55.7	0.72	0.96	1.00	1.00	1.0	1.6	2.4	3.3	0.87	1.28	1.60	1.70
	10	12.0	36.8	43.5	0.61	0.78	0.79	0.79	0.9	1.4	2.1	2.7	0.75	1.10	1.33	1.36
	0	6.5	24.0	33.0	0.52	0.62	0.62	0.62	0.8	1.2	1.8	2.2	0.66	0.93	1.07	1.07
	-10	2.0	16.5	24.0	0.43	0.48	0.48	0.48	0.7	1.1	1.5	1.8	0.57	0.78	0.84	0.84
	-20	—	—	10.1	16.3	—	—	—	—	0.6	0.9	1.2	1.4	0.48	0.64	0.66

IPR-6 EXTENDED CAPACITY TABLES IN TONS – SUCTION GAS

TYPE & ADJUSTMENT RANGE	EVAP. TEMP. °F	SATURATION PRESSURE PSIG			R12				R407C				R502			
		R-12	R-407C	R-502	PRESSURE DROP ACROSS VALVE – PSI											
					2	5	10	20	2	5	10	20	2	5	10	20
IPR-6 0/50 or 30/100 psig	40	37	61.7	80.2	0.8	1.4	2	2.7	1.3	2.1	3.2	4.6	0.9	1.5	2.3	3.5
	30	28.4	48.4	65.4	0.8	1.2	1.7	2.2	1.0	1.7	2.6	3.6	0.8	1.3	2	3
	20	21	36.9	52.4	0.7	1.1	1.5	1.8	0.9	1.4	2.0	2.8	0.7	1.2	1.8	2.5
	10	14.6	27.1	41.1	0.6	0.9	1.2	1.5	0.7	1.1	1.6	2.1	0.6	1	1.5	2.1
	0	9.2	18.9	31.2	0.5	0.8	1	1.2	0.5	0.8	1.2	1.5	0.5	0.9	1.3	1.7
	-10	4.5	11.9	22.8	0.5	0.6	0.8	-	0.4	0.7	0.9	1.1	0.5	0.8	1.1	1.4
	-20	0.6	6.17	15.5	0.4	0.5	0.6	-	0.3	0.5	0.6	0.7	0.4	0.6	0.9	1.1

IPR-10 EXTENDED CAPACITY TABLES IN TONS – SUCTION GAS

TYPE & ADJUSTMENT RANGE	EVAP. TEMP. °F	SATURATION PRESSURE PSIG			R134a				R22				R404A/R507			
		R-134a	R-22	R404A/R-507	PRESSURE DROP ACROSS VALVE – PSI											
					2	5	10	20	2	5	10	20	2	5	10	20
IPR-10 0/50 or 30/100 psig	40	35	68.5	85.7	2.2	3.1	3.6	4.8	3.0	4.8	6.9	9.5	2.5	3.8	5.0	5.9
	30	26.1	54.9	69.7	1.9	2.6	2.9	3.7	2.7	4.3	6.1	8.3	2.3	3.4	4.3	4.8
	20	18.4	43	55.7	1.7	2.2	2.3	2.8	2.4	3.8	5.4	7.2	2.0	2.9	3.7	3.9
	10	12	36.8	43.5	1.4	1.8	1.8	2.3	2.1	3.3	4.7	5.9	1.7	2.5	3.1	3.1
	0	6.5	24	33	1.2	1.4	1.4	1.6	1.9	2.9	4.0	4.8	1.5	2.1	2.5	2.5
	-10	2	16.5	24	1.0	1.1	1.1	0.0	1.6	2.5	3.3	3.9	1.3	1.8	1.9	1.9
	-20	—	—	10.1	16.3	0.0	0.0	0.0	0.0	1.4	2.1	2.7	3.0	1.1	1.5	1.5

IPR-10 EXTENDED CAPACITY TABLES IN TONS – SUCTION GAS

TYPE & ADJUSTMENT RANGE	EVAP. TEMP. °F	SATURATION PRESSURE PSIG			R12				R407C				R502			
		R-12	R-407C	R-502	PRESSURE DROP ACROSS VALVE – PSI											
					2	5	10	20	2	5	10	20	2	5	10	20
IPR-10 0/50 or 30/100 psig	40	37	61.7	80.2	2	3.2	4.5	5.8	3.2	5.0	7.2	10.0	2.2	3.5	5.3	7.5
	30	28.4	48.4	65.4	1.8	2.9	3.9	4.8	2.6	4.1	5.8	7.9	2	3.1	4.6	6.5
	20	21	36.9	52.4	1.6	2.5	3.3	3.9	2.0	3.2	4.6	6.1	1.8	2.8	4	5.5
	10	14.6	27.1	41.1	1.4	2.2	2.8	3.2	1.6	2.5	3.6	4.5	1.5	2.4	3.5	4.6
	0	9.2	18.9	31.2	1.2	1.9	2.3	2.5	1.3	2.0	2.7	3.3	1.3	2.1	3	3.7
	-10	4.5	11.9	22.8	1.1	1.5	1.8	-	1.0	1.5	2.0	2.3	1.1	1.8	2.5	3
	-20	0.6	6.17	15.5	0.9	1.2	1.3	-	0.7	1.1	1.4	1.6	0.9	1.5	2	2.3

EPRB(S) BRASS BODY UPSTREAM REGULATOR

This Evaporator Pressure Regulator is an energy-efficient pilot operated regulator. The pilot operation utilizes high side system pressure to operate which minimizes pressure drop across the regulator. This regulator is of normally-open construction, therefore a manual operator is not required for system evacuation. The solenoid version has suction stop capabilities.

FEATURES AND SPECIFICATIONS

- ☑ Solid copper connections
- ☑ Can be installed without disassembly
- ☑ Easily disassembled to allow easy serviceability
- ☑ Pressure tap on inlet connection
- ☑ Corrosion resistant to 1000 hour salt spray
- ☑ Reduced discharge to suction bleed
- ☑ Has wide adjustment range (0-110 psig, factory setting 30 psig)
- ☑ May be installed in either a vertical or horizontal refrigeration line
- ☑ Pilot connection available in 1/4" SAE or ODF
- ☑ Available with suction stop feature using a take-apart solenoid for additional serviceability
- ☑ UL file number MP604, Guide number Y10Z
- ☑ Maximum Working Pressure: 450 psig (3100 KPa).
- ☑ MOPD: 350 psi (2412 KPa) "S" version.
- ☑ Maximum Temperature: 250°F (121°C).
- ☑ 25 lb. system pressure differential needed for valve operation
- ☑ CRN file number OC0824.9 (see page A)



ORDERING INFORMATION

PCN	VALVE
057907	EPRB 12 T 7 ODF PILOT 7/8 ODF VLC
057893	EPRB 12 T 7 SAE PILOT 7/8 ODF VLC
057242	EPRB 12 T 9 ODF PILOT 1-1/8 ODF VLC
057241	EPRB 12 T 9 SAE PILOT 1-1/8 ODF VLC
057248	EPRB 16 T 11 ODF PILOT 1-3/8 ODF VLC
057244	EPRB 16 T 11 SAE PILOT 1-3/8 ODF VLC
057251	EPRB 20 T 13 ODF PILOT 1-5/8 ODF VLC
057247	EPRB 20 T 13 SAE PILOT 1-5/8 ODF VLC
057894	EPRBS 12 T 7 SAE PILOT 7/8 ODF VLC
057243	EPRBS 12 T 9 SAE PILOT 1-1/8 ODF VLC
057245	EPRBS 12 T 9 ODF PILOT 1-1/8 ODF VLC
057250	EPRBS 16 T 11 ODF PILOT 1-3/8 ODF VLC
057246	EPRBS 16 T 11 SAE PILOT 1-3/8 ODF VLC
057249	EPRBS 20 T 13 SAE PILOT 1-5/8 ODF VLC
057253	EPRBS 20 T 13 ODF PILOT 1-5/8 ODF VLC

NOMINAL CAPACITY TABLE IN TONS (kW)

VALVE	R12	R134a	R22	R407C	R507/R404A	R502
EPRB(S)-12	2.9(10.3)	3.41(11.8)	4.47(15.5)	5.1(18.1)	3.77(13.1)	3.5(12.4)
EPRB(S)-16	5.3(18.8)	6.00(20.8)	7.88(27.3)	8.3(29.4)	6.64(23.0)	6.2(22.1)
EPRB(S)-20	8.4(29.7)	11.19(38.8)	14.70(51.0)	15.5(54.9)	12.39(43.0)	11.7(41.2)

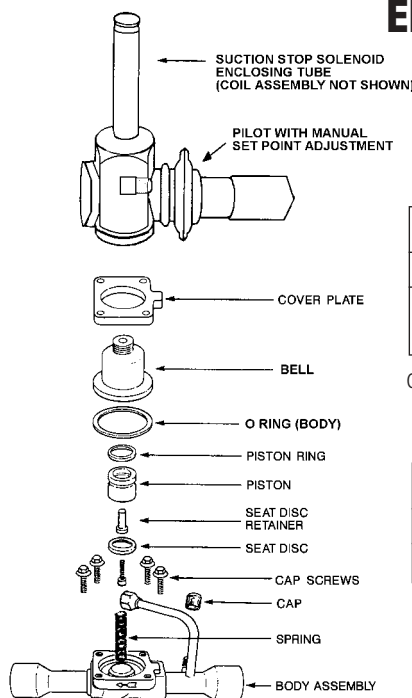
All capacities shown are at 40°F Evaporator Temperature and 2 psi pressure drop across the valve. For capacities at other evaporator temperatures and pressure drops, see extended capacity tables in tons beginning on page 61.

NOMENCLATURE EXAMPLE: EPRBS 12T9 SAE PILOT 1-1/8" ODF VLC

EPRB	S	12	T	9	SAE PILOT	VLC
Valve Series	Suction Stop (optional)	Port Size (in 1/16") 12 = 3/4" 16 = 1" 20 = 1 1/4"	Connection Style T = ODF	Connection Size (in 1/8") 9 = 1 1/8" 11 = 1 3/8" 13 = 1 5/8"	Pilot type 1/4" SAE or ODF	Coil Type VLC - Valve Less Coil

"S" version for use with DMG, AMG or AMC coils only. See coil selections page 35.

EPRB(S) REPLACEMENT PARTS EXPLODED VIEW



BELL/PISTON ASSEMBLY		
VALVE	PART #	PCN
EPRB(S)-12	KR-50045	058019
EPRB(S)-20	KR-50047	058021

Consists of piston ring, piston, seat disc retainer, seat disk and bell

GAKSETS		
VALVE	PART #	PCN
ALL EPRB(S)	KR-50053	058027

Consists of Body O-ring and enclosing tube O-ring

PILOT ASSEMBLY

1/4" ODF PILOT	PART #	PCN
EPRB	KR-50071	058496
EPRBS	KR-50067	058492
1/4" SAE PILOT	PART #	PCN
EPRB	KR-50052	058026
EPRBS	KR-50044	058018

Consists of pilot assembly (EPRB) or pilot assembly with suction stop solenoid (EPRBS).

UPPER SUBASSEMBLY

1/4" ODF PILOT	PART #	PCN
EPRB-16	KR-50069	058494
EPRBS-12	KR-50072	058497
EPRBS-16	KR-50073	058498
EPRBS-20	KR-50074	058499
1/4" SAE PILOT	PART #	PCN
EPRB-20	KR-50050	058024
EPRBS-12	KR-50054	058028
EPRBS-16	KR-50055	058029
EPRBS-20	KR-50056	058030

Consists of all parts except body assembly and cap

REGULATORS EXTENDED CAPACITIES IN TONS

EPRB(S) EXTENDED CAPACITY TABLES

R134a	EVAPORATOR TEMP.																							
	+ 45°F					+ 35°F					+ 25°F					+ 20°F								
	PRESSURE DROP ACROSS VALVE – PSI																							
VALVE	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5
EPRBS 12T9	1.75	2.52	3.61	4.44	5.14	5.60	1.55	2.24	3.20	3.95	4.48	4.86	1.37	1.97	2.83	3.49	3.87	4.17	1.28	1.85	2.66	3.22	3.58	3.83
EPRBS 16T11	3.09	4.44	6.35	7.82	9.06	9.90	2.74	3.94	5.64	6.95	7.91	8.63	2.41	3.48	4.99	6.15	6.86	7.45	2.26	3.26	4.68	5.70	6.37	6.88
EPRBS 20T13	5.76	8.28	11.85	14.59	16.90	18.16	5.11	7.35	10.53	12.97	14.49	16.00	4.50	6.49	9.31	11.47	12.71	13.98	4.21	6.08	8.73	10.45	11.86	13.03

R134a	EVAPORATOR TEMP.																							
	+ 15°F					+ 10°F					+ 5°F					0°F								
	PRESSURE DROP ACROSS VALVE – PSI																							
VALVE	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5
EPRBS 12T9	1.20	1.73	2.49	2.99	3.29	3.51	1.12	1.62	2.33	2.76	3.02	3.20	1.04	1.51	2.19	2.53	2.76	2.89	0.97	1.41	2.02	2.32	2.50	2.60
EPRBS 16T11	2.11	3.05	4.38	5.29	5.89	6.34	1.97	2.85	4.10	4.90	5.42	5.80	1.84	2.66	3.86	4.52	4.97	5.29	1.71	2.48	3.57	4.15	4.54	4.79
EPRBS 20T13	3.94	5.70	8.18	9.75	11.04	12.11	3.68	5.32	7.65	9.08	10.26	11.22	3.43	4.97	7.05	8.43	9.50	10.36	3.19	4.63	6.55	7.81	8.78	9.53

R22	EVAPORATOR TEMP.																							
	+ 45°F					+ 35°F					+ 20°F					+ 10°F								
	PRESSURE DROP ACROSS VALVE – PSI																							
VALVE	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5
EPRBS 12T9	2.29	3.29	4.69	5.77	6.68	7.49	2.07	2.97	4.25	5.23	6.06	6.78	1.76	2.54	3.63	4.47	5.18	5.81	1.58	2.27	3.25	4.01	4.64	5.02
EPRBS 16T11	4.04	5.79	8.27	10.17	11.77	13.19	3.65	5.24	7.49	9.21	10.67	11.95	3.11	4.47	6.40	7.88	9.13	10.23	2.78	4.00	5.73	7.06	8.18	8.89
EPRBS 20T13	7.53	10.80	15.42	18.97	21.97	24.60	6.81	9.77	13.97	17.19	19.90	22.29	5.80	8.34	11.94	14.70	17.03	19.08	5.18	7.46	10.69	13.17	15.26	16.38

R22	EVAPORATOR TEMP.																							
	0°F					- 10°F					- 20°F					- 30°F								
	PRESSURE DROP ACROSS VALVE – PSI																							
VALVE	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5
EPRBS 12T9	1.40	2.02	2.90	3.57	4.02	4.35	1.24	1.79	2.57	3.13	3.47	3.72	1.08	1.57	2.26	2.68	2.94	3.11	0.94	1.37	1.97	2.26	2.44	2.53
EPRBS 16T11	2.47	3.56	5.11	6.29	7.12	7.75	2.18	3.15	4.52	5.53	6.18	6.68	1.91	2.77	3.98	4.77	5.28	5.65	1.66	2.42	3.49	4.05	4.43	4.66
EPRBS 20T13	4.60	6.64	9.53	11.74	13.11	14.45	4.06	5.87	8.44	10.14	11.50	12.64	3.56	5.16	7.43	8.85	10.00	10.93	3.10	4.51	6.42	7.64	8.58	9.31

R404A/ R507	EVAPORATOR TEMP.																							
	+ 45°F					+ 35°F					+ 20°F					+ 10°F								
	PRESSURE DROP ACROSS VALVE – PSI																							
VALVE	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5
EPRBS 12T9	1.95	2.79	3.98	4.90	5.66	6.34	1.74	2.49	3.56	4.38	5.06	5.67	1.45	2.09	2.98	3.67	4.25	4.76	1.28	1.84	2.63	3.24	3.75	4.11
EPRBS 16T11	3.44	4.92	7.01	8.62	9.98	11.17	3.07	4.39	6.27	7.71	8.92	9.99	2.56	3.67	5.25	6.46	7.48	8.38	2.26	3.24	4.64	5.71	6.61	7.26
EPRBS 20T13	6.41	9.18	13.09	16.09	18.62	20.84	5.72	8.19	11.69	14.38	16.64	18.64	4.78	6.86	9.80	12.05	13.96	15.63	4.21	6.05	8.66	10.65	12.34	13.29

R404A/ R507	EVAPORATOR TEMP.																							
	0°F					- 10°F					- 20°F					- 30°F								
	PRESSURE DROP ACROSS VALVE – PSI																							
VALVE	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5
EPRBS 12T9	1.12	1.62	2.32	2.85	3.30	3.54	0.98	1.41	2.02	2.49	2.78	3.01	0.85	1.22	1.76	2.12	2.35	2.51	0.73	1.06	1.52	1.78	1.95	2.05
EPRBS 16T11	1.98	2.85	4.08	5.02	5.82	6.28	1.73	2.49	3.56	4.39	4.93	5.36	1.49	2.16	3.10	3.75	4.19	4.52	1.29	1.86	2.67	3.17	3.50	3.74
EPRBS 20T13	3.69	5.31	7.61	9.37	10.86	11.59	3.22	4.64	6.65	8.20	9.10	10.03	2.79	4.03	5.78	6.90	7.83	8.59	2.40	3.47	4.99	5.90	6.66	7.27

R407C	EVAPORATOR TEMP.																							
	+ 45°F					+ 35°F					+ 20°F					+ 10°F								
	PRESSURE DROP ACROSS VALVE – PSI																							
VALVE	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5
EPRBS 12T9	2.52	3.62	5.16	6.35	7.35	8.24	2.1	3.0	4.3	5.2	6.1	6.8	1.5	2.2	3.1	3.8	4.4	4.9	1.2	1.7	2.5	3.0	3.5	3.8
EPRBS 16T11	4.44	6.37	9.10	11.19	12.95	14.51	3.7	5.2	7.5	9.2	10.7	12.0	2.6	3.8	5.4	6.7	7.8	8.7	2.1	3.0	4.4	5.4	6.2	6.8
EPRBS 20T13	8.28	11.88	16.96	20.87	24.17	27.06	6.8	9.8	14.0	17.2	19.9	22.3	4.9	7.1	10.1	12.5	14.5	16.2	3.9	5.7	8.1	10.0	11.6	12.4

R407C	EVAPORATOR TEMP.																							
	0°F					- 10°F					- 20°F					- 30°F								
	PRESSURE DROP ACROSS VALVE – PSI																							
VALVE	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5	.5	1	2	3	4	5
EPRBS 12T9	1.0	1.4	2.0	2.4	2.7	3.0	0.7	1.1	1.5	1.9	2.1	2.2	0.6	0.8	1.2	1.4	1.5	1.6	0.4	0.6	0.9	1.0	1.1	1.1
EPRBS 16T11	1.7	2.4	3.5	4.3	4.8	5.3	1.3	1.9	2.7	3.3	3.7	4.0	1.0	1.4	2.1	2.5	2.7	2.9	0.7	1.1	1.6	1.8	2.0	2.1
EPRBS 20T13	3.1	4.5	6.5	8.0	8.9	9.8	2.4	3.5	5.1	6.1	6.9	7.6	1.9	2.7	3.9	4.6	5.2	5.7	1.4	2.0	2.9	3.4	3.9	4.2

OPR OUTLET PRESSURE DOWNSTREAM REGULATOR

OPR Series Downstream Pressure Regulators accurately maintain a predetermined maximum outlet pressure. Designed to prevent compressor motor overload, the OPR is a hermetic valve supplied with a pressure tap in the inlet connection as standard.

FEATURES AND SPECIFICATIONS

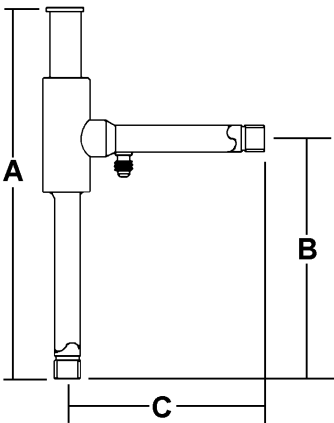
- Compact design permits minimal space requirements
- Install in vertical or horizontal line
- Supplied with strainer in the inlet connection
- Supplied with copper line connections for installation ease
- Maximum working pressure: 400 psig
- 3 adjustment range options:
 - 0-60 psig (factory setting 30 psig)
 - 20-90 psig (factory setting 60 psig)
 - 50-130 psig (factory setting 90 psig)
- UL file number SA5312, Guide SFJQ
- CSA file number LR44005
- CRN file number OC0824.9 (see page A)



NOMENCLATURE EXAMPLE: OPR-6 5/8 ODF 0-60 PSIG

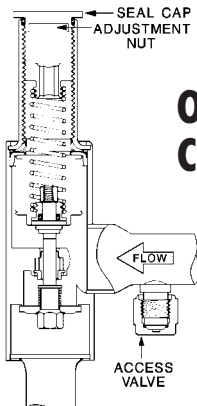
OPR Series	6	5/8	ODF	0-60 psig
Valve	Port Size (in 1/8")	Connection Size	Connection Type SAE or ODF	Adjustment Range

DIMENSIONAL DATA



VALVE	A	B	C
OPR-6	9.75	6.38	5.25
OPR-10	11.19	6.50	5.69

DIMENSIONS SHOWN ARE IN INCHES.



OPR CUTAWAY VIEW

ORDERING INFORMATION

PCN	DESCRIPTION	ADJUSTMENT RANGE
049241	OPR - 6 (1/2 ODF)	0 - 60 PSIG
054405	OPR - 6 (1/2 ODF)	20 - 90 PSIG
047907	OPR - 6 (1/2 SAE)	0 - 60 PSIG
054871	OPR - 6 (1/2 SAE)	20 - 90 PSIG
047314	OPR - 6 (1-1/8 ODF)	0 - 60 PSIG
047312	OPR - 6 (5/8 ODF)	0 - 60 PSIG
054406	OPR - 6 (5/8 ODF)	20 - 90 PSIG
049712	OPR - 6 (5/8 ODF)	50 - 130 PSIG
047908	OPR - 6 (5/8 SAE)	0 - 60 PSIG
047313	OPR - 6 (7/8 ODF)	0 - 60 PSIG
058172	OPR - 6 (7/8 ODF)	20 - 90 PSIG
047909	OPR - 6 (7/8 ODF)	50 - 130 PSIG
059223	OPR - 10 (1-1/8 ODF)	20 - 90 PSIG
049788	OPR - 10 (1-1/8 ODF)	50 - 130 PSIG
047316	OPR - 10 (1-1/8 ODF)	0 - 60 PSIG
049787	OPR - 10 (1-3/8 ODF)	50 - 130 PSIG
047318	OPR - 10 (1-3/8 ODF)	0 - 60 PSIG
047315	OPR - 10 (7/8 ODF)	0 - 60 PSIG
061786	OPR - 10 (7/8 ODF)	20 - 90 PSIG
049789	OPR - 10 (7/8 ODF)	50 - 130 PSIG

For extended capacities, see tables in tons on page 63.

REGULATORS EXTENDED CAPACITIES IN TONS

OPR-6, -10 EXTENDED CAPACITY TABLES IN TONS R-12 – SUCTION GAS

TYPE & ADJUSTMENT RANGE	EVAPORATOR TEMP. °F	R-12 SATURATED PRESSURE	SUCTION PSIG	1/2 PSI DROP						1 PSI DROP						2 PSI DROP					
				VALVE SET POINT – PSIG																	
				10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60
OPR-6 0-60, 20-90, or 50-130 psig	30	28.5			0.27	0.48	0.68	0.89			0.63	0.67	0.96	1.25			0.50	0.91	1.32	1.74	
	20	21.1			0.38	0.57	0.75	0.93			0.53	0.79	1.05	1.30			0.71	1.08	1.45	1.82	
	10	14.7			0.28	0.44	0.61	0.83		0.38	0.62	0.85	1.08	1.17		0.50	0.84	1.17	1.49	1.61	
	0	9.2		0.18	0.33	0.47	0.62	0.74	0.74	0.24	0.45	0.65	0.86	1.03	1.03	0.30	0.60	0.88	1.18	1.41	17.85
	-10	4.5		0.22	0.35	0.47	0.60	0.64	0.64	0.29	0.47	0.65	0.83	0.90	0.90	0.38	0.63	0.88	1.14	1.23	1.05
OPR-10 0-60, 20-90, or 50-130 psig	30	28.5			0.20	1.48	2.26	2.26			0.28	2.09	3.19	3.19			2.04	4.02	4.02	4.02	
	20	21.1			1.03	2.02	2.02	2.02			1.45	2.86	2.86	2.86			2.04	4.02	4.02	4.02	
	10	14.7			0.55	1.58	1.80	1.80	1.80		0.78	2.23	2.54	2.54	2.54		1.08	3.12	3.58	3.58	3.58
	0	9.2		0.08	0.99	1.60	1.60	1.60	1.60	0.11	1.39	2.25	2.25	2.25	2.25	0.14	1.94	3.17	3.17	3.17	3.17
	-10	4.5		0.44	1.24	1.41	1.41	1.41	1.41	0.62	1.74	1.98	1.98	1.98	1.98	0.86	2.45	2.78	2.78	2.78	2.78

OPR-6, -10 EXTENDED CAPACITY TABLES IN TONS R-22 (R-407C) – SUCTION GAS

TYPE & ADJUSTMENT RANGE	EVAPORATOR TEMP. °F	R-22 (R-407C) SATURATED PRESSURE	SUCTION PSIG	1/2 PSI DROP						1 PSI DROP						2 PSI DROP							
				VALVE SET POINT – PSIG																			
				10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60		
OPR-6 0-60, 20-90, or 50-130 psig	30	54.9 (63.1)						0.53						0.74							1.01		
	20	43.1 (51.6)					0.53	0.80					0.74	1.12							1.01	1.55	
	10	32.8 (41.8)				0.47	0.72	0.97				0.66	1.01	1.37						0.90	1.40	1.90	
	0	24.0 (33.6)			0.40	0.62	0.84	1.06			0.55	0.86	1.18	1.49			0.75	1.19	1.63	2.07			
	-10	16.5 (26.7)		0.30	0.49	0.69	0.88	1.00		0.41	0.69	0.97	1.24	1.41		0.55	0.95	1.33	1.73	1.94			
	-20	10.2		0.38	0.55	0.72	0.88	0.88		0.51	0.76	1.01	1.24	1.24						1.70	1.70		
OPR-10 0-60, 20-90, or 50-130 psig	-40	0.6		0.27	0.41	0.55	0.67	0.67	0.67	0.38	0.57	0.76	0.93	0.93						1.27	1.27		
	30	54.9 (63.1)						0.98						1.38								1.93	
	20	43.1 (51.6)					1.20	2.92					1.69	4.13								2.38	5.83
	10	32.8 (41.8)				1.11	2.67	2.73				1.58	4.04	3.85						2.22	5.31	5.44	
	0	24.0 (33.6)			0.83	2.22	2.44	2.44			1.17	3.13	3.44	3.44			1.65	4.41	4.86	4.86			
	-10	16.5 (26.7)		0.43	1.66	2.17	2.17	2.17		0.61	2.34	3.07	3.07	3.07		0.84	3.31	4.32	4.32	4.32			
OPR-10 0-60, 20-90, or 50-130 psig	-20	10.2		1.07	1.92	1.92	1.92	1.92		1.50	2.71	2.71	2.71	2.71		2.11	3.81	3.81	3.81	3.81			
	-40	0.6		0.79	1.47	1.47	1.47	1.47	1.11	2.08	2.08	2.08	2.08	2.08	1.55	2.92	2.92	2.92	2.92	2.92			

OPR-6, -10 EXTENDED CAPACITY TABLES IN TONS R-134a – SUCTION GAS

TYPE & ADJUSTMENT RANGE	EVAPORATOR TEMP. °F	R-134a SATURATED PRESSURE	SUCTION PSIG	1/2 PSI DROP						1 PSI DROP						2 PSI DROP					
				VALVE SET POINT – PSIG																	
				10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60
OPR-6 0-60, 20-90, or 50-130 psig	30	26.1			0.37	0.59	0.82	1.06			0.50	0.83	1.16	1.48			0.67	1.13	1.60	2.06	
	20	18.4			0.27	0.47	0.68	0.88	1.04		0.37	0.66	0.95	1.24	1.45		0.49	0.89	1.30	1.71	2.02
	10	12			0.36	0.54	0.71	0.89	0.91		0.48	0.75	1.00	1.25	1.27		0.65	1.00	1.37	1.72	1.75
	0	6.5		0.23	0.39	0.55	0.70	0.80	0.80	0.32	0.54	0.77	0.99	1.10	1.10	0.40	0.71	1.03	1.34	1.52	1.52
	-10	2		0.26	0.40	0.54	0.67	0.68	0.68	0.36	0.55	0.75	0.93	0.96	0.96	0.45	0.72	1.00	1.27	1.30	1.30
OPR-10 0-60, 20-90, or 50-130 psig	30	26.1			0.57	2.01	2.53	2.53			0.80	2.84	3.59	3.59			1.12	4.00	5.05	5.05	
	20	18.4		0.21	1.48	2.24	2.24	2.24		0.28	2.08	3.17	3.17	3.17		0.39	2.93	4.46	4.46	4.46	
	10	12		0.90	1.97	1.97	1.97	1.97		1.27	2.78	2.78	2.78	2.78		1.79	3.93	3.93	3.93	3.93	
	0	6.5		0.35	1.32	1.72	1.72	1.72	1.72	0.48	1.87	2.44	2.44	2.44	0.66	2.63	3.42	3.42	3.42	3.42	
	-10	2		0.68	1.50	1.50	1.50	1.50	1.50	0.97	2.12	2.12	2.12	2.12	1.34	2.97	2.97	2.97	2.97	2.97	

OPR-6, -10 EXTENDED CAPACITY TABLES IN TONS R-404A – SUCTION GAS

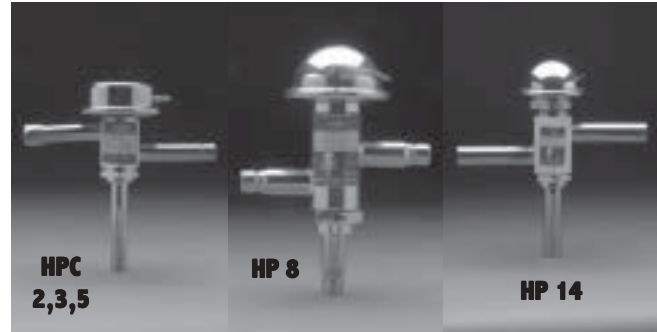
TYPE & ADJUSTMENT RANGE	EVAPORATOR TEMP. °F	R-404A SATURATED PRESSURE	SUCTION PSIG	1/2 PSI DROP						1 PSI DROP						2 PSI DROP					
				VALVE SET POINT – PSIG																	
				10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60
OPR-6 0-60, 20-90, or 50-130 psig	20	55.7						0.38						0.53							0.71
	10	43.5					0.40	0.58					0.55	0.82						0.76	1.13
	0	33				0.35	0.54	0.70				0.47	0.75	0.99					0.65	1.04	1.37
	-10	24			0.28	0.44	0.61	0.76			0.39	0.62	0.85	1.06			0.54	0.85	1.19	1.47	
	-20	16.3		0.21	0.35	0.48	0.63	0.70		0.29	0.48	0.68	0.89	0.98		0.39	0.66	0.93	1.23	1.37	
OPR-10 0-60, 20-90, or 50-130 psig	20	55.7						0.60						0.84							1.18
	10	43.5					0.92	2.09					1.30	2.96						1.84	4.17
	0	33				0.80	2.01	2.01				1.12	2.82	2.82					1.59	3.99	3.99
	-10	24			0.61	1.59	1.75	1.75			0.85	2.25	2.47	2.47			1.20	3.16	3.49	3.49	
	-20	16.3		0.32	1.19	1.52	1.52	1.52		0.45	1.67	2.14	2.14	2.14		0.62	2.35	3.02	3.02	3.02	

OPR-6, -10 EXTENDED CAPACITY TABLES IN TONS R-507 – SUCTION GAS

TYPE & ADJUSTMENT RANGE	EVAPORATOR TEMP. °F	R-507 SATURATED PRESSURE	SUCTION PSIG	1/2 PSI DROP						1 PSI DROP						2 PSI DROP					
				VALVE SET POINT – PSIG																	
				10	20	30	40	50	60	10	20	30	40	50	60	10	20	30	40	50	60
OPR-6 0-60, 20-90, or 50-130 psig	10	46.2					0.32	0.53					0.44	0.75						0.61	1.03
	0	35.2				0.30	0.47	0.66				0.42	0.66	0.92					0.57	0.91	1.29
	-10	25.8			0.25	0.41	0.57	0.72			0.35	0.57	0.79	1.02			0.47	0.79	1.09	1.42	
	-20	17.8			0.33	0.46	0.60	0.69			0.45	0.65	0.84	0.98			0.62	0.89	1.16	1.35	
	-40	5.5		0.16	0.26	0.37	0.46	0.51	0.51	0.22	0.37	0.50	0.65	0.71	0.71	0.27	0.48	0.68	0.89	0.98	0.98
OPR-10 0-60, 20-90, or 50-130 psig	10	46.2					0.46	1.79					0.66	2.52						0.92	3.47
	0	35.2				0.55	1.64	1.97				0.77	2.31	2.79					1.08	3.26	3.94
	-10	25.8			0.41	1.40	1.73	1.73			0.58	1.97	2.45	2.45			0.81	2.78	3.45	3.45	
	-20	17.8			1.04	1.51	1.51	1.51			1.47	2.13	2.13	2.13			2.07	3.00	3.00	3.00	
	-40	5.5		0.28	0.92	1.11	1.11	1.11	1.11	0.39	1.30	1.58	1.58	1.58	1.58	0.55	1.84	2.22	2.22	2.22	

HP/HPC HEADMASTER® HEAD PRESSURE CONTROLS

HeadMaster HP/HPC Series 3-Way Head Pressure Control Valves are controlled by the system discharge pressure. Adequate head pressure is necessary to maintain sufficient pressure drop across expansion device. When ambient air temperature is warm there is no problem maintaining head pressure. However, when ambient temperature falls, there is a corresponding head pressure drop. The HP/HPC is designed specifically to maintain proper air-cooled condenser pressures during periods of low ambient conditions. The HP/HPC eliminates the need for special piping or multiple control valves simplifying piping and reducing installation costs.



