

# Valves, Controls and System Protectors

## Asia Catalogue



Product Catalogue

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# Thermo™ - expansion valves

Application	Nominal capacity		Valve family	Bi-Flow	Adjustable superheat	Internal check	Style			Connections		Configuration		Port	
	R-22	R-410A					Hermetic	Replaceable power element	Field serviceable	SAE	ODF	Angle	Straight	Conventional	Balanced
Air Conditioning and Refrigeration	1/4 to 5	1 ¼ to 5	AA		X		X				X		X	X	
	1/4 to 5	1 ¼ to 5	AN				X				X	X	X	X	
	1/4 to 5	1 ¼ to 5	AAC		X	X	X				X		X	X	
	1/4 to 5	1 ¼ to 5	ANC			X	X				X	X	X	X	
	1/4 to 5		AFA		X		X			X		X		X	
	1/2 to 6	½ to 7 ½	BA	X	X		X				X		X		X
	1/2 to 6	½ to 7 ½	BN	X			X				X	X			X
		½ to 15	NXT	X	X	X	X			X	X	X	X		X
	1/4 to 5 1/2		HFK		X			X	X	X	X	X	X		X
	1/4 to 5 1/2		HF		X			X		X	X	X	X		X
	8 to 20		HF EXT		X			X			X	X	X		X
	1/4 to 5 1/2		TA		X				X	X	X	X		X	
	1/3 to 5		TI		X				X	X	X	X		X	
	8 to 20	12 to 20	TF	X	X			X			X				X
	1/2 to 12		TL	X					X	X	X	X	X	X	
	1/2 to 12		TCL	X	X				X	X	X	X	X	X	
	11 and 14		TJL	X	X				X		X	X	X	X	
	14 and 18		TJR	X	X				X		X	X	X		X
	22 to 45		TER	X	X				X		X	X	X		X
	55		TIR	X	X				X		X	X	X		X
	70 and 85		THR	X	X				X		X	X	X		X
	100		TMR	X	X				X		X	X	X		X
	10 to 40		TRAE+	X	X			X			X		X		X
50 to 70		TRAE	X	X		X				X		X		X	
8 to 15	8 to 18	TRAE Stretch	X	X			X			X		X		X	
8 to 15		TRAES		X		X				X		X		X	
1/4 to 6	3/4 to 5 1/4	TX3		X	X	X				X		X	X		
8 to 45	9 to 50	TX7	X	X		X				X		X		X	
1 1/2 to 11 (R-134a only)		VAEM		X		X		X	MIO			X		X	
Constant Pressure	1/2 to 5		ACP				X			X		X	X		
Ultra-Low Temp	3/4 to 8		ZZ		X				X	X	X	X	X	X	
De-Superheating			LA		X		X			X		X	X	X	
			LCL		X				X	X	X	X	X	X	

## Charge code selector

Applications	Operating ranges
R-134A/R-12 Domestic refrigerators and freezers, ice makers, dehumidifiers, transport refrigeration, medium temperature supermarket equipment, medium temperature commercial equipment	MC/FC
	MZ/FZ
	MW35/FW35 (MOP)
	MW55
R-22 Residential air conditioners & heat pumps, commercial and industrial chillers, medium temperature supermarket equipment, commercial air handlers	HCA/HAA air cond. & Heat pump
	HW/HW100
	HC
	HW65 (MOP)
R-404A/R-507/R-502 Low temperature cases, ice makers, commercial air handlers, conditioners, soft ice cream machines, environmental chambers	HZ
	SC/RC
	SZ/RZ
R-410A	SW45/RW45 (MOP)
	ZW195
	-50 -40 -30 -20 -10 0 +10 +20 +30 +40 +50

# A Series Thermo™ - expansion valves

For heat pump, air conditioning, food services and commercial applications.

## Features

- Stainless steel power element prevents corrosion and valve failure
- Compact size allows installation in limited spaces
- Hermetic construction
- Mass spectrometer tested to ensure less than 0.10 oz/year external leakage rate

## Options

- ZW195 charge available for R-410A systems
- Adjustable or non-adjustable superheat
- SAE or ODF connections standard – Chatleff or Aeroquip are available
- External or internal equalizer
- Internal check valve allows reverse flow for heat pump applications, eliminating the need for external piping and external check valve
- Bleed type pressure equalization to accommodate PSC type compressors
- Pressure limiting charges (MOP) available



## Specifications

Maximum working pressure: 700 psig  
UR/CUR file number: SA 5312

## Model nomenclature example: AACEB 2HC30IN3/8X1/2ODFANG

A	A	C	E	B	2	H	C	30 IN	3/8 X 1/2	ODF	ANG
Series	Superheat adjustment	Internal check valve	Equalizer	Bleed hole	Capacity	Refrigerant code	Charge code	Capillary tube length	Inlet X outlet connection sizes	Connection type	Configuration
Hermetic design	A = Adjustable N = Non-adjustable	(Optional) Reverse flow Bypass Application	E = External (Omit for internal)	(Optional) (Omit for no bleed hole)	Nominal rating in Tons  (See Nominal Capacity table below)	+F = R-12 • H = R-22 +M = R-134a • N = R-407C *P = R-507 *R = R-502 *S = R-404A Z = R-410A B = R-448A /R-449A D = R-450A /R-513A T = R-290	C = Medium temp CA = Heat pump W(MOP) <sup>1</sup> = Press limiting Z = Low temp AA = Wide range A = Medium & low temp	30 IN & 5 FT (std)	1/4 x 3/8 3/8 x 1/2 1/2 x 5/8 5/8 x 7/8	SAE = Flare ODF = Solder Chatleff (Optional) Aeroquip (Optional)	S/T = Straight-thru  ANG = 90° Angle

+ = R-12 and R-134a are interchangeable refrigerant charges  
\* = R-507, R-502, and R-404A are interchangeable refrigerant charges  
• = R-22/R-290 and R-407C are interchangeable refrigerant charges  
<sup>1</sup> Maximum operating pressure

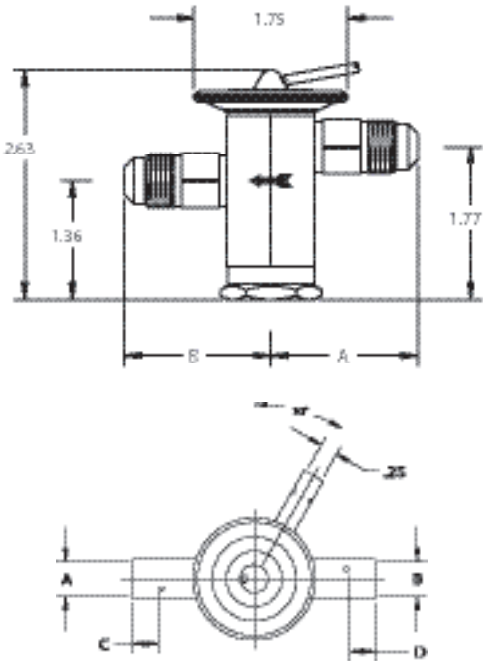
## A Series – nominal\* capacity table in Tons (kW)

R-12	R-134a	R-450A/R-513A	R-22/R-290	R-410A	R-502	R-507/R-404A	**R-448A/ R-449A	R-407C
–	1/8 (0.4)	1/8 (0.4)	1/5 (0.7)	–	–	1/8 (0.4)	1/5 (0.7)	1/5
1/8 (0.4)	1/4 (0.9)	1/5 (0.7)	1/4 (0.9)	1/4 (0.9)	1/8 (0.4)	1/4 (0.9)	1/4 (0.9)	1/4 (0.9)
1/4 (0.9)	1/2 (1.8)	1/4 (0.9)	1/2 (1.8)	1/2 (1.8)	1/4 (0.9)	1/2 (1.8)	1/2 (1.8)	1/2 (1.8)
1/2 (1.8)	3/4 (2.7)	1/2 (1.8)	1 (3.5)	1 (3.5)	1/2 (1.8)	3/4 (2.7)	1 (3.5)	1 (3.5)
1 (3.5)	1 (3.5)	3/4 (2.7)	1-1/2 (5.3)	1-1/2 (5.3)	1 (3.5)	1 (3.5)	1-1/2 (5.3)	1-1/4 (4.4)
–	1-1/2 (5.3)	1 (3.5)	2 (7.0)	2 (7.0)	–	1-1/4 (4.4)	2 (7.0)	2 (7.0)
1-1/2 (5.3)	2 (7.0)	1-1/2 (5.3)	2-1/2 (8.8)	3 (11.0)	1-1/2 (5.3)	2 (7.0)	2-3/4 (9.7)	2-1/2 (8.8)
2 (7.0)	2-1/2 (9.0)	2 (7.0)	3 (11.0)	4 (14.0)	2 (7.0)	2-1/4 (8.0)	3-1/2 (12.0)	3-1/4 (11.5)
2-1/2 (9.0)	3 (11.0)	2-1/2 (9.0)	4 (14.0)	5 (17.0)	2-1/2 (8.8)	2-1/2 (8.8)	4 (14.0)	4 (14.0)
3 (11.0)	4 (14.0)	3 (11.0)	5 (17.0)	–	3 (11.0)	3-1/2 (12.0)	5-1/2 (20.0)	5-1/4 (19.0)

All capacities shown are at 100°F condensing, 40°F evaporator temperature.  
\*See extended capacity tables for ratings at a wide range of conditions per ARI standard 750.

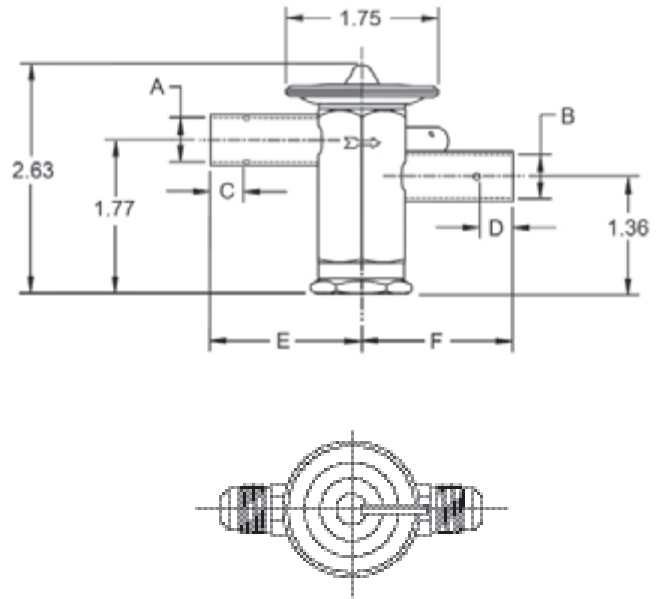
### ANCE SAE dimensional data (in.)

Connection size		A	B
Inlet	Outlet		
3/8 SAE	3/8 SAE	1.67	1.67
1/2 SAE	1/2 SAE	1.75	1.75



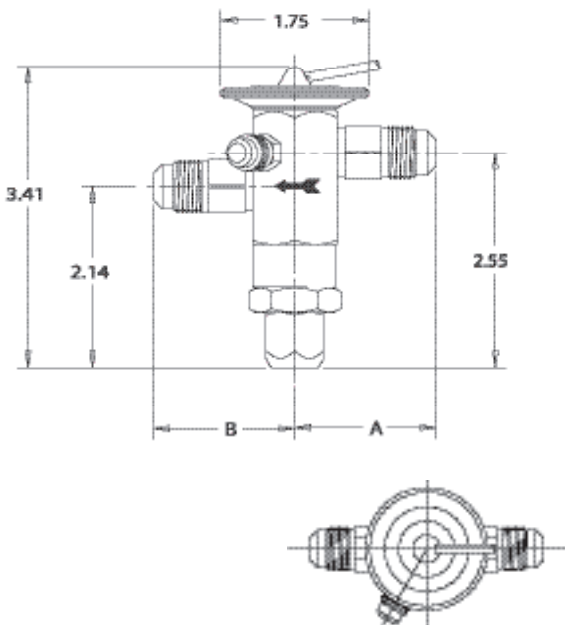
### ANCE ODF dimensional data (in.)