FEATURES AND SPECIFICATIONS

- ¶ Accurate head pressure control, at low ambient temperatures
- ¶ ODF or SAE connections available – HP Series
- ¶ 3/8" or 1/2" ODF connections – HPC Series
- ¶ Maximum working pressure: HP5,8 – 500 psig
HP14 – 440 psig
- ¶ Shipping weights: HP5 & HP8 = 2-1/2 lbs
HP14 = 5 lbs
- ¶ UL file number SA5312
- ¶ CSA file number LR44005
- ¶ CRN file number OC0824.9 (see page A)

PCN	HPC VALVE	CONNECTIONS
064188	HPC 2 T 4 -100	1/2 x 1/2 x 1/2 ODF
064190	HPC 2 T 4 -180	1/2 x 1/2 x 1/2 ODF
064192	HPC 3 T 4 -180	1/2 x 1/2 x 1/2 ODF
064177	HPC 5 T 3 -100	3/8 x 3/8 x 3/8 ODF
064179	HPC 5 T 3 -180	3/8 x 3/8 x 3/8 ODF
064175	HPC 5 T 3 -225	3/8 x 3/8 x 3/8 ODF
064180	HPC 5 T 4 -100	1/2 x 1/2 x 1/2 ODF
064183	HPC 5 T 4 -180	1/2 x 1/2 x 1/2 ODF
064187	HPC 5 T A -180	1/2 x 3/8 x 3/8 ODF

The installation of a check valve is recommended in the condensate line between the condenser outlet and receiver inlet to prevent refrigerant migration, please refer to page 38.

ORDERING INFORMATION FOR HP/HPC VALVES

PCN	HP VALVE	CONNECTIONS
046094	HP 5 F 3-110	3/8 x 3/8 x 3/8 SAE
046093	HP 5 F 3-185	3/8 x 3/8 x 3/8 SAE
055130	HP 5 F 4-110	1/2 x 1/2 x 1/2 SAE
046091	HP 5 F 4-185	1/2 x 1/2 x 1/2 SAE
046090	HP 5 T 3-110	3/8 x 3/8 x 3/8 ODF
046088	HP 5 T 3-185	3/8 x 3/8 x 3/8 ODF
054173	HP 5 T 3-215	3/8 x 3/8 x 3/8 ODF
046087	HP 5 T 4-110	1/2 x 1/2 x 1/2 ODF
046086	HP 5 T 4-185	1/2 x 1/2 x 1/2 ODF
062240	HP 5 T 4-215	1/2 x 1/2 x 1/2 ODF
052979	HP 8 F 4-110	1/2 x 1/2 x 1/2 SAE
053200	HP 8 F 4-185	1/2 x 1/2 x 1/2 SAE
046209	HP 8 T 4-110	1/2 x 1/2 x 1/2 ODF
046208	HP 8 T 4-185	1/2 x 1/2 x 1/2 ODF
062027	HP 8 T 4-225	1/2 x 1/2 x 1/2 ODF
033862	HP 8 T 5-110	5/8 x 5/8 x 5/8 ODF
032407	HP 8 T 5-185	5/8 x 5/8 x 5/8 ODF
034246	HP 8 T 5-175	5/8 x 5/8 x 5/8 ODF
046535	HP 8 T 5-215	5/8 x 5/8 x 5/8 ODF
046389	HP 8 T 5-225	5/8 x 5/8 x 5/8 ODF
046207	HP 8 T 7-110	7/8 x 7/8 x 7/8 ODF
054023	HP 8 T 7-125	7/8 x 7/8 x 7/8 ODF
046206	HP 8 T 7-185	7/8 x 7/8 x 7/8 ODF
046498	HP 8 T 7-215	7/8 x 7/8 x 7/8 ODF
046632	HP 8 T 7-205	7/8 x 7/8 x 7/8 ODF
032210	HP 14 T 7-120	7/8 x 7/8 x 7/8 ODF
024935	HP 14 T 7-175	7/8 x 7/8 x 7/8 ODF
043405	HP 14 T 7-215	7/8 x 7/8 x 7/8 ODF
024405	HP 14 T 9-120	1-1/8 x 1-1/8 x 1-1/8 ODF
045927	HP 14 T 9-125	1-1/8 x 1-1/8 x 1-1/8 ODF
029805	HP 14 T 9-175	1-1/8 x 1-1/8 x 1-1/8 ODF
043406	HP 14 T 9-215	1-1/8 x 1-1/8 x 1-1/8 ODF
024380	HP 14 T11-120	1-3/8 x 1-3/8 x 1-3/8 ODF
024601	HP 14 T11-175	1-3/8 x 1-3/8 x 1-3/8 ODF
043407	HP 14 T11-215	1-3/8 x 1-3/8 x 1-3/8 ODF

SERVICE REFERENCE CODE		CHARGE TYPE		
		A	B	C
		TO BE USED WITH REFRIGERANT TYPE		
		R-134a	R-22/R407C	R-404A/R-507
VALVE TYPE		SYSTEM CONDENSING PRESSURE SET POINT* (PSIG)		
	HP5, HP8	110	185	215
	HP14	120	175	215

* For Corresponding Condensing Temperature, see P-T Chart.

NOMENCLATURE EXAMPLE: HP 8T4 180 1/2 x 1/2 x 1/2 ODF

HP	8	T	4	180	1/2	x	1/2	x	1/2	ODF
Valve Series HP or HPC	Size	Connection Style T = ODF F = SAE	Connection Size (in 1/8")	Condensing Pressure Set Point (for corresponding Condensing Temp. see P-T Chart)	Bypass Connection Size		Receiver Connection Size		Condenser Connection Size	Connection Type

HP/HPC SIZING SELECTION

Consideration must be given to the system design requirements, such as: equivalent line length (vertical lift or unusual pressure drop), equipment location, etc., to determine if the minimum control range meets design requirements. There are numerous alternatives involving head pressure control applications worth considering. For engineering assistance, consult your Emerson Climate Technologies Flow Controls District Sales Manager.

NOTE: Be sure the HP valve is not required to operate at conditions exceeding the maximum working pressure.

NOTE: Not recommended for systems utilizing patented subcooling coils in conjunction with low head pressure systems or on systems where the condensate line bypasses the receiver in order to maintain subcooling effect in the liquid line.

TABLE 1 – NOMINAL CAPACITY TABLE IN TONS AND kW

REFRIGERANT	VALVE	PRESSURE DROP – psi (kPa)									
		1 (7)		2 (14)		3 (21)		4 (28)		5 (35)	
		TONS	kW	TONS	kW	TONS	kW	TONS	kW	TONS	kW
R-134a	HPC-2	1.0	3.5	1.4	4.9	1.8	6.2	2.0	6.9	2.3	8.0
	HPC-3	1.7	5.9	2.4	8.3	3.0	10.4	3.5	12.1	3.9	13.5
	HPC-5	2.2	7.8	3.2	11.0	3.9	13.5	4.5	15.5	5.0	17.4
	HP-5	2.0	6.9	2.9	10.1	3.6	12.5	4.1	14.2	4.6	16.0
	HP-8	5.5	19.1	7.8	27.1	9.6	33.3	11.0	38.2	12.4	43.0
	HP-14	14.0	48.6	19.8	68.7	24.2	84.0	28.3	98.2	31.7	110.0
R-22/ R-407C	HPC-2	1.1	3.8	1.6	5.6	1.9	6.6	2.2	7.6	2.5	8.7
	HPC-3	1.9	6.5	2.7	9.2	3.3	11.3	3.8	13.0	4.2	14.5
	HPC-5	2.4	8.4	3.4	11.9	4.2	14.6	4.9	16.9	5.4	18.8
	HP-5	2.2	7.6	3.2	11.1	3.9	13.5	4.5	15.6	5.0	17.4
	HP-8	6.0	20.8	8.5	29.5	10.5	36.4	12.0	41.6	13.5	46.8
	HP-14	14.7	51.0	20.8	72.2	25.6	88.8	29.7	103.1	33.8	117.3
R-404A/ R-507	HPC-2	0.7	2.4	1.0	3.5	1.3	4.5	1.5	5.2	1.7	5.9
	HPC-3	1.3	4.3	1.8	6.1	2.2	7.5	2.5	8.7	2.8	9.7
	HPC-5	1.6	5.6	2.3	7.9	2.8	9.8	3.3	11.3	3.6	12.6
	HP-5	1.5	5.2	2.1	7.3	2.6	9.0	3.0	10.4	3.3	11.5
	HP-8	3.9	13.5	5.5	19.1	6.7	23.2	7.8	27.1	8.7	30.2
	HP-14	10.1	35.0	14.3	49.6	17.6	61.1	20.5	71.1	23.0	79.8
R-12	HPC-2	0.9	3.0	1.2	4.3	1.5	5.2	1.7	6.0	1.9	6.7
	HPC-3	1.5	5.3	2.1	7.5	2.6	9.2	3.0	10.6	3.4	11.9
	HPC-5	1.8	6.4	2.5	9.0	3.1	11.0	3.6	12.7	4.0	14.2
	HP-5	1.7	6.0	2.4	8.5	3.0	10.6	3.4	12.0	3.8	13.5
	HP-8	4.6	16.3	6.5	23.0	8.0	28.3	9.2	32.6	10.3	36.5
	HP-14	11.7	41.4	16.5	58.4	20.2	71.5	23.6	83.5	26.4	93.5
R-502	HPC-2	0.7	2.6	1.0	3.7	1.3	4.5	1.5	5.2	1.6	5.8
	HPC-3	1.3	4.6	1.8	6.5	2.3	8.0	2.6	9.2	2.9	10.3
	HPC-5	1.6	5.7	2.3	8.0	2.8	9.8	3.2	11.3	3.6	12.7
	HP-5	1.5	5.3	2.1	7.4	2.6	9.2	3.0	10.6	3.3	11.7
	HP-8	3.9	13.8	5.5	19.5	6.7	23.7	7.8	27.6	8.7	30.8
	HP-14	10.1	35.8	14.3	50.6	17.6	62.3	20.5	72.6	23.0	81.4

All capacities shown are based on 40°F Evaporator Temperature and 100°F liquid.

TABLE 2 – MULTIPLIER FACTORS FOR CAPACITIES AT CONDITIONS OTHER THAN NOMINAL RATINGS

LIQUID TEMP. °F	EVAPORATOR TEMPERATURE °F														
	R-134a/R-12					R-22/R-407C					R-404A/R-507/R-502				
	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°
120°	0.87	0.82	0.78	0.71	0.69	0.89	0.86	0.84	0.82	0.78	0.84	0.79	0.74	0.69	0.63
100°	1.00	0.96	0.91	0.86	0.82	1.00	0.98	0.95	0.93	0.89	1.00	0.96	0.90	0.85	0.79
80°	1.13	1.08	1.04	0.99	0.95	1.12	1.09	1.06	1.03	1.00	1.14	1.09	1.04	0.99	0.93
60°	1.27	1.22	1.17	1.12	1.07	1.22	1.20	1.17	1.14	1.10	1.32	1.27	1.21	1.16	1.09
40°	—	1.34	1.29	1.24	1.19	—	1.30	1.27	1.24	1.21	—	1.42	1.37	1.31	1.26
20°	—	—	1.42	1.38	1.32	—	—	1.39	1.35	1.32	—	—	1.51	1.46	1.41

ACP(E) DIRECT ACTING, HOT GAS REGULATOR

Direct acting, hot gas bypass regulator is designed for small capacity systems.

FEATURES AND SPECIFICATIONS

- † Small, compact size adapts to any installation
- † Friction-free floating design
- † Fully adjustable from 0-80 psig (factory setting 40 psig)
- † Wrench flats on inlets and outlets
- † SAE or ODF, Angle or straight-thru connections
- † Internal or external equalizer
- † Safe working pressure: 450 psig
- † Safe working temperature: 300°F
- † UL file number SA5312
- † CSA file number LR44005
- † CRN file number OC0824.9 (see page A)



See Page 11 for capacities and ordering information

NOMENCLATURE EXAMPLE: ACPE 6 SAE EE 1/4 x 3/8 ODF ANG

ACP	E	6	SAE EE	1/4	x	3/8	ODF	ANG
Valve Series	External Equalizer (optional)	Port Size (diameter)	External Equalizer Type	Inlet Connection Size		Outlet Connection Size	Connection Type ODF or SAE	Body Style ANG = Angle S/T = Straight-thru

EGR(E) DIRECT ACTING HOT GAS BYPASS REGULATOR

EGRE Series Direct Acting Balance Port Hot Gas Bypass Regulators are designed for use on residential and light commercial systems. They provide precision system capacity balance at an economical price.

When suction pressure decreases below set point, the regulator opens and allows discharge gas to be bypassed. The discharge gas may be bypassed into the evaporator or the suction line. When bypassed to the suction line, a liquid injection Thermo Valve must be installed to properly desuperheat the suction gas returning to the compressor. The adjustable EGRE rated capacity will be attained when the suction pressure falls 6°F below the corresponding set point saturation temperature.



ORDERING INFORMATION

PCN	DESCRIPTION
062867	EGRE 4 S 4 C ODF EE
062866	EGRE 4 S 4 B SAE EE
063178	EGRE 4 S 5 C ODF EE
063177	EGRE 4 S 5 B SAE EE
063181	EGRE 6 S 4 B SAE EE
062868	EGRE 6 S 4 C ODF EE
062869	EGRE 6 S 5 B SAE EE
062870	EGRE 6 S 5 C ODF EE
062871	EGRE 8 S 4 B SAE EE
063182	EGRE 8 S 4 C ODF EE
063183	EGRE 8 S 5 B SAE EE
062872	EGRE 8 S 5 C ODF EE

FEATURES AND SPECIFICATIONS

- ☆ Compact hermetic construction.
- ☆ ODF solid copper connections.
- ☆ Balanced port design.
- ☆ External or internal equalizer.
- ☆ Safe working pressure: 440 psig
- ☆ Adjustment range: 0-80 psig (factory setting 50 psig)
- ☆ UL file number SA5312
- ☆ CSA file number LR44005
- ☆ CRN file number OC0824.9 (see page A)

NOMINAL CAPACITY TABLE IN TONS (kW)

VALVE	R-12	R-134a	R-22	R-407C	R-507/404A	R-502
EGR(E)-4	1.6 (5.6)	1.8 (6.2)	2.9 (10.1)	2.9 (10.1)	2.8 (9.7)	2.6 (9.0)
EGR(E)-6	2.0 (6.9)	2.4 (8.3)	3.8 (13.2)	3.8 (13.2)	3.5 (12.1)	2.9 (10.1)
EGR(E)-8	3.6 (12.5)	4.2 (14.6)	6.7 (23.2)	6.7 (23.2)	6.3 (21.9)	5.9 (20.5)

All capacities shown are based on 40°F Evaporator Temperature, 100°F Condensing Temperature, Valve Full Open, Compressor Discharge Temperature is 50°F higher than Isentropic Compression and 25°F Superheat at the compressor inlet see extended capacity tables page 70.

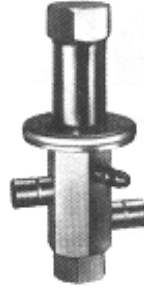
For conditions other than nominal, divide required capacity by the appropriate multiplier found on page 69.

NOMENCLATURE EXAMPLE: EGRE 6S4 B SAE EE

EGR	E	6	S	4	B	SAE EE
Valve Series	External Equalizer (omit for internal equalizer)	Size	Connection S = ODF connections	Connection (in 1/8")	External Equalizer Connection A = NONE, B = 1/4" SAE C = 1/4" ODF	External Equalizer Type

DGRE DIRECT ACTING HOT GAS BYPASS REGULATOR

DGRE Series Direct Acting Hot Gas Bypass Regulators are designed for use on light commercial systems. They provide precision system capacity balance at an economical price. When suction pressure decreases below set point, the regulator opens and allows discharge gas to be bypassed. The discharge gas may be bypassed into the evaporator or the suction line. When bypassed to the suction line, a liquid injection Thermo Valve must be installed to properly desuperheat the suction gas returning to the compressor. The adjustable DGRE rated capacity will be attained when the suction pressure falls 6°F below the corresponding set point saturation temperature.



ORDERING INFORMATION FOR DGRE VALVES

PCN	DESCRIPTION
049640	DGRE 12 S 7 B SAE EE
029806	DGRE 12 S 7 C ODF EE
049861	DGRE 12 S 9 B SAE EE

FEATURES AND SPECIFICATIONS

- ☞ Compact hermetic construction
- ☞ External equalizer
- ☞ Maximum working pressure: 440 psig
- ☞ Adjustment range: 0-80 psig (factory setting 50 psig)
- ☞ UL file number SA5312
- ☞ CSA file number 44005
- ☞ CRN file number OC0824.9 (see page A)

NOMINAL CAPACITY TABLE IN TONS (kW)

VALVE	R-12	R-134a	R-22	R-407C	R-507/404A	R-502
DGRE-12	8.3 (29.4)	9.7 (34.2)	15.4 (54.6)	15.4 (54.6)	14.5 (51.3)	13.6 (48.0)

All capacities shown are based on 40°F Evaporator Temperature, 100°F Condensing Temperature, Valve Full Open, Compressor Discharge Temperature is 50°F higher than Isentropic Compression and 25°F Superheat at the compressor inlet see extended capacity tables page 70.

For conditions other than nominal, divide required capacity by the appropriate multiplier found on page 69.

NOMENCLATURE EXAMPLE: DGRE 12S7 B SAE EE

DGR	E	12	S	7	B	SAE EE
Valve Series	External Equalizer (omit for internal equalizer)	Size	Connection S = ODF connections	Connection (in 1/8")	EE Connection A = NONE, B = 1/4" SAE C = 1/4" ODF	External Equalizer Type

CPH(E) DIRECT OPERATED HOT GAS BYPASS REGULATOR

CPHE Series Direct Acting Take-A-Part Hot Gas Bypass Regulators are designed for use on light commercial systems. They provide precision system capacity and are designed for field service without removing the body flange. When suction pressure decreases below set point, the regulator opens and allows discharge gas to be bypassed.



ORDERING INFORMATION FOR CPH(E) VALVES

PCN	DESCRIPTION
088025	CPHE 1 SAE EE 3/8 x 5/8 ODF ANG
087274	CPHE 1 SAE EE 3/8 x 5/8 ODF S/T
087774	CPHE 2 SAE EE 1/2 x 5/8 ODF ANG
087887	CPHE 2 SAE EE 1/2 x 5/8 ODF S/T
036903	CPHE 3 SAE EE 3/8 x 5/8 ODF ANG
087357	CPHE 3 SAE EE 7/8 ODF/1-1/8 ODM S/T
081348	CPHE 4 SAE EE 7/8 ODF/1-1/8 ODM ANG
044783	CPHE 4 SAE EE 7/8 ODF/1-1/8 ODM S/T
045225	CPHE 5 SAE EE 7/8 ODF/1-1/8 ODM ANG
037802	CPHE 5 SAE EE 7/8 ODF/1-1/8 ODM S/T
028619	CPHE 6 SAE EE 1-1/8X1-1/8 ODM ANG
038219	CPHE 6 SAE EE 1-1/8X1-1/8 ODM S/T

FEATURES AND SPECIFICATIONS

- ☞ SAE external equalizer standard
- ☞ Sizes available: 1 thru 6
- ☞ ODF and ODF x ODM connections are available
- ☞ External air connection available for pneumatic compensation (add EAC prefix – example: EAC CPHE)
- ☞ Adjustment Range: 0-80 psig (factory setting 20 psig)
- ☞ UL file number SA5312
- ☞ CSA file number LR44005
- ☞ CRN file number OC0824.9 (see page A)

For conditions other than nominal, divide required capacity by the appropriate multiplier found on page 69.

NOMENCLATURE EXAMPLE: CPHE 3 SAE EE 3/8 x 5/8 ODF ANG

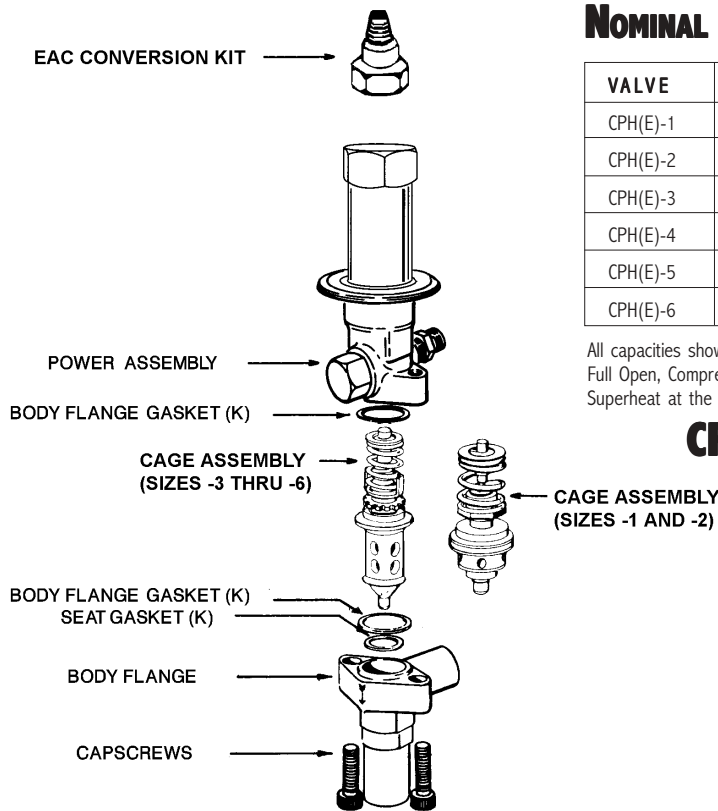
CPH	E	3	SAE EE	3/8 x 5/8	ODF	ANG
Valve Series	External Equalizer (omit on CPHE1 & 2 for internal equalizer)	Size	1/4" SAE male External Equalizer	Inlet Connection Size	Outlet Connection Size	Connection Type

NOMINAL CAPACITY TABLE IN TONS (kW)

VALVE	R-12	R-134a	R-22	R-407C	R-507/404A	R-502
CPH(E)-1	0.4 (1.4)	0.5 (1.7)	0.7 (2.5)	0.7 (2.5)	0.7 (2.4)	0.6 (2.2)
CPH(E)-2	0.7 (2.3)	0.8 (2.8)	1.2 (4.2)	1.2 (4.2)	1.2 (4.2)	1.0 (3.5)
CPH(E)-3	1.2 (4.2)	1.6 (5.6)	2.3 (8.0)	2.3 (8.0)	2.2 (7.6)	2.0 (6.9)
CPH(E)-4	3.0 (10.4)	3.8 (13.2)	5.5 (19.4)	5.5 (19.4)	5.3 (18.4)	4.8 (16.7)
CPH(E)-5	3.6 (12.5)	4.5 (15.6)	6.7 (23.2)	6.7 (23.2)	6.4 (22.2)	5.8 (20.1)
CPH(E)-6	4.6 (16.0)	5.8 (20.1)	8.5 (29.5)	8.5 (29.5)	8.2 (28.5)	7.4 (25.7)

All capacities shown are based on 40°F Evaporator Temperature, 100°F Condensing Temperature, Valve Full Open, Compressor Discharge Temperature is 50°F higher than Isentropic Compression and 25°F Superheat at the compressor inlet see extended capacity tables in Catalog 29.

CPH(E) REPLACEMENT PARTS AND EXPLODED VIEW



EAC CONVERSION KIT		
KIT	PART #	PCN
EAC CONVERSION	X10227-2	042475

Consists of gasket, 1/4 SAE fitting and seal cap.

POWER ASSEMBLY		
VALVE	PART #	PCN
CPH1, 2, 3	X7118-3	056515
CPH(E)1, 2, 3	X7118-4	026296
CPH(E)4, 5, 6	X7428-2	029055

Consists of power assembly and body flange gasket.

CAPSCREWS		
VALVE	PART #	PCN
CPH(E)1, 2	PS286	021057
CPH(E)3, 4	PS259	020829
CPH(E)5, 6	PS370	021064

CAGE ASSEMBLY		
VALVE	PART #	PCN
CPH(E)1	X22440-B5B	037043
CPH(E)2	X22440-B8B	037049
CPH(E)3	X11873-B5B	037190
CPH(E)4	X9117-B9B	029429
CPH(E)5	X9166-B10B	070738
CPH(E)6	X9144-B13B	021067

Consists of cage assembly and gaskets.

BODY FLANGE		
ANGLE STYLE	PART #	PCN
3/8 x 5/8 ODF	C501-5	065748
1/2 x 5/8 ODF	C501-7	065861
7/8 ODF x 1-1/8 ODM	10331	029411
7/8 ODF x 1-1/8 ODM	9153	029523
7/8 ODF x 1-1/8 ODM	9151	033290
1-1/8 x 1-1/8 ODM	9149	028030
STRAIGHT-THRU STYLE	PART #	PCN
3/8 x 5/8 ODF	9761-3	027771
1/2 x 5/8 ODF	9761-4	027268
7/8 ODF x 1-1/8 ODM	10332	032988
7/8 ODF x 1-1/8 ODM	9152	027918
7/8 ODF x 1-1/8 ODM	9150	028849
1-1/8 x 1-1/8 ODM	9148	029512

Consists of body flange.

EXTENDED HOT GAS BYPASS MULTIPLIER FACTOR TABLES

R12 TABLE OF MULTIPLIERS – FAHRENHEIT

COND. TEMP. °F	EVAPORATOR TEMPERATURE °F									
	50	40	30	20	10	0	-10	-20	-30	-40
80	0.952	0.927	0.905	0.884	0.862	0.840	0.816	0.793	0.770	0.747
100	1.071	1.000	0.977	0.953	0.928	0.904	0.879	0.854	0.827	0.802
120	1.235	1.205	1.175	1.143	1.110	1.079	1.044	1.012	0.977	0.946
140	1.439	1.399	1.359	1.318	1.277	1.236	1.192	1.151	1.107	1.065

R22 TABLE OF MULTIPLIERS – FAHRENHEIT

COND. TEMP. °F	EVAPORATOR TEMPERATURE °F									
	50	40	30	20	10	0	-10	-20	-30	-40
80	0.836	0.819	0.804	0.786	0.770	0.752	0.734	0.716	0.696	0.678
100	1.023	1.000	0.981	0.958	0.937	0.913	0.889	0.865	0.841	0.791
120	1.230	1.177	1.153	1.124	1.095	1.066	1.038	1.008	0.976	0.947
140	1.402	1.366	1.335	1.298	1.264	1.227	1.190	1.153	1.113	1.076

R134a TABLE OF MULTIPLIERS – FAHRENHEIT

COND. TEMP. °F	EVAPORATOR TEMPERATURE °F									
	50	40	30	20	10	0	-10	-20	-30	-40
80	0.810	0.792	0.775	0.756	0.737	0.719	0.699	0.679	0.659	0.639
100	1.027	1.000	0.987	0.956	0.931	0.906	0.880	0.854	0.827	0.800
120	1.231	1.198	1.166	1.132	1.098	1.062	1.026	0.991	0.954	0.917
140	1.440	1.396	1.353	1.307	1.263	1.217	1.170	1.122	1.074	1.026

R404A/507 TABLE OF MULTIPLIERS – FAHRENHEIT

COND. TEMP. °F	EVAPORATOR TEMPERATURE °F									
	50	40	30	20	10	0	-10	-20	-30	-40
80	0.905	0.872	0.863	0.824	0.816	0.790	0.767	0.728	0.703	0.677
100	1.045	1.000	0.989	0.943	0.929	0.896	0.864	0.813	0.780	0.745
120	1.170	1.111	1.092	1.026	1.010	0.966	0.926	0.856	0.812	0.768
140	1.165	1.073	1.053	0.971	0.949	0.896	0.841	0.754	0.699	0.643

HOT GAS BYPASS REGULATORS EXTENDED CAPACITIES

DGR(E) & EGR(E) VALVES FOR R134a in Tons

TOTAL TONS BYPASSED	COMPONENT TYPE	EVAPORATOR TEMPERATURE °F																
		40°	30°	20°	10°	0°	-10°	-20°	-30°	-40°								
1/2	BYPASS REGULATOR	EGRE6	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8	DGRE12	DGRE12							
	HOT GAS SOL. LIQ. INI. VALVE	200RB3 LCL1B	200RB3 LCL1B	200RB3 LCL1C	200RB3 LCL1C	200RB3 LCL1C	200RB3 LCL1C	200RB3 LCL1C	200RB3 LCL1C	200RB3 LCL1C	200RB3 LCL1C							
1	BYPASS REGULATOR	EGRE8	EGRE8	EGRE8	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	—							
	HOT GAS SOL. LIQ. INI. VALVE	200RB4 LCL1B	200RB4 LCL1B	200RB4 LCL1C	200RB4 LCL1C	200RB4 LCL1C	200RB4 LCL1C	200RB4 LCL1C	200RB4 LCL1C	200RB4 LCL1C	— —							
2	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>LCL 1B</td> <td>HFSC 1/2UL</td> <td>LCL 1C</td> <td>HFSC 1/2UL</td> </tr> <tr> <td>LCL 2B</td> <td>HFSC 1/1L</td> <td>LCL 2C</td> <td>HFSC 1/1L</td> </tr> </table> <p>* Refer to page 5 for "HFSC" make up instructions.</p>					LCL 1B	HFSC 1/2UL	LCL 1C	HFSC 1/2UL	LCL 2B	HFSC 1/1L	LCL 2C	HFSC 1/1L
	LCL 1B	HFSC 1/2UL	LCL 1C	HFSC 1/2UL														
LCL 2B	HFSC 1/1L	LCL 2C	HFSC 1/1L															
HOT GAS SOL. LIQ. INI. VALVE	200RB5 LCL2B	200RB5 LCL2B	200RB5 LCL2C	200RB5 LCL2C														
3	BYPASS REGULATOR	DGRE12	DGRE12	—	—	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>LCL 1B</td> <td>HFSC 1/2UL</td> <td>LCL 1C</td> <td>HFSC 1/2UL</td> </tr> <tr> <td>LCL 2B</td> <td>HFSC 1/1L</td> <td>LCL 2C</td> <td>HFSC 1/1L</td> </tr> </table> <p>* Refer to page 5 for "HFSC" make up instructions.</p>					LCL 1B	HFSC 1/2UL	LCL 1C	HFSC 1/2UL	LCL 2B	HFSC 1/1L	LCL 2C	HFSC 1/1L
	LCL 1B	HFSC 1/2UL	LCL 1C	HFSC 1/2UL														
LCL 2B	HFSC 1/1L	LCL 2C	HFSC 1/1L															
HOT GAS SOL. LIQ. INI. VALVE	200RB6 LCL2B	200RB6 LCL2B	— —	— —														

DGR(E) & EGR(E) VALVES FOR R22 in Tons

TOTAL TONS BYPASSED	COMPONENT TYPE	EVAPORATOR TEMPERATURE °F																										
		40°	30°	20°	10°	0°	-10°	-20°	-30°	-40°																		
1/2	BYPASS REGULATOR	EGRE4	EGRE4	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	EGRE8																	
	HOT GAS SOL. LIQ. INI. VALVE	100RB2 LCL1A	100RB2 LCL1A	100RB2 LCL1B	100RB2 LCL1B	100RB2 LCL1B	100RB2 LCL1B	100RB2 LCL1C	100RB2 LCL1C	100RB2 LCL1C	100RB2 LCL1C																	
1	BYPASS REGULATOR	EGRE4	EGRE6	EGRE6	EGRE6	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8																	
	HOT GAS SOL. LIQ. INI. VALVE	200RB3 LCL1A	200RB3 LCL1A	200RB3 LCL1B	200RB3 LCL1B	200RB3 LCL1B	200RB3 LCL1B	200RB3 LCL1C	200RB3 LCL1C	200RB3 LCL1C	200RB3 LCL1C																	
2	BYPASS REGULATOR	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8	DGRE12	DGRE12	DGRE12	DGRE12																	
	HOT GAS SOL. LIQ. INI. VALVE	200RB4 LCL1A	200RB4 LCL1A	200RB4 LCL1B	200RB4 LCL1B	200RB4 LCL1B	200RB4 LCL1B	200RB4 LCL1C	200RB4 LCL1C	200RB4 LCL1C	200RB4 LCL1C																	
3	BYPASS REGULATOR	EGRE8	EGRE8	EGRE8	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	—																	
	HOT GAS SOL. LIQ. INI. VALVE	200RB5 LCL1A	200RB5 LCL1A	200RB5 LCL1B	200RB5 LCL1B	200RB5 LCL1B	200RB5 LCL1B	200RB5 LCL2C	200RB5 LCL2C	200RB5 LCL2C	— —																	
4	BYPASS REGULATOR	EGRE8	EGRE8	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	—	—																	
	HOT GAS SOL. LIQ. INI. VALVE	200RB5 LCL2A	200RB5 LCL2A	200RB5 LCL2B	200RB5 LCL2B	200RB5 LCL2B	200RB5 LCL2B	200RB5 LCL2C	200RB5 LCL3C	— —	— —																	
5	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	—	—	—	—																	
	HOT GAS SOL. LIQ. INI. VALVE	200RB6 LCL2A	200RB6 LCL2A	200RB6 LCL2B	200RB6 LCL2B	200RB6 LCL2B	200RB6 LCL2B	200RB6 LCL2C	— —	— —	— —																	
6	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	—	—	—	—	—																	
	HOT GAS SOL. LIQ. INI. VALVE	200RB6 LCL2A	200RB6 LCL2A	200RB6 LCL2B	200RB6 LCL2B	200RB6 LCL2B	— —	— —	— —	— —	— —																	
7	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	—	—	—	—	—	—																	
	HOT GAS SOL. LIQ. INI. VALVE	240RA8 LCL2A	240RA8 LCL2A	240RA8 LCL2B	240RA8 LCL3B	— —	— —	— —	— —	— —	— —																	
8	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	—	—	—	—	—	—	—																	
	HOT GAS SOL. LIQ. INI. VALVE	240RA8 LCL3A	240RA8 LCL3A	240RA8 LCL3B	— —	— —	— —	— —	— —	— —	— —																	
9	BYPASS REGULATOR	DGRE12	DGRE12	—	—	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>LCL 1A</td> <td>HFSC 1/2UL</td> <td>LCL 1B</td> <td>HFSC 1/2UL</td> <td>LCL 1C</td> <td>HFSC 1/2UL</td> </tr> <tr> <td>LCL 2A</td> <td>HFSC 1/1L</td> <td>LCL 2B</td> <td>HFSC 1/1L</td> <td>LCL 2C</td> <td>HFSC 1/1L</td> </tr> <tr> <td>LCL 3A</td> <td>HFSC 2/1L</td> <td>LCL 3B</td> <td>HFSC 2/1L</td> <td>LCL 3C</td> <td>HFSC 2/1L</td> </tr> </table> <p>* Refer to page 5 for "HFSC" make up instructions.</p>					LCL 1A	HFSC 1/2UL	LCL 1B	HFSC 1/2UL	LCL 1C	HFSC 1/2UL	LCL 2A	HFSC 1/1L	LCL 2B	HFSC 1/1L	LCL 2C	HFSC 1/1L	LCL 3A	HFSC 2/1L	LCL 3B	HFSC 2/1L	LCL 3C	HFSC 2/1L
	LCL 1A	HFSC 1/2UL	LCL 1B	HFSC 1/2UL	LCL 1C						HFSC 1/2UL																	
LCL 2A	HFSC 1/1L	LCL 2B	HFSC 1/1L	LCL 2C	HFSC 1/1L																							
LCL 3A	HFSC 2/1L	LCL 3B	HFSC 2/1L	LCL 3C	HFSC 2/1L																							
HOT GAS SOL. LIQ. INI. VALVE	240RA8 LCL3A	240RA8 LCL3A	— —	— —																								
10	BYPASS REGULATOR	DGRE12	—	—	—	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>LCL 1A</td> <td>HFSC 1/2UL</td> <td>LCL 1B</td> <td>HFSC 1/2UL</td> <td>LCL 1C</td> <td>HFSC 1/2UL</td> </tr> <tr> <td>LCL 2A</td> <td>HFSC 1/1L</td> <td>LCL 2B</td> <td>HFSC 1/1L</td> <td>LCL 2C</td> <td>HFSC 1/1L</td> </tr> <tr> <td>LCL 3A</td> <td>HFSC 2/1L</td> <td>LCL 3B</td> <td>HFSC 2/1L</td> <td>LCL 3C</td> <td>HFSC 2/1L</td> </tr> </table> <p>* Refer to page 5 for "HFSC" make up instructions.</p>					LCL 1A	HFSC 1/2UL	LCL 1B	HFSC 1/2UL	LCL 1C	HFSC 1/2UL	LCL 2A	HFSC 1/1L	LCL 2B	HFSC 1/1L	LCL 2C	HFSC 1/1L	LCL 3A	HFSC 2/1L	LCL 3B	HFSC 2/1L	LCL 3C	HFSC 2/1L
	LCL 1A	HFSC 1/2UL	LCL 1B	HFSC 1/2UL	LCL 1C						HFSC 1/2UL																	
LCL 2A	HFSC 1/1L	LCL 2B	HFSC 1/1L	LCL 2C	HFSC 1/1L																							
LCL 3A	HFSC 2/1L	LCL 3B	HFSC 2/1L	LCL 3C	HFSC 2/1L																							
HOT GAS SOL. LIQ. INI. VALVE	240RA8 LCL3A	— —	— —	— —																								

HOT GAS BYPASS REGULATORS EXTENDED CAPACITIES

DGR(E) & EGR(E) VALVES FOR R12 IN TONS

TOTAL TONS BYPASSED	COMPONENT TYPE	EVAPORATOR TEMPERATURE °F																
		40°	30°	20°	10°	0°	-10°	-20°	-30°	-40°								
1/2	BYPASS REGULATOR	EGRE4	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	DGRE12	DGRE12							
	HOT GAS SOL.	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3							
	LIQ. INI. VALVE	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C							
1	BYPASS REGULATOR	EGRE6	EGRE6	EGRE6	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	—							
	HOT GAS SOL.	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	—							
	LIQ. INI. VALVE	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C	—							
2	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>LCL 1B</td> <td>HFSC 1/2GL</td> <td>LCL 1C</td> <td>HFSC 1/2UL</td> </tr> <tr> <td>LCL 2B</td> <td>HFSC 1GL</td> <td>LCL 2C</td> <td>HFSC 1UL</td> </tr> </table> <p>* Refer to page 5 for "HFSC" make up instructions.</p>					LCL 1B	HFSC 1/2GL	LCL 1C	HFSC 1/2UL	LCL 2B	HFSC 1GL	LCL 2C	HFSC 1UL
	LCL 1B	HFSC 1/2GL	LCL 1C	HFSC 1/2UL														
	LCL 2B	HFSC 1GL	LCL 2C	HFSC 1UL														
HOT GAS SOL.	200RB5	200RB5	200RB5	200RB5														
LIQ. INI. VALVE	LCL2B	LCL2B	LCL2C	LCL2C														
3	BYPASS REGULATOR	DGRE12	DGRE12	—	—	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>LCL 1B</td> <td>HFSC 1/2GL</td> <td>LCL 1C</td> <td>HFSC 1/2UL</td> </tr> <tr> <td>LCL 2B</td> <td>HFSC 1GL</td> <td>LCL 2C</td> <td>HFSC 1UL</td> </tr> </table> <p>* Refer to page 5 for "HFSC" make up instructions.</p>					LCL 1B	HFSC 1/2GL	LCL 1C	HFSC 1/2UL	LCL 2B	HFSC 1GL	LCL 2C	HFSC 1UL
	LCL 1B	HFSC 1/2GL	LCL 1C	HFSC 1/2UL														
	LCL 2B	HFSC 1GL	LCL 2C	HFSC 1UL														
HOT GAS SOL.	200RB6	200RB6	—	—														
LIQ. INI. VALVE	LCL2B	LCL2B	—	—														

DGR(E) & EGR(E) VALVES FOR R404A & R507 IN TONS

TOTAL TONS BYPASSED	COMPONENT TYPE	EVAPORATOR TEMPERATURE °F																									
		30°	20°	10°	0°	-10°	-20°	-30°	-40°																		
1/2	BYPASS REGULATOR	EGRE4	EGRE4	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	EGRE8																	
	HOT GAS SOL.	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2																	
	LIQ. INI. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C																	
1	BYPASS REGULATOR	EGRE4	EGRE6	EGRE6	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8																	
	HOT GAS SOL.	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3																	
	LIQ. INI. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C																	
2	BYPASS REGULATOR	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8	DGRE12	DGRE12	DGRE12	DGRE12																	
	HOT GAS SOL.	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4																	
	LIQ. INI. VALVE	LCL2A	LCL2A	LCL2B	LCL2B	LCL2B	LCL2B	LCL2C	LCL2C	LCL2C																	
3	BYPASS REGULATOR	EGRE8	EGRE8	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	—																	
	HOT GAS SOL.	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	—																	
	LIQ. INI. VALVE	LCL2A	LCL2A	LCL2B	LCL2B	LCL3B	LCL3B	LCL3C	LCL3C	—																	
4	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	—	—																	
	HOT GAS SOL.	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	—	—																	
	LIQ. INI. VALVE	LCL2A	LCL3A	LCL3B	LCL3B	LCL3B	LCL3B	LCL3C	—	—																	
5	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	—	—	—	—																	
	HOT GAS SOL.	200RB6	200RB6	200RB6	200RB6	200RB6	—	—	—	—																	
	LIQ. INI. VALVE	LCL3A	LCL3A	LCL3B	LCL3B	LCL3B	—	—	—	—																	
6	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	—	—	—	—	—																	
	HOT GAS SOL.	240RA8	240RA8	240RA8	240RA8	—	—	—	—	—																	
	LIQ. INI. VALVE	LCL3A	LCL3A	LCL3B	LCL4B	—	—	—	—	—																	
7	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	—	—	—	—	—	—																	
	HOT GAS SOL.	240RA8	240RA8	240RA8	—	—	—	—	—	—																	
	LIQ. INI. VALVE	LCL4A	LCL4A	LCL4B	—	—	—	—	—	—																	
8	BYPASS REGULATOR	DGRE12	DGRE12	—	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>LCL 1A</td> <td>HFSC 1/2GL</td> <td>LCL 1B</td> <td>HFSC 1/2GL</td> <td>LCL 1C</td> <td>HFSC 1/2UL</td> </tr> <tr> <td>LCL 2A</td> <td>HFSC 1GL</td> <td>LCL 2B</td> <td>HFSC 1GL</td> <td>LCL 2C</td> <td>HFSC 1UL</td> </tr> <tr> <td>LCL 3A</td> <td>HFSC 2GL</td> <td>LCL 3B</td> <td>HFSC 2GL</td> <td>LCL 3C</td> <td>HFSC 2UL</td> </tr> </table> <p>* Refer to page 5 for "HFSC" make up instructions.</p>					LCL 1A	HFSC 1/2GL	LCL 1B	HFSC 1/2GL	LCL 1C	HFSC 1/2UL	LCL 2A	HFSC 1GL	LCL 2B	HFSC 1GL	LCL 2C	HFSC 1UL	LCL 3A	HFSC 2GL	LCL 3B	HFSC 2GL	LCL 3C	HFSC 2UL
	LCL 1A	HFSC 1/2GL	LCL 1B	HFSC 1/2GL						LCL 1C	HFSC 1/2UL																
	LCL 2A	HFSC 1GL	LCL 2B	HFSC 1GL						LCL 2C	HFSC 1UL																
LCL 3A	HFSC 2GL	LCL 3B	HFSC 2GL	LCL 3C	HFSC 2UL																						
HOT GAS SOL.	240RA8	240RA8	—																								
LIQ. INI. VALVE	LCL4A	LCL4A	—																								
9	BYPASS REGULATOR	DGRE12	—	—	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>LCL 1A</td> <td>HFSC 1/2GL</td> <td>LCL 1B</td> <td>HFSC 1/2GL</td> <td>LCL 1C</td> <td>HFSC 1/2UL</td> </tr> <tr> <td>LCL 2A</td> <td>HFSC 1GL</td> <td>LCL 2B</td> <td>HFSC 1GL</td> <td>LCL 2C</td> <td>HFSC 1UL</td> </tr> <tr> <td>LCL 3A</td> <td>HFSC 2GL</td> <td>LCL 3B</td> <td>HFSC 2GL</td> <td>LCL 3C</td> <td>HFSC 2UL</td> </tr> </table> <p>* Refer to page 5 for "HFSC" make up instructions.</p>					LCL 1A	HFSC 1/2GL	LCL 1B	HFSC 1/2GL	LCL 1C	HFSC 1/2UL	LCL 2A	HFSC 1GL	LCL 2B	HFSC 1GL	LCL 2C	HFSC 1UL	LCL 3A	HFSC 2GL	LCL 3B	HFSC 2GL	LCL 3C	HFSC 2UL
	LCL 1A	HFSC 1/2GL	LCL 1B	HFSC 1/2GL						LCL 1C	HFSC 1/2UL																
	LCL 2A	HFSC 1GL	LCL 2B	HFSC 1GL						LCL 2C	HFSC 1UL																
LCL 3A	HFSC 2GL	LCL 3B	HFSC 2GL	LCL 3C	HFSC 2UL																						
HOT GAS SOL.	240RA9	—	—																								
LIQ. INI. VALVE	LCL4A	—	—																								

DGR(E) & EGR(E) VALVES FOR R407C IN TONS

TOTAL TONS BYPASSED	COMPONENT TYPE	EVAPORATOR TEMPERATURE °F									
		40°	30°	20°	10°	0°	-10°	-20°	-30°	-40°	
1/2	BYPASS REGULATOR	EGRE4	EGRE4	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	EGRE8
	HOT GAS SOL.	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2
	LIQ. INJ. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C	LCL1C
1	BYPASS REGULATOR	EGRE4	EGRE6	EGRE6	EGRE6	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8
	HOT GAS SOL.	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3
	LIQ. INJ. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C	LCL1C
2	BYPASS REGULATOR	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8	EGRE8	DGRE12	DGRE12	DGRE12	DGRE12
	HOT GAS SOL.	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4
	LIQ. INJ. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C	LCL1C
3	BYPASS REGULATOR	EGRE8	EGRE8	EGRE8	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	-
	HOT GAS SOL.	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	-
	LIQ. INJ. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL2C	LCL2C	LCL2C	LCL2C	-
4	BYPASS REGULATOR	EGRE8	EGRE8	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	-	-
	HOT GAS SOL.	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	-	-
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL2B	LCL2B	LCL2B	LCL2B	LCL2C	LCL3C	-	-
5	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	-	-	-	-
	HOT GAS SOL.	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	-	-	-	-
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL2B	LCL2B	LCL2B	LCL2C	-	-	-	-
6	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	-	-	-	-	-
	HOT GAS SOL.	200RB6	200RB6	200RB6	200RB6	200RB6	-	-	-	-	-
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL2B	LCL2B	LCL2B	-	-	-	-	-
7	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	-	-	-	-	-	-
	HOT GAS SOL.	240RA8	240RA8	240RA8	240RA8	-	-	-	-	-	-
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL2B	LCL3B	-	-	-	-	-	-
8	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	-	-	-	-	-	-	-
	HOT GAS SOL.	240RA8	240RA8	240RA8	-	-	-	-	-	-	-
	LIQ. INJ. VALVE	LCL3A	LCL3A	LCL3B	-	-	-	-	-	-	-
9	BYPASS REGULATOR	DGRE12	DGRE12	-	-	-	-	-	-	-	-
	HOT GAS SOL.	240RA8	240RA8	-	-	-	-	-	-	-	-
	LIQ. INJ. VALVE	LCL3A	LCL3A	-	-	-	-	-	-	-	-
10	BYPASS REGULATOR	DGRE12	-	-	-	-	-	-	-	-	-
	HOT GAS SOL.	240RA8	-	-	-	-	-	-	-	-	-
	LIQ. INJ. VALVE	LCL3A	-	-	-	-	-	-	-	-	-

LCL 1A	HFSC 12CL	LCL 1B	HFSC 12GL	LCL 1C	HFSC 12UL
LCL 2A	HFSC 1CL	LCL 2B	HFSC 1GL	LCL 2C	HFSC 1UL
LCL 3A	HFSC 2CL	LCL 3B	HFSC 2GL	LCL 3C	HFSC 2UL

* Refer to page 5 for "HFSC" make up instructions.

DGR(E) & EGR(E) VALVES FOR R502 IN TONS

TOTAL TONS BYPASSED	COMPONENT TYPE	EVAPORATOR TEMPERATURE °F									
		40°	30°	20°	10°	0°	-10°	-20°	-30°	-40°	
1/2	BYPASS REGULATOR	EGRE4	EGRE4	EGRE4	EGRE4	EGRE4	EGRE4	EGRE4	EGRE4	EGRE4	EGRE6
	HOT GAS SOL.	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2
	LIQ. INJ. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C	LCL1C
1	BYPASS REGULATOR	EGRE4	EGRE4	EGRE4	EGRE4	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6
	HOT GAS SOL.	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3
	LIQ. INJ. VALVE	LCL1A	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C
2	BYPASS REGULATOR	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	EGRE6	DGRE12	DGRE12	DGRE12	DGRE12
	HOT GAS SOL.	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL2B	LCL2B	LCL2B	LCL2B	LCL2B	LCL2C	LCL2C	LCL2C
3	BYPASS REGULATOR	EGRE6	EGRE6	EGRE6	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	-
	HOT GAS SOL.	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	-
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL2A	LCL2B	LCL2B	LCL3B	LCL3C	LCL3C	LCL3C	-
4	BYPASS REGULATOR	EGRE6	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	-	-
	HOT GAS SOL.	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	-	-
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL3A	LCL3B	LCL3B	LCL3B	LCL3B	LCL3C	-	-
5	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	-	-	-	-
	HOT GAS SOL.	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	-	-	-	-
	LIQ. INJ. VALVE	LCL3A	LCL3A	LCL3A	LCL3B	LCL3B	LCL3B	-	-	-	-
6	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	DGRE12	-	-	-	-	-
	HOT GAS SOL.	240RA8	240RA8	240RA8	240RA8	240RA8	-	-	-	-	-
	LIQ. INJ. VALVE	LCL3A	LCL3A	LCL3A	LCL3B	LCL4B	-	-	-	-	-
7	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	DGRE12	-	-	-	-	-	-
	HOT GAS SOL.	240RA8	240RA8	240RA8	240RA8	-	-	-	-	-	-
	LIQ. INJ. VALVE	LCL3A	LCL4A	LCL4A	LCL4B	-	-	-	-	-	-
8	BYPASS REGULATOR	DGRE12	DGRE12	DGRE12	-	-	-	-	-	-	-
	HOT GAS SOL.	240RA8	240RA8	240RA8	-	-	-	-	-	-	-
	LIQ. INJ. VALVE	LCL4A	LCL4A	LCL4A	-	-	-	-	-	-	-
9	BYPASS REGULATOR	DGRE12	DGRE12	-	-	-	-	-	-	-	-
	HOT GAS SOL.	240RA9	240RA9	-	-	-	-	-	-	-	-
	LIQ. INJ. VALVE	LCL4A	LCL4A	-	-	-	-	-	-	-	-
10	BYPASS REGULATOR	DGRE12	-	-	-	-	-	-	-	-	-
	HOT GAS SOL.	240RA9	-	-	-	-	-	-	-	-	-
	LIQ. INJ. VALVE	LCL4A	-	-	-	-	-	-	-	-	-

LCL 1A	HFSC 12CL	LCL 1B	HFSC 12GL	LCL 1C	HFSC 12UL
LCL 2A	HFSC 1CL	LCL 2B	HFSC 1GL	LCL 2C	HFSC 1UL
LCL 3A	HFSC 2CL	LCL 3B	HFSC 2GL	LCL 3C	HFSC 2UL
LCL 4A	HFSC 3CL	LCL 4B	HFSC 3GL	LCL 4C	HFSC 3UL

* Refer to page 5 for "HFSC" make up instructions.

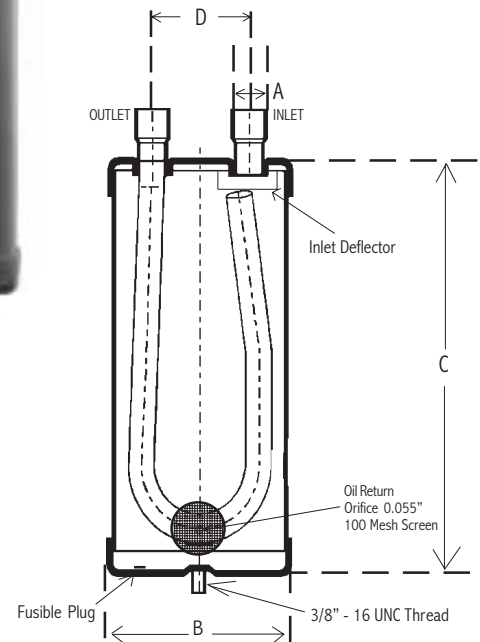
A-AS SUCTION ACCUMULATORS

FEATURES AND SPECIFICATIONS

- ⌚ Designed to operate in a range of +40°F to -40°F evaporator temperature
- ⌚ Fusible plug on 4" and larger diameter units
- ⌚ Solid copper fittings
- ⌚ Corrosion resistant epoxy powder paint finish
- ⌚ Inlet deflector that blends refrigerant flow to prevent internal splashing and aid in the collection of refrigerant oil in the bottom connection of the accumulator
- ⌚ Oil return orifice .055" and screen to prevent plugging
- ⌚ Maximum working pressure: (3-4" dia.) 575 psig
(5-6" dia.) 300 psig
- ⌚ Fusible Plug 430°F
- ⌚ UL file number: SA 7973
- ⌚ CSA file number: LR 100624
- ⌚ CRN file number Pending (see page A)



DIMENSIONAL DATA



NOMENCLATURE

A	AS	3	12	5
Alco	Accumulator Suction	Diameter (in inches)	Height (in inches)	Fitting Size in 1/8"
Above Example: A-AS 3 125				

ORDERING INFORMATION FOR A-AS

PCN	MODEL NUMBER	A FITTING SIZE NOMINAL	UNIT WEIGHT (LBS.)	B DIAMETER IN INCHES	C HEIGHT IN INCHES	D FITTING SEPARATION (IN.)	TONS R-22 (+40°F)	HOLDING CAPACITY (LBS.) 5 0% FULL		Cross Reference		
								40°F LIQUID R22/R134a	40°F LIQUID R404A/R507	AC & R	Refrigeration Research	Virginia
060819	A-AS 3 84 [†]	1/2	2.0	3	8	1.63	2	1.5	1.5		3680	VA-30-4S
060963	A-AS 3 105 [†]	5/8	2.4	3	10	1.63	3	2	2		3689	VA-31-5S
060812	A-AS 3 125 [†]	5/8	2.9	3	12	1.63	3	3	2.5		3685	VA-32-5S
060813	A-AS 3 126 [†]	3/4	2.9	3	12	1.63	4	3	2.5			VA-32-6S
060964	A-AS 3 145 [†]	5/8	3.3	3	15	1.63	3	3.5	3		3690	VA-35-5S
060965	A-AS 3 146 [†]	3/4	3.3	3	14	1.63	4	3.5	2.75		3691	VA-35-6S
060967	A-AS 4 64	1/2	2.8	4	6	2.5	2	2.5	2		3816	
060821	A-AS 4 65	5/8	2.8	4	6	2.5	3	2.5	2	S-7043	3701	
060966	A-AS 4 105	5/8	4.6	4	10	2.5	3	4	3.5	S-7045	3702	VA-44-5SRD
060820	A-AS 4 106	3/4	4.6	4	10	2.5	4	4	3.5	S-7046	3703	VA-44-6SRD
060824	A-AS 5 96	3/4	5.1	5	9	2.75	4	6	5.5		3731	VA-54-6SRD
060818	A-AS 5 97	7/8	5.1	5	9	2.75	7.3	6	5.5		3732	VA-54-7SRD
060822	A-AS 5 126	3/4	6.6	5	12	2.75	4	8	7.5		3733	VA-56-6SRD
060823	A-AS 5 127	7/8	6.6	5	12	2.75	7.3	8	7.5	S-7057	3738	
060814	A-AS 5 137	7/8	7.1	5	13	2.75	7.3	8.5	8		3738	VA-56-7SRD
060815	A-AS 5 139	1 1/8	7.1	5	13	2.75	11.8	8.5	8		3735	VA-57-9SRD
060817	A-AS 5 179	1 1/8	8.4	5	17	2.75	11.8	12	10		3736	VA-59-9SRD
060816	A-AS 5 1711	1 3/8	8.4	5	17	2.75	18.8	12	10		3737	VA-59-11SRD
060825	A-AS 6 117	7/8	10.0	6	11	2.94	7.3	10	9			
060826	A-AS 6 137	7/8	11.7	6	13	2.94	7.3	12	11		3827	VA-610-7SRD
060968	A-AS 6 139	1 1/8	11.7	6	13	2.94	11.8	12	11	S-7061		VA-610-9SRD
060827	A-AS 6 1411	1 3/8	12.1	6	14	2.94	18.8	15	12		3837	VA-611-11SRD
060969	A-AS 6 1713	1 5/8	15.4	6	17	2.94	28.5	16	15		3698	
060828	A-AS 6 2013	1 5/8	18.1	6	20	2.94	28.5	20	16			VA-616-13SRD
060970	A-AS 6 2513	1 5/8	22.6	6	25	2.94	28.5	25	20	S-7065	3704	

[†] Not supplied with a fusible plug

Note:

- 1) The minimum capacity in tons must be no less than 15% of the recommended capacity in order to ensure a positive return of oil.
- 2) All of the data is based on tons of refrigeration and is not related to horsepower.
- 3) **Minimum evaporator temperature of -40°F. Minimum temperature of the suction gas through the accumulator is 12°F.** For operation under conditions that are not within the recommended range, please contact Flow Controls' Applications Department before proceeding with the installation.