Connection size		A± .002	B± .002	C MIN	D MIN	E	F
Inlet	Outlet						
1/4 ODF	3/8 ODF	0.25	0.38	0.32	0.32	1.70	1.73
3/8 ODF	3/8 ODF	0.38	0.38	0.32	0.32	1.70	1.73
3/8 ODF	1/2 ODF	0.38	0.50	0.32	0.38	1.73	1.73
1/2 ODF	1/2 ODF	0.50	0.50	0.38	0.38	1.73	1.73
1/2 ODF	5/8 ODF	0.63	0.61	0.38	0.50	1.75	1.75



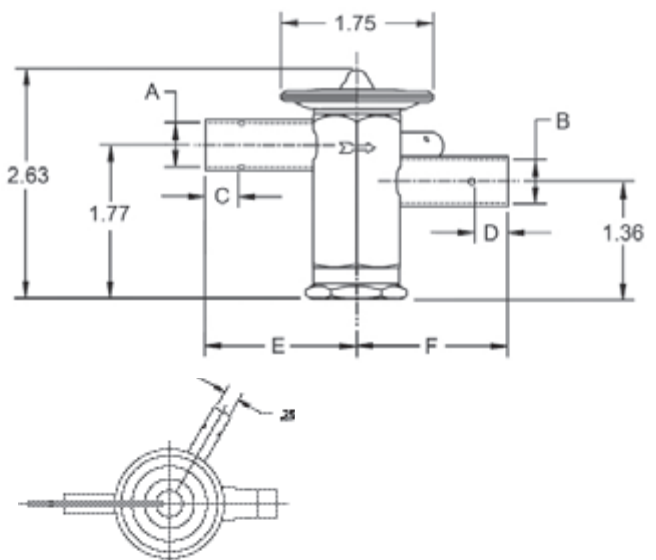
### AACE SAE dimensional data (in.)

Connection Size		A	B
Inlet	Outlet		
3/8 SAE	3/8 SAE	1.67	1.67
1/2 SAE	1/2 SAE	1.75	1.75



### AACE ODF dimensional data (in.)

Connection Size		A± .002	B± .002	C MIN	D MIN	E	F
Inlet	Outlet						
1/4 ODF	3/8 ODF	0.25	0.38	0.32	0.32	1.70	1.73
3/8 ODF	3/8 ODF	0.38	0.38	0.32	0.32	1.70	1.73
3/8 ODF	1/2 ODF	0.38	0.50	0.32	0.38	1.73	1.73
1/2 ODF	1/2 ODF	0.50	0.50	0.38	0.38	1.73	1.73
1/2 ODF	5/8 ODF	0.63	0.61	0.38	0.50	1.75	1.75



# A Series Thermo™ - expansion valves

For heat pump, air conditioning, food services and commercial applications.

## Ordering information

### Without internal check valve

Refrigerant	Series	Tons*	Charge	Connections	Cap Tube	PCN	
R-410A	AAE	1-1/2	ZW195	3/8 X 1/2 ODF S/T	30 IN	066515	
			ZW195	3/8 X 3/8 ODF S/T	30 IN	064595	
		3	ZW195	3/8 X 1/2 ODF S/T	30 IN	065579	
			ZW195	CHATLEFF	30 IN	015776	
			ZW195	1/2 X 5/8 ODF S/T	30 IN	065580	
ZW195	CHATLEFF	30 IN	015794				
R-134a R-12	AA	1/8	MC	1/4 X 3/8 ODF S/T	30 IN	066030	
			MC	1/4 X 1/2 ODF S/T	30 IN	065821	
		1/4	MC	1/4 X 3/8 ODF S/T	30 IN	062051	
			MC	1/4 X 1/2 ODF S/T	5 FT	065623	
		1	MC	3/8 X 1/2 ODF S/T	30 IN	065776	
			MC	1/4 X 3/8 SAE S/T	30 IN	058985	
	1/2	MC	1/4 X 1/2 ODF S/T	5 FT	065624		
		MZ	1/4 X 3/8 SAE S/T	30 IN	058986		
	AAE	1	MC	1/4 X 1/2 ODF S/T	5 FT	065630	
			MC	3/8 X 1/2 ODF S/T	5 FT	065631	
	R-22 R-407C	AA	1/4	HC	1/4 X 3/8 ODF S/T	5 FT	056315
				HC	1/4 X 1/2 ODF S/T	5 FT	055932
1/2			HC	1/4 X 1/2 ODF S/T	5 FT	065626	
			HC	3/8 X 3/8 ODF S/T	30 IN	056547	
1/2			HC	3/8 X 1/2 SAE S/T	5 FT	057828	
			HC	1/4 X 1/2 ODF S/T	5 FT	065632	
1/2		HC	3/8 X 1/2 ODF S/T	5 FT	065633		
		HC	3/8 X 1/2 SAE ST	5 FT	057987		
1		HC	1/4 X 3/8 ODF ST	30 IN	059582		
		HC	1/4 X 1/2 ODF S/T	5 FT	065634		
1		HC	3/8 X 1/2 ODF S/T	5 FT	065635		
		HC	3/8 X 1/2 ODF S/T	5 FT	064424		
2		HC	3/8 X 1/2 ODF S/T	5 FT	064425		
		HCA	3/8 X 1/2 ODF S/T	30 IN	049632		
2-1/2		HAA	3/8 X 1/2 ODF S/T	30 IN	063648		
		HAA	CHATLEFF	30 IN	013938		
3		HCA	3/8 X 1/2 ODF S/T	30 IN	049633		
		HC	3/8 X 1/2 ODF S/T	5 FT	062376		
3		HC	3/8 X 1/2 SAE S/T	5 FT	056686		
		HCA	3/8 X 1/2 ODF S/T	30 IN	049634		
4		HCA	1/2 X 5/8 ODF S/T	30 IN	060643		
		HC	1/2 X 5/8 ODF S/T	5 FT	061960		
4		HCA	3/8 X 1/2 ODF S/T	30 IN	049638		
		HCA	1/2 X 1/2 ODF S/T	30 IN	061247		
5		HAA	3/8 X 1/2 ODF S/T	30 IN	063649		
		HAA	CHATLEFF	30 IN	013939		
5		HC	1/2 X 5/8 ODF S/T	5 FT	059565		
		HC	5/8 X 7/8 ODF S/T	30 IN	061805		
5		HCA	3/8 X 1/2 ODF S/T	30 IN	054024		
		HCA	1/2 X 5/8 ODF S/T	30 IN	059683		
5	HW100	3/8 X 5/8 ODF S/T	5 FT	062088			
	HCA	3/8 X 1/2 ODF S/T	30 IN	059616			
AAEB	3	HCA	3/8 X 1/2 ODF S/T	30 IN	059603		
		HCA	1/2 X 1/2 ODF S/T	30 IN	059605		
AAEB	5	HCA	1/2 X 1/2 ODF S/T	30 IN	059607		

### Chatleff gasket kit – KG-10045 (PCN: 066031)

\* For interchangeable refrigerant charges R-134a/R-12, R-404A/R-507/R-502 and R-22/R-290/R-407C the tons of capacity shown in the table are for the first (primary) refrigerant listed. Consult the Nominal Capacity Table for determining the tons of capacity for the secondary refrigerants listed.

Example: A 1/4 ton R-12 valve is required. What R-134a ton valve should be selected?

Solution: From the nominal capacity table, a 1/2 ton R-134a valve is equivalent to a 1/4 ton R-12 valve.

### Without internal check valve (cont.)

Refrigerant	Series	Tons*	Charge	Connections	Cap Tube	PCN
R-404A R-507 R-502	AA	1/8	SC	1/4 X 3/8 ODF S/T	30 IN	065921
			SC	1/4 X 1/2 ODF S/T	30 IN	063503
		1/4	SW45	1/4 X 3/8 ODF S/T	5 FT	065676
			SZ	1/4 X 3/8 ODF S/T	5 FT	065675
		1/2	SC	1/4 X 1/2 ODF S/T	30 IN	063504
			SW45	1/4 X 1/2 ODF S/T	5 FT	065685
		1/2	SZ	1/4 X 1/2 ODF S/T	5 FT	065682
			SZ	3/8 X 1/2 ODF S/T	30 IN	063925
		3/4	SC	3/8 X 1/2 ODF S/T	30 IN	066200
			SW45	3/8 X 1/2 ODF S/T	30 IN	065686
		1	SZ	3/8 X 1/2 ODF S/T	30 IN	065149
			SC	3/8 X 1/2 ODF S/T	30 IN	066201
		1	SW45	3/8 X 1/2 ODF S/T	30 IN	066506
			SZ	3/8 X 1/2 ODF S/T	30 IN	063926
		1/4	SC	1/4 X 1/2 ODF S/T	30 IN	066422
			SW45	1/4 X 1/2 ODF S/T	30 IN	066508
		1/2	SZ	1/4 X 1/2 ODF S/T	30 IN	066435
			SC	1/4 X 1/2 ODF S/T	30 IN	066423
		1/2	SC	3/8 X 1/2 ODF S/T	5 FT	066085
			SW45	1/4 X 1/2 ODF S/T	5 FT	065636
		1/2	SW45	3/8 X 1/2 ODF S/T	5 FT	065688
			SZ	1/4 X 1/2 ODF S/T	30 IN	066436
		3/4	SZ	3/8 X 1/2 ODF S/T	5 FT	065687
			SC	3/8 X 1/2 ODF S/T	5 FT	066086
	1	SW45	3/8 X 1/2 ODF S/T	30 IN	066509	
		SZ	1/4 X 1/2 ODF S/T	30 IN	066437	
	AAE	1-1/4	SC	3/8 X 1/2 ODF S/T	5 FT	066087
			SW45	3/8 X 1/2 ODF S/T	5 FT	065637
			SZ	3/8 X 1/2 ODF S/T	5 FT	065183
			SC	3/8 X 1/2 ODF S/T	5 FT	066081
			SW45	3/8 X 1/2 ODF S/T	5 FT	066079
			SZ	3/8 X 1/2 ODF S/T	5 FT	066080
			SC	3/8 X 1/2 ODF S/T	5 FT	066448
			SC	3/8 X 1/2 SAE S/T	30 IN	061882
			SW45	3/8 X 1/2 ODF S/T	5 FT	065698
			SZ	3/8 X 1/2 ODF S/T	5 FT	065697
			SC	3/8 X 1/2 ODF S/T	30 IN	065330
			2	SW45	3/8 X 1/2 ODF S/T	5 FT
		SZ	3/8 X 1/2 ODF S/T	5 FT	065689	
		SW45	3/8 X 1/2 ODF S/T	5 FT	066082	
		SZ	3/8 X 1/2 ODF S/T	5 FT	066083	
		2-1/4	SC	3/8 X 1/2 ODF S/T	5 FT	066084
		SC	3/8 X 1/2 SAE S/T	30 IN	061885	
		2-1/2	SW45	1/2 X 5/8 ODF S/T	5 FT	065148
		SZ	1/2 X 5/8 ODF S/T	5 FT	065691	
		3	SC	3/8 X 1/2 ODF S/T	30 IN	066510
		SW45	3/8 X 1/2 ODF S/T	5 FT	065693	
		SZ	3/8 X 1/2 ODF S/T	5 FT	065692	