AVR LIQUID REFRIGERANT RECEIVERS

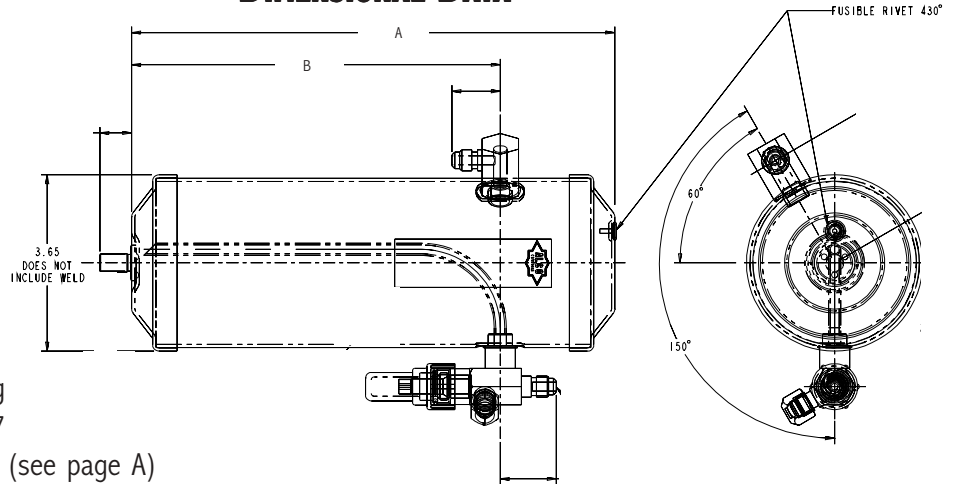
APPLICATION

- ❏ Liquid refrigerant receivers provide a reservoir for refrigerant during normal system operation

FEATURES AND SPECIFICATIONS

- ❏ Corrosion resistant epoxy powder paint finish
- ❏ Receivers should be sized to hold no more than 90% of the total charge at 90°F
- ❏ Maximum working pressure: 450 psig
- ❏ UL/CUL: SA 9447
- ❏ CRN file number: Pending (see page A)

DIMENSIONAL DATA



NOMENCLATURE

A	V	R	03	10	2	M	X	P
Alco	V = Vertical H = Horizontal	Receiver	Diameter (in inches)	Length (in inches)	Fitting size in 1/8" inches	M = SAE S = ODF	Service Valve	Fusible Plug
Above Example: AVR 03 10 2 MXP								

ORDERING INFORMATION

PCN	MODEL NUMBER	DIAMETER IN INCHES	A	B	CONNECTIONS		CROSS REFERENCE		PUMP DOWN CAPACITY (LBS.) 90% OF VOLUME AT 90°F	
					INLET	OUTLET	AC&R	REF. RES.	R22/R134a	R404A/R507
064521	AVR 03 10 2 MX	3	10	7.63	1/4 SAE	1/4 SAE	S-8060	5774	2	1.8
064522	AVR 03 10 2 SX	3	10	7.63	1/4 ODF	1/4 ODF	--	--	2	1.8
064523	AVR 05 10 2 MXP	5	10	6.75	1/4 SAE	1/4 SAE	S-8064	1918	6	5.4
064524	AVR 05 10 3 MXP	5	10	6.75	3/8 SAE	3/8 SAE	--	5315	6	5.4
064525	AVR 06 12 3 MXP	6	12	7.75	3/8 SAE	3/8 SAE	S-8065	1911	10	9.0
064526	AVR 06 18 4 MXP	6	18	14.50	1/2 SAE	1/2 SAE	--	3212	16	14.4
064527	AVR 35 10 2 MXP	3.50	10	7.63	1/4 SAE	1/4 SAE	S-8062	1917	3	2.7
064528	AVR 35 75 2 MXP	3.50	7.50	5.13	1/4 SAE	1/4 SAE	S-8061	1920	2	1/8

Emerson Climate Technologies Flow Controls manufactures a wide range of custom receivers for OEM use. Both horizontal and vertical custom receivers are available. Contact your District Sales Manager.

AOR OIL RESERVOIRS

APPLICATION

- ❏ The AOR Oil Reservoir is a holding vessel for stand-by oil necessary for the operation of commercial refrigeration systems
- ❏ Direct replacements of popular competitive models

ORDERING INFORMATION

PCN	Product Description	Total Capacity Gallons	A Capacity	B Capacity	Length in Inches	Cross Reference		Initial Required Oil Charge
						AC & R	R. R.	
064950	AOR-2	2	3/4	3/4	20"	S-9109	5014	1.25 Gallons
064951	AOR-4	4	3/4	3	38"	S-9108	5014-1	2.75 Gallons

FEATURES AND SPECIFICATIONS

- ❏ 2 sight glasses with floating ball indicators - 2 gallon model
- ❏ 3 sight glasses with floating ball indicators - 4 gallon model
- ❏ 3/8" flare rotolock valves on top and bottom
- ❏ Corrosion resistant epoxy powder paint finish
- ❏ Maximum working pressure: 500 psig
- ❏ UL/CUL file number: SA8547
- ❏ CRN file number: Pending (see page A)

W-OLC MECHANICAL OIL LEVEL REGULATORS

APPLICATION

- Controls the oil level in the compressor crankcase with a float operated valve to manufacturer's recommended level
- Direct replacement of popular competitive models

FEATURES AND SPECIFICATIONS

- Corrosion resistant epoxy powder paint finish
- 1/4 level sight glass (Carrier)
- 1/2 level sight glass (Copeland)
- Maximum Working Pressure: 450 psig
- MOPD: 90 psig
- UL file number: SA8547
- CRN file number: 0C0824.9 (see page A)

Initial oil charge 14 oz



ORDERING INFORMATION

PCN	Product Description	AC & R Cross Reference
064953	W-OLC-2 (1/2 Sight Glass)	S-9110
064954	W-OLC-4 (1/4 Sight Glass)	S-9210
065170	W-OLC-2-4-A (Adjustable)	S-9130

OMB ELECTRONIC OIL LEVEL CONTROL

APPLICATION

- Compressor crankcase oil level protective control
- Warranty requirement for Copeland ZF, ZB and ZS refrigeration scroll compressors

FEATURES AND SPECIFICATIONS

- Self contained unit with oil level sensor and integral solenoid to manage oil supply
- Sacrificial magnet for collecting ferrous debris
- Reverse Hall-effect sensor for precise measurement
- Alarm and status indication by LEDs
- SPDT contact for compressor shut down or alarming
- Easy installation by sightglass replacement
- Adapters suitable for most various Scroll types
- Signal generated by gravity based float - not prone to errors from foaming like optical sensors
- Debris retention magnet for reliable operation
- Maximum Working Pressure: 500psig
- Solenoid MOPD: 300 psi
- Supply Voltage: 24 V AC
- Time delay for Low Level: 10 seconds
- Time Delay After Recovery: 10 seconds
- Alarm Delay Time: 120 seconds
- Alarm Contact Rating: 10A @ 125VAC
- Refrigerant Compatibility: HFC, HCFC, CFC
(NOT for use with flammable refrigerants or ammonia)
- Refrigerant Temp.: 180°F Maximum
- UL file number: MP604
- CRN file number: OF0845.9 (see page A)



NOMENCLATURE

Example: OMB JB1S/T ASC2 24 50/60

OMB	JB	1	S/T	ASC2 24 50/60
Oil Management Control	JB - Junction Box MA - Stress Relief Connector	1 - Oil Control	Oil Inlet FTG 1/4" SAE S/T - Straight ANG - Angle	Solenoid Coil Model Number, Voltage, Frequency (Included)

ORDERING INFORMATION FOR OMB

PCN	DESCRIPTION
OMB	
065365	OMB-JB1 S/T ASC 2 24/50-60 - STD
065366	OMB-MO1 ANG ASC 2 24/50-60 - STD
ADAPTERS (TO ATTACH OMB TO COMPRESSOR FOR NEW INSTALLATIONS ONLY)	
065667	OMB-ACB ADAPTER (Copeland Scroll ZR) - KS30375
065668	OMB-ACA ADAPTER (Copeland Scroll ZF, ZS, ZB) - KS30370
063521	OMB-AUA ADAPTER (Semi Hermetic Universal)
SERVICE PARTS	
048638	Inlet Flare Screen - X11176-7
020877	Sight Glass O-Ring - KS30367
064812	O-Rings (3 pieces) - KS30368

NOTE: An adapter kit is required for new installations.

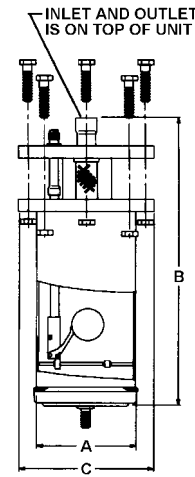
A-W & A-F OIL SEPARATORS

FEATURES AND SPECIFICATIONS

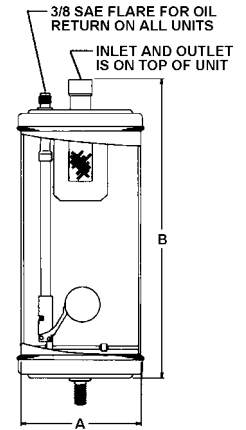
- ☑ Hermetic welded or accessible bolted flange construction
- ☑ Solid copper connections
- ☑ Corrosion resistant epoxy powder paint
- ☑ For use with CFC's, HCFCs, HFCs and their lubricants
- ☑ Maximum working pressure: 450 psig
- ☑ UL file number: 5168
- ☑ CSA file number: LR100624
- ☑ CRN file number: 0E0844.9 (see page A)



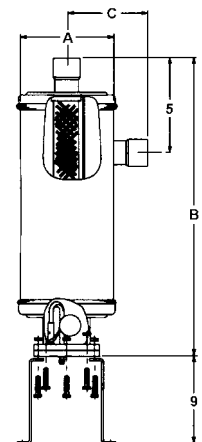
DIMENSIONAL DATA



STYLE NO. 3



STYLE NO. 1



STYLE NO. 2

NOMENCLATURE

Example: AW 5582 4

A	W	5582	4
Alco	W = Welded F = Flanged	Competitive Cross Reference	Connection Size (in 1/8")

MODEL NO.	STYLE NO.	CONNECTION SIZE	DIMENSIONS (inches)			Cross Reference		Initial Required Oil Charge (oz)
			A	B	C	AC & R	R.R.	
A-W 55824	1	1/2 ODF	4.00	10.75		S-5582	8408	11
A-W 55855	1	5/8 ODF	4.00	14.25		S-5585	8409	11
A-W 55877	1	7/8 ODF	4.00	17.25		S-5587		11
A-W 55889	1	1-1/8 ODF	4.00	21.00		S-5588		11
A-W 559011	1	1-3/8 ODF	4.00	21.25		S-5590		11
A-W 569011	1	1-3/8 ODF	6.00	15.75		S-5690	8413	17
A-W 569213	1	1-5/8 ODF	6.00	19.00		S-5692	8414	17
A-W 569417	1	2-1/8 ODF	6.00	19.50		S-5694	8415	17
A-F 58824	3	1/2 ODF	4.00	10.75	5.50	S-5882		11
A-F 58855	3	5/8 ODF	4.00	14.25	5.50	S-5885		11
A-F 58877	3	7/8 ODF	4.00	17.25	5.50	S-5887		11
A-F 58889	3	1-1/8 ODF	4.00	21.00	5.50	S-5888		11
A-F589011	3	1-3/8 ODF	4.00	21.25	5.50	S-5890		11
A-F 589213	3	1-3/8 ODF	4.00	21.63	5.50	S-5892		11
A-F 579213	2	1-5/8 ODF	6.00	20.25	4.25	S-5792		17
A-F 579417	2	2-1/8 ODF	6.00	20.31	4.50	S-5794		17
A-FC 6221313*	2	1-5/8 ODF	6.00	17.00	4.50	S-5292		17
A-FC 8241717*	2	2-1/8 ODF	8.00	19.00	5.38	S-5202		17

* high-efficiency centrifugal style

ORDERING INFORMATION AND CAPACITY TABLE

MODEL NO.				R12				R22/R407C				R502				R134a				R-404A/R-507			
FLANGED	PCN	SEALED	PCN	-40F/C		40F (14C)		-40F/C		40F (14C)		-40F/C		40F (14C)		-40F/C		40F (14C)		-40F/C		40F (14C)	
				Tons	kW	Tons	kW	Tons	kW	Tons	kW	Tons	kW	Tons	kW	Tons	kW	Tons	kW	Tons	kW	Tons	kW
A-F 58824	060877	A-W 55824	060933	1	3.54	1.5	5.31	1.5	5.31	2	7.08	1.5	5.31	2	7.08	1	3.54	1.75	6.2	1.5	5.31	2	7.0
A-F 58855	060878	A-W 55855	060934	3	10.62	4	14.2	4.5	15.9	5.5	19.5	4.75	16.8	5.75	20.36	3.25	11.5	4.5	15.9	4	14.16	5.5	19.0
A-F 58877	060879	A-W 55877	060931	4.5	15.93	5.5	19.5	7	24.8	8	28.3	7.5	26.6	8.5	30.09	4.75	16.8	6.5	23	6.5	23.01	8.5	30.0
A-F 58889	060759	A-W 55889	060974	6	21.24	7.5	26.6	9	31.9	11	37.2	9.5	33.6	11.5	40.71	6.5	23	8.5	30.1	8.5	30.09	11	38.0
A-F 589011	060760	A-W 559011	060930	7.5	26.55	10	35.4	11.5	40.7	14	47.8	12	42.5	14.5	51.33	8	28.3	11.5	40.7	10.5	37.17	14	49.0
A-F 589213	060761	A-W 559213	060975	9	31.86	11.5	40.7	14	49.6	18	62	16	56.6	17.5	61.95	9.5	33.6	13.25	46.9	14	49.56	17	60.0
A-F 579213	060875	A-W 569213	060979	11	38.94	14	49.6	16	56.6	18	63.7	20	70.8	24	84.96	11.8	41.6	16	56.6	17.5	61.95	23	81
A-F 579417	060876	A-W 569417	060980	17	60.18	22	77.9	25	88.5	30	106	30	106	35	123.9	18	63.7	25.25	89.4	26	92.04	34	121.0
A-FC6221313	065362	High efficiency		10	35	12	42	16	57	18	64	15.5	55	20	71	11	39	13	46	15	53	19	67
A-FC8241717	065276	High efficiency		20	71	25	88	35	124	39	138	32	113	42	148	22	78	27	95	31	110	41	145

AOFD 553 OIL FILTER-DRIER

AOFD is designed specifically for refrigerant systems that use POE oil. POE oil is hygroscopic in nature, which means that it attracts and absorbs water. Moisture in a closed system can produce acid and will harm the compressor. The AOFD protects compressors by removing moisture and trapping contaminants.

FEATURES

- ¶ Dual access fittings for determining pressure drop
- ¶ Designed to clean and dry POE Oil
- ¶ 3/8" male flare connections for easy replacement
- ¶ Large filter surface area to provide maximum filtration
- ¶ Contains 100% molecular sieve XH-9 Desiccant for moisture removal
- ¶ Designed to operate at a very low pressure drop
- ¶ 10 micron filtration for optimum oil cleaning
- ¶ CRN file number: OE0844.9 (see page A)



(Replaces AC&R S-4005)

ORDERING INFORMATION FOR AOFD FILTER-DRIER

PCN	DESCRIPTION
062829	AOFD 553 OIL FILTER DRIER

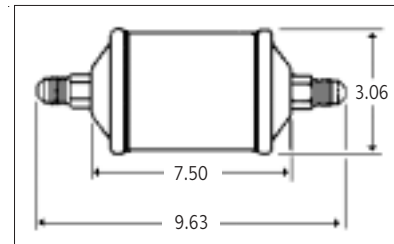
AOF High Efficiency Oil Filter

APPLICATION

- ¶ Specifically designed to protect the compressor from all solid contaminants including metallic magnetic particles

FEATURES AND SPECIFICATIONS

- ¶ Corrosion resistant epoxy powder paint finish
- ¶ 3/8" SAE connections for easy installation
- ¶ 98% efficient to 4 micron particles
- ¶ Compatible with all oils
- ¶ Maximum working pressure: 500 psig
- ¶ UL/CUL: SA 3124
- ¶ CRN file number: OE0844.9 (see page A)



ORDERING INFORMATION

PCN	DESCRIPTION
064952	AOF 303

AOF High Efficiency Take-Apart Oil Filter

APPLICATION

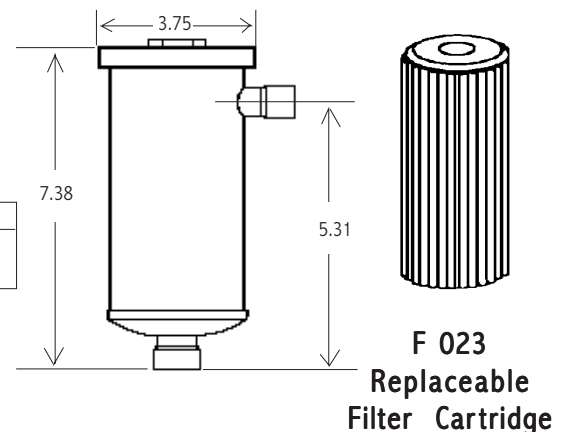
- ¶ Specifically designed to protect the compressor from dirt and all solid contaminants including metallic magnetic particles

FEATURES

- ¶ Compatible with all oils
- ¶ 3/8 ODF Solid copper fittings
- ¶ Quick change filter cartridge
- ¶ Corrosion resistant epoxy paint finish
- ¶ 98% efficient to 4 micron particles
- ¶ Maximum working pressure: 500 psig
- ¶ UL/CUL: SA7175
- ¶ CRN file number: OE0844.9 (see page A)

ORDERING INFORMATION

PCN	DESCRIPTION
062784	AOF 023S
064799	F023 Cartridge



F 023
Replaceable
Filter Cartridge

TS1 SERIES TEMPERATURE CONTROLS

The TS1 Series is a range of adjustable thermostats for application in refrigeration systems. In these systems, thermostats serve control and monitoring functions, such as space temperature, high/low temperature alarming or defrost termination. By operating a set of electrical contacts, a temperature value is maintained inside a set point.

FEATURES AND SPECIFICATIONS

- ☆ Adjustable temperatures and differentials
- ☆ Range and differential pointer units in °F and °C
- ☆ Range and differential individually lockable by wire seal
- ☆ Manual toggle for system checkout and override
- ☆ Bellows heater for thermostats with vapour charge
- ☆ Room thermostats with insulation console
- ☆ Standard accessories include mounting brackets and knob with lockplate on all individually packed controls
- ☆ Non-ambient sensitive
- ¶ Heavy-duty SPDT switch rated for 120VAC/240VAC at 24FLA and 144LRA
- ¶ Agency approvals include: UL/CUL file number E85974, VDE 0631/0660, TÜV, CE 73/23/EWG, CE 93/68/EWG
- ¶ CRN file number: OF0845.9 (see page A)



OPTIONS

- ☆ Housing variants for top and front adjustment, flush mount version also available
- ☆ Vapor, liquid and cross-ambient charges
- ☆ Sensor shapes for various applications
- ☆ Factory set to customer specification
- ☆ Different types of mounting brackets
- ☆ Sensor bulb wells and capillary tube holders

TF115 REPLACEMENT

NOMENCLATURE — EXAMPLE TS1 B1E

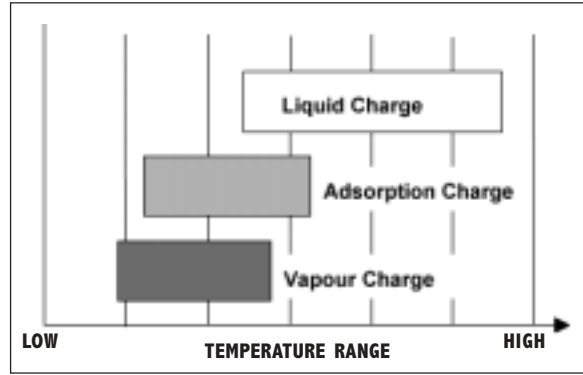
TS1	B	1	E
Product Name TS1 =Adjustable thermostat TSA =Customer specials	Housing Variant/function A = Wall mount design, top adjustment B = Wall mount design, top adjustment off-switch C = Frost monitor, auto reset D = Frost monitor, manual reset E = Wall mount design, front adjustment F = Wall mount design, front adjustment, off-switch G = Flush mount design, front adjustment H = Flush mount design, front adjustment, off-switch R = Wall mounting, top adjustment, manual reset X = Wall mount design, top adjustment, Y = Frost monitor, manual reset	Temperature Range 0 = +40 to +68°F (+4.5 to +20°C) 1 = -50 to +14°F (-45 to -10°C) 2* = -22 to +50°F (-30 to +10°C) -22 to +59°F (-30 to +15°C) 3* = +14 to +77°F (-10 to +25°C) +14 to +95°F (-10 to +35°C) 4* = -13 to +86°F (-25 to +30°C) -22 to +95°F (-30 to +35°C) 5* = +68 to +140°F (+20 to +60°C) +77 to +167°F (+25 to +75°C) 6 = +122 to +212°F (+50 to +100°C) 7 = +32 to +50°F (0 to +10°C) 8 = +194 to +284°F (+90 to +140°C) 9 = +266 to +356°F (+130 to +180°C) Temp ranges 0-4: manual reset for falling temperature Temp ranges 5-9: manual reset for rising temperature	Sensor Type A = Vapor Charge, 2 m. capillary C = Liquid Charge, 2 m. bulb E = Vapor Charge, 0 m. coil F = Adsorption Charge, 2 m. bulb P = Vapor Charge, 2 m. capillary for housing variant A/B/E/F/G/H/R. 6 m. capillary for housing variant C/D/X/Y.
* First line is range for controls with housing variant/function A, B, C, D, R, X or Y. Second temperature range applies to controls with housing variant/function E, F, G or H.			

REPLACES THE COMPETITION								
NEW MODEL	PCN	OLD MODEL	RANCO	PENN	WHITE-RODGERS	HONEYWELL	DANFOSS	SAGINOMIYA
TS1-X2A 21/30	4097457	TF115-S2-AA10	010-1408, 010-1409 010-1410, 010-104		1609-90	T4031A1008		
TS1-X4F 32/41	4097458	TF115-S4-AF10	060-100 F25-107	A19ABC-24 A19ZBC-2	1609-101, 1609-102 1609-103	T6031A1029		
TS1-X2E 36/40	4097467	TF115-S2-AE00	010-1418, 016-594 010-1072	A19BBC-2	201-20	T6054A		
TS1-X3E 64/68		TF115-S3-AE00	010-301, 016-165	A19BAB-3, A19BAC-1	201-8	T6054B		
TS1-X1A -4/0		TF115-S1-AA10	010-1433		1609-100			
TS1-B2A 21/30	4366800	TF115-H2-AA06	016-109				KP61 60L1103	
TS1-COP 36/40	4352100	TF115-S0-AP20						
TS1-DOP 36	4352200	TF115-S0-DP20						
TS1-X2P		TF115-S2-AP06	016-109				KP61 60L1100	BNS-C1030X
TS1-A4F 32/41	4351800	TF115-S4-AF06	016-109				KP71 60L1113, KP71 60L1115 KP73 60L1117, KP73 60L1118 KP73 60L1140, KP73 60L1143 KP75 60L1120, KP75 60L1137	TNS-C1010XC TNS-C1034XC

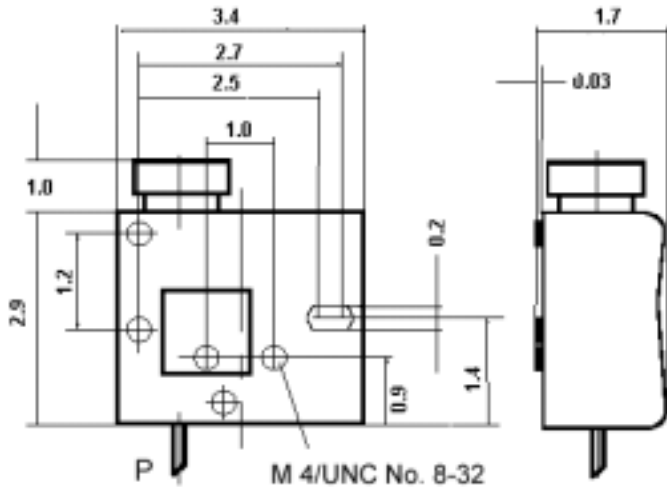
TEMPERATURE SENSING

TS1 thermostats sense temperature by means of a thermal system, consisting of temperature charge, bulb, capillary and bellows. The temperature charge changes its pressure based on the refrigerant temperature to be sensed. The sensor is the portion of the system which is in thermal contact with the refrigerant, the capillary connects the sensor with the bellows and the bellows contracts or expands depending on the pressure, causing the thermostat to operate the electrical contacts. An exception are capillary type of sensors, which do not have a bulb, instead, their capillary serves as the bulb directly. Charges and sensor types are matched to temperature ranges and other application specific characteristics.

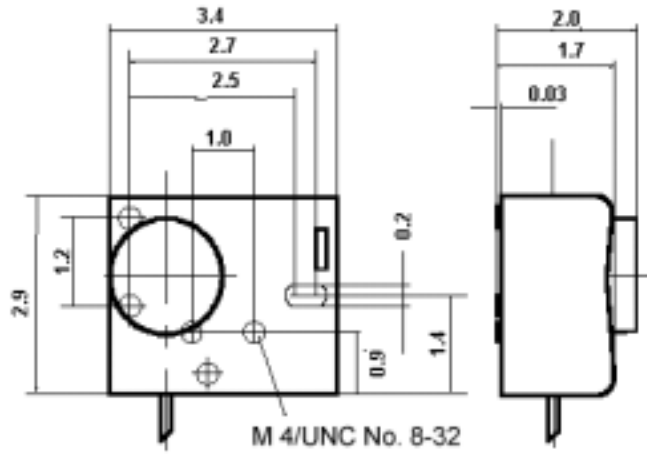
TS1 thermostats come with one of three charge types: vapor charges, adsorption charges or liquid charges. The application temperature range covered by each charge type is shown in the chart below.



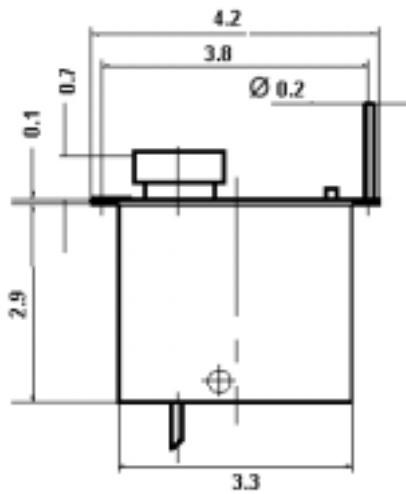
TS1 DIMENSIONAL DIAGRAMS



TS1-A/B/C/D/R/X/Y

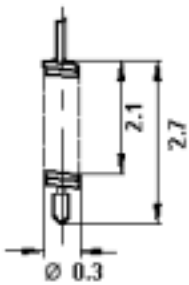


TS1-E/F

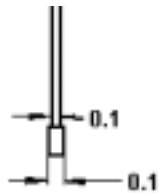


TS1-G/H

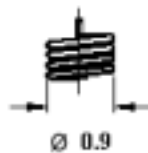
DIMENSIONS SHOWN ARE IN INCHES



Sensor type A
Vapour charge
2m (6.56 ft)



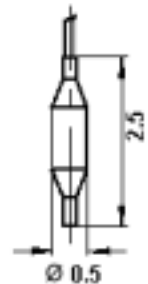
Sensor type P*
Vapour charge



Sensor type E
Vapour charge



Sensor type F
Adsorption charge
2m (6.56 ft)



Sensor type C
Liquid charge
2m (6.56 ft)

* 2 m. (6.56 ft) length with housing variant A/B/E/F/G/H/R
6 m. (19.68 ft) length with housing variant C/D/X/Y

PS1 SERIES SINGLE PRESSURE CONTROLS

PS1 Single Pressure Controls are designed for use on high and low pressure applications in refrigeration systems. By operating a set of electrical contacts, a pressure setpoint is maintained.