### With internal check valve

Refrigerant	Series	Tons*	Charge	Connections	Cap Tube	PCN	
R-410A	AAE	1-1/2	ZW195	3/8 X 1/2 ODF S/T	5 FT	065871	
			ZW195	CHATLEFF	30 IN	016432	
		2	ZW195	3/8 X 1/2 ODF S/T	5 FT	065872	
			ZW195	CHATLEFF	30 IN	016615	
		3	ZW195	3/8 X 1/2 ODF S/T	5 FT	065873	
			ZW195	CHATLEFF	30 IN	015795	
		4	ZW195	3/8 X 1/2 ODF S/T	5 FT	065874	
			ZW195	CHATLEFF	30 IN	016433	
	5	ZW195	1/2 X 5/8 ODF S/T	5 FT	065875		
		ZW195	CHATLEFF	30 IN	015796		
	AAE	1-1/2	ZW195	3/8 X 1/2 ODF S/T	30 IN	065946	
			ZW195	3/8 X 1/2 ODF S/T	30 IN	065942	
		3	ZW195	3/8 X 1/2 ODF S/T	30 IN	065943	
			ZW195	3/8 X 1/2 ODF S/T	30 IN	065944	
		4	ZW195	3/8 X 1/2 ODF S/T	30 IN	065945	
			ZW195	3/8 X 1/2 ODF S/T	30 IN	065945	
R-22 R-407C		AAE	1	HCA	3/8 X 1/2 ODF S/T	30 IN	063795
				HCA	3/8 X 1/2 ODF S/T	5 FT	058923
	2		HCA	3/8 X 1/2 ODF S/T	30 IN	063676	
			HAA	3/8 X 1/2 ODF S/T	30 IN	064102	
	2-1/2		HAA	CHATLEFF	30 IN	014091	
			HCA	3/8 X 1/2 ODF S/T	5 FT	065868	
	3		HCA	1/2 X 5/8 ODF S/T	5 FT	065797	
			HCA	3/8 X 1/2 ODF S/T	5 FT	065869	
	4	HAA	3/8 X 1/2 ODF S/T	30 IN	064103		
		HAA	1/2 X 5/8 ODF S/T	5 FT	065863		
	5	HAA	CHATLEFF	30 IN	014092		
		HCA	3/8 X 1/2 ODF S/T	30 IN	065842		
	AAE	1-1/2	HCA	3/8 X 1/2 ODF S/T	30 IN	065959	
			HCA	3/8 X 1/2 ODF S/T	30 IN	065941	
		4	HCA	3/8 X 1/2 ODF S/T	30 IN	065844	

## ACP(E) Thermo™ - expansion valves – automatic

The ACP is designed for small cooling units where the heat load is reasonably constant. The ACP is ideal for room air conditioners, domestic refrigerators, drink dispensers, food dispensers, ice cream cabinets, bottle coolers, home freezers, ice cube makers, ice cream freezers, and milk coolers.



### Features

- Friction-free floating design
- Can be used as a small capacity hot gas bypass valve
- Fully adjustable from 0-80 psig (factory setting 40 psig)
- Wrench flats on inlets and outlets

### Options

- Internal or external equalizer
- SAE or ODF connections

### Specifications

- Maximum working pressure: 500 psig
- Maximum working temperature: 300°F
- UL/CUL file number: SA5312

### 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
Series	Equalizer	Port size	External equalizer type	Inlet x outlet connection sizes	Connection type	Body style
	E=External (Optional)	(Diameter) see table below			ODF or SAE	ANG = Angle S/T = Straight-thru

### Ordering information

PCN	Description	PCN	Description
046838	ACP 1 IE 1/4 x 3/8-1/2 SAE ANG	049204	ACP 5 IE 3/8 X 3/8-1/2 SAE ANG
047652	ACP 6 IE 1/4 x 3/8 ODF ANG	047653	ACP 6 IE 1/4 x 3/8 SAE ANG
047680	ACP 1 IE 1/4 x 3/8 ODF ANG	057233	ACP 1 IE 1/4 x 3/8 ODF S/T
056240	ACP 1 IE 1/4 X 3/8 SAE ANG	065922	ACP 6 IE 3/8 x 3/8 ODF ANG
046839	ACP 2 IE 1/4 X 3/8 SAE ANG	047654	ACP 7 IE 3/8 x 1/2 ODF ANG
047651	ACP 2 IE 1/4 x 3/8 ODF ANG	047285	ACP 7 IE 3/8 x 3/8-1/2 SAE ANG
047283	ACP 3 IE 1/4 X 3/8 ODF ANG	047655	ACP 8 IE 3/8 x 1/2 ODF ANG
046840	ACP 3 IE 1/4 x 3/8 SAE ANG	047657	ACP 9 IE 3/8 X 1/2 ODF ANG
047105	ACP 4 IE 1/4 x 3/8 ODF ANG	057209	ACP 9 IE 3/8 X 3/8 ODF ANG
047101	ACP 4 IE 1/4 X 3/8 SAE ANG	057771	ACP 9 IE 1/2 x 5/8 ODF ANG
047284	ACP 5 IE 1/4 x 3/8 ODF ANG	052773	ACP 9 IE 1/4 X 3/8 ODF ANG
047332	ACP 5 IE 1/4 X 3/8 SAE ANG	047658	ACP 9 IE 3/8 x 3/8-1/2 SAE ANG
053374	ACP 5 IE 3/8 x 3/8 ODF ANG	057327	ACP 9 IE 3/8 X 3/8 SAE S/T
		047280	ACPE 1 SAE EE 1/4 x 3/8 SAE S/T
		053231	ACPE 1 SAE EE 1/4 x 3/8 ODF ANG
		047790	ACPE 7 SAE EE 3/8 x 1/2 ODF ANG
		048657	ACPE 9 SAE EE 3/8 x 1/2 ODF S/T
		058674	ACPE 9 SAE EE 1/2 x 5/8 ODF S/T
		057017	ACPE 9 ODF EE 3/8 x 1/2 ODF ANG

### ACP(E)- nominal\* capacity table in Tons

Valve	Port diameter (in)	R-12/R-134a	R-407C/R-22	R-502/R-404A/R-507
		Pressure drop across valve – PSI		
		60	100	100
ACP(E)1	0.05	0.31	0.44	0.29
ACP(E)2	0.06	0.41	0.57	0.38
ACP(E)3	0.10	0.65	0.91	0.61
ACP(E)4	0.11	0.90	1.30	0.87
ACP(E)5	0.13	1.40	1.96	1.31
ACP(E)6	0.14	1.90	2.67	1.78
ACP(E)7	0.17	2.30	3.28	2.19
ACP(E)8	0.20	2.70	3.75	2.50
ACP(E)9	0.23	3.80	5.32	3.55

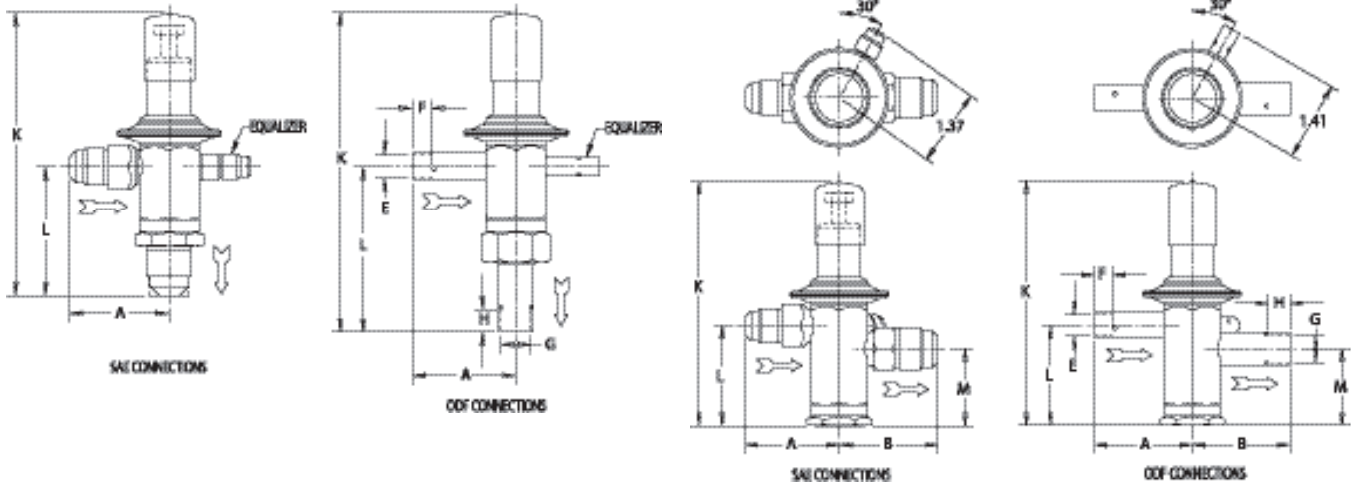
\* All capacities shown are at 100°F Condensing, 40°F Evaporator Temperature, with a solid column of liquid at the valve inlet.

# ACP(E) Thermo™ - expansion valve – automatic

## ACP dimensional data

ACP Angle

ACP Straight-Thru



## Dimensional data (in)

ACP(E) Valve type	Inlet	Outlet	A	B	E DIA.	F MIN.	G DIA.	H MIN.	K	L	
Angle	1/4	3/8	1.50	-	-	-	-	-	4.50	2.13	
	3/8	3/8 - 1/2	1.64								
	1/2		1.72								
SAE	1/4	5/8	1.50	-	-	-	-	-	4.61	2.23	
	3/8		1.64								
	1/2		1.72								
Angle	1/4	3/8	1.19	-	0.25	0.32	0.37	0.32	4.55	2.17	
	3/8				0.37	0.32					0.50
	1/2	5/8	1.38	-	0.50	0.38	0.62	0.50	4.73	2.36	
	5/8				0.62	0.50					
	1/4	1/2	1.19	-	0.25	0.32	0.37	0.32	4.55	2.17	
	3/8				0.37	0.32					
	1/2				0.50	0.38					
	ODF	1/4	7/8	1.19	-	0.25	0.32	0.50	0.38	5.11	2.73
		3/8				0.37	0.32				
		1/2				0.50	0.38				

ACP(E) Valve type	Inlet	Outlet	A	B	E DIA.	F MIN.	G DIA.	H MIN.	K	L	M
Straight-thru	1/4	3/8	1.50	1.64	-	-	-	-	4.25	1.88	1.48
	3/8		1.64								
	1/2		1.72								
SAE	1/4	5/8	1.50	1.98	-	-	-	-	4.25	1.88	1.48
	3/8		1.64								
	1/2		1.72								
Straight-thru	1/4	3/8	1.19	1.19	0.25	0.32	0.37	0.32	4.25	1.88	1.48
	3/8				0.37	0.32					
	1/2	5/8	1.38	1.38	0.50	0.38	0.62	0.50	4.25	1.88	1.48
	5/8				0.62	0.50					
	1/4	1/2	1.19	1.19	0.25	0.32	0.37	0.32	4.25	1.88	1.48
	3/8				0.37	0.32					
	1/2				0.50	0.38					
	ODF	1/4	7/8	1.19	1.75	0.25	0.32	0.50	0.38	5.11	2.73
		3/8				0.37	0.32				
		1/2				0.50	0.38				

# AFA Series Thermo™ - expansion valves

## For air conditioning and commercial refrigeration applications

### Features

- Stainless steel power element prevents corrosion and valve failure
- External superheat adjustment
- Replaceable inlet strainer
- SAE connections only
- Wrench flats on inlet and outlet

### Options

- External or internal equalizer



### Specifications

- Maximum working pressure: 700 psig
- UR/CUR file number: SA 5312

### Model nomenclature example: AFAE 1/2HC5FT3/8X1/2SAEANG

AF	A	E	1/2	H	C	5 FT	3/8 X 1/2	SAE	ANG
Series	Superheat adjustment	Equalizer	Capacity	Refrigerant code	Charge code	Capillary tube length	Inlet x outlet connection sizes	Connection type	Configuration
Hermetic Design, Flare Connections	A = Adjustable	E=External (Omit for Internal)	Nominal Rating in Tons (See Nominal Capacity Table Below)	+F = R-12 • H = R-22 /R-290 +M = R-134a • N = R-407C *P = R-507 *R = R-502 *S = R-404A Z = R-410A	C = Medium Temp CA = Heat Pump W(MOP) = Press. Limiting Z = Low Temp AA = Wide Range	30 IN & 5 FT (std)	1/4 X 3/8 1/4 X 1/2 1/4 X 5/8 1/4 X 3/8-1/2 3/8 X 3/8 3/8 X 1/2 3/8 X 5/8 3/8 X 3/8-1/2	SAE=Flare	ANG = 90° Angle

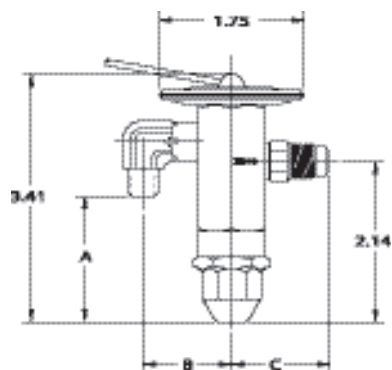
+ = R-12 and R-134a are interchangeable refrigerant charges, \* = R-507, R-502 and R-404A are interchangeable refrigerant charges, • = R-22, R-290 and R-407C are interchangeable refrigerant charges  
<sup>1</sup> Maximum operating pressure

### AFA Series – nominal\* capacity table in Tons (kW)

R-12	R-134a	R-22/R-290	R-502	R-507/R-404A	R-407C
-	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)	1/8 (0.4)	1/4 (0.9)	1/4 (0.9)
1/4 (0.9)	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)	1/2 (1.8)	3/4 (2.7)	1 (3.5)
1 (3.5)	1 (3.5)	1-1/2 (5.3)	1 (3.5)	1 (3.5)	1-1/4 (4.4)
-	1-1/2 (5.3)	2 (7.0)	-	1-1/4 (4.4)	2 (7.0)
1-1/2 (5.3)	2 (7.0)	2-1/2 (9.0)	1-1/2 (5.3)	2 (7.0)	2-1/2 (9.0)
2 (7.0)	2-1/2 (9.0)	3 (11.0)	2 (7.0)	2-1/4 (8.0)	3-1/4 (11.5)
-	3 (11.0)	-	-	2-1/2 (9.0)	4 (14.0)
3 (11.0)	4 (14.0)	5 (17.0)	3 (11.0)	3-1/2 (12.0)	5-1/4 (19.0)

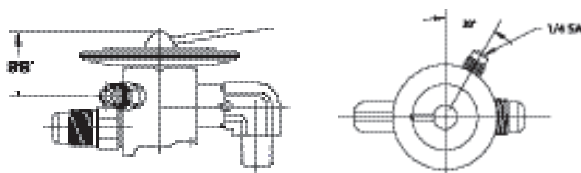
All capacities shown are at 100°F condensing, 40°F evaporator temperature.  
 \*See extended capacity tables for ratings at a wide range of conditions per ARI standard 750.

### Dimensional data



Remote bulb tubing length 30" or 5' standard

AFA Connections (in.)				
Inlet	Outlet	A	B	C
1/4 SAE Elbow	3/8 SAE	1.56	1.31	1.64
	1/2 SAE			1.35
	5/8 SAE			1.98
3/8 SAE Elbow	3/8 - 1/2 SAE	1.47	1.31	1.73
	3/8 SAE			1.34
	1/2 SAE			1.36
	5/8 SAE			1.98
	3/8 - 1/2 SAE			1.73



# AFA Series Thermo™ - expansion valves

For air conditioning and commercial refrigeration applications

## Ordering information

### Internally equalized

Refrigerant	Series	Tons*	Charge	Connections	Cap tube	PCN
R-12 R-134a	AFA	1/4	FC	1/4 X 3/8-1/2 SAE	5 FT	047753
			FC	1/4 X 3/8-1/2 SAE	30 IN	057047
			FC	3/8 X 3/8-1/2 SAE	5 FT	054258
			MC	1/4 X 3/8-1/2 SAE	5 FT	058536
			MC	1/4 X 3/8-1/2 SAE	30 IN	057607
		1/2	FC	1/4 X 3/8-1/2 SAE	5 FT	047752
			FC	1/2 X 3/8-1/2 SAE	30 IN	057028
			FC	3/8 X 3/8-1/2 SAE	5 FT	054226
			FC	3/8 X 3/8-1/2 SAE	30 IN	057027
			MC	1/4 X 3/8-1/2 SAE	30 IN	057606
			MC	3/8 X 3/8-1/2 SAE	30 IN	059625
		1	FC	3/8 X 3/8-1/2 SAE	5 FT	047758
			FC	3/8 X 3/8-1/2 SAE	30 IN	057029
			MC	1/4 X 3/8-1/2 SAE	30 IN	057605

\* For interchangeable refrigerant charges R-134a/R-12, R-404A/R-507/R-502, and R-22/R-290/R-407C, the tons of capacity shown in the table are for the first (primary) refrigerant listed. Consult the nominal capacity table for determining the tons of capacity for the secondary refrigerants listed.  
 Example: A 1/4 ton R-12 valve is required. What R-134a ton valve should be selected? Solution: from the nominal capacity table, A 1/2 ton R-134a valve is equivalent to a 1/4 ton R-12 valve.



## Ordering Information

### Externally equalized

Refrigerant	Series	Tons*	Charge	Connections	Cap tube	PCN		
R-134a R-12	AFAE	1/4	MC	3/8 X 3/8-1/2 SAE	30 IN	063898		
		1/2	MC	1/4 X 3/8-1/2 SAE	30 IN	057853		
			MC	3/8 X 3/8-1/2 SAE	30 IN	061904		
		1	MC	3/8 X 3/8-1/2 SAE	30 IN	057613		
		1-1/2	MC	3/8 X 3/8-1/2 SAE	30 IN	060865		
		2	MC	3/8 X 3/8-1/2 SAE	30 IN	061906		
R-22 R-290 R-407C	AFAE	1/2	HC	1/4 X 3/8-1/2 SAE	5 FT	054243		
		1	HC	3/8 X 3/8-1/2 SAE	5 FT	054246		
			HC	1/4 X 3/8-1/2 SAE	5 FT	054245		
			HZ	3/8 X 3/8-1/2 SAE	5 FT	057163		
		1-1/2	HC	3/8 X 3/8-1/2 SAE	5 FT	054247		
			HZ	3/8 X 3/8-1/2 SAE	5 FT	057950		
		2	HZ	3/8 X 3/8-1/2 SAE	5 FT	057951		
			HC	3/8 X 3/8-1/2 SAE	5 FT	054248		
		3	HC	3/8 X 3/8-1/2 SAE	5 FT	054249		
			HZ	3/8 X 3/8-1/2 SAE	5 FT	057556		
		5	HC	3/8 X 3/8-1/2 SAE	5 FT	054250		
			HZ	3/8 X 3/8-1/2 SAE	5 FT	058484		
		R-404A R-507 R-502	AFAE	1/4	SC	1/4 X 3/8-1/2 SAE	30 IN	066427
					SW45	1/4 X 3/8-1/2 SAE	30 IN	066502
SZ	1/4 X 3/8-1/2 SAE				30 IN	066442		
1/2	SC			1/4 X 3/8-1/2 SAE	30 IN	066428		
	SW45			3/8 X 3/8-1/2 SAE	30 IN	066453		
	SZ			1/4 X 3/8-1/2 SAE	30 IN	066443		
3/4	SC			3/8 X 3/8-1/2 SAE	30 IN	061911		
	SW45			3/8 X 3/8-1/2 SAE	30 IN	066504		
	SZ			1/4 X 3/8-1/2 SAE	30 IN	066444		
1	SC			3/8 X 3/8-1/2 SAE	30 IN	061912		
	SW45			3/8 X 3/8-1/2 SAE	30 IN	066452		
	SZ			1/4 X 3/8-1/2 SAE	30 IN	066445		
1-1/2	SZ			3/8 X 3/8-1/2 SAE	5 FT	063464		
	SC			3/8 X 3/8-1/2 SAE	5 FT	066454		
2	SZ			3/8 X 3/8-1/2 SAE	5 FT	063465		
	SC			3/8 X 3/8-1/2 SAE	30 IN	061914		
	SW45			3/8 X 3/8-1/2 SAE	5 FT	066505		
					SZ	3/8 X 3/8-1/2 SAE	5 FT	061646

\* For interchangeable refrigerant charges R-134a/R-12, R-404A/R-507/R-502, and R-22/R-290/R-407c, the tons of capacity shown in the table are for the first (primary) refrigerant listed. Consult the nominal capacity table for determining the tons of capacity for the secondary refrigerants listed.  
 Example: A 1/4 ton R-12 valve is required. What R-134a ton valve should be selected? Solution: from the nominal capacity table, a 1/2 ton R-134a valve is equivalent to a 1/4 ton R-12 valve.

## B Series Thermo™ - expansion valves

For over widely varying operating conditions.

The B Series is a balanced ported valve. Typical applications include: refrigerated cases, coolers, freezers, ice machines and air conditioning systems. B Series valves operate over widely varying operating conditions.

### Features

- Stainless steel power element prevents corrosion and valve failure
- Hermetic, leak-free construction
- Compact size allows installation in limited spaces
- Bi-Flow capability allows one valve to control the superheat in both cooling and heating modes for heat pump applications
- Balanced port construction compensates for changes in operating pressures due to varying ambients, gas defrost, heat reclaim, or widely varying evaporator loads

### Specifications

- Maximum working pressure: 700 psig



### Options

- ZW195 charge available for R-410 air conditioning application
- ZAA charge for R410A is applicable to heat-pump, also available for air conditioning and refrigerated cases
- External or internal equalizer
- Bleed type pressure equalization available to accommodate PSC type compressors
- SAE or ODF connections standard – Chatleff or Aeroquip are available
- Adjustable or non-adjustable superheat

### Model nomenclature example: BAEB 1/2HCA5FT3/8X1/2ODFS/T

B	A	E	B	1/2	H	CA	5 FT	3/8 x 1/2	ODF	S/T
Series	Superheat Adjustment	Equalizer	Bleed hole	Capacity	Refrigerant code	Charge code	Capillary tube length	Inlet x outlet connection sizes	Connection type	Configuration
Hermetic Balanced Port Design	A = Adjustable  N = Non-Adjustable	E=External  (Omit for Internal)	(Optional)  (Omit for No Bleed Hole)	Nominal Rating in Tons (See Nominal Capacity Table Below)	+F = R-12 • H = R-22 +M = R-134a • N = R-407C *P = R-507 *R = R-502 *S = R-404A Z = R-410A B = R-448A/ R-449A D = R-450A/ R-513A T = R-290	C = Medium Temp CA = Heat Pump W(MOP) <sup>1</sup> = Press. Limiting Z = Low Temp A = Medium & Low Temp	30 IN & 5 FT (std)	1/4 X 3/8 3/8 X 1/2 1/2 X 5/8 5/8 X 7/8	SAE=Flare  ODF = Solder	S/T = Straight-Thru  ANG = 90° Angle

Not available for sale in the aftermarket.