FEATURES AND SPECIFICATIONS

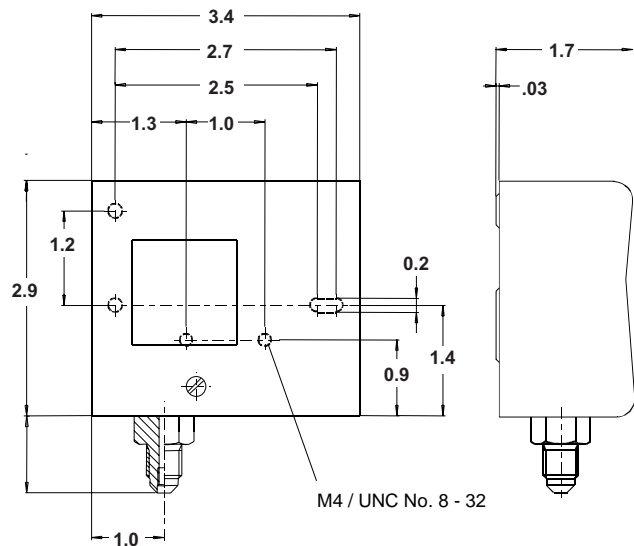
- ☆ Adjustable pressure and differential
- ☆ Narrow adjustable differential depending on model
- ☆ Range and differential pointer in units bar and psig
- ☆ Range and differential individually lockable by wire seal
- ☆ Manual toggle for system checkout and override
- ☆ Factory installed wire bridge for easier installation
- ⚡ SPDT switch rated for 120VAC/240VAC at 24FLA and 144LRA
- ⚡ Agency approvals include: UL/CUL file number E85974, VDE 0631/0660, TÜV, CE 73/23/EWG, CE 93/68/EWG
- ☆ Low pressure and high pressure versions available with TÜV approval according to EN 12263
- ☆ CRN file number: OF0845.9 (see page A)



FF115 REPLACEMENT

PS1 DIMENSIONAL DIAGRAM

DIMENSIONS SHOWN ARE IN INCHES.



NOMENCLATURE — EXAMPLE PS1-A5K

PS1	A	5	K
Product Name PS1 = Adjustable single Pressure Control PSA = Customer specials	Function A = Pressure control, automatic reset, internal range & differential adjustments B = Pressure cut out, external manual reset, DIN/TUV approved, internal range and differential adjustments ^{①,②} R = Pressure cut out, external manual reset, internal range and differential adjustments ^{①,②} S = Safety pressure cut out, internal manual reset, DIN/TUV approved, internal range & differential adjustments ^{①,②} U = Convertible from R to A W = Pressure control, automatic reset, DIN/TUV approved, internal range and differential adjustments X = Pressure control, automatic reset, external range and differential adjustments Y = Pressure cut out, external manual reset, external range and differential adjustments ^① Function types B, R, S in combination with Pressure Range 1 or 3 have a low pressure manual reset function. (15 psi differential) ^② Function types B, R, S in combination with Pressure Range 4 or 5 have a high pressure manual reset function. (60 psi diff.)	Pressure Range 1 = 24"Hg to 42 psi (-0.75 to 3 bar) 2 = 26"Hg to 21 psi (-0.8 to 1.5 bar) 3 = 15"Hg to 100 psi (-0.5 to 7 bar) 4 = 15 to 290 psi (1 to 20 bar) 5 = 90 to 450 psi (6 to 31 bar)	Pressure Connector Type A = 7/16"-20 UNF male for 1/4" SAE male flare C = R 1/4" stainless steel with steel bellows F = 1/4"-18 NPTF stainless steel with steel bellows K* = 7/16"-20 UNF flare nut with 1 meter (3 ft.) cap tube L = 1/4" ODF solder with 1 meter (3 ft.) cap tube R = R 1/4" U = 6 mm ODF solder, 80 mm tube length X = 1/4" ODF solder, 80 mm tube length * Controls with housing variant X/Y have extended copper ends, without schrader valve depressor. All other housing variants have schrader valve depressor and brass end fitting with copper gasket.

REPLACES THE COMPETITION							
NEW MODEL	PCN	OLD MODEL	COPELAND ①	RANCO	PENN	DANFOSS	SAGINOMIYA
PS1-X1K 7/15		FF115-S1-BAK	085-0098-21 985-CP1A-1K	010-1402 016-557	P70AB-12		
PS1-X4K 115/145		FF115-S4-BAK	085-0098-33	010-2000 016-593	P70AA-2		
PS1-X3K 50/65	4097451	FF115-S3-BAK	085-0098-00 985-CP1A-3K	010-1483, 011-3099 016-527	P70AB-12, P70AB-2 P70CA-2		
PS1-X5K 230/290	4097452	FF115-S5-BAK	085-0098-08 985-CP1A-5K	010-2054, 011-1711 016-108, 020-7006	P70AA-118 P70CA-3		
PS1-Y5K 230/290	4097553	FF115-S5-BRK		016-200	P70DA-1 P70KA-1		
PS1-X3A 50/65	4097459	FF115-S3-BAA	985-CP1A-3A	010-1401, 010-1831 011-1799, 016-106	P170AB-12 P170AB-2 016-107	KP1 60-1101	SNS-C106X
PS1-X5A 140/280	4097460	FF115-S5-BAA	985-CP1A-5A	010-1894, 011-1713 016-503, 016-570 016-106	P170AA-118, P170CA-3 P77AAA-9350 P77AAA-9370	KP5 60-1171	SNS-C130X, SNS-C135X
PS1-Y5A 330/390	4097462	FF115-S5-BRA		016-209, 016-106	P170DA-1, P77BEA-9350 P77BEA-9370	KP5 60-1173	
PS1-U5A 385			985-CP1U-5A				
PS1-U5K 385			985-CP1U-5K				

①The Flow control may be used with bracket (PCN 097221) to allow replacement of the Copeland control with the same mounting configuration.

PS2 SERIES DUAL PRESSURE CONTROLS

PS1 Single Pressure Controls are designed for use on high and low pressure applications in refrigeration systems. By operating a set of electrical contacts, a pressure setpoint is maintained.

FEATURES AND SPECIFICATIONS

- ☆ Adjustable pressures and differentials
- ☆ Narrow adjustable differential depending on model
- ☆ Range and differential pointer units in psig and bar
- ☆ Range and differential individually lockable by wire seal
- ☆ Manual toggle for system checkout and override
- ☆ Factory installed wire bridge for easier installation
- ¶ SPDT switch rated for 120VAC/240VAC at 24FLA and 144LRA
- ¶ Agency approvals include: UL/CUL file number E85974, VDE 0631/0660, TÜV, CE 73/23/EWG, CE 93/68/EWG
- ☆ Low pressure and high pressure versions available with TÜV approval according to DIN 32733 to meet requirements of DIN 8901 and DIN 8975
- ☆ CRN file number: OF0845.9 (see page A)



FF215 REPLACEMENT

REPLACES THE COMPETITION							
NEW MODEL	PCN	OLD MODEL	COPELAND ①	RANCO	PENN	DANFOSS	SAGINOMIYA
PS2-Y7K 50/65 230/290	4097454	FF215-S7-BAUK	085-0098-02, 085-7000-00 985-CP2M-7K	012-1549 012-4834	P70LB-1, P70LB-6 P70MA-1, P70MA-18		
PS2-Y9K 7/15 230/290		FF215-S9-BAUK	085-0098-22, 085-0098-23	012-1502, 012-1506 012-1554, 012-4833	P70LB-1, P70LB-6 P70MA-1, P70MA-18		
PS2-Y7A 50/65 230/290	4097463	FF215-S7-BAUA	985-CP2M-7A	012-1550	P170LB-1 P170MA-1		
PS2-A7A 50/65 230/290	4353400	FF215-S7-BAAA		017-108	P78LCA-9300 P78LCA-9320	KP15 60-1241 KP15 60-1265	DNS-D304X, DNS-D306X DNS-D604X, DNS-D606X DNS-D706X
PS2-X7K 50/65 230/290		FF215-S7-BAAK					
PS2-A7L 50/65 230/290	4713565	FF215-S7-BAAL					
PS2-L7A 50/65 290	4351100	FF215-S7-BARA		017-108	P78MCA-9300 P78MCA-9320	KP15 60-1243 KP15 60-1264	DNS-D304XM, DNS-D304XML DNS-D306XM, DNS-D306XML DNS-D604XM, DNS-D606XM DNS-D606XMM
PS2-L7L 50/65 290	4440800	FF215-S7-BARL					
PS2-Y7L 50/65 290		FF215-S7-BAUL					

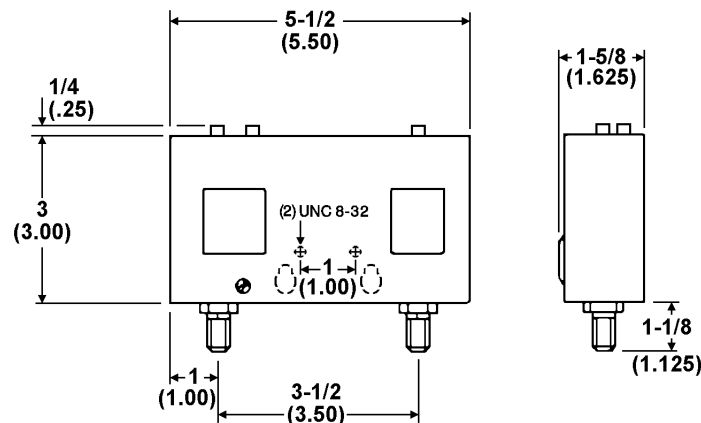
① The Flow Control may be used with bracket (PCN 097221) to allow replacement of the Copeland control with the same mounting configuration.

NOMENCLATURE — EXAMPLE PS2-G8A

PS2	G	8	A
<p>Product Name PS2 = Adjustable Dual Pressostat</p> <p>PSB = Customer special Version</p>	<p>Function</p> <p>A = Both sides: Pressure controls, Automatic reset, Internal range and differential adjustments.</p> <p>B = Both sides: Pressure cut out, External manual reset, DIN/TÜV approved, internal range and differential adjustments.</p> <p>C = Left side: Pressure control, Automatic reset, DIN/TÜV approved, Internal range and differential adjustments. Right side: Safety cut out, External manual reset, DIN/TÜV approved, Internal range & differential adjustments.</p> <p>G = Left side: Pressure control, Automatic reset, DIN/TÜV approved, Internal range and differential adjustments. Right Side: Safety limiter, internal manual reset, DIN/TÜV approved, Internal range & differential adjustments.</p> <p>L = Left side: Pressure control, Automatic reset, Internal range and differential adjustments. Right side: Pressure cut out, External manual reset, Internal range and differential adjustments.</p> <p>M = Left side: Pressure control, Automatic reset, Internal range and differential adjustments. Right side: Convertible reset from R to A, Internal range and differential adjustments.</p> <p>R = Both sides: Pressure cut out, External manual reset, Internal range and differential adjustments.</p> <p>S = Both sides: Pressure safety cut out, Internal manual reset, DIN/TÜV approved, Internal range and differential adjustments.</p> <p>T = Left side: Pressure control, Automatic reset, DIN/TÜV approved, Internal range and differential adjustments. Right Side: Safety limiter, internal manual reset, DIN/TÜV approved, Internal range & differential adjustments.</p> <p>U = Both sides: Convertible from R to A.</p> <p>W = Both sides: Pressure control, Automatic reset, TÜV approved, Internal range and differential adjustments.</p> <p>X = Both sides: Pressure controls, Automatic reset, External range and differential adjustments.</p> <p>Y = Left side: Pressure control, Automatic reset, External range and differential adjustments. Right side: Convertible from external manual reset to automatic reset, External range and differential adjustments.</p> <p>Z = Both sides: Convertible from External manual reset to automatic reset, External range and differential adjustments.</p> <p>LOW PRESSURE MANUAL RESET: Cut outs with manual reset function and in combination with the low pressure side of Pressure Ranges 7 & 9 have a low pressure manual reset function (15 psi differential).</p> <p>HIGH PRESSURE MANUAL RESET: Cut outs with manual reset function and in combination with the high pressure side of Pressure Ranges 7 & 9 have a high pressure manual reset function (60 psi differential).</p>	<p>Pressure Ranges</p> <p>7 = Left side: 15”Hg to 100 psi (-0.5 to 7 bar) Right side: 90 to 450 psi (6 to 31 bar)</p> <p>8 = Left side: 90 to 450 psi (6 to 31 bar) Right side: 90 to 450 psi (6 to 31 bar)</p> <p>9 = Left side: 24”Hg to 45 psi (-0.75 to 3 bar) Right side: 90 to 450 psi (6 to 31 bar)</p>	<p>Pressure Connector Type</p> <p>A = 7/16”-20 UNF male for 1/4” SAE flare fitting</p> <p>C = R 1/4” stainless steel with steel bellows</p> <p>F = 1/4”-18 NPTF stainless steel with steel bellows</p> <p>K* = 7/16”-20 UNF flare nut with 1 meter (3 ft.) cap tube</p> <p>L = 1/4” ODM solder with 1 meter (3 ft.) cap tube</p> <p>R = R 1/4”</p> <p>U = 6 mm ODF solder, 80 mm tube length</p> <p>X = 1/4” ODF solder, 80 mm tube length</p> <p>* Controls with housing variants X/Y/Z have extended copper ends, without schrader valve depressor. All other housing variants have schrader valve depressor and brass end fitting with copper gasket.</p>

PS2 DIMENSIONAL DIAGRAM

DIMENSIONS SHOWN ARE IN INCHES.

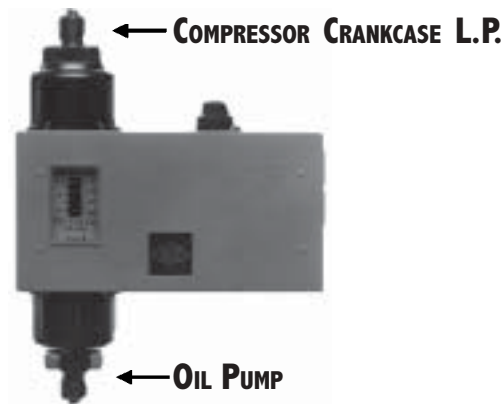


FD113-ZU(K) OIL PRESSURE SAFETY CONTROLS

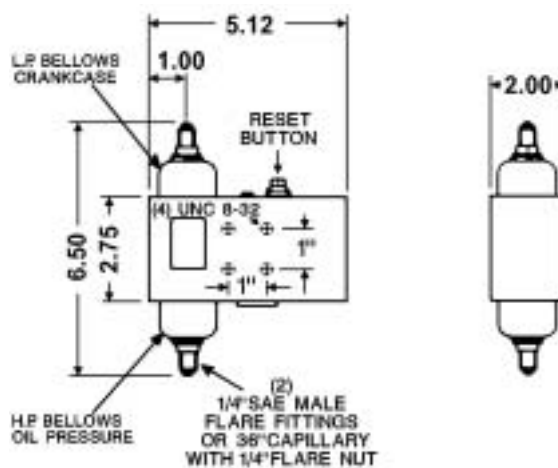
The FD113 Oil Pressure Safety Control senses the effective oil pressure on pressure lubricated compressors. If inadequate oil pressure exists, a (adjustable) time delay is energized. If the oil pressure does not recover to (adjusted) safe levels within the time delay setting, the compressor is shut down. The time delay allows the compressor adequate time to establish oil pressure on start up and avoids nuisance shutdowns on pressure drop of short duration during the run cycle. The minimum pressure setting and time delay values specified by the compressor manufacturer should be used when installing the FD113 control.

FEATURES AND SPECIFICATIONS

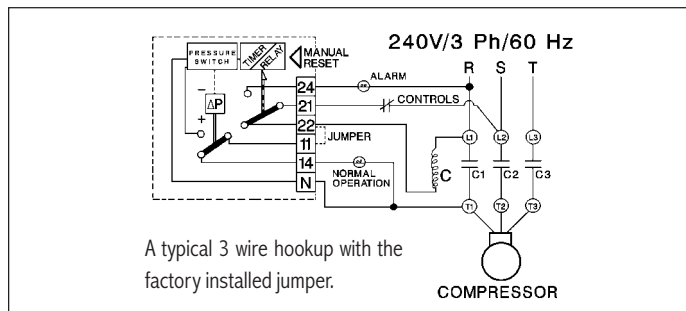
- Pressure Range adjustable from 4 to 65 PSID; Timer start pressure—timer stop pressure is 3 PSID above timer start pressure
- A SPDT switch is used in the pressure portion of the control which allows the addition of a “safe light” if desired
- Electronic Timer is Time-Adjustable from 20 to 150 seconds
Supply voltage—24 to 240 Volt AC/DC; Timing unaffected by voltage or ambient temperature variations
- A SPDT Manual Reset Switch is used in the Timer Module; Upon time-out, the compressor is stopped and an alarm circuit is energized.
- A factory installed Jumper allows single power source. Should separate circuits be desired for the timer and “Lockout” switch, the Jumper is removable
- Agency approvals include: UL/CUL file number E85974, VDE 0631/0660, TÜV, CE 73/23/EWG, CE 93/68/EWG
- CRN file number: OF0845.9 (see page A)



FD113 DIMENSIONAL DATA



DIMENSIONS SHOWN ARE IN INCHES.



ORDERING INFORMATION FOR FD113-ZU(K) OIL PRESSURE SAFETY CONTROLS

PCN	FLOW Part Number	Adjustable Pressure Range	Adjustable Time Delay	Supply Voltage	Pressure Connection	REPLACES		
						Penn	Copeland	Ranco
097456	FD113-ZUK	4-65 PSID	20 to 150 seconds	24 to 240V AC/DC	(2) 36" capillary with 1/4" flare nut	P45NCA-12 P45NCA-82 P28AA-1,-2 P28AA-17,-18 P28DA-1 P28GA-2 P28NA-5	085-0062-00	P30-5826 P30-3601 P30-3701 P30-3801
097464	FD113-ZU		Factory-set at 120 seconds		(2) 1/4" male flare ¹	P128AA-1,-2,-3 P145NCA-12,-82 P145NCB-12,-82		P30-5827

¹ For applications where the condensing unit/control is exposed to temperatures below 20°F, 1/4" lines are recommended.

FD113-ZU-S PRESSURE DROP ALARM CONTROL

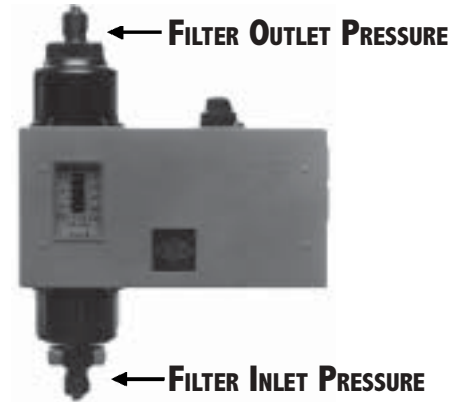
The FD113 Alarm Control senses the differential pressure, if the pressure drop exceeds the setpoint value, the timer is energized. If the pressure drop does not decrease 4 PSI below the setpoint during the time delay period, the manual reset timer relay trips and the alarm circuit is energized.

TYPICAL PRESSURE DROP MONITORING APPLICATIONS

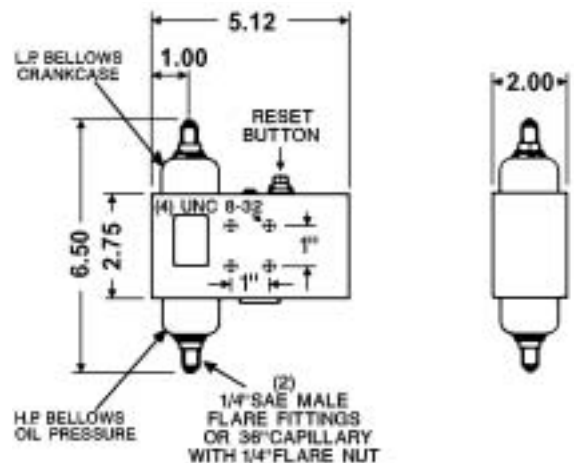
- ☞ Liquid Line Filters/Driers
- ☞ Suction Line Filters
- ☞ Oil Line Filters

FEATURES AND SPECIFICATIONS

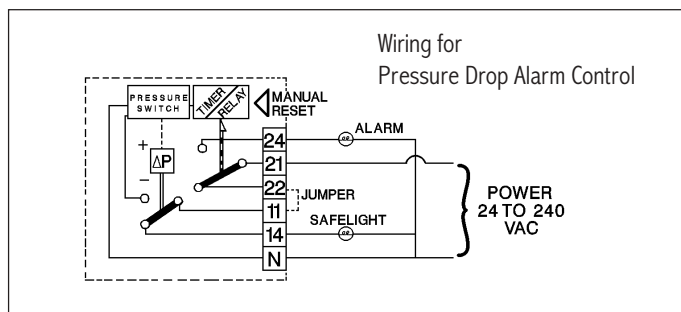
- ☞ Wide Adjustable Pressure Range: 4 to 60 PSID
- ☞ Narrow Cut-in/Cut-out Differential set at 4 PSI
- ☞ Wide reference pressure capabilities 10" Hg to 300 PSIG with minimum change in setpoint or differential settings
- ☞ Electronic Time Delay—Manual Reset
 - Adjustable from 20 to 150 seconds
 - Supply voltage—24 to 240 VAC
 - Timing unaffected by voltage or ambient variations
- ☞ Prevents nuisance alarms from temporary surges in pressure changes during start-up
- ☞ Output: SPDT Isolated Manual Reset Relay—times out on an increase of pressure differential above setpoint.
- ☞ Rating: 360 VA Max. 120/240 VAC.
- ☞ Ambient Temperature Range
 - Operating -10°F to +120°F.
- ☞ Agency approvals include: UL/CUL file number E85974, VDE 0631/0660, TÜV, CE 73/23/EWG, CE 93/68/EWG
- ☞ CRN file number: OF0845.9 (see page A)



FD113 DIMENSIONAL DATA



DIMENSIONS SHOWN ARE IN INCHES.



ORDERING INFORMATION FOR FD113-ZU-S PRESSURE DROP ALARM CONTROLS

PCN	FLOW Part Number	Adjustable Pressure Range	Adjustable Time Delay	Supply Voltage	Pressure Connection	APPLICATION
097040	FD113-ZU-S	4-65 psid factory set at 50 psid	20 to 150 seconds	24 to 240V AC/DC	(2) 1/4" male flare fittings	Oil filter pressure drop alarm on HVAC chiller
097202	FD113-ZU-S	4-65 psid factory set at 25 psid	factory set at 120 sec.			

PS3 MINI-PRESSURE CONTROLS

TYPICAL APPLICATIONS

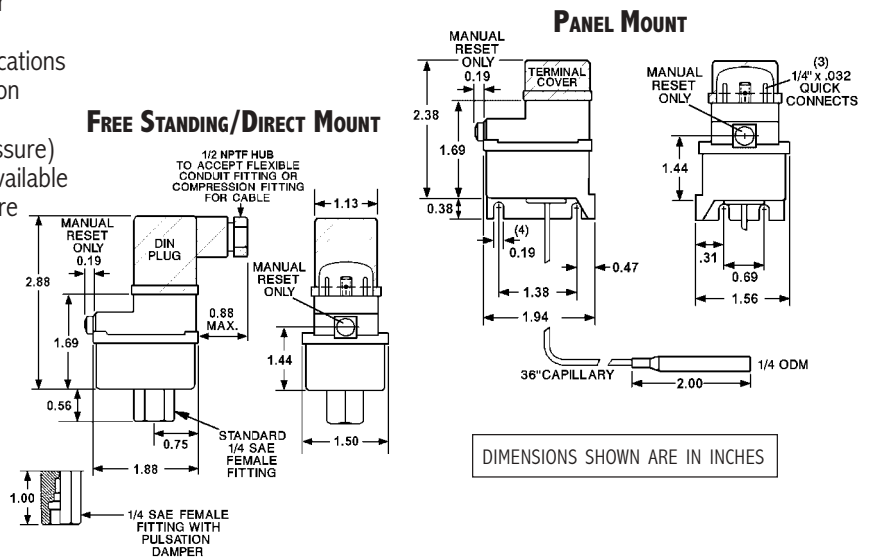
- 1 High Pressure Limit/Alarm
- 1 Condenser Fan Cycling
- 1 Low Pressure Limit/Alarm
- 1 Low Pressure Cycling (Back-Up)
- 1 Defrost Termination/Fan Delay
- 1 Rupture Guard (Charge Loss) Alarm

FEATURES AND SPECIFICATIONS

- 1 Standard SPDT Switch Action
- 1 Automatic or Manual Reset
- 1 Compatible with CFC, HCFC and HFC refrigerants
- 1 Models available with high temperature double diaphragms and built-in high pressure pulsation snubber
- 1 Plug Connectable with hub for 1/2" flexible conduit or Compression Fitting for cable
- 1 Factory preset to customer's desired pressure specifications
- 1 Selected Models Field "Trimable" to match application pressure requirements
- 1 Narrow differential "Micro" switch available (low pressure)
- 1 Panel Mount configurations with fitting or capillary available
- 1 Terminal Covers available for protecting individual wire connections when 1/4" QC's used on Panel Mount
- 1 Ambient Temperature
 - Storage: -30° to +160°F
 - Operating: -20° to +140°
- 1 Worldwide Approvals: UL/CUL/VDE/TUV
- 1 UL file number: E85974
- 1 CRN file number: OF0845.9 (see page A)



PS3 DIMENSIONAL DATA



NOMENCLATURE — EXAMPLE PS3-AF1HNB

PS3	A	F	1	H	N	B
Product Name	Function	Mounting	Pressure Range	Electrical Connection	Contact Type	Pressure Connection
A	Automatic Reset, High Pressure with Single Bronze Diaphragm Material	F Free Standing	1 15" Hg to 90 psig (-0.6 to 6 bar)	H Spade for DIN connector	N Standard	S 1/4" SAE Female (7/16"-20 UNF) with Schrader valve depressor
W	Automatic Reset, High Pressure with safety cut-out with Double Bronze Diaphragm Material, DIN/TUV approved	P Panel Mount design with mounting flange	3 2 to 230 psig (0.1 to 16 bar)	T 1/4" x .032" Spade connections	M MicroSwitch	A 1/4" SAE Male (7/16"-20 UNF)
X	Automatic Reset, High Pressure with Double Nickel Beryllium Diaphragm Material (High Temp), DIN/TUV approved		5 100 to 465 psig (6 to 32 bar)		G Gold plated contacts	B 1/4" SAE Female (7/16"-20 UNF) with Snubber orifice and Schrader valve depressor for High Temp/Pressure Application
B	Manual Reset, High Pressure Safety Limiter with Double Bronze Diaphragm Material, DIN/TUV approved				O Standard switch with Gold plated contacts	L 1/4" ODM Solder with 36" capillary tube
C	Manual Reset, High Pressure Safety Limiter with Double Nickel Beryllium Diaphragm Material (High Temp), DIN/TUV approved					K 1/4" SAE Female Flare Nut (7/16"-20 UNF) with 36" capillary tube
D	Manual Reset, Low Pressure with Single Bronze Diaphragm Material					
R	Manual Reset, High Pressure with Single Bronze Diaphragm Material					
S	Manual Reset (only with special reset tool), High Pressure Safety Limiter with Double Bronze Diaphragm Material, DIN/TUV approved					
T	Manual Reset (only with special reset tool), High Pressure Safety Limiter with Double Nickel Beryllium Diaphragm Material (High Temp), DIN/TUV approved					

ELECTRICAL SPECIFICATIONS

Electrical Ratings—SPDT Switch

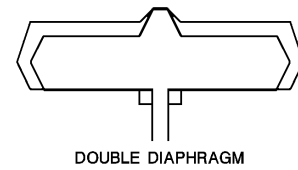
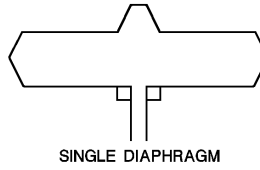
¶ Standard Switch – High/Low Pressure

- Load Contact
6 FLA – 36 LRA – 120/240 VAC
- Back Contact
0.5 Amp 120/240 VAC Pilot Duty

¶ Micro Switch – Low Pressure

- 2.5 FLA – 15 LRA – 120/240 VAC
- Back Contact
0.5 Amp 120/240 VAC Pilot Duty

CONSTRUCTION



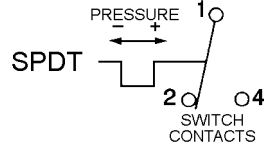
¶ Low Pressure
• Single Diaphragm
Maximum Media Temp. 150°F.

¶ High Pressure
• Double Diaphragm
Maximum Media Temp. 300°F.
Internal Pressure Pulsation Snubber available for direct head mount.