+ = R-12 and R134a are interchangeable refrigerant charges

\* = R-507, R-502 and R404A are interchangeable refrigerant charges

• = R-22/R-290 and R-407C are interchangeable refrigerant charges

<sup>1</sup> Maximum operating pressure

### BA/BN Series – nominal\* capacity table in Tons (kW)

R-12	R-134a	R-450A/R-513A	R-22/R-290/R-407C	R-410A	R-502/R-404A/R-507	**R-448A/R-449A
1/4 (0.9)	1/2 (1.8)	1/4 (0.9)	1/2 (1.8)	1/2 (1.8)	1/4 (0.9)	1/2 (1.8)
1/2 (1.8)	3/4 (2.7)	1/2 (1.8)	1 (3.5)	1 (3.5)	1/2 (1.8)	1 (3.5)
1 (3.5)	1 (3.5)	3/4 (2.7)	1-1/2 (5.3)	1-1/2 (5.3)	1 (3.5)	1-1/2 (5.3)
1-1/4 (4.4)	1-1/2 (5.3)	1 (3.5)	2 (7.0)	2 (7.0)	1-1/4 (4.4)	2 (7.0)
1-1/2 (5.3)	2 (7.0)	1-1/2 (5.3)	2-1/2 (9.0)	3 (11.0)	1-1/2 (5.3)	2-1/2 (8.8)
2 (7.0)	2-1/4 (8.0)	1-3/4 (9.5)	3 (11.0)	3-1/2 (12.0)	2 (7.0)	3 (11.0)
2-1/2 (9.0)	3 (11.0)	2-1/4 (8.0)	4 (14.0)	4-1/2 (16.0)	2-1/2 (9.0)	4 (14.0)
3 (11.0)	3-1/2 (12.0)	3 (11.0)	5 (17.0)	6 (21.0)	3 (11.0)	5 (17.5)
3-1/2 (12.0)	4-1/4 (15.0)	3-1/2 (12.0)	6 (21.0)	7-1/2 (26.0)	4 (14.0)	6 (21.0)

All capacities shown are at 100°F condensing, 40°F evaporator temperature.

\*See extended capacity tables for ratings at a wide range of conditions per ARI standard 750

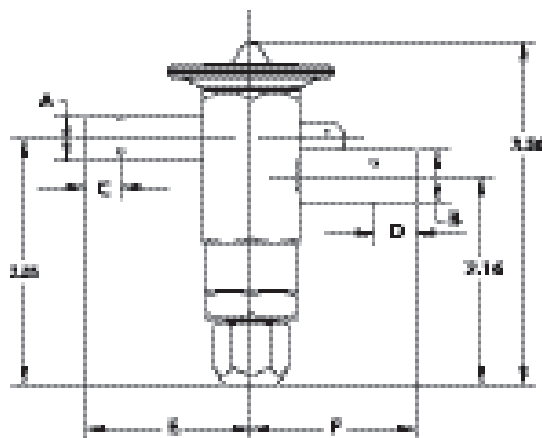
## B Series Thermo™ - expansion valves

For over widely varying operating conditions.

### BA dimensional data (in.)

Connection Size		A	B	C MIN	D MIN	E	F
Inlet	Outlet						
1/4 ODF	3/8 ODF	0.25	0.38	0.31	0.32	1.70	1.73
3/8 ODF	3/8 ODF	0.38	0.38	0.32	0.32	1.73	1.73
3/8 ODF	1/2 ODF	0.38	0.50	0.32	0.41	1.73	1.73
1/2 ODF	1/2 ODF	0.50	0.50	0.41	0.41	1.73	1.73
1/2 ODF	5/8 ODF	0.50	0.63	0.41	0.50	1.73	1.75
5/8 ODF	5/8 ODF	0.63	0.61	0.50	0.50	1.75	1.75
5/8 ODF	7/8 ODF	0.63	0.88	0.50	0.62	1.75	1.73

### BA dimensional diagram

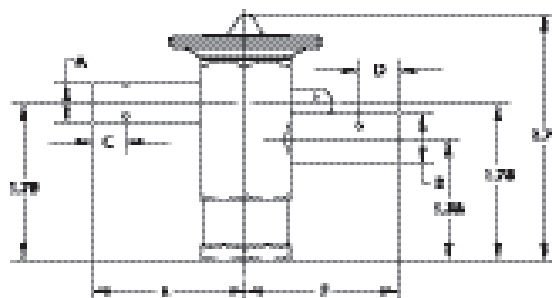


BAE  
ODF CONNECTIONS  
STRAIGHT-THRU CONFIGURATION ONLY

### BN dimensional data (in.)

Connection size		A	B	C MIN	D MIN	E	F
Inlet	Outlet						
1/4 ODF	3/8 ODF	0.25	0.38	0.31	0.32	1.70	1.73
3/8 ODF	3/8 ODF	0.38	0.38	0.32	0.32	1.73	1.73
3/8 ODF	1/2 ODF	0.38	0.50	0.32	0.41	1.73	1.73
1/2 ODF	1/2 ODF	0.50	0.50	0.41	0.41	1.73	1.73
1/2 ODF	5/8 ODF	0.50	0.63	0.41	0.50	1.73	1.75
5/8 ODF	5/8 ODF	0.63	0.61	0.50	0.50	1.75	1.75
5/8 ODF	7/8 ODF	0.63	0.88	0.50	0.62	1.75	1.73

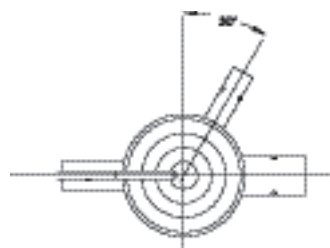
### BN dimensional diagram



BNE  
ODF CONNECTIONS  
STRAIGHT-THRU CONFIGURATION ONLY

### Remote bulb tubing length 30" or 5' standard

BA & BN Remote bulb dimensions (in.)		
Refrigerant charge	Length	Diameter
HCA, HAA	2.31	0.75
MC, MZ, MW (MOP), RW (MOP)	2.09	0.50
RC, SC, SZ, SW (MOP),		
PC, PZ, PW (MOP)		



BNE  
TOP VIEW SHOWING  
EXTERNAL EQUALIZER LOCATION

## B Series Thermo™ - expansion valves

For over widely varying operating conditions.

### Ordering information

Refrigerant	Series	Tons*	Charge	Connections	Cap tube	PCN		
R-410A	BAE	1-1/2	ZW195	3/8 X 1/2 ODF S/T	5 FT	065876		
		2	ZW195	3/8 X 1/2 ODF S/T	5 FT	065877		
		3	ZW195	3/8 X 1/2 ODF S/T	5 FT	065878		
		4-1/2	ZW195	3/8 X 1/2 ODF S/T	5 FT	065880		
		6	ZW195	1/2 X 3/8 ODF S/T	5 FT	065886		
		7-1/2	ZW195	5/8 X 7/8 ODF S/T	5 FT	066088		
	BAEB	1-1/2	ZW195	3/8 X 1/2 ODF S/T	5 FT	065336		
		2	ZW195	3/8 X 1/2 ODF S/T	5 FT	065337		
		3	ZW195	3/8 X 1/2 ODF S/T	5 FT	065338		
		4-1/2	ZW195	3/8 X 1/2 ODF S/T	5 FT	065339		
		6	ZW195	3/8 X 1/2 ODF S/T	5 FT	065340		
			ZW195	1/2 X 3/8 ODF S/T	5 FT	065978		
	BAE	1	ZAA	3/8 X 1/2 ODF S/T	30 IN	066860		
		1-1/2	ZAA	3/8 X 1/2 ODF S/T	30 IN	066861		
			ZAA	3/8 X 1/2 ODF S/T	5 FT	066862		
			ZAA	3/8 X 1/2 ODF S/T	5 FT	066897		
		2	ZAA	3/8 X 1/2 ODF S/T	5 FT	066863		
			ZAA	3/8 X 1/2 ODF S/T	5 FT	066864		
		3	ZAA	3/8 X 1/2 ODF S/T	30 IN	066865		
			ZAA	3/8 X 1/2 ODF S/T	5 FT	066866		
			ZAA	3/8 X 1/2 ODF S/T	5 FT	066898		
		3-1/2	ZAA	3/8 X 1/2 ODF S/T	30 IN	066867		
			ZAA	3/8 X 1/2 ODF S/T	5 FT	066868		
		4-1/2	ZAA	3/8 X 1/2 ODF S/T	5 FT	066870		
			ZAA	3/8 X 1/2 ODF S/T	30 IN	066871		
			ZAA	3/8 X 1/2 ODF S/T	5 FT	066899		
		6	ZAA	1/2 X 5/8 ODF S/T	30 IN	066872		
		7-1/2	ZAA	1/2 X 7/8 ODF S/T	5 FT	066873		
			ZAA	5/8 X 7/8 ODF S/T	5 FT	066874		
			ZAA	5/8 X 7/8 ODF S/T	5 FT	066900		
		R-12 R-134a	BAE	1	MC	3/8 X 1/2 ODF S/T	30 IN	061967
				2	MC	3/8 X 1/2 ODF S/T	30 IN	062830
				3	MC	3/8 X 1/2 ODF S/T	30 IN	063201

Refrigerant	Series	Tons*	Charge	Connections	Cap tube	PCN	
R-407C R-22	BAE	1	NC	3/8X1/2 ODF S/T	30IN	66875	
		1-1/2	NC	3/8X1/2 ODF S/T	30IN	66876	
			NC	3/8X1/2 ODF S/T	5FT	66901	
		2	NC	3/8X1/2 ODF S/T	30IN	66877	
			NC	3/8X1/2 ODF S/T	5FT	66902	
		2-1/2	NC	3/8X1/2 ODF S/T	30IN	66878	
		3	NC	1/2X5/8 ODF S/T	5FT	66879	
		4	NC	1/2X5/8 ODF S/T	5FT	66880	
		5	NC	1/2X5/8 ODFS/T	5FT	66881	
		6	NC	1/2X5/8 ODFS/T	5FT	66882	
		1	HCA	3/8 X 1/2 ODF S/T	30 IN	63200	
		1-1/2	HCA	3/8 X 1/2 ODF S/T	30 IN	61954	
		2	HCA	3/8 X 1/2 ODF S/T	30 IN	61955	
			HCA	1/2 X 1/2 ODF S/T	5 FT	63018	
		2-1/2	HCA	3/8 X 1/2 ODF S/T	30 IN	61956	
			HCA	1/2 X 5/8 ODF S/T	30 IN	61962	
			HW100	3/8 X 1/2 ODF S/T	30 IN	62616	
		3	HCA	3/8 X 1/2 ODF S/T	30 IN	61957	
			HCA	1/2 X 5/8 ODF S/T	5 FT	63019	
			HW100	3/8 X 1/2 ODF S/T	30 IN	62372	
		4	HCA	3/8 X 1/2 ODF S/T	30 IN	61958	
			HCA	5/8 X 5/8 ODF S/T	5 FT	63020	
			HW100	3/8 X 1/2 ODF S/T	30 IN	62373	
		5	HCA	3/8 X 1/2 ODF S/T	5 FT	62839	
			HCA	1/2 X 5/8 ODF S/T	5 FT	61964	
			HW100	3/8 X 1/2 ODF S/T	30 IN	62374	
		6	HCA	1/2 X 5/8 ODF S/T	5 FT	62736	
		BNE	4	HCA	3/8 X 3/8 ODF S/T	30 IN	63132
		BAEB	1-1/2	HCA	3/8 X 1/2 ODF S/T	30 IN	62789
			2	HCA	3/8 X 1/2 ODF S/T	30 IN	62790
	3		HCA	3/8 X 1/2 ODF S/T	30 IN	61968	
			HCA	1/2 X 5/8 ODF S/T	5 FT	63348	
	4		HCA	3/8 X 1/2 ODF S/T	30 IN	63939	
	5		HCA	3/8 X 1/2 ODF S/T	5 FT	61980	
			HCA	1/2 X 1/2 ODF S/T	30 IN	63128	
	6		HCA	1/2 X 1/2 ODF S/T	30 IN	63940	
		HCA	1/2 X 5/8 ODF S/T	5 FT	64805		

# HF/HFK Series Thermo™ - expansion valves

For refrigeration, air conditioning and heat pump applications.

The HF series is a balanced ported valve designed for refrigeration, air conditioning and heat pump applications.