SWITCH ACTION

¶ SPDT Standard

- 1–2 Open on Rise
Close on Fall
- 1–4 Close on Rise
Open on Fall



PS3 PARTS/ACCESSORIES

PS3 CONNECTOR AND CABLE ASSEMBLY WITH 1/2 NPTF HUB
PCN #097049

PS3 ADJUSTMENT KIT 1/4" flare gasket, calibration plug and
5/64" allen wrench PCN #097865

PS3 SIDE ENTRY TERMINAL COVER PCN #097443

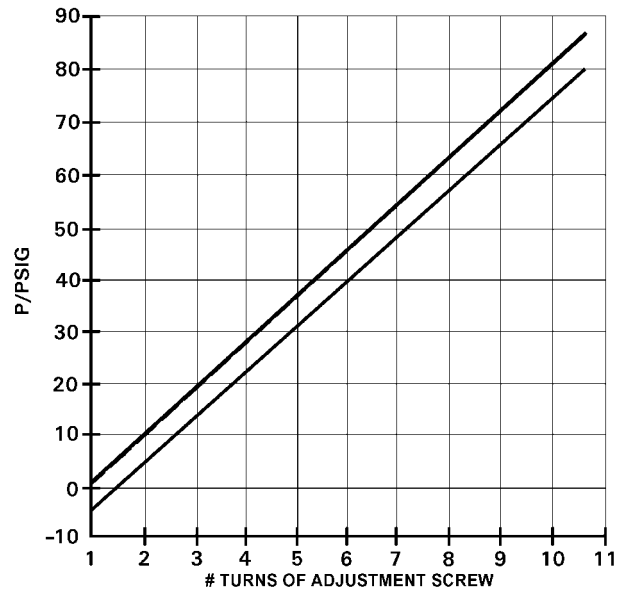
PS3 SETTING CAPABILITIES

The PS3 is factory preset. The selection table on page 369 lists setting specifications for standard PS3 models.

For special applications, these controls can be factory preset to other values as illustrated on the appropriate graphs.

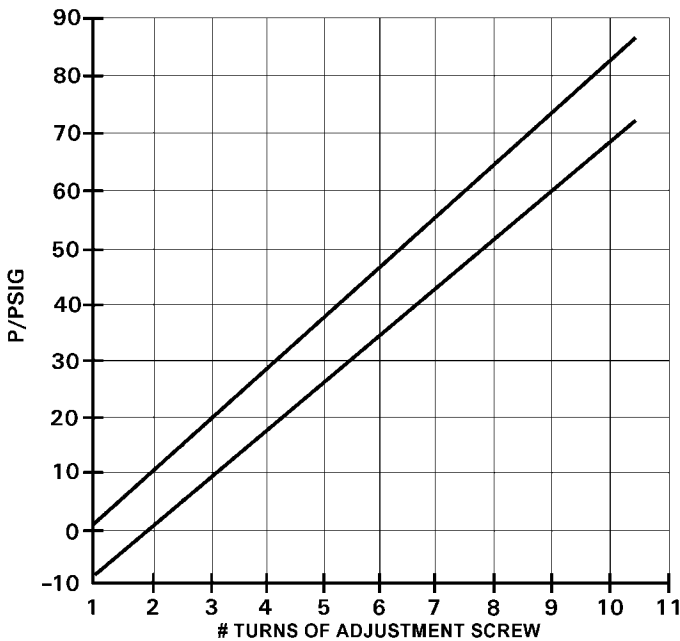
MICRO-SWITCH SETTING CAPABILITY

PRESSURE RANGE = 1



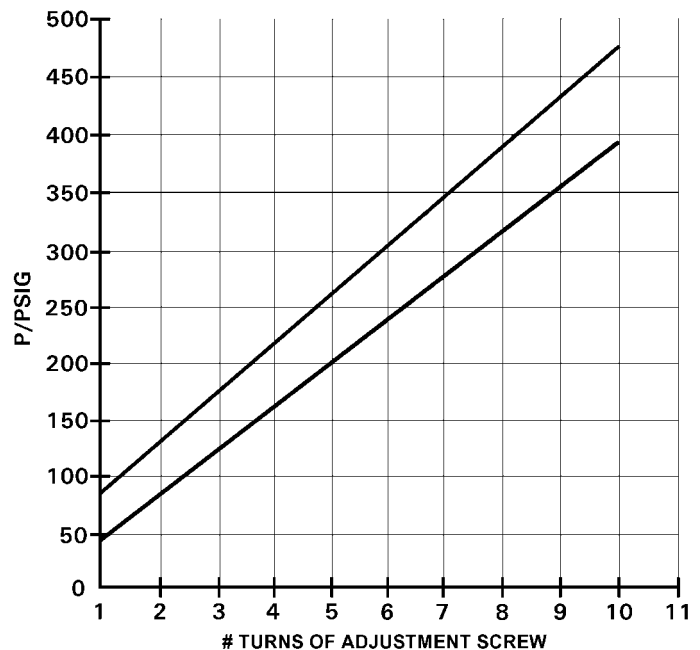
STANDARD SWITCH SETTING CAPABILITY

PRESSURE RANGE = 1



STANDARD SWITCH SETTING CAPABILITY

PRESSURE RANGE = 5



FS ELECTRONIC FAN SPEED CONTROL

FEATURES AND SPECIFICATIONS

- ¶ EMC-Filter included in connector with 1.5 m. cable **ordered separately**
- ¶ FSF Connector turnable (in 90° steps)
- ¶ Direct mount—Easily retrofit to suitable motor
- ¶ Adjustable Pressure Setting
- ¶ Multiple FS controls can be used in parallel
- ¶ Nominal current:
 - 0.2 to 4 Amp max up to 104°F (40°C)
 - 0.2 to 2.5 Amp max up to 140°F (60°C)
- Starting current: max. 8 Amp
- ¶ Temperature Range
 - Storage and transportation: -30°C to 70°C
 - Ambient temp: -20°C to 55°C
 - Medium temperature: -20°C to 70°C
- ¶ Supply Voltage: 230V AC + 15-20%. (50-60 Hz)
- ¶ Protection: Provide an ultimate enclosure to protect from direct rain, sunlight and external damage.
- ¶ Weight: 3-1/2 ounces
- ¶ Approvals: UL/CUL file number E183816
CE Low Voltage Directive 72/23/EC
Connector per DIN 43650
- ☆ CRN file number: OF0845.9 (see page A)



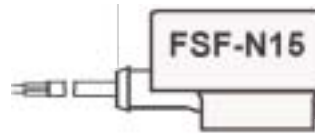
FSX / FSM Controller incl. Filter Cable Assembly FSF-Nxx

OPTIONS

- ¶ Custom Calibration
- ¶ Choice of 4 Possible Pressure Connection Types
- ¶ Other Operating Voltages/Pressure Ranges

PARTS AND ACCESSORIES

Multi-Position Plug FSF-N15



PCN 804640



FLOW PCN	NEW MODEL	OLD MODEL	ADJUSTABLE PRESSURE RANGE	MODULATING BAND
0715482	FSX-41S	FV-31-S2-15-S	58 to 180 psig	35 psig
0715480	FSX-42S	FV-31-S2-25-S	130 to 305 psig	55 psig
0715491	FSX-43S	n/a	180 to 410 psig	66 psig

NOMENCLATURE — EXAMPLE FSX-41S

FS	X	4	1			S
Fan Speed Control	X = Cut-off mode M = Minimum speed mode	Max. Current Rating 4 = 4 Amps maximum at 104°F ambient temperature	Pressure Range			Pressure Connection
			Pressure Range	Modulating Band	Factory Setting*	S = 1/4" SAE female (7/16"-20 UNF) with Schrader Depressor
			1 = 4 to 12.5 bar (58 to 180 psig)	35 psig	8 bar (118 psig)	A = 1/4" SAE male (7/16"-20 UNF)
			2 = 9.2 to 21.2 bar (130 to 305 psig)	55 psig	15 bar (215 psig)	K = 1/4" SAE female (7/16"-20 UNF) flare nut with Schrader Depressor and 1 meter capillary tube.
			3 = 12.4 to 28.4 bar (180 to 410 psig)	66 psig	21.8 bar (316 psig)	L = 1/4" ODM Solder Connection and 1 meter capillary tube
					U = Solder tube 6 mm	
					X = Solder tube 1/4"	

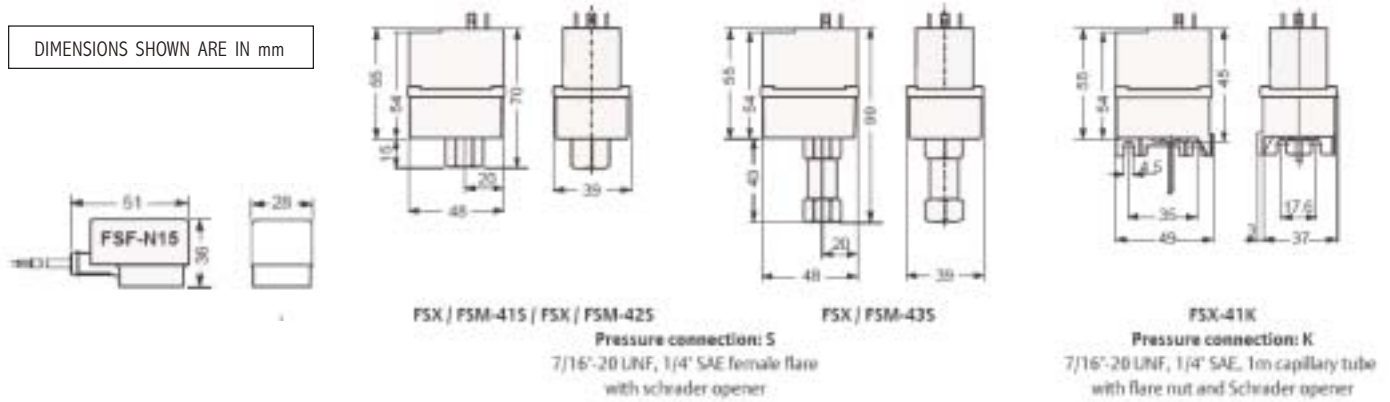
* Factory setting is the calibration pressure at which the motor is at maximum speed.

Ordering instructions

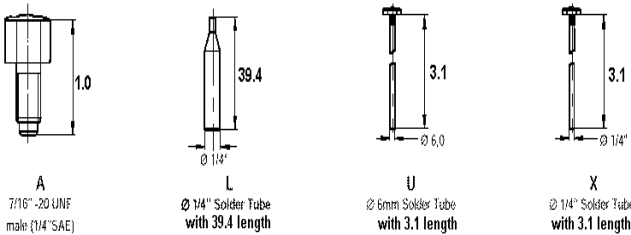
Example: FSX-42S Single package, allen key Order PCN 0715480
FSF-N15 Cable assembly Order PCN 804640

FS DIMENSIONAL DIAGRAMS

DIMENSIONS SHOWN ARE IN mm



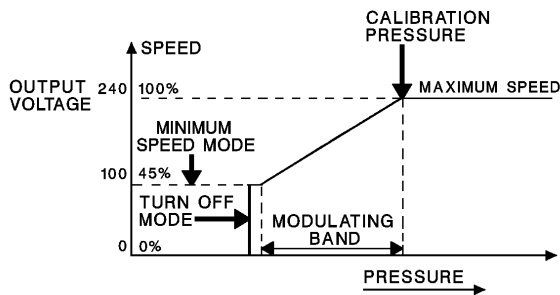
PRESSURE CONNECTIONS



WIRING with 3-Phase Motors.

Several **3-phase fan motors** (220-240D/380-420U/3/50) can be speed controlled with the **1-phase FSX** by using a capacitor between 2 of the 3 phases. This wiring has an impact on the performance of the fan motor. Therefore please contact the motor manufacturer to verify this possibility. The run capacitor should be sized per motor manufacturers recommendation. Information for capacity sizing can be found in published literature.

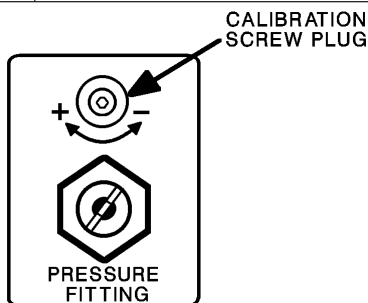
OPERATING MODE GRAPHICAL DESCRIPTION



SETPOINT ADJUSTMENT (CALIBRATION)

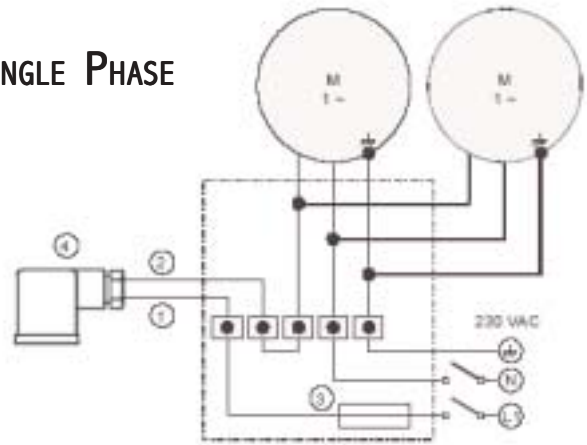
From the Pressure Fitting End of the control, remove the calibration screw plug exposing the allen head calibration screw.
With Allen wrench, rotate calibration screw: **CLOCKWISE** to increase pressure **COUNTERCLOCKWISE** to decrease pressure.
1 full turn equals approximately the following PSIG change in the pressure setting (see table below).
After changing pressure setting, the actual operating pressure range should be verified with a gauge and the calibration plug replaced.

CONTROL TYPE	OPERATING PRESSURE RANGE	1 TURN EQUALS
FSO/FSF-41x	95 to 220 PSIG	20 PSI
FSO/FSF-42x	190 to 360 PSIG	36 PSI
FSX/FSM-43x	180 to 410 PSIG	48 PSI

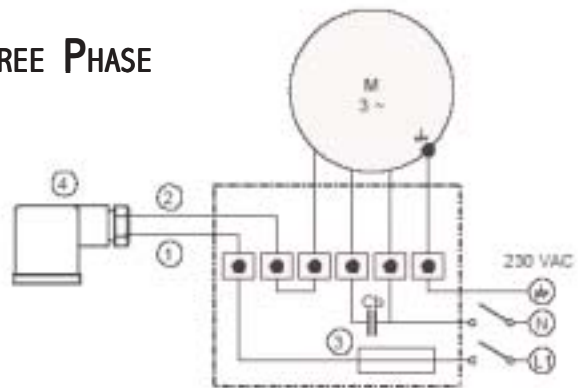


Electrical Connection

SINGLE PHASE



THREE PHASE



- ① Wire color blue, from L1 power line
- ② Wire color brown, output to motor
- ③ Fuse 4A

EC1 ELECTRONIC CONTROLLER

FEATURES AND SPECIFICATIONS

- ¶ 2 1/2" digital LED display with automatic decimal point
- ¶ Indicators for compressor, defrost, fan, alarm status
- ¶ Display in °F or °C
- ¶ Display in %, bar, psi and k Pa
- ¶ Intergrated timer and alarm function
- ¶ Alarm buzzer standard
- ¶ 5 models for typical operation modes
 - Electronic thermometer
 - Thermostat for off-cycle defrost (1 relay)
 - Thermostat for electric or hot gas defrost (2 relays)
 - Thermostat for electric or hot gas defrost and fan contro (4 relays)
 - Universal Controller with mA input for multiple applications
- ¶ All parameters and functions programmable on keypad or with optional remote control
- ¶ Password protection to eliminate tapering
- ¶ Supply voltage 12VAC

The EC1 Series Electronic Temperature Case Controller is an economical electronic refrigeration control with different variations to suit many applications. The temperature display and controls allow for easy monitoring and setup.



EC1 Controller

Type	Order No.	Function	Outputs	Indicator LEDs	Housing Depth
EC1-000	804 300	Electronic Thermometer		1	2.52 in
EC1-010	804 301	Thermostat for off cycle defrost	1 SPST	2	2.52 in
EC1-020	804 302	Thermostat for electric or hot-gas defrost	2 SPST	2	2.83 in
EC1-040	804 303	Thermostat for electric or hot-gas defrost and fan control	2 SPST 2 SPDT	4	2.83 in
EC1-110	804 316	Universal Electronic Controller	1 SPST	1	2.83 in

Description	Type	Order Nr.
NTC Sensors, single insulated (10 kΩ at 77°F)	5 ft cable length	ECN-S15 804 304
	10 ft cable length	ECN-S30 804 305
	20 ft cable length	ECN-S60 804 284
Transformer 12 V, 3 VA 12 / 24 V, 20 VA	230 VAC Input	ECT-123 804 307
	110 / 230 VAC input	ECT-523 804 332
Infrared Remote Control for EC1-000, EC1-010, EC1-020, EC1-040	English	EC1-IRE 804 308
	German	EC1-IRD 804 309
	French	EC1-IRF 804 310
	Spanish	EC1-IRS 804 311
	Italian	EC1-IRI 804 329
Infrared Remote Control for EC1-110	English	ECU-IRE 804 350
	German	ECU-IRD 804 351
	French	ECU-IRF 804 352
	Spanish	ECU-IRS 804 353
	Italian	ECU-IRI 804 354
Sensors for EC1-110	Type	Order Nr.
Pressure Transmitter PT3 series 6.5 ft cable length	22"Hg to 100 psig	PT3-07A 802 276
	0 to 260 psig	PT3-18A 802 277
	0 to 440 psig	PT3-30A 802 278
Humidity sensors	temp. & humidity (wall)	ECS-TH1 804 355
	temp. & humidity (duct)	ECS-TH2 804 356

Accessories



ECN-Sxx



EC1-IRx



ECS-TH2

ECS-TH1

EC2 ELECTRONIC CONTROLLER

FEATURES AND SPECIFICATIONS

- ¶ 2 1/2" digital LED display with automatic decimal point
- ¶ Indicators for compressor, defrost, fan, alarm status
- ¶ Display in °F or °C
- ¶ Intergrated alarm and timer functions
- ¶ 3 versions available
 - EC2-300 Series: Case Controller (EXV)
 - EC2-200 Series: Case Controller (TXV)
 - EC2-100 Series: Universal Controller
- ¶ All parameters and functions programmable via LON communication, with keypad or with optional remote control
- ¶ Password protection to eliminate tapering
- ¶ Air temperature control
- ¶ Defrost timer for off-cycle, electric or hot gas defrost with fan control
- ¶ EC2-300/311 Controller includes superheat control for pulse width modulated electronic expansion valves (EX-2 Series) Self-adapting controller no user set-up necessary (MOP)
- ¶ Echelon LON interface based on the LONWorks standard for monitoring and configuration through a supervisory system

The EC2 series of controllers are specifically designed for display cases for use with TXV (EC2-200 series) or in conjunction with the EX2 electronic expansion valve (EC2-300 series). They may also be used for small coldrooms.



EC2 Controller

EX2 Electronic Expansion Valve

EC2-IRE Remote Control

Selection Table

Alco EC2 Series Controllers

Description	FTT10		RS485	
	Type	Order-No.	Type	Order-No.
Display Case Controller EXV	EC2-311	807 681	EC2-310	807 680
Display Case Controller TXV	EC2-211	807 661	EC2-210	807 660
Universal I/O Controller	EC2-111	807 701	EC2-110	807 700
Terminal kit			K02-000	800 050



K02-000

Temperature Sensors

		Type	Order-No.
Air-Sensors, single insulated (10 kΩ at 77°F)	5 ft cable length	ECN-S15	804 304
	10 ft cable length	ECN-S30	804 305
	20 ft cable length	ECN-S60	804 284
Pipe-Sensors (10 kΩ at 77°F)	5 ft cable length	ECN-P30	804 280
	10 ft cable length	ECN-P60	804 281
	25 ft cable length	ECN-P80	804 282
Defrost sensor (10 kΩ at 77°F) (including fin clip)	20 ft cable length	ECN-F60	804 283

Transformer, 110/230 VAC Input, 12/24 V output, 20VA	ECT-523	804 332
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Infrared Remote Control

Language:	English	EC2-IRE	804 345
	German	EC2-IRD	804 346
	French	EC2-IRF	804 347
	Spanish	EC2-IRS	804 348
	Italian	EC2-IRI	804 349

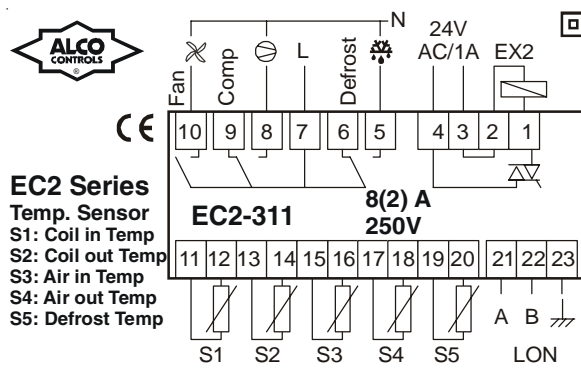
EX2 Pulse width modulated expansion valve: see page 8



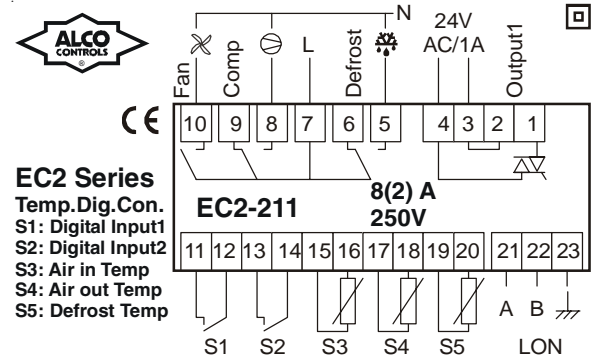
ECT-523

Wiring Diagrams

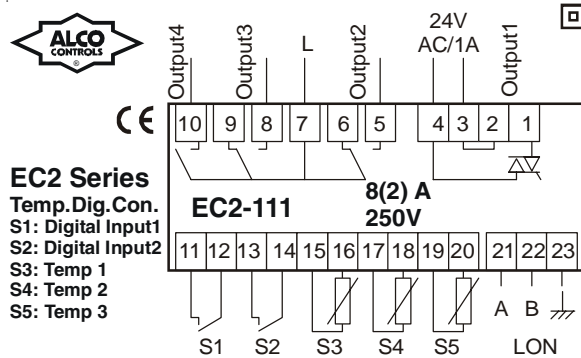
EC2-31x Case Controller (EXV)



EC2-21x Case Controller (TXV)



EC2-11x Universal I/O Controller



Typical Order Package for a display case

Case Controller	EC2-311	807 681
El. Expansion valve	EX2-M00	801 091
Orifice 2	EXO-003	801 088
Terminal Kit	K02-000	800 050
2 pipe sensors	ECN-P60	804 281
2 air sensors	ECN-S30	804 305
Defrost sensor	ECN-F60	804 283
Transformer	ECT-523	804 332

EC3 ELECTRONIC CONTROLLER

The EC3-300 series are specifically designed for coldrooms and are compatible for use with both EXV pulse width valves (EX2 series) or the larger EXV stepper valve series (EX5, 6, 7 & 8). The EC3 series provide additional functions with more inputs and outputs than the smaller EC2 series.

The EC3-600, -700, -800 & -900 series controllers are designed for the control of compressors and condensers. The EC3-600 series are specifically for controlling Racks with up to 8 compressors. The EC3-700 series are designed for controlling Condenser arrays with up to 7 fan stages. The EC3-800 series are for Racks with two suction groups and would be used in conjunction with an EC3-700 series controller. The EC3-900 series is a combined Rack and Condenser controller for up to 4 compressors and 4 fans.

FEATURES AND SPECIFICATIONS

- ¶ Superheat control with self adapting algorithm for electronic expansion valves
 - Triac output for EX-2 Series and Evaporator fan
 - Stepper motor driver for EX-5 through 8 Series
- ¶ Thermostat, fan and defrost control including adaptive and demand defrost algorithms
- ¶ Analog inputs: 6 NTC temperatures
- ¶ Analog input for suction pressure control using PT3 pressure transducers
- ¶ Digital inputs for compressor safety and cold room door contacts plus two programmable inputs
- ¶ Relay outputs for compressors, defrost and alarm plus programmable relay
- ¶ FTT10 free topology network interface, optional with RS485 interface for daisy chain network
- ¶ Lightweight aluminum enclosure for DIN rail mounting
- ¶ All parameters and functions programmable via LON communication, with keypad or with optional remote control



EC3-311



ECD-001

FEATURES AND SPECIFICATIONS OF ECD-001

- ¶ Connection to EC3 Series via a RJ45 plug, no further power cables are necessary
- ¶ 2 1/2" digital display
- ¶ Indicator LEDs for compressor, fan, defrost and alarm
- ¶ 4 keys allow parameter modification if necessary

Consult your Emerson Climate Technologies Flow Controls District Sales Manager for additional information and applications

EXD-S STAND-ALONE EXPANSION VALVE DRIVER MODULE

The EXD-S driver module is for the EX-5 through 8 electronic control valves. The driver module contains all required algorithms, hardware and software for full "PLUG AND PLAY" operation. Driver module can be started after completion of wiring without any additional setting.

FEATURES AND SPECIFICATIONS

- ☑ MOP Function
- ☑ Shut-off function eliminates additional solenoid for pump-down
- ☑ PLUG and PLAY
- ☑ Operation modes and alarms via LED for easy diagnostics
- ☑ DIN rail mounted housing
- ☑ Remote alarms diagnostics via output relay



EXD-S

Selection table

Type	Order-No.	Valve	Capacity regulation (tons) *	Capacity regulation	Refrigerant	Superheat setting (°F)	MOP setting (psig)
EXD-S05	804 537	EX5	1.4 to 14.2	10-100%	R 22	10	100
EXD-S06	804 538	EX6	4.3 to 34.1				
EXD-S07	804 539	EX7	9.9 to 93.7				
EXD-S08	804 540	EX8	25.6 to 249.9				
EXD-S15	804 541	EX5	1.4 to 15.1		R 407C	10	100
EXD-S16	804 542	EX6	4.3 to 35.8				
EXD-S17	804 543	EX7	9.9 to 98.5				
EXD-S18	804 544	EX8	28.4 to 262.7				
EXD-S25	804 545	EX5	1.1 to 11.1		R 134a	10	58
EXD-S26	804 546	EX6	2.8 to 26.4				
EXD-S27	804 547	EX7	7.1 to 72.4				
EXD-S28	804 548	EX8	19.9 to 193.1				
EXD-S35	804 549	EX5	1.1 to 9.9		R404A	10	100
EXD-S35S	804564	EX5	1.1 to 9.9			10	35
EXD-S36	804 550	EX6	2.8 to 23.9			10	100
EXD-S36S	804565	EX6	2.8 to 23.9			10	35
EXD-S37	804 551	EX7	7.1 to 65.3		R 404A	10	100
EXD-S38	804 552	EX8	17.0 to 174.0				
EXD-S45	804 553	EX5	1.7 to 16.5		R 410A	10	168
EXD-S46	804 554	EX6	4.3 to 39.8				

* Nominal conditions: 100°F condensing temperature, 40°F evaporating temperature and 0 subcooling.

- For conditions other than nominal please contact your Emerson Flow Controls District Sales Manager

Accessories

Description	Type	Order No.	Note
Cable and plug assembly	EX5-N60	804 652	Only for EX5 or EX6 *
Pressure Sensor	PT3-07A	802 276	For R 22, R 407C, R 134a, R 404A/R 507
Pressure Sensor	PT3-18A	802 277	For R 410A only
Temperature Sensor	ECN-C60	804 514	-
Uninterruptible Power	ECP-024	804 558	Optional recommended
Terminal kit for ECP-024	K09-P00	804 560	Optional recommended

* EX7 and EX8 will be delivered with standard Din plug.



ECP-024

Ordering Information (Example)

System with 28 ton cooling capacity, refrigerant R22 requires the following parts:
 EX6 Electronic Expansion Valve
 EX5-N60 Electrical cable and plug assembly
 EXD-S06 Driver module
 PT3-07A Pressure Transmitter

ECN-C60 Temperature Sensor
 ECP-024 Uninterruptible Power Supply
 K09-P00 Terminal Kit for ECP-024

EXD-U00 UNIVERSAL DRIVER MODULE

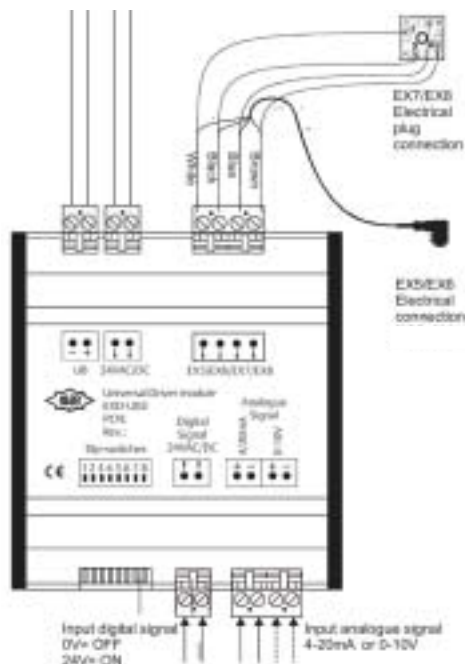
The EXD-U00 driver module is for the EX-5 through 8 electronic control valves. The driver module contains all required algorithms, hardware and software the only requirements are an analog 4-20 mA or 0-10 V signal.

Configured to operate as a:

- Solenoid Valve
- Electronic Expansion Valve
- Hot Gas By-pass
- Evaporator Pressure Regulator
- Crankcase Pressure Regulator
- Head Pressure Control
- Liquid Level Control
- Liquid Injection Valve

FEATURES AND SPECIFICATIONS

- Automatic operation directly proportional to input signal no parameter setting required
- Easy configuration by dip switches
- For use with CFC's, HCFC's and HFC's not for use with ammonia
- Maximum flexibility with reduced inventory
- DIN rail mounted aluminum housing



Typical Package for Evaporator Pressure Regulator

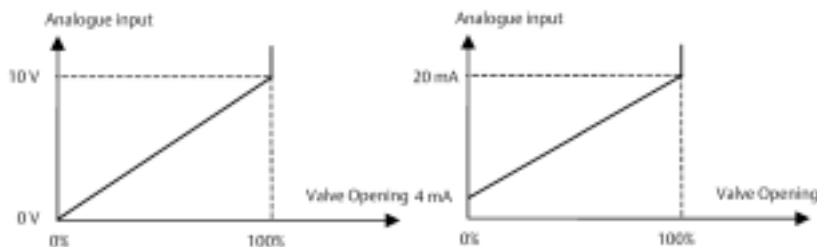
Universal Driver Module	EXD-U00	804 557
Terminal kit for EXD-U00	K09-U00	804 559
Transformer	ECT-523	804 332
Uninterruptible Power Supply	ECP-024	804 558
Terminal kit for ECP-024	K09-P00	804 560
Electronic Stepper Valve	EX-5	800 600
EX Cable and Connector	EX5-N60	804 652



EXD-U00

Function

The driver module requires an analog input signal 4 - 20 mA or 0 - 10 V. The output is the closing/opening of EX-5 through 8 and consequently the control of refrigerant liquid or vapour mass flow in accordance with the analog input. The universal driver module can be connected to any controller which can provide the specified analog signal (4-20 mA or 0-10 V) This gives extreme flexibility to retrofitting systems to achieve different functionality utilizing an existing controller.