## Features

- Stainless steel replaceable power element eliminates corrosion and prevents valve failure
- Two body sizes provide capacities from 1/4 to 20 tons

## Standard body – HF & HFK

- The HF is offered several ways:
  - Pre-packaged HFK service kits – Include a mix of bodies and power elements with a complete set of cages to serve the most applications with a minimum of parts
  - Individual components – Bodies, cages, & power elements may be ordered separately
  - Finished valves – Assembled valves ready for immediate installation
- Bi-Flow capability up to 5-1/2 tons R-22 allows one valve to control the superheat in both cooling and heating modes

## Extended body – HF

- Capacity range from 8 to 20 tons (R-22)
- Finished valve only



**NOTE:** If the HF body is stamped HFK, then the cage is replaceable.

## Options

- ODF or SAE connections
- Straight-through or angle flow configurations
- Removable inlet strainer (ODF only)
- Internal or external equalizer

## Specifications

- Maximum working pressure: 450 psig
- UR/CUR file number: SA5312

## Nomenclature example: HFESC 2 HC 5 FT 3/8 x 1/2 ODF S/T

HF	N	E	S	C	B	2	H	C	5 FT	3/8 x 1/2	ODF	S/T
Series	Superheat adjustment	Equalizer	Connection type	Removable inlet strainer	Bleed hole	Capacity	Refrigerant code	Charge code	Capillary tube length	Inlet x outlet Connection sizes	Connection Type	Configuration
Balanced Port Design	N = Non-Adjustable Omit for Adjustable	E = External  (Omit for Internal)	S = Solder  (Omit for SAE Flare)	(Optional)  C = Inlet Strainer (ODF only)	(Optional)  No Bleed Hole	Nominal Rating in Tons  (See Nominal Capacity Table Below)	+F = R-12 • H = R-22 +M = R-134a • N = R-407C * P = R-507 * R = R-502 * S = R-404A * B = R-448A /R-449A +D = R-450A /R-513A	C = Medium Temp CA = Heat Pump W(MOP) = Press. Limiting Z = Low Temp AA = Wide Range	5 FT (std)	1/4 x 3/8 3/8 x 1/2	SAE = Flare ODF = Solder	ANG = 90° Angle S/T = Straight-Thru

+ = R-12, R-134a, R-450A and R-513A are interchangeable refrigerant charges  
 \* = R-507, R-502, R-404A, R-448A and R-449A are interchangeable refrigerant charges  
 • = R-22 and R-407C are interchangeable refrigerant charges

## HF Series- nominal\* capacity tables in Tons (kW)

### Standard body HF

R-12	R-134a	R-450A/ R-513A	R-22/ R-407C	R-502/ R-404A/ R-507	**R-448A/ R-449A
1/8 (0.4)	1/4 (0.9)	1/5 (0.7)	1/4 (0.9)	1/8 (0.4)	1/4 (0.9)
1/4 (0.9)	1/2 (1.8)	1/4 (0.9)	1/2 (1.8)	1/4 (0.9)	1/2 (1.8)
1/2 (1.8)	3/4 (2.7)	1/2 (1.8)	1 (3.5)	1/2 (1.8)	1 (3.5)
1 (3.5)	1 (3.5)	3/4 (2.7)	1-1/2 (5.3)	1 (3.5)	1-1/2 (5.3)
1-1/4 (4.4)	1-1/2 (5.3)	1 (3.5)	2 (7.0)	1-1/4 (4.4)	2 (7.0)
1-1/2 (5.3)	1-3/4 (6.2)	1-1/2 (5.3)	2-1/2 (8.8)	1-1/2 (5.3)	2-1/2 (9.0)
2 (7.0)	2-1/2 (8.8)	2 (7.0)	3 (11.0)	2 (7.0)	3-1/2 (12.0)
3-1/2 (12.0)	4 (14.0)	3-1/2 (12.0)	5-1/2 (20.0)	3-1/2 (12.0)	6 (21.0)

### Extended body HF

R-12	R-134a	R-450A/ R-513A	R-22/ R-407C	R-502/ R-404A/ R-507	**R-448A/ R-449A
5 (17.0)	6 (2.1)	4-1/2 (16.0)	8 (28.0)	5 (17.0)	8-1/2 (30.0)
6 (21.0)	7-1/2 (27.0)	6 (21.0)	10 (35.0)	7 (27.0)	10-1/2 (37.0)
9 (32.0)	11 (39.0)	9 (32.0)	15 (53.0)	10 (35.0)	16 (56.0)
12 (42.0)	14 (50.0)	11-1/2 (40.0)	20 (70.0)	13 (46.0)	20 (70.0)

All capacities shown are at 100°F condensing, 40°F evaporator temperature.

\*See extended capacity tables for ratings at a wide range of conditions per ARI standard 750.

\*\*Use SZ charge for all R-448A/R-449A applications. Recommend oversizing the valve capacity by 50% for low temperature applications.

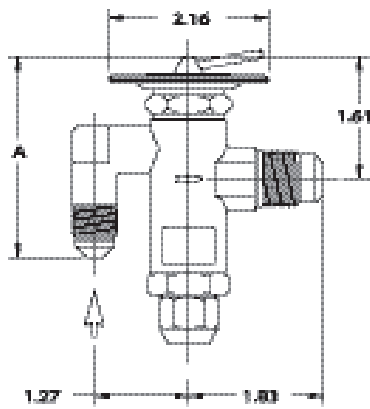
# HF/HFK Series Thermo™ - expansion valves

For refrigeration, air conditioning and heat pump applications.

## Dimensional data

### Standard body HF

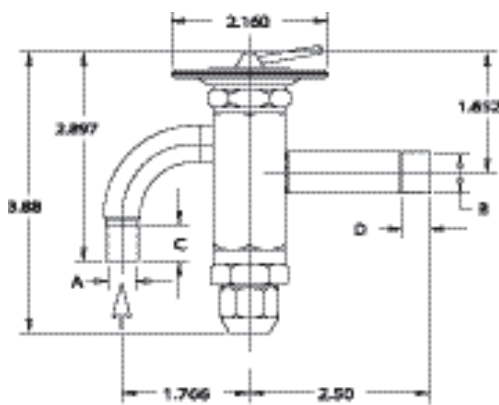
¼ thru 5½ tons R-22



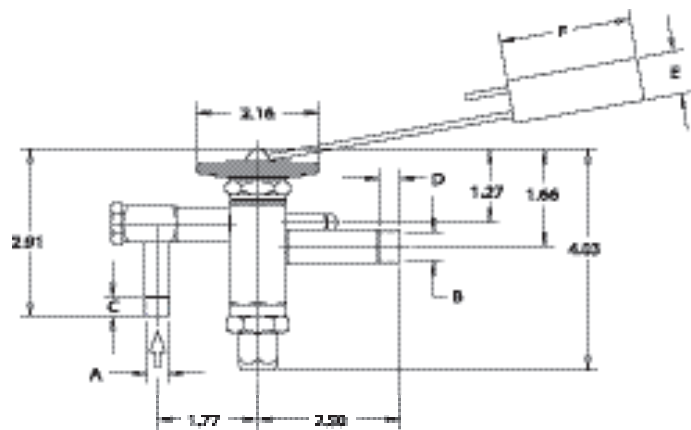
SAE

### HF SAE

Connection size		A	B	C
Inlet	Outlet			
1/4 SAE	1/2 SAE	3.11	1.27	1.83
3/8 SAE	1/2 SAE	2.72		



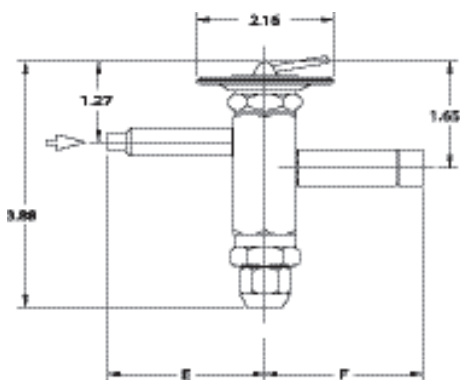
ODF



ODF  
w/optional strainer at inlet

### Extended body HF

8, 10, 15 & 20 ton R-22



ODF

### HF ODF

Connection size		A±	B±	C	D	E	F
Inlet	Outlet	.002	.002	MIN	MIN		
1/4 ODF	3/8 ODF	0.25	0.38	0.31	0.31		
3/8 ODF	1/2 ODF	0.25	0.50	0.31	0.37	2.50	2.50
3/8 ODF	1/2 ODF	0.38	0.50	0.37	0.37		

## HF/HFK Series Thermo™ - expansion valves

For refrigeration, air conditioning and heat pump applications.

### Ordering Information

Use the following tables to order individual components.

#### HFK 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 & HFK power element table

PCN	Description	System refrigerant(s)	Application
053769	X26300-FW15-1	R-134a/R-12	Low Temp MOP
054798	X26300-FW35-1	R-134a/R-12	Low Temp MOP
063869	X26300-FW55-1	R-134a/R-12	Low Temp MOP
053766	X26300-FZ-1	R-134a/R-12	Low Temp
053763	X26300-FC-1	R-134a/R-12	Medium Temp
058074	X26300-MC-1	R-134a	Medium Temp
053767	X26300-HZ-1	R-22/R-407C	Low Temp
057834	X26300-HCA-1	R-22/R-407C	Heat Pump
057764	X26300-HW100-1	R-22/R-407C	AC MOP
053764	X26300-HC-1	R-22/R-407C	A/C Med. Temp
058085	X26300-SW45-1	R-404/ R-507/ R-502	Low Temp MOP
058082	X26300-SZ-1	R-404/ R-507/ R-502	Low Temp
058083	X26300-SC-1	R-404/ R-507/ R-502	Medium Temp

#### HFK cage nominal\* capacity table

PCN	Description <sup>1</sup>	Cage Code	R-12	R-22	R-134a	R-404	R-507	R-502	R-407C
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	3/4	1/2	1/2	1/2	1
064871	KT-20299-3	3	1	1-1/2	1	1	1	1	1-1/2
064872	KT-20299-4	4	1-1/4	2	1-1/2	1-1/4	1-1/4	1-1/4	2
064873	KT-20299-5	5	1-1/2	2-1/2	1-3/4	1-1/2	1-1/2	1-1/2	2-1/2
064874	KT-20299-6	6	2	3	2-1/2	2	2	2	3
064875	KT-20299-7	7	3-1/2	5½	4	3-1/2	3-1/2	3-1/2	5-1/2

<sup>1</sup> Cage kit includes cage, insertion tool and ID clips.

\*All capacities shown are at 100°F condensing, 40°F evaporator temperature.

See extended capacity tables for ratings at a wide range of conditions per ARI standard 750.

#### Cage kit (PCN 064879)

Item	Qty
Size 0 Cage (1/4 ton R-22)	2
Size 1 Cage (1/2 ton R-22)	2
Size 2 Cage (1 ton R-22)	2
Size 3 Cage (1 1/2 ton R-22)	2
Size 4 Cage (2 tons R-22)	2
Size 5 Cage (2 1/2 tons R-22)	2
Size 6 Cage (3 tons R-22)	2
Size 7 Cage (5 1/2 tons R-22)	2
Insertion Tool	1
Oil Bottle	1
Cage ID Tags	16

#### Replacement parts – SAE inlet

PCN	Part Number	Description
027385	X-11176-1	3/8" Inlet filter screen
058707	27676-1	Seal cap
048638	X-11176-7	1/4" Inlet filter screen

#### Replacement parts- HFSC & HFESC only

PCN	Kit Number	Description
057686	KT-20264	Includes seal cap, gasket o-ring, screen, spring

#### HFK accessories

PCN	Description
064897	Cage box (empty)
064898	Insertion tool
064899	Oil bottle
065203	Cage gasket kit (12 Sets)



## Ordering information

### HFK pre-packaged kits

The HFK is a pre-packaged kit consisting of a mix of popular bodies and power elements with a complete selection of cages. These kits provide great flexibility allowing valves to be assembled as needed for each application. Three kits are provided as shown below, along with the cage kit which is included in each pre-packaged kit. In addition, custom kits can be assembled by stocking an empty kit case with desired components.



#### SAE/ODF Kit (PCN 065135)

Item	Qty
HFK 3/8 x 1/2 SAE ANG	1
HFKE 3/8 x 1/2 SAE ANG	1
HFKS 3/8 x 1/2 ODF S/T	1
HFKES 3/8 x 1/2 ODF S/T	1
Cage Kit (PCN 064879)	1
Insertion Tool (PCN 064898)	1
Service Box	1
FC Power Element	1
FZ Power Element	1
HC Power Element	1
HZ Power Element	1
SC Power Element	1
SW45 Power Element	1

#### SAE Kit (PCN 064876)

Item	Qty
HFK 1/4 X 1/2 Body	1
HFKE 3/8 X 1/2 Body	1
HFKE 3/8 X 1/2 Body	2
FC Power Element	2
HC Power Element	1
HZ Power Element	1
SZ Power Element	2
Cage Kit (PCN 064879)	1

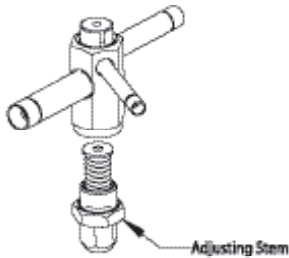
#### ODF Kit (PCN 064877)

Item	Qty
HFKSC 3/8 X 1/2 Body	1
HFKES 3/8 X 1/2 Body	1
HFKESC 3/8 X 1/2 Body	2
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)

Item	Qty
Size 0 Cage (1/4 ton R-22)	2
Size 1 Cage (1/2 ton R-22)	2
Size 2 Cage (1 ton R-22)	2
Size 3 Cage (1 1/2 ton R-22)	2
Size 4 Cage (2 tons R-22)	2
Size 5 Cage (2 1/2 tons R-22)	2
Size 6 Cage (3 tons R-22)	2
Size 7 Cage (5 1/2 tons R-22)	2
Insertion Tool	1
Oil Bottle	1
Cage ID Tags	16

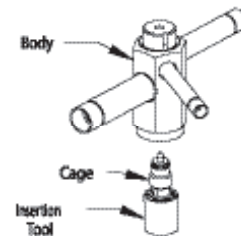
### HFK assembly procedure (See 6 assembly steps & diagrams below)



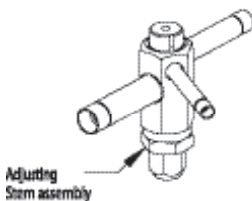
1. Remove adjusting stem assembly from body with 15/16" wrench.



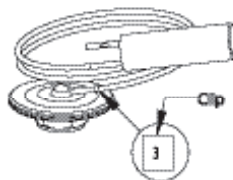
2. Lubricate both o-rings on cage.



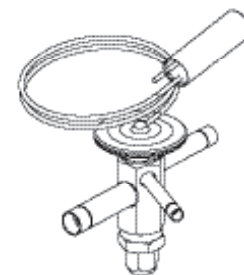
3. Insert cage into body with driver and insertion tool and hand tighten. (Do not over-tighten)



4. Replace adjustment stem assembly to body and hand tighten. Use the 15/16" wrench to tighten adjustment stem assembly 60° or one wrench flat. (300-360 inch lbs. - Do not over-tighten)



5. Attach cage identification clip on power element cap tube.



6. Screw power element to top of valve body and hand tighten. Use the 1" wrench to tighten power element 60° or one wrench flat. (300-360 inch lbs. - Do not over-tighten)

## HF/HFK Series Thermo™ - expansion valves

For refrigeration, air conditioning and heat pump applications.

### Ordering information

Use the following tables to order factory assembled valves.

#### HF Series – internally equalized

Refrigerant	Series	Tons *	Charge	Connections	Cap tube	PCN
R-12	HF HFS	1/4	FC	1/4 X 1/2 SAE ANG	5 FT	009811
			FC	3/8 X 1/2 SAE ANG	5 FT	054134
		1/2	FC	1/4 X 1/2 SAE ANG	5 FT	009810
			FC	3/8 X 1/2 ODF ANG	5 FT	056063
			FC	3/8 X 1/2 ODF S/T	5 FT	056013
			FC	3/8 X 1/2 SAE	5 FT	054966
			FC	3/8 X 1/2 SAE ANG	5 FT	054892
		1	FC	3/8 X 1/2 ODF S/T	5 FT	056119
			FC	3/8 X 1/2 SAE ANG	5 FT	057619
1-1/2	FC	3/8 X 1/2 SAE ANG	5 FT	054914		
2	FC	3/8 X 1/2 SAE	5 FT	053060		
R-134a R-12 R-450A R-513A	HF HFS	1/4	MC	3/8 X 1/2 ODF ANG	5 FT	058545
			MC	3/8 X 1/2 SAE ANG	5 FT	057618
		1/2	MC	3/8 X 1/2 ODF S/T	5 FT	058100
			MC	3/8 X 1/2 SAE ANG	5 FT	057620
1	MC	3/8 X 1/2 ODF S/T	5 FT	065641		
R-22 R-407C	HF HFS	1/4	HC	1/4 X 1/2 SAE ANG	5 FT	058430
			HC	3/8 X 1/2 ODF ANG	5 FT	055493
			HC	3/8 X 1/2 ODF S/T	5 FT	055633
			HC	3/8 X 1/2 SAE	5 FT	054921
			HZ	1/4 X 1/2 SAE ANG	5 FT	059653
			HZ	3/8 X 1/2 ODF S/T	5 FT	056169
		1/2	HC	1/4 X 1/2 SAE ANG	5 FT	009812
			HC	3/8 X 1/2 ODF ANG	5 FT	054723
			HC	3/8 X 1/2 ODF S/T	5 FT	054136
			HC	3/8 X 1/2 SAE	5 FT	054135
			HZ	3/8 X 1/2 SAE	5 FT	054364
			HC	3/8 X 1/2 ODF ANG	5 FT	055702
		1	HC	3/8 X 1/2 ODF S/T	5 FT	055928
			HC	3/8 X 1/2 SAE	5 FT	054927
			HZ	3/8 X 1/2 SAE	5 FT	054928
		1-1/2	HC	3/8 X 1/2 ODF ANG	5 FT	055969
			HC	3/8 X 1/2 ODF S/T	5 FT	056018
			HC	3/8 X 1/2 SAE	5 FT	054933
		2	HC	3/8 X 1/2 SAE	5 FT	054939
			HZ	3/8 X 1/2 SAE ANG	5 FT	054940
		2-1/2	HC	3/8 X 1/2 SAE	5 FT	054947
			HC	3/8 X 1/2 SAE	5 FT	053316
		3	HC	3/8 X 1/2 ODF S/T	5 FT	053915
			HC	3/8 X 1/2 ODF S/T	5 FT	053915
R-404A R-507 R-502 **R-448A **R-449A	HF HFS	1/4	SC	1/4 X 1/2	30 IN	066516
			SW45	1/4 X 1/2	30 IN	066517
			SZ	1/4 X 1/2	30 IN	066518
		1/2	SC	1/4 X 1/2	30 IN	066519
			SW45	1/4 X 1/2	30 IN	066520
			SZ	1/4 X 1/2	30 IN	066521
		1	SC	3/8 X 1/2 ODF S/T	5 FT	065643
			SW45	3/8 X 1/2	5 FT	066522
			SZ	3/8 X 1/2	5 FT	066523
		1/2	SC	3/8 X 1/2	5 FT	066524
			SW45	3/8 X 1/2	5 FT	066525
			SZ	3/8 X 1/2	5 FT	066526
		2	SC	3/8 X 1/2	5 FT	066527
			SW45	3/8 X 1/2	5 FT	066528
			SZ	3/8 X 1/2	5 FT	066529
		3-1/2	SC	3/8 X 1/2	5 FT	066530
			SW45	3/8 X 1/2	5 FT	066531
			SZ	3/8 X 1/2	5 FT	066532

\*\*Use SZ charge for all R-448A/R-449A applications. Recommend oversizing the valve by 50% for low temperature applications.

## HF Series – internally equalized (continued)

Refrigerant	Series	Tons*	Charge	Connections	Cap tube	PCN
R-502	HF HFS	1/4	RC	1/4 X 1/2 SAE ANG	5 FT	059304
			RC	3/8 X 1/2 ODF ANG	5 FT	055490
			RC	3/8 X 1/2 SAE	5 FT	054137
			RZ	1/4 X 3/8 ODF S/T	5 FT	055792
			RZ	3/8 X 1/2 ODF S/T	5 FT	056228
			RZ	3/8 X 1/2 SAE	5 FT	054369
		1/2	RC	3/8 X 1/2 SAE	5 FT	054964
			RZ	3/8 X 1/2 ODF ANG	5 FT	055874
			RZ	3/8 X 1/2 ODF S/T	5 FT	056008
			RZ	3/8 X 1/2 SAE	5 FT	054965
		1	RC	3/8 X 1/2 SAE	5 FT	054976
			RC	3/8 X 1/2 SAE ANG	5 FT	054905
			RZ	3/8 X 1/2 ODF ANG	5 FT	055785
			RZ	3/8 X 1/2 SAE	5 FT	054977
		1-1/2	RC	3/8 X 1/2 SAE	5 FT	054984
			RZ	3/8 X 1/2 SAE	5 FT	054986
		2	RC	3/8 X 1/2 SAE	5 FT	053061
		3-1/2	RC	3/8 X 1/2 SAE	5 FT	055936

## Ordering information (continued)

### HF Series – externally equalized (continued)

Refrigerant	Series	Tons*	Charge	Connections	Cap tube	PCN
R-12	HFE HFES	1/4	FC	3/8 X 1/2 SAE ANG	5 FT	054360
			FC	1/4 X 1/2 SAE ANG	5 FT	009955
		1/2	FC	3/8 X 1/2 ODF ANG	5 FT	056021
			FC	3/8 X 1/2 ODF S/T	5 FT	056331
			FC	3/8 X 1/2 SAE ANG	5 FT	054895
			FC	3/8 X 1/2 ODF ANG	5 FT	055993
		1	FC	3/8 X 1/2 ODF S/T	5 FT	056151
			FC	3/8 X 1/2 SAE ANG	5 FT	054909
			FC	3/8 X 1/2 ODF ANG	5 FT	055994
		1-1/2	FC	3/8 X 1/2 SAE ANG	5 FT	054917
			FC	3/8 X 1/2 ODF S/T	5 FT	053266
		2	FC	3/8 X 1/2 SAE ANG	5 FT	053069
			FC	3/8 X 1/2 SAE ANG	5 FT	054138
		R-134a R-12 R-450A R-513A	HFE HFES	1/4	MC	3/8 X 1/2 SAE ANG
1/2	MC			3/8 X 1/2 ODF S/T	5 FT	065645
	MC			3/8 X 1/2 SAE ANG	5 FT	057616
3/4	MC			3/8 X 1/2 ODF ANG	5 FT	057784
	MC			3/8 X 1/2 SAE ANG	30 IN	057861
	MC			3/8 X 1/2 ODF S/T	5 FT	059422
1	MC			3/8 X 1/2 ODF ANG	5 FT	058546
	MC			3/8 X 1/2 ODF S/T	5 FT	065646
	MC			3/8 X 1/2 SAE ANG	5 FT	057617
1-1/2	MC			3/8 X 1/2 SAE ANG	5 FT	057895
1-3/4	MC			3/8 X 1/2 ODF S/T	5 FT	065647
	MC			3/8 X 1/2 SAE	5 FT	058152
4	MC			3/8 X 1/2 SAE ANG	5 FT	057896
	MC			3/8 X 1/2 SAE ANG	5 FT	057897
6	MC			5/8 X 7/8 ODF S/T	5 FT	057903
	MC			5/8 X 7/8 ODF S/T	5 FT	057906
11	MC			7/8 X 1 1/8 ODF S/T	5 FT	058681
	MC			7/8 X 1 3/8 ODF S/T	5 FT	064000
14	MC	7/8 X 1 3/8 ODF S/T	5 FT	064000		
	MC	7/8 X 1 3/8 ODF S/T	5 FT	064000		
R-22 R-407C	HFE HFES	1/4	HC	3/8 X 1/2 ODF S/T	5 FT	055927
			HC	3/8 X 1/2 SAE	5 FT	054924
			HZ	3/8 X 1/2 SAE	5 FT	054925
		1/2	HC	1/4 X 1/2 SAE ANG	5 FT	059079
			HC	3/8 X 1/2 ODF ANG	5 FT	054838
			HC	3/8 X 1/2 ODF S/T	5 FT	055827
			HC	3/8 X 1/2 SAE	5 FT	054361
			HZ	3/8 X 1/2 ODF S/T	5 FT	055889
			HZ	3/8 X 1/2 SAE	5 FT	054365
		1	HC	3/8 X 1/2 ODF ANG	5 FT	055494
			HC	3/8 X 1/2 ODF S/T	5 FT	055708
			HC	3/8 X 1/2 SAE	5 FT	054930
			HW 35	3/8 X 1/2 SAE	5 FT	054932
			HZ	3/8 X 1/2 SAE	5 FT	054931
		1-1/2	HC	3/8 X 1/2 ODF ANG	5 FT	055495
			HC	3/8 X 1/2 ODF S/T	5 FT	055863
			HC	3/8 X 1/2 SAE	5 FT	054936
			HZ	3/8 X 1/2 ODF S/T	5 FT	055870
			HZ	3/8 X 1/2 SAE	5 FT	054937
		2	HC	3/8 X 1/2 ODF S/T	5 FT	055706
			HC	3/8 X 1/2 SAE	5 FT	054942
			HC	3/8 X 1/2 ODF ANG	5 FT	054946
			HZ	3/8 X 1/2 SAE	5 FT	054943
		2-1/2	HC	3/8 X 1/2 ODF ANG	5 FT	056042
			HC	3/8 X 1/2 ODF S/T	5 FT	055931
			HC	3/8 X 1/2 SAE	5 FT	054950
		3	HC	3/8 X 1/2 ODF ANG	5 FT	054756
			HC	3/8 X 1/2 ODF S/T	5 FT	053916
			HC	3/8 X 1/2 SAE	5 FT	053317
			HC	1/2 X 5/8 ODF ANG	5 FT	064761
HCA	3/8 X 1/2 ODF S/T		5 FT	058648		
HCA	1/2 X 5/8 ODF S/T		5 FT	061730		
HZ	3/8 X 1/2 ODF S/T		5 FT	055924		
HZ	3/8 X 1/2 SAE		5 FT	053191		