Configuration

Driver module can be configured via Dip-switches

Dip-switch number	Achievable function						
	EX5/EX8 operation	EX7 operation	EX8 operation	4-20 mA Analogue input signal	0-10V Analogue input signal	With start mode	Without start mode
1	OFF	ON	ON	-	-	-	-
2	ON	OFF	ON	-	-	-	-
3	ON	OFF	OFF	-	-	-	-
4	OFF	ON	ON	-	-	-	-
5	ON	OFF	ON	-	-	-	-
6	OFF	ON	ON	-	-	-	-
7	-	-	-	-	-	ON	OFF
8	-	-	-	OFF	ON	-	-

Uninterruptible Power Supply ECP-024

In the event of a power loss an electronic valve is not able to drive closed and will remain in the position at time of failure. Because of this there is a likely potential for the refrigerant to migrate, which may result compressor failure. The ECP-024 is a simple and reliable solution to drive the valve closed and prevent the harmful effects of migration.

FEATURES AND SPECIFICATIONS

- Two outputs for separate drivers or controllers
- 24 VAC input
- reliable power source in event of power failure



ECP-024

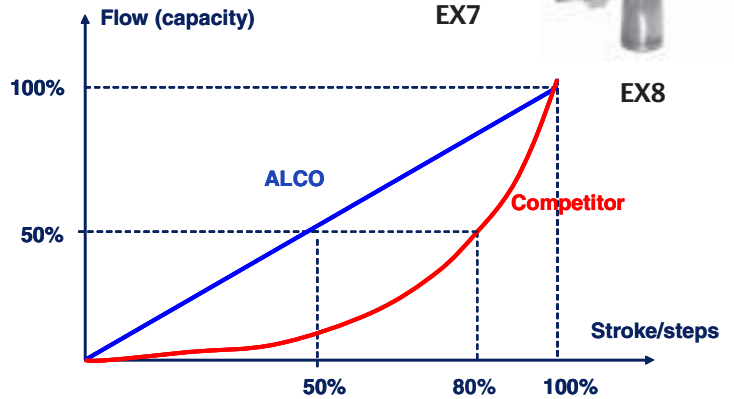
EX ELECTRONIC CONTROL VALVE SERIES

EX Electronic Control Valve series applications

- Expansion Valve
- Hot-Gas Bypass Valve
- Evaporator Pressure Regulator
- Crankcase Pressure Regulator
- Head Pressure Control
- Liquid Level Control
- Liquid Injection Valve



- Fully hermetic corrosion resistant stainless steel body
- For use CFC's, HCFC's, HFC's - mineral, alkyl benzene and POE systems (not for use with flammable refrigerants)
- Bi-Polar stepper motor driven (24 VDC)
- Full valve travel
 - EX-5 / 6 = 750 steps 1.5 seconds
 - EX-7 = 1600 steps 5 seconds
 - EX-8 = 2600 steps 5 seconds
- Direct coupling of motor and valve for high reliability
- Positive Shut-off function eliminates solenoid requirement
- High capacity and resolution due to straight through design
- Balanced force design
- Ceramic slide and port for accurate flow and minimal wear
- Solid copper extended connections (EX-8 Rotalock)
- Maximum working pressure:
 - EX-5/6 624 psig
 - EX-7/8 508 psig
- MOPD Maximum Operating Pressure Differential:
 - EX-5/6 435 psig
 - EX-7/8 360 psig
- Refrigerant temperature range: -68°F to 176°F
- CRN file number: Pending (see page A)



Flow Control's patented ceramic slide and port design ensures a reliable linear modulation of mass flow vs valve position. Other designs drive a valve stem into a seat, thus producing non-linear flow per step.

For Use With:

- EXD-S stand-alone superheat controller
- EXD-U universal controller with analog input signal
- EC3-331 cold room controller
- other controllers

Selection Chart - capacities represent valve fully open (no reserve capacity) at 100°F/40°F equivalent pressure drop

Type	Order No.	Expansion Valve Nominal Capacity (tons)					Capacity Regulation	Inlet connection		Outlet connection	
		R 407C	R 404A	R 134a	R 410A	R 22					
EX5-U21	800 600	15.1	9.9	11.1	16.5	14.2	10 ... 100%	5/8" ODF	7/8" ODF		
EX6-I21	800 610	35.8	23.9	26.4	39.8	34.1		7/8" ODF	1-1/8" ODF		
EX7-U21	801 686	98.6	65.3	72.4		93.7		13/8" ODF			
EX7-B21*	801 679	98.6	65.3	72.4		93.7		13/8" ODF			
EX8-U21	801 970	262.7	174.1	193.1		249.9		13/8" ODF, rotalock			

Note: EX5 and EX6 are delivered without cable/connector assembly. The cable/connector assembly must be ordered separately.

EX7 and EX8 is delivered with electrical plug (DIN 43650) wire not included with plug assembly, use up to 20ft of AWG 20/22

* EX7-B21 is Bi-Flow

Cable and Connector Assembly for EX5 and EX6

EX5-N60 20 ft PCN 804652

Suction Duty Capacities

For pressure drops other than 2 psi use capacity from EX Suction Duty Capacity tables and multiply by the appropriate factor

Pressure Drop	1.5	2	3	4.4
Factor	0.82	1.00	1.15	1.41

EX SUCTION DUTY CAPACITY

Condensing Temperature °F	R-22 Maximum Capacity in Tons (2 psi drop see page 94)							Valve Type
	Evaporator Temperature °F							
	50	40	30	20	0	-20	-40	
140	3.7	3.4	3.1	2.6	2.0	1.4	1.1	EX7
	11.6	10.5	9.7	7.7	6.2	4.3	3.4	EX8
120	4.3	3.7	3.4	2.8	2.3	1.7	1.4	EX7
	12.8	11.6	10.5	8.5	6.8	5.4	4.0	EX8
100	4.5	4.3	3.7	3.1	2.6	2.0	1.4	EX7
	13.9	12.8	11.6	9.4	7.7	6.0	4.3	EX8
90	4.8	4.5	4.0	3.4	2.6	2.0	1.4	EX7
	15.0	13.6	12.5	10.2	8.2	6.2	4.5	EX8
70	5.4	4.8	4.3	3.7	2.8	2.3	1.7	EX7
	15.9	14.8	13.3	11.0	8.8	6.8	5.1	EX8

Condensing Temperature °F	R-407C Maximum Capacity in Tons (2 psi drop see page 94)							Valve Type
	Evaporator Temperature °F							
	50	40	30	20	0			
140	3.4	3.1	2.8	2.3	1.7			EX7
	10.2	9.4	8.2	6.5	5.1			EX8
120	4.0	3.4	3.1	2.6	2.0			EX7
	11.6	10.5	9.7	7.7	6.0			EX8
100	4.3	4.0	3.4	2.8	2.3			EX7
	13.0	11.9	10.8	8.5	6.5			EX8
90	4.8	4.3	4.0	3.1	2.6			EX7
	14.5	13.0	11.6	9.4	7.4			EX8
70	5.1	4.5	4.3	3.4	2.6			EX7
	15.6	14.2	12.8	10.2	8.0			EX8

Condensing Temperature °F	R-134a Maximum Capacity in Tons (2 psi drop see page 94)							Valve Type
	Evaporator Temperature °F							
	50	40	30	20	0			
140	2.8	2.6	2.3	1.7	1.1			EX7
	8.5	7.7	6.8	5.1	3.7			EX8
120	3.1	2.8	2.6	2.0	1.4			EX7
	9.7	8.5	7.7	6.0	4.3			EX8
100	3.4	3.1	2.8	2.3	1.7			EX7
	10.8	9.7	8.5	6.5	4.8			EX8
90	4.0	3.4	3.1	2.3	1.7			EX7
	11.6	10.5	9.4	7.4	5.4			EX8
70	4.3	3.7	3.4	2.6	2.0			EX7
	12.8	11.4	10.2	8.0	6.0			EX8

Condensing Temperature °F	R-404A/507 Maximum Capacity in Tons (2 psi drop see page 94)							Valve Type
	Evaporator Temperature °F							
	50	40	30	20	0	-20	-40	
140	2.6	2.3	2.3	1.7	1.1	0.9	0.6	EX7
	8.2	7.4	6.5	5.1	3.7	2.8	2.0	EX8
120	3.4	3.1	2.6	2.0	1.7	1.1	0.9	EX7
	10.2	9.1	8.2	6.5	5.1	3.7	2.6	EX8
100	4.0	3.4	3.1	2.6	2.0	1.4	1.1	EX7
	11.9	10.8	9.7	7.7	6.0	4.5	3.4	EX8
90	4.5	4.0	3.7	2.8	2.3	1.7	1.4	EX7
	13.6	12.2	11.0	8.8	7.1	5.4	4.0	EX8
70	4.8	4.5	4.0	3.4	2.6	2.0	1.4	EX7
	15.0	13.6	12.5	9.9	8.0	6.0	4.5	EX8

EX HOT GAS BYPASS CAPACITY

Condensing Temperature °F	R-22/407C	R134a	R404/507	Valve Type
	at 40°F Saturated Suction Temperature			
140	6.5	4.5	5.4	EX5
	15.3	10.8	12.8	EX6
	54.2	38.3	45.7	EX7
	164.0	116.7	138.6	EX8
120	5.7	4.0	5.1	EX5
	13.1	9.1	11.6	EX6
	46.3	32.7	41.7	EX7
	140.6	98.8	126.9	EX8
100	4.5	3.4	4.5	EX5
	10.8	7.7	10.2	EX6
	38.6	27.0	36.9	EX7
	117.6	82.1	111.9	EX8
90	4.0	2.6	3.7	EX5
	9.1	6.2	8.8	EX6
	31.8	22.2	31.5	EX7
	96.6	67.0	95.4	EX8
70	2.8	1.7	2.8	EX5
	6.2	4.0	6.5	EX6
	22.4	14.5	22.7	EX7
	68.4	44.0	69.3	EX8

EX LIQUID CAPACITY FOR HEAD PRESSURE CONTROL

Condensing Temperature °F	R-407C Maximum Capacity in Tons (5 psi drop)						Valve Type
	Evaporator Temperature °F						
	40	30	20	0	-20	-40	
140	4.0	3.7	3.4	3.4			EX5
	9.1	8.5	8.2	8.0			EX6
	31.8	30.7	29.3	27.8			EX7
	96.6	92.9	88.9	84.6			EX8
120	4.5	4.3	4.3	4.0			EX5
	10.5	10.2	9.9	9.4			EX6
	37.5	36.4	34.9	33.5			EX7
	114.2	110.2	105.9	101.7			EX8
100	5.1	5.1	4.8	4.8			EX5
	12.2	11.6	11.4	10.8			EX6
	43.2	41.7	40.3	38.9			EX7
	130.6	126.7	122.4	117.9			EX8
90	6.0	5.7	5.4	5.4			EX5
	13.6	13.3	12.8	12.5			EX6
	48.3	47.1	45.4	44.0			EX7
	146.8	142.9	138.3	133.8			EX8
70	6.5	6.2	6.2	6.0			EX5
	15.1	14.8	14.2	13.9			EX6
	53.7	52.3	50.8	49.1			EX7
	162.7	158.5	154.2	149.4			EX8
50		6.8	6.8	6.5			EX5
		16.2	15.6	15.3			EX6
		57.4	55.7	54.2			EX7
		174.1	169.5	164.7			EX8

Condensing Temperature °F	R-22 Maximum Capacity in Tons (5 psi drop)						Valve Type
	Evaporator Temperature °F						
	40	30	20	0	-20	-40	
140	4.3	4.3	4.3	4.0	4.0	3.7	EX5
	10.2	9.9	9.7	9.4	9.1	8.5	EX6
	36.4	35.2	34.1	32.9	31.8	30.7	EX7
	109.9	107.1	103.7	100.3	96.8	93.2	EX8
120	4.8	4.8	4.5	4.8	4.5	4.3	EX5
	11.6	11.4	10.2	11.1	10.2	9.9	EX6
	40.9	40.0	36.6	38.9	36.6	35.2	EX7
	124.7	121.6	111.0	118.1	111.0	107.1	EX8
100	5.4	5.4	5.4	5.1	4.8	4.8	EX5
	12.8	12.5	12.2	11.9	11.6	11.1	EX6
	45.7	44.6	43.5	42.3	41.2	39.8	EX7
	138.6	135.5	132.1	128.7	124.7	121.0	EX8
90	6.0	6.0	5.7	5.7	5.4	5.4	EX5
	14.2	13.9	13.6	13.1	12.8	12.5	EX6
	50.3	49.1	48.0	46.9	45.4	44.3	EX7
	152.2	149.1	145.7	142.0	138.0	134.0	EX8
70	6.5	6.5	6.2	6.2	6.0	6.0	EX5
	15.3	15.1	14.8	14.5	13.9	13.6	EX6
	54.5	53.4	52.3	51.1	49.7	48.8	EX7
	165.9	162.4	159.0	155.3	151.4	147.4	EX8
50		7.1	6.8	6.8	6.5	6.2	EX5
		16.2	15.9	15.6	15.3	14.8	EX6
		57.9	56.8	55.4	54.2	52.8	EX7
		175.8	172.1	168.4	164.4	160.5	EX8
30			7.4	7.1	7.1	6.8	EX5
			17.0	16.8	16.5	15.9	EX6
			61.1	59.6	58.5	57.1	EX7
			185.2	181.5	177.2	173.2	EX8
10		8.0	8.0	7.7	7.7	7.4	EX5
		18.7	18.5	18.0	17.6	17.3	EX6
		66.5	65.3	63.9	62.5	61.3	EX7
		201.6	197.9	194.3	190.0	186.0	EX8

Condensing Temperature °F	R-134a Maximum Capacity in Tons (5 psi drop)						Valve Type
	Evaporator Temperature °F						
	40	30	20	0	-20	-40	
140	4.0	3.7	3.7	3.4			EX5
	9.1	8.8	8.2	7.7			EX6
	32.7	31.0	29.5	27.8			EX7
	99.4	94.3	89.5	84.1			EX8
120	4.5	4.3	4.3	4.0			EX5
	10.5	10.2	9.9	9.1			EX6
	37.8	36.1	34.4	32.7			EX7
	115.0	109.9	104.8	99.4			EX8
100	5.1	5.1	4.8	4.5			EX5
	11.9	11.6	11.1	10.5			EX6
	42.9	41.2	39.5	37.8			EX7
	130.1	125.0	119.8	114.5			EX8
90	5.7	5.7	5.4	5.1			EX5
	13.3	13.1	12.5	11.9			EX6
	47.7	46.0	44.3	42.6			EX7
	145.4	140.0	134.6	129.2			EX8
70	6.2	6.2	6.0	5.7			EX5
	14.8	14.5	13.9	13.3			EX6
	52.8	51.1	49.1	47.4			EX7
	160.2	155.1	149.4	144.0			EX8
50		6.8	6.5	6.2			EX5
		15.6	15.3	14.8			EX6
		55.9	54.0	52.3			EX7
		169.8	164.2	158.5			EX8

Condensing Temperature °F	R-404A/507 Maximum Capacity in Tons (5 psi drop)						Valve Type
	Evaporator Temperature °F						
	40	30	20	0	-20	-40	
140	2.3	2.3	2.0	1.7	1.7	1.4	EX5
	5.4	4.8	4.5	4.3	3.7	3.4	EX6
	18.7	17.6	16.5	15.1	13.6	12.2	EX7
	57.4	53.7	49.7	45.4	41.5	36.9	EX8
120	3.1	2.8	2.6	2.6	2.3	2.3	EX5
	6.8	6.5	6.2	5.7	5.4	4.8	EX6
	24.7	23.3	22.2	20.7	19.0	17.6	EX7
	75.0	71.0	67.0	62.5	58.2	53.7	EX8
100	3.7	3.4	3.4	3.1	2.8	2.8	EX5
	8.5	8.0	7.7	7.4	6.8	6.5	EX6
	30.1	28.7	27.3	25.8	24.1	22.7	EX7
	91.2	86.9	82.6	78.4	73.8	69.0	EX8
90	4.3	4.0	4.0	3.7	3.4	3.4	EX5
	9.9	9.4	9.1	8.5	8.2	7.7	EX6
	34.9	33.8	32.4	30.7	29.3	27.5	EX7
	106.5	102.2	98.0	93.4	88.6	83.8	EX8
70	4.8	4.5	4.5	4.3	4.0	4.0	EX5
	11.4	10.8	10.5	9.9	9.7	9.1	EX6
	40.0	38.6	37.2	35.5	34.1	32.4	EX7
	126.3	117.0	112.7	107.9	103.1	98.3	EX8
50		5.1	5.1	4.8	4.5	4.5	EX5
		12.2	11.6	11.4	10.8	10.5	EX6
		43.5	41.7	40.3	38.6	36.9	EX7
		131.8	126.9	122.4	117.3	112.2	EX8
30			5.7	5.4	5.1	5.1	EX5
			13.1	12.5	12.2	11.6	EX6
			46.6	44.9	43.2	41.5	EX7
			114.1	136.3	131.5	126.4	EX8
10				6.0	5.7	5.7	EX5
				13.9	13.3	13.1	EX6
				49.4	47.7	46.0	EX7
				150.2	145.1	140.0	EX8

PT4 PRESSURE TRANSMITTER

FEATURES AND SPECIFICATIONS

- ☑ Pressure sensitive piezo-based cell with strong Primary output signal for precise and noise-free operation
- ☑ Pressure cell protected by oil filled pressure enclosure
- ☑ Output signal 4 to 20 mA
- ☑ Separate electrical plug for easy field service
- ☑ Vibration and pulsation resistant
- ☑ Compact dimensions
- ☑ Pressure connector 1/4" SAE female (7/16-20 UNF) with shraeder depressor
- ☑ Variable supply voltage (10-28 VDC)
- ☑ Protection class IP 65, per: EN60529
- ☑ Maximum Working Pressure: 500 psig
- ☑ CE-mark under EC EMC-Directive
- ☑ Lifetime = 5,000,000 full stroke cycles
- ☑ UL file number: E52198
- ☑ CRN file number: OF0845.9 (see page A)



Plug/Cable assembly sold separately

NOMENCLATURE EXAMPLE: PT4-07S

PT4	07S	
Pressure Transmitter	Pressure Range	
	07	22" Hg to 100 psig
	18	0 to 260 psig
	30	0 to 440 psig
	50	0 to 725 psig

ORDERING INFORMATION

PCN	Description
802 320	PT4-07S
802 322	PT4-18S
802 324	PT4-30S
802 326	PT4-50S
804 595	PT4-L60 Plug/Cable Assembly

REFRIGERANT CHARGE CODES

R-12 = F R-134a = M R-401A = X R-22 = H
 R-410A = Z R-502 = R R-404A = S R-507 = P

TEMPERATURE PRESSURE CHART

= VACUUM		BLACK FIGURES = SATURATED VAPOR (PSIG)				BOLD FIGURES = SATURATED LIQUID (PSIG)			
°C	°F	R-12	R-134A	R-401A	R-22	R-410A	R-502	R-404A	R-507
-46	-50	15.4	18.4	18.5	6.2	5.8	0.2	0.0	0.9
-44	-48	14.6	17.7	17.7	4.8	6.9	0.7	0.8	1.7
-43	-46	13.8	17.0	17.0	3.4	8.0	1.5	1.6	2.6
-42	-44	12.9	16.2	16.0	2.0	9.2	2.3	2.5	3.5
-41	-42	11.9	15.4	15.0	0.5	10.4	3.2	3.4	4.5
-40	-40	11.0	14.5	14.5	0.5	11.7	4.1	5.5	5.5
-39	-38	10.0	13.7	13.5	1.3	13.0	5.0	6.5	6.5
-38	-36	8.9	12.8	12.5	2.2	14.4	6.0	7.5	7.6
-37	-34	7.8	11.8	11.5	3.0	15.9	7.0	8.6	8.7
-36	-32	6.7	10.8	10.6	4.0	17.3	8.1	9.7	9.9
-34	-30	5.5	9.7	9.0	4.9	18.9	9.2	10.8	11.1
-33	-28	4.3	8.6	8.3	5.9	20.5	10.3	12.0	12.4
-32	-26	3.0	7.7	7.0	6.9	22.2	11.5	13.2	13.7
-31	-24	1.6	6.2	6.0	7.9	23.9	12.7	14.5	15.0
-30	-22	0.3	4.9	4.5	9.0	25.7	14.0	15.8	16.4
-29	-20	0.6	3.6	3.5	10.1	27.5	15.3	17.1	17.8
-28	-18	1.3	2.3	2.0	11.3	29.4	16.7	18.5	19.3
-27	-16	2.1	0.8	0.5	12.5	31.4	18.1	20.0	20.9
-26	-14	2.8	0.3	0.4	13.8	33.5	19.5	21.5	22.5
-24	-12	3.7	1.1	1.4	15.1	35.6	21.0	23.0	24.1
-23	-10	4.5	1.9	2.2	16.5	37.8	22.6	24.6	25.8
-22	-8	5.4	2.8	3.1	17.9	40.0	24.2	26.3	27.6
-21	-6	6.3	3.6	3.9	19.3	42.4	25.8	28.0	29.4
-20	-4	7.2	4.5	4.8	20.8	44.8	27.5	29.8	31.3
-19	-2	8.2	5.5	5.7	22.4	47.3	29.3	31.6	33.2
-18	0	9.2	6.5	6.7	24.0	49.8	31.1	33.5	35.2
-17	2	10.2	7.5	8.0	25.6	52.5	32.9	34.8	37.3
-16	4	11.2	8.5	8.8	27.3	55.2	34.9	37.4	39.4
-14	6	12.3	9.6	9.9	29.1	58.0	36.9	39.4	41.6
-13	8	13.5	10.8	11.0	30.9	60.9	38.9	41.6	43.8
-12	10	14.6	12.0	12.2	32.8	63.9	41.0	43.7	46.2
-11	12	15.8	13.1	13.4	34.7	67.0	43.2	46.0	48.5
-10	14	17.1	14.4	14.6	36.7	70.2	45.4	48.3	51.0
-9	16	18.4	15.7	15.9	38.7	73.4	47.7	50.7	53.5
-8	18	19.7	17.0	17.2	40.9	76.8	50.0	53.1	56.1
-7	20	21.0	18.4	18.6	43.0	80.2	52.5	55.6	58.8
-6	22	22.4	19.9	20.0	45.3	83.8	54.9	58.2	61.5
-4	24	23.9	21.4	21.5	47.6	87.4	57.5	60.9	64.3
-3	26	25.4	22.9	23.0	49.9	91.2	60.1	63.6	67.2
-2	28	26.9	24.5	24.6	52.4	95.1	62.8	66.5	70.2
-1	30	28.5	26.1	26.2	54.9	99.0	65.6	69.4	73.3
0	32	30.1	27.8	27.9	57.5	103.1	68.4	72.3	76.4
1	34	31.7	29.5	29.6	60.1	107.3	71.3	75.4	79.6
2	36	33.4	31.3	31.3	62.8	111.6	74.3	78.5	82.9
3	38	35.2	33.2	33.2	65.6	116.0	77.4	81.8	86.3
4	40	36.9	35.1	35.0	68.5	120.5	80.5	85.1	89.8
6	42	38.8	37.0	37.0	71.5	125.1	83.8	88.5	93.4
7	44	40.7	39.1	39.0	74.5	129.9	87.0	91.9	97.0
8	46	42.7	41.1	41.0	77.6	134.8	90.4	95.5	100.8
9	48	44.7	43.3	43.1	80.7	139.8	93.9	99.2	104.6
10	50	46.7	45.5	45.3	84.0	144.9	97.4	102.9	108.6

REFRIGERANT CHARGE CODES			
R-12 = F	R-134a = M	R-401A = X	R-22 = H
R-410A = Z	R-502 = R	R-404A = S	R-507 = P

TEMPERATURE PRESSURE CHART

☐ = VACUUM BLACK FIGURES = SATURATED VAPOR (PSIG) BOLD FIGURES = SATURATED LIQUID (PSIG)

°C	°F	R-12	R-134A	R-401A	R-22	R-410A	R-502	R-404A	R-507
11	52	48.8	47.7	60.0	87.3	150.2	101.0	109.0	112.6
12	54	51.0	50.1	62.0	90.8	155.6	104.8	113.0	116.7
13	56	53.2	52.3	65.0	94.3	161.1	108.6	117.0	121.0
14	58	55.4	55.0	68.0	97.9	166.7	112.4	121.0	125.3
16	60	57.7	57.5	70.0	101.6	172.5	116.4	125.0	129.7
17	62	60.1	60.1	73.0	105.4	178.5	120.4	130.0	134.3
18	64	62.5	62.7	76.0	109.3	184.5	124.6	134.0	139.0
19	66	65.0	65.5	79.0	113.2	190.7	128.8	139.0	143.7
20	68	67.6	68.3	82.0	117.3	197.1	133.2	144.0	148.6
21	70	70.2	71.2	85.0	121.4	203.6	137.6	148.0	153.6
22	72	72.9	74.2	89.0	125.7	210.3	142.2	153.0	158.7
23	74	75.6	77.2	92.0	130.0	217.1	146.8	158.0	163.9
24	76	78.4	80.3	95.0	134.5	224.0	151.5	164.0	169.3
26	78	81.3	83.5	99.0	139.0	231.1	156.3	169.0	174.7
27	80	84.2	86.8	102.0	143.6	238.4	161.2	174.0	180.3
28	82	87.2	90.2	106.0	148.4	245.9	166.2	180.0	186.0
29	84	90.2	93.6	109.0	153.2	253.5	171.4	185.0	191.9
30	86	93.3	97.1	113.0	158.2	261.2	176.6	191.0	197.8
31	88	96.5	100.7	117.0	163.2	269.2	181.9	197.0	203.9
32	90	99.8	104.4	121.0	168.4	277.3	187.4	203.0	210.2
33	92	103.1	108.2	125.0	173.7	285.5	192.9	209.9	216.6
34	94	106.5	112.1	129.0	179.1	294.0	198.6	215.0	223.1
36	96	110.0	116.1	133.0	184.6	302.6	204.3	222.0	229.8
37	98	113.5	120.1	138.0	190.2	311.4	210.2	229.0	236.6
38	100	117.2	124.3	142.0	195.9	320.4	216.2	235.0	243.5
39	102	120.9	128.5	146.0	201.8	329.6	222.3	242.0	250.6
40	104	124.7	132.9	151.0	207.7	339.0	228.5	249.0	257.9
41	106	128.5	137.3	156.0	213.8	348.5	234.9	256.0	265.3
42	108	132.4	142.8	160.0	220.0	358.3	241.3	264.0	272.9
43	110	136.4	146.5	165.0	226.4	368.2	247.9	271.0	280.6
44	112	140.5	151.3	170.0	232.8	378.3	254.6	279.0	288.6
46	114	144.7	156.1	175.0	239.4	388.7	261.5	286.0	296.6
47	116	148.9	161.1	180.0	246.1	399.2	268.4	294.0	304.9
48	118	153.2	166.1	185.0	252.9	410.0	275.5	302.0	313.3
49	120	157.7	171.3	191.0	259.9	420.9	282.7	311.0	321.9
50	122	162.2	176.6	196.0	267.0	432.1	290.1	319.0	330.7
51	124	166.7	182.0	202.0	274.3	443.5	297.6	328.0	339.7
52	126	171.4	187.5	207.0	281.6	455.1	305.2	336.0	348.9
53	128	176.2	193.1	213.0	289.1	466.9	312.9	345.0	358.2
54	130	181.0	198.9	219.0	296.8	478.9	320.8	354.0	367.8
56	132	185.9	204.7	225.0	304.6	491.2	328.9	364.0	377.6
57	134	191.0	210.7	231.0	312.5	503.7	337.1	373.0	387.5
58	136	196.1	216.8	237.0	320.6	516.4	345.4	383.0	397.7
59	138	201.3	223.0	243.0	328.9	529.4	353.9	392.0	408.1
60	140	206.6	229.4	250.0	337.3	542.5	362.6	402.0	418.7
61	142	212.0	235.8	256.0	345.8	556.0	371.4	413.0	429.6
62	144	217.5	242.4	263.0	354.5	569.6	380.4	423.0	440.6
63	146	223.1	249.2	269.0	363.3	583.6	389.5	434.0	451.9
64	148	228.8	256.0	277.0	372.3	597.7	398.9	444.0	462.0
66	150	234.6	263.0	283.0	381.5	612.1	408.4	449.0	475.3

Conversion Table

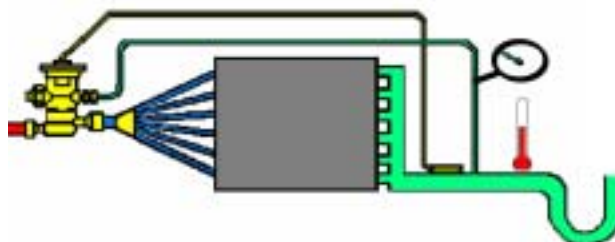
Power, Work, Energy		
1 ton	= 12000 BTU/hr	= 3.517 kW/hr
1 kW	= 3413 BTU	= 1.341 hp
1 hp	= 0.746 kw	= 2544.7 BTU
1 watt	= 1 joule	= .000948 BTU
Pressure		
1 "Hg	= 0.491 psi	= 1.133 ft water at 4°C
1 psi	= 2.036 "Hg	= 144 lb/sq ft
1 oz / sq in	= 0.0625 psi	= 0.00431 bar
1 bar	= 14.5 psi	= 232.06 oz / sq in
1 psi	= 0.0689 bar	= 0.0703 kg/ sq cm
1 standard atmosphere	= 14.7 psi	= 29.92 "Hg
Temperature		
°F to °C	(°F - 32) multiply by 0.556	
°C to °F	(°C multiply by 1.8) + 32	
Length		
1 in	= 2.54 cm	= 0.08333 ft
1 ft	= 12 in	= 0.3048 m
1 yard	= 3 ft	= 0.9144 m
1 mile	= 5280 ft	= 1.609 km
1 m	= 3.281 ft	= 100 cm
Volume		
1 pint	= 16 fluid oz	= 0.473 L
1 gallon, U.S.	= 3.785 L	= 0.833 gallon, U.K.
Weight		
1 oz	= 28.35 g	= 0.0625 lb
1 short ton	= 2000 lb	= 907 kg
1 lb	= 0.454 kg	= 7000 grains
Velocity		
1 ft/ sec	= 0.3048 m/ sec	= 0.682 miles/ hr
1 mile/ hr	= 0.447 m/ sec	= 1.609 km/ hr
1 m/ sec	= 3.6 km/ hr	= 3.28 ft/ sec

Measuring Operating Super-Heat

1. Determine suction pressure with an accurate guage at the evaporator outlet.
 2. From the pressure temperature tables on pages 99-100 convert the suction pressure from above to temperature
 3. Measure the temperature using an accurate thermomter at the ThermoExpansion Valve bulb located at the outlet of the evaporator.
 4. Subtract the temperature determined in step 2. from the temperature measured in step 3. (step 3 temperature - step 2 temperature)
- The diference is evaporator super-heat. The same procedure can be done at the compressor to determine compressor return gas super-heat.

Typical Operating super-heat set points.

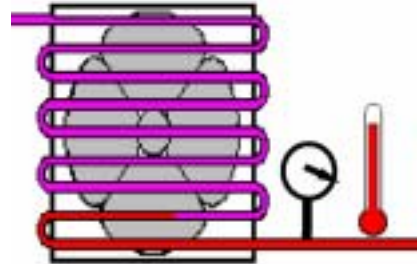
Air-Conditioning or High Temperature	10 to 12°F
Medium Temperature	5 to 8°F
Low Temperature	2 to 5°F



Measuring Sub-cooling

1. Determine pressure with an accurate gauge at the condenser outlet.
2. From the pressure temperature tables on pages 99-100 convert the liquid line pressure from above to temperature
3. Measure the temperature using an accurate thermometer at the condenser outlet.
4. Subtract the temperature measured in step 3. from the temperature determined in step 2. (step 2 temperature - step 3 temperature)

The difference is liquid sub-cooling. The same procedure can be done at the expansion valve inlet to ensure 1°F sub-cooling for proper valve operation.



Approximate Pressure Control Settings (PSIG)

APPLICATION	REFRIGERANT							
	R-134A		R-22		R-404A		R-507	
	OUT	IN	OUT	IN	OUT	IN	OUT	IN
Ice Cube Maker - Dry Type Coil	2	14	16	37	23	48	25	51
Sweet Water Bath - Soda Fountain	19	27	43	56	56	71	59	74
Beer, Water, Milk Cooler, Wet Type	17	27	40	56	52	71	55	74
Ice Cream Trucks, Hardening Rooms	1*	12	13	34	19	44	21	47
Eutectic Plates, Ice Cream Truck	3*	2	11	16	17	23	19	25
Walk In, Defrost Cycle	11	32	32	64	42	80	45	84
Reach In, Defrost Cycle	17	34	40	68	52	84	55	88
Vegetable Display, Defrost Cycle	10	33	30	66	41	82	43	86
Vegetable Display Case-Open Type	13	41	35	77	46	95	49	99
Beverage Cooler, Blower Dry Type	12	32	34	64	44	80	47	84
Retail Florist - Blower Coil	26	41	55	77	69	95	72	99
Meat Display Case, Defrost Cycle	14	33	37	66	48	82	51	86
Meat Display Case - Open Type	8	24	27	53	37	67	39	70
Dairy Case - Open Type	7	33	26	66	35	82	38	86
Frozen Food - Open Type	12*	2	4	17	9	25	10	27
Frozen Food - Open Type Thermostat	-2°F	-10°F	-	-	-	-	-	-
Frozen Food - Closed Type	3*	5	11	22	17	31	19	33

* Vacuum - Inches of Mercury

Weight of Refrigerant in Copper Pipe Pounds per 100 ft in Type L Copper Pipe (weight at 77°F/25°C)

Pipe O.D.	Flow Area sq. in.	R-22		R-407C		R-134A		R-507		R-404A		R402A		R410A	
		L	V	L	V	L	V	L	V	L	V	L	V	L	V
1/4"	0.028	1.45	0.05	1.4	0.05	1.5	0.04	1.3	0.08	1.3	0.08	1.4	0.08	1.3	0.08
3/8"	0.078	4.04	0.15	3.8	0.14	4.1	0.11	3.5	0.22	3.5	0.22	4.0	0.23	3.8	0.22
1/2"	0.145	7.5	0.28	7.2	0.26	7.6	0.20	6.6	0.40	6.6	0.40	7.3	0.44	6.7	0.42
5/8"	0.233	12.1	0.45	11.5	0.42	12.2	0.37	10.6	0.65	10.6	0.65	11.6	0.70	10.7	0.67
3/4"	0.348	18.0	0.67	17.1	0.68	18.2	0.49	15.8	0.97	15.8	0.97	17.4	1.05	16.0	1.00
7/8"	0.484	25.0	0.98	23.8	0.88	25.3	0.68	22.0	1.34	22.0	1.34	24.1	1.45	22.3	1.38
1 1/8"	0.825	42.7	1.58	40.7	1.50	43.1	1.16	37.5	2.29	37.5	2.29	41.2	2.48	38.0	2.36
1 3/8"	1.257	65.1	2.41	61.8	2.29	65.7	1.76	57.1	3.49	57.1	3.49	62.7	3.77	57.8	3.60
1 5/8"	1.779	92.0	3.41	87.4	3.24	93.0	2.49	80.8	4.94	80.8	4.94	88.7	5.33	81.9	5.09
2 1/8"	3.095	160.2	5.93	152.1	5.68	161.8	4.34	140.7	8.60	140.7	8.60	154.4	9.28	142.5	8.85
2 5/8"	4.772	247.0	9.15	234.6	8.68	249.5	6.69	216.9	13.26	216.9	13.26	238.1	14.32	219.8	13.65
3 1/8"	6.812	352.6	13.06	345.0	12.40	356.1	9.56	309.6	18.92	309.6	18.92	340.0	20.43	313.8	19.49
3 5/8"	9.213	476.8	17.66	453.0	16.76	481.6	12.92	418.7	25.59	418.7	25.59	459.8	27.64	424.3	26.36
4 1/8"	11.977	619.9	22.95	588.8	21.79	626.1	16.8	544.3	33.27	544.3	33.27	597.7	35.93	551.6	34.27

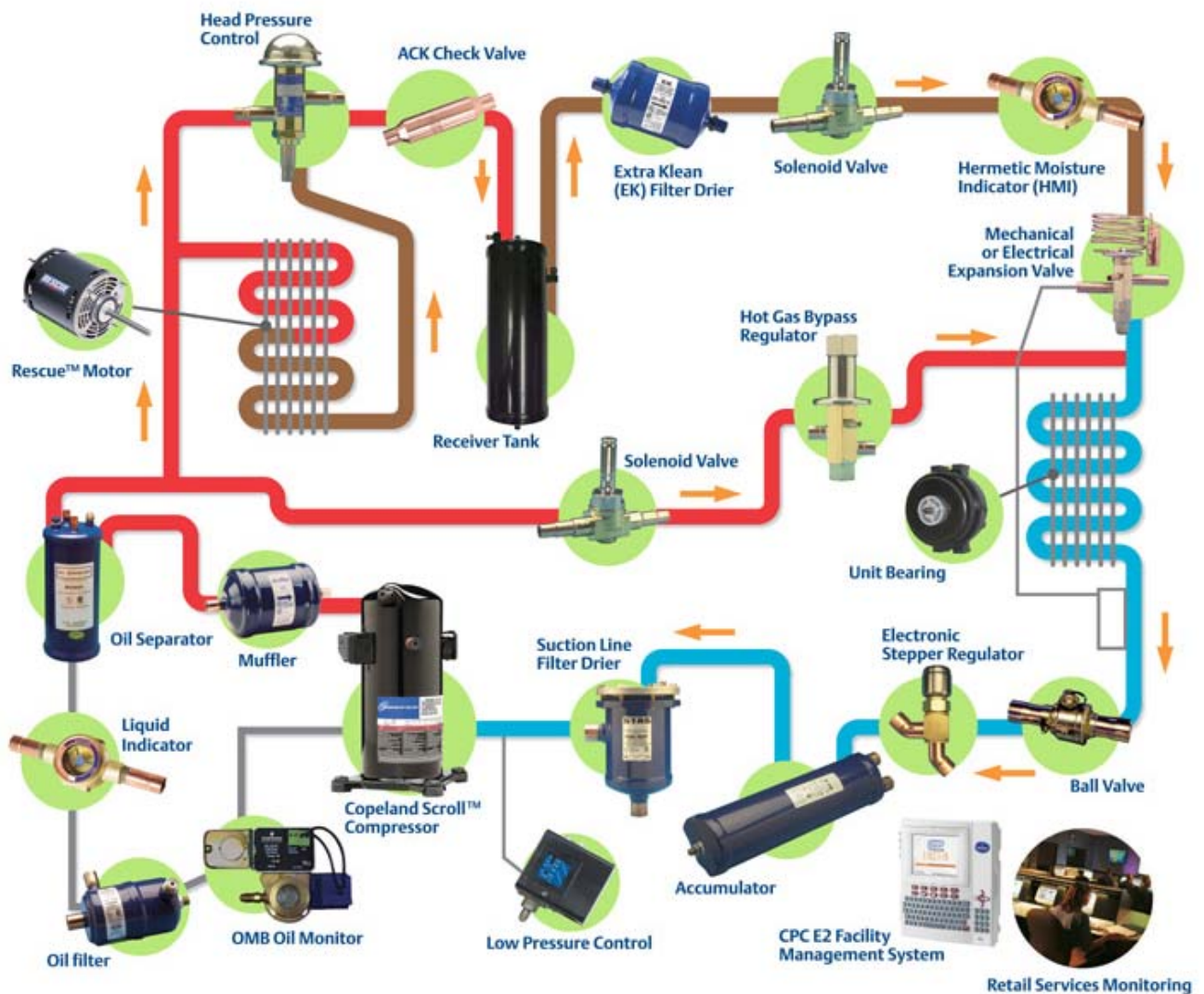
Copper Piping as per ASTM-B88

Notes: L = saturated liquid, V = saturated vapour

Return bends equivalent length: 3/8" O.D. = 0.20 ft 1/2" O.D. = 0.25 ft 5/8" O.D. = 0.30 ft

to calculate lbs per ft divide values in chart by 100, to convert values to ounces divide by 16.

visit www.emersonflowcontrols.com
or
www.copeland-corp.com
for selection information



HIGH and MEDIUM TEMPERATURE (BTUH @ 90°F Ambient / +25°F Evap*)			Compressor	Air-Cooled BTUH	Copevap	Options*	BTUH	Water-Cooled	BTUH	
HT	R-134a	1/5	ARB13C3E	M2FH-0017	1150	M2"H-0017	E P	1150		
HT	R-134a	1/5	ARB17C3E	M2FH-0020	1330	M2"H-0020	E P	1330		
HT	R-134a	1/4	ARE25C3E	M2FH-0024	1810	M2"H-0024	E P	1810		
HT	R-134a	1/4	ARE27C3E	M2FH-0026	2080	M2"H-0026	E P	2080	M2WH-C026	2160
HT	R-134a	1/3	ARE37C3E	M2FH-A033	2620	M2"H-A033	E P	2620	M2WH-C033	3000
HT	R-134a	1/3	ARE41C3E	M2FH-0040	2670	M2"H-0040	E P	2670	M2WH-C040	3390
HT	R-134a	1/2	ART51C1E	M2FH-0049	3600	M2"H-0047	E P	3460	M2WH-C049	4050
HMT	R-134a	1/2	ART62C1E	M2FH-0050	4230	M2"M-0048	E	3760	M2WH-C050	4720
HT	R-134a	1/2	ART64C1E	M2FH-0056	4630				M2WH-C056	5140
HT	R-134a	3/4	RR81C2E	FTAH-B074	5450	FT"H-B075	E	5570	FTWH-C074	6530
MT	R-134a	3/4	RS54C2E	FTAM-A075	6450	FT"M-A078	E	6790	FTWM-C075	7850
HT	R-134a	1	CS10K6E/RR10K2E	FTAH-A101	7770	FT"H-B100	E	7160	FPWN-C150	8900
HT	R-134a	1-1/4	CS14K6E	FTAH-A125	11200				FPWN-C225	12500
HT	R-134a	1-1/2	CS18K6E	FTAH-A150	13300				FPWN-C300	15900
HT	R-134a	2	CS20K6E	FTAH-A201	16400				FPWN-C325	17800
HT	R-404A	1/5	ASB12C3E	M4FH-0022	1720	M4"H-0022	E P	1720		
HT	R-404A	1/4	ASE19C3E	M4FH-0025	2430	M4"H-0025	E P	2430	M4WH-C025	2790
HT	R-404A	1/3	ASE24C3E	M4FH-A036	3370	M4"H-A035	E P	3100	M4WH-C036	3520
HT	R-404A	1/2	ASE32C3E	M4FH-0050	4380	M4"H-0049	E	3970	M4WH-C050	5130
MT	R-404A	1/2	RS43C2E	FJAF-A056	5630				FJWM-C056	6000
MT	R-404A	3/4	RS55C2E	FJAF-B078	6740	FJ"F-B078	E	6740	FJWM-C078	7930
MT	R-404A	1	RS64C2E	FJAM-A106	8530				FJWM-C106	9100
MT	R-404A	1-1/4	RS70C1E	FJAM-A125	9340				FJWM-C125	10300
MT	R-404A	1-1/4	RS80C2E	FJAM-A126	10500				FJWM-C126	11600
MT	R-404A	1-1/2	CS10K6E	FJAM-A150	12500				FPWN-C150	15500
MT	R-404A	2	CS12K6E	FJAM-A200	16100				FJWM-C200	17900
MT	R-404A	2-1/4	CS14K6E	FJAM-A225	17900				FPWN-C225	20900
MT	R-404A	3	CS18K6E	FJAM-A300	23800				FPWN-C300	27200
MT	R-404A	3-1/4	CS20K6E	FJAM-A325	26100				FPWN-C325	31400
MT	R-404A	4	CS27K6E	FJAM-B400	37800				FJWM-C400	41400
MT	R-404A	5	CS33K6E	FJAM-B500	41200				FJWM-C500	46300
HT	R-22	1/5	ARB21C3	MMFH-0022	1680	MM"H-0022	E P	1680		
HT	R-22	1/4	ARE36C3	MCFH-0027	2600	MC"H-0027	E P	2600	MCWH-C027	2910
HT	R-22	1/3	ARE43C3	MCFH-0036	3140	MC"H-0035	E P	3020	MCWH-C036	3330
HT	R-22	1/2	ARE59C3	MCFH-0049	4250	MC"H-0048	E P	4110	MCWH-C049	4640
HT	R-22	1/2	ART69C1	MCFH-0056	4950				MCWH-C056	5390
HT	R-22	3/4	RS47C2	F3AH-A078	6450	F3"H-A078	E	6450	F3WH-C078	6980
HT	R-22	1	RRG4-0100/RS64C2	F3AH-A100	7480				F3WH-C100	8750
MT	R-22	1	RS70C1	F3AM-A105	9620				F3WM-C105	10300
HT	R-22	1-1/2	CR18KQ	F3AD-B151	11500				F3WD-C151	13500
HT	R-22	2	CR24KQ	F3AD-B201	15400				F3WD-C201	16900
HT	R-22	2-1/4	CR28KQ	F3AD-B225	17100				F3WD-C225	19300
HT	R-22	3	CR37KQ	F3AD-B301	24600				F3WD-C301	27400
HT	R-22	3-1/4	CR41KQ	F3AD-B325	26500				F3WD-C325	30200
HT	R-22	4	CR53KQ	F3AD-B401	37600				F3WD-C401	39400
HT	R-22	5	CRN5-0500	F3AD-A501	42700				F3WD-C501	45700

LOW TEMPERATURE (BTUH @ 90°F Ambient / -10°F Evap*)			Compressor	Air-Cooled BTUH	Copevap	Options*	BTUH	Water-Cooled	BTUH	
LT	R-134a	1/5	AFB05C3E	M2FL-0023	740	M2"L-0023	E P	740		
LT	R-134a	1/4	AFE10C3E	M2FL-A025	1070	M2"L-A025	E P	1070	M2WL-C025	1080
LT	R-134a	1/3	AFE12C3E	M2FL-B033	1240	M2"L-B033	E P	1240	M2WL-C033	1330
LT	R-134a	1/3	AFT12C1E	M2FL-0040	1540	M2"L-0040	E P	1540	M2WL-C040	1530
LT	R-134a	1/2	RF18C2E	FTAL-A050	2260	FT"L-A050	E	2260	FTWL-C050	2320
LT	R-404A	1/4	AFB09C3E	M4FL-0025	920	M4"L-0025	E P	920	M4WL-C025	900
LT	R-404A	1/3	AFE11C3E	M4FL-0033	1390	M4"L-0033	E P	1390	M4WL-C033	1370
LT	R-404A	1/2	AFE13C3E	M4FL-0040	2040	M4"L-0039	E P	1980	M4WL-C040	1970
LT	R-404A	1/2	AFT18C1E	M4FL-0051	2430	M4"L-0050	E P	2170	M4WL-C051	2200
LT	R-404A	1/2	AFT26C1E	M4FL-0067	3260				M4WL-C067	3420
LT	R-404A	3/4	RS64C2E	FJAF-A075	3490	FJ"F-A075	E	3510	FJWF-C075	3750
LT	R-404A	1	RF42C1E	FJAL-A102	5090				FJWL-C102	5530
LT	R-404A	1	CF04K6E	FJAL-A103	4950				FJWL-C103	5550
LT	R-404A	2	CF06K6E	FJAL-B200	8260				FJWL-C200	8090
LT	R-404A	2-1/4	CF06K6E	FJAL-A225	9010					
LT	R-404A	3	CF09K6E	FJAL-B301	13100				FJWL-C301	13200
LT	R-404A	4	CF12K6E	FJAL-A390	16000				FJWL-C390	16800

* Low and medium temperature units are rated at 40°F return gas temperature. HT models are rated at 65°F. Water-cooled models rated at 105°F condensing.



Expansion valve selection						Temp	Filter	Sight
Air-cooled		Copevap		Water-Cooled		Control	Drier	Glass
HF series	PCN	HF series	PCN	HF series	PCN	TS1*	EKP	HMI
capillary	n/a	capillary	n/a			TS1-X2E	EK-032SVC	HMI-1TT2
capillary	n/a	capillary	n/a			TS1-X2E	EK-032SVC	HMI-1TT2
capillary	n/a	capillary	n/a			TS1-X2E	EK-032SVC	HMI-1TT2
capillary	n/a	capillary	n/a	capillary	n/a	TS1-X2E	EK-032SVC	HMI-1TT2
HF 1/4MC	057618	HF 1/4MC	057618	HF1/4MC	057618	TS1-X2E	EKP-052	HMI-1FM2
HF 1/4MC	057618	HF 1/4MC	057618	HF1/4MC	057618	TS1-X2E	EKP-052	HMI-1FM2
HF 1/4MC	057618	HF 1/4MC	057618	HF1/4MC	057618	TS1-X2E	EKP-052	HMI-1FM2
HF 1/2MC	057620	HF 1/2MC	057620	HF1/2MC	057620	TS1-X2E	EKP-052	HMI-1FM2
HF 1/2MC	057620			HF1/2MC	057620	TS1-X2E	EKP-052	HMI-1FM2
HFESC1/2MC	058069	HFESC1/2MC	058069	HFESC1/2MC	058069	TS1-X2E	EKP-052S*	HMI-1TT2**
HFESC3/4MC	058070	HFESC3/4MC	058070	HFESC3/4MC	058070	TS1-X2E	EKP-083S	HMI-1TT3
HFESC3/4MC	058070	HFESC3/4MC	058070	HFESC3/4MC	058070	TS1-X2E	EKP-083S	HMI-1TT3
HFESC1MC	057570			HFESC1MC	057570	TS1-X2E	EKP-083S	HMI-1TT3
HFESC1MC	057570			HFESC1 1/2MC	057568	TS1-X2E	EKP-083S	HMI-1TT3
HFESC1 1/2MC	057568			HFESC1 1/2MC	057568	TS1-X2E	EKP-083S	HMI-1TT3
capillary	n/a	capillary	n/a			TS1-X2E	EK-032SVC	HMI-1TT2
capillary	n/a	capillary	n/a	capillary	n/a	TS1-X2E	EK-032SVC	HMI-1TT2
HF 1/4SC		HF1/4SC		HF1/4SC		TS1-X2E	EKP-052	HMI-1FM2
HFESC1/4SC		HFESC1/4SC		HFESC1/4SC		TS1-X2E	EKP-052S	HMI-1TT2
HFESC1/4SC				HFESC1/4SC		TS1-X2E	EKP-052S	HMI-1TT2
HFESC1/2SC		HFESC1/2SC		HFESC1/2SC		TS1-X2E	EKP-053S	HMI-1TT3
HFESC1/2SC				HFESC1SC		TS1-X2E	EKP-053S	HMI-1TT3
HFESC1SC				HFESC1SC		TS1-X2E	EKP-053S	HMI-1TT3
HFESC1SC				HFESC1SC		TS1-X2E	EKP-053S	HMI-1TT3
HFESC1SC				HFESC11/4SC		TS1-X2E	EKP-083S	HMI-1TT3
HFESC11/4SC				HFESC11/4SC		TS1-X2E	EKP-083S	HMI-1TT3
HFESC11/4SC				HFESC11/2SC		TS1-X2E	EKP-083S	HMI-1TT3
HFESC11/2SC				HFESC2SC		TS1-X2E	EKP-163S	HMI-1TT3
HFESC2SC				HFESC2SC		TS1-X2E	EKP-163S	HMI-1TT3
HFESC31/2SC				HFESC31/2SC		TS1-X2E	EKP-304S	HMI-1TT4
HFESC31/2SC				HFESC31/2SC		TS1-X2E	EKP-304S	HMI-1TT4
capillary	n/a	capillary	n/a			TS1-X2E	EK-032SVC	HMI-1TT2
capillary	n/a	capillary	n/a	capillary	n/a	TS1-X2E	EK-032SVC	HMI-1TT2
HF 1/4HC	057467	HF1/4HC	057467	HF1/4HC	057467	TS1-X2E	EKP-052	HMI-1FM2
HFESC1/4HC	057409	HFESC1/4HC	057409	HFESC1/4HC	057409	TS1-X2E	EKP-052S	HMI-1TT2
HFESC1/2HC	057291			HFESC1/2HC	057291	TS1-X2E	EKP-052S	HMI-1TT2
HFESC1/2HC	057291	HFESC1/2HC	057291	HFESC1/2HC	057291	TS1-X2E	EKP-053S	HMI-1TT3
HFESC1/2HC	057291			HFESC1/2HC	057291	TS1-X2E	EKP-053S	HMI-1TT3
HFESC1/2HC	057291			HFESC1/2HC	057291	TS1-X2E	EKP-053S	HMI-1TT3
HFESC1HC	057410			HFESC1HC	057410	TS1-X2E	EKP-053S	HMI-1TT3
HFESC1HC	057410			HFESC1HC	057410	TS1-X2E	EKP-053S	HMI-1TT3
HFESC11/2HC	057292			HFESC11/2HC	057292	TS1-X2E	EKP-053S	HMI-1TT3
HFESC11/2HC	057292			HFESC11/2HC	057292	TS1-X2E	EKP-053S	HMI-1TT3
HFESC2HC	057294			HFESC2HC	057294	TS1-X2E	EKP-083S	HMI-1TT3
HFESC2HC	057294			HFESC21/2HC	057411	TS1-X2E	EKP-083S	HMI-1TT3
HFESC3HC	057412			HFESC3HC	057412	TS1-X2E	EKP-163S	HMI-1TT3
HFESC3HC	057412			HFESC3HC	057412	TS1-X2E	EKP-163S	HMI-1TT3
capillary	n/a	capillary	n/a	capillary	n/a	TS1-X2E	EK-032SVC	HMI-1TT2
capillary	n/a	capillary	n/a	capillary	n/a	TS1-X2E	EK-032SVC	HMI-1TT2
capillary	n/a	capillary	n/a	capillary	n/a	TS1-X2E	EK-032SVC	HMI-1TT2
HFESC1/4MC	057572	HFESC1/4MC	057572	HFESC1/4MC	057572	TS1-X2E	EKP-032S	HMI-1TT2
HFESC1/4MC	057572	HFESC1/4MC	057572	HFESC1/4MC	057572	TS1-X2E	EKP-032S	HMI-1TT2
capillary	n/a	capillary	n/a	capillary	n/a	TS1-X2E	EK-032SVC	HMI-1TT2
capillary	n/a	capillary	n/a	capillary	n/a	TS1-X2E	EK-032SVC	HMI-1TT2
HFSC1/8SC		capillary	n/a	capillary	n/a	TS1-X2E	EKP-032S	HMI-1TT2
HFSC1/8SC		HFSC1/8SC		HFSC1/8SC		TS1-X2E	EKP-032S	HMI-1TT2
HFESC1/4SC				HFESC1/4SC		TS1-X2E	EKP-032S	HMI-1TT2
HFESC1/4SC		HFESC1/4SC		HFESC1/4SC		TS1-X2E	EKP-053S	HMI-1TT3
HFESC1/2SC				HFESC1/2SC		TS1-X2E	EKP-053S	HMI-1TT3
HFESC1/2SC				HFESC1/2SC		TS1-X2E	EKP-053S	HMI-1TT3
HFESC1SC				HFESC1SC		TS1-X2E	EKP-053S	HMI-1TT3
HFESC1SC						TS1-X2E	EKP-053S	HMI-1TT3
HFESC11/4SC				HFESC11/4SC		TS1-X2E	EKP-083S	HMI-1TT3
HFESC11/2SC				HFESC11/2SC		TS1-X2E	EKP-083S	HMI-1TT3

Refer to page 5 for valve make-ups

* For a temperature control with 72" capillary and bulb use the TS1-X4F

You can use the electronic control EC1-020 with integrated timer and alarm function see page 89

** For copevap and water-cooled units use EKP053S and HMI-1TT3

Customer Information

Customer: _____ Quote Number: _____
Project: _____ Job Number: _____

Room Size: length _____ width _____ height _____

Maximum Load: _____ BTU/HR _____ tons

Minimum Load: _____ BTU/HR _____ tons

Include all load sources walls or sun, product or occupants, lights, defrost heaters, fan motors, equipment (BTUH/12,000 = tons)

Refrigerant: H=R22 or N=407C M=R134a or F=R12 S=R404A or P=R507 or R=R502 Z=R410A

Setpoint Temperature (Room Temperature): _____ °F (°C)

Saturated Suction Temperature (S.S.T.): _____ °F (°C) page 99-100 _____ psig

To calculate Saturated Suction Temperature (S.S.T.) subtract T.D. from Setpoint Temperature

Saturated Condensing Temperature (S.C.T.): _____ °F (°C) page 99-100 _____ psig

Condensing Medium Temperature (ambient / water): _____ °F (°C)

Head Pressure Control Required: Y N

Available Power: 575VØ3 460VØ3 208-230VØ3 208-230VØ1 115VØ1

Control Voltage: 208V 120V 24V

Defrost Type: None Off-cycle Electric Hot-gas

Required Selection

Evaporator Model Number: _____ at _____ °F T.D.

Condensing Unit Model Number: _____

For additional selection information and/or software (Compressor Calculator) please refer to our web-site at www.copeland-corp.com

Diameter Liquid Line: _____ Suction Line: _____ Discharge Line: _____

For line sizing information please refer to condensing unit manufacturers specifications

Expansion Valve: 1/4 - 5 1/2 ton R22 page 3 HFESC _____

10 - 70 ton R22 page 6 TRAE+ _____

Required information to select expansion valve: refrigerant, load, saturated suction pressure, saturated condensing pressure, pressure drop across valve port (SCT-SST-Distributor), liquid temperature, connection, M.O.P. required, verify selection for max. and min. load from above.

Liquid Line Filter Drier: Hermetic page 40 EKP _____

Take-A-Part page 47 STAS _____ Block or Filter page 50 _____

Use "Quick Selection Guide System Protectors" on page 39 for recommended system tonnage.

Sight-glass: page 53 HMI _____

Temperature Control (timer): mechanical page 77 TS1 _____ defrost timer _____

electronic (timer) page 89 EC1 _____

Optional Equipment

Liquid Line Solenoid Valve: page 21 - 32 _____ Coil: page 35 _____

Required information to select solenoid (min. pressure drop recommended): refrigerant, duty (liquid,suction or discharge), S.S.T, capacity, connection size, coil voltage

Hot Gas By-Pass Valve: page 66-71 _____

Hot Gas Solenoid (required for pump-down): page 21-32 _____ Coil: page 35 _____

Required information to select a hot-gas by-pass valve: refrigerant, S.S.T., tons to be by-passed (no more than 50% of the unloaded capacity), distributor requirements, connection

Crankcase Pressure Regulator: page 62 OPR _____

Required information to select a Crankcase Pressure Regulator: refrigerant, S.S.T., capacity, valve set-point (refer to compressor manufacturer for maximum suction pressure), connection size

Accumulator: page 72 A-AS _____

Head Pressure Control: HeadMaster page 64 HP _____

Fan Cycling page 79 PS1 X5_

Required information to select HeadMaster Valve: refrigerant, S.S.T., capacity, liquid temperature, conne