## HF/HFK Series Thermo™ - expansion valves

For refrigeration, air conditioning and heat pump applications.

Ordering information (continued)

HF Series – externally equalized (continued)

Refrigerant	Series	Tons*	Charge	Connections	Cap tube	PCN
R-22 R-407C	HFE HFES	5-1/2	HC	3/8 X 1/2 ODF S/T	5 FT	054141
			HC	3/8 X 1/2 SAE	5 FT	054140
			HC	1/2 X 5/8 ODF ANG	5 FT	054778
			HC	1/2 X 7/8 ODF S/T	5 FT	055187
			HC	5/8 X 7/8 ODF S/T	5 FT	054779
			HCA	3/8 X 1/2 ODF S/T	5 FT	065649
			HCA	1/2 X 5/8 ODF ANG	5 FT	057378
			HZ	3/8 X 1/2 ODF S/T	5 FT	054780
			HZ	3/8 X 1/2 SAE	5 FT	054777
		8	HC	1/2 X 5/8 ODF S/T	5 FT	057312
			HC	5/8 X 1 1/8 ODF ST	5 FT	057313
			HCA	1/2 X 7/8 ODF S/T	5 FT	056818
			HCA	5/8 X 1 1/8 ODF ST	5 FT	056819
		10	HC	1/2 X 5/8 ODF S/T	5 FT	057315
			HC	5/8 X 7/8 ODF S/T	5 FT	057256
			HC	7/8 X 1 1/8 ODF S/T	5 FT	057316
			HCA	5/8 X 7/8 ODF S/T	5 FT	056820
		12	HCA	5/8 X 1 1/8 ODF S/T	5 FT	056821
			HC	5/8 X 1 1/8 ODF S/T	5 FT	062737
		15	HC	5/8 X 7/8 ODF S/T	5 FT	057317
			HC	7/8 X 1 1/8 ODF S/T	5 FT	057318
			HCA	5/8 X 1 1/8 ODF S/T	5 FT	056824
			HCA	5/8 X 7/8 ODF S/T	5 FT	056823
		20	HCA	7/8 X 1 1/8 ODF S/T	5 FT	056825
HC	7/8 X 1 1/8 ODF S/T		5 FT	062055		
HCA	7/8 X 1 1/8 ODF S/T		5 FT	058490		
SC	1/4 X 1/2 ODF S/T		30IN	066533		
R-404A R-507 R-502 **R-448A **R-449A	HFE HFES	1/4	SW 45	3/8 X 1/2 ODF S/T	5 FT	065734
			SW 45	3/8 X 1/2 SAE ANG	5 FT	066623
			SZ	3/8 X 1/2 ODF S/T	5 FT	065733
			SC	3/8 X 1/2 ODF ANG	5 FT	058975
		1/2	SW 45	3/8 X 1/2 ODF S/T	5 FT	065736
			SW 45	3/8 X 1/2 SAE ANG	5 FT	066040
			SZ	3/8 X 1/2 ODF ANG	5 FT	058995
			SZ	3/8 X 1/2 ODF S/T	5 FT	065735
		1	SC	3/8 X 1/2 ODF S/T	5 FT	065650
			SC	3/8 X 1/2 ODF ANG	5 FT	058976
			SW 45	3/8 X 1/2 ODF ANG	5 FT	059086
			SW 45	3/8 X 1/2 SAE ANG	5 FT	066624
			SW 45	3/8 X 1/2 ODF S/T	5 FT	065651
		1-1/4	SZ	3/8 X 1/2 ODF S/T	5 FT	064289
			SC	3/8 X 1/2 ODF ANG	5 FT	058977
			SW 45	3/8 X 1/2 ODF S/T	5 FT	057976
			SZ	3/8 X 1/2 ODF S/T	5 FT	065737
		1-1/2	SC	3/8 X 1/2 ODF S/T	5 FT	057974
			SW 45	3/8 X 1/2 ODF S/T	5 FT	065738
			SW 45	3/8 X 1/2 SAE ANG	5 FT	066625
			SZ	3/8 X 1/2 ODF S/T	5 FT	064290
		2	SC	3/8 X 1/2 ODF S/T	5 FT	057958
			SW 45	3/8 X 1/2 ODF S/T	5 FT	065740
			SW 45	3/8 X 1/2 SAE ANG	5 FT	066627
SZ	3/8 X 1/2 ODF S/T		5 FT	065739		
3-1/2	SC	3/8 X 1/2 ODF S/T	5 FT	065652		
	SC	5/8 X 7/8 ODF S/T	5 FT	062151		
	SW 45	1/2 X 5/8 ODF S/T	5 FT	066534		
	SZ	1/2 X 5/8 ODF S/T	5 FT	061694		
5	SW 45	5/8 X 7/8 ODF S/T	5 FT	064170		
	SC	5/8 X 7/8 ODF S/T	5 FT	066536		
	SZ	5/8 X 7/8 ODF S/T	5 FT	058451		
7	SC	5/8 X 7/8 ODF S/T	5 FT	066536		
	SW 45	5/8 X 7/8 ODF S/T	5 FT	066537		
	SZ	5/8 X 7/8 ODF S/T	5 FT	064291		
10	SC	5/8 X 7/8 ODF S/T	5 FT	066538		
	SW 45	5/8 X 7/8 ODF S/T	5 FT	064195		
	SZ	5/8 X 7/8 ODF S/T	5 FT	062828		

\*\*Use SZ charge for all R-448A/R-449A applications. Recommend oversizing capacity by 50% for low temperature applications.

## HF/HFK Series Thermo™ - expansion valves

For refrigeration, air conditioning and heat pump applications.

Ordering information (continued)

HF Series – externally equalized (continued)

Refrigerant	Series	Tons*	Charge	Connections	Cap tube	PCN			
R-502	HFE (HFES)	1/4	RC	3/8 X 1/2 SAE	5 FT	054366			
			RC	3/8 X 1/2 ODF ANG	5 FT	055092			
			RZ	3/8 X 1/2 ODF ANG	5 FT	055491			
			RZ	3/8 X 1/2 SAE	5 FT	054370			
		1/2	RC	3/8 X 1/2 ODF ANG	5 FT	055992			
			RC	3/8 X 1/2 ODF S/T	5 FT	056022			
			RC	3/8 X 1/2 SAE	5 FT	054967			
			RW 45	3/8 X 1/2 ODF ANG	5 FT	055996			
			RW 45	3/8 X 1/2 SAE	5 FT	054969			
			RZ	3/8 X 1/2 ODF ANG	5 FT	055497			
			RZ	3/8 X 1/2 ODF S/T	5 FT	056024			
			RZ	3/8 X 1/2 SAE	5 FT	054968			
			R-502	HFE (HFES)	1	RC	3/8 X 1/2 ODF ANG	5 FT	054983
						RC	3/8 X 1/2 ODF S/T	5 FT	056029
RC	3/8 X 1/2 SAE	5 FT				054979			
RW 45	3/8 X 1/2 SAE	5 FT				054981			
RZ	3/8 X 1/2 ODF ANG	5 FT				055496			
RZ	3/8 X 1/2 ODF S/T	5 FT				056225			
RZ	3/8 X 1/2 SAE	5 FT				054980			
1-1/2	RC	3/8 X 1/2 ODF ANG			5 FT	055657			
	RC	3/8 X 1/2 ODF S/T			5 FT	056031			
	RC	3/8 X 1/2 SAE			5 FT	054988			
	RW 45	3/8 X 1/2 ODF ANG			5 FT	055991			
	RW 45	3/8 X 1/2 ODF S/T			5 FT	056032			
	RW 45	3/8 X 1/2 SAE			5 FT	054990			
	RZ	3/8 X 1/2 ODF ANG			5 FT	055498			
2	RZ	3/8 X 1/2 SAE			5 FT	054989			
	RC	3/8 X 1/2 ODF ANG			5 FT	054768			
	RC	3/8 X 1/2 ODF S/T			5 FT	053270			
	RC	3/8 X 1/2 SAE			5 FT	053070			
	RW 45	3/8 X 1/2 SAE			5 FT	054992			
	RZ	3/8 X 1/2 ODF S/T			5 FT	053271			
	RZ	3/8 X 1/2 ODF ANG			5 FT	054844			
3-1/2	RZ	3/8 X 1/2 SAE			5 FT	053071			
	RC	3/8 X 1/2 ODF ANG			5 FT	054783			
	RC	3/8 X 1/2 ODF S/T			5 FT	054143			
	RC	3/8 X 1/2 SAE			5 FT	054142			
	RW 45	3/8 X 1/2 ODF ANG			5 FT	058907			
	RZ	3/8 X 1/2 ODF ANG			5 FT	054785			
	RZ	3/8 X 1/2 ODF S/T			5 FT	054784			
	RZ	3/8 X 1/2 SAE			5 FT	054145			
	5	RC			3/8 X 1/2 ODF S/T	5 FT	058875		
RC		5/8 X 7/8 ODF S/T	5 FT	058608					
RW 45		5/8 X 7/8 ODF S/T	5 FT	058305					
RZ		1/2 X 5/8 ODF ANG	5 FT	061196					
7	RC	5/8 X 7/8 ODF S/T	5 FT	058607					
	RW 45	5/8 X 7/8 ODF S/T	5 FT	059291					
10	RC	5/8 X 7/8 ODF S/T	5 FT	058808					

\* For interchangeable refrigerant charges R-134a, R-12, R-450A/R-513A, R-404A, R-507, R-502, R-448A/R-449A and R-22/R-407C, the tons of capacity shown in the table are for the first (primary) refrigerant listed. Consult the Nominal Capacity Table for determining the tons of capacity for the secondary refrigerants listed.

Example: A 1/4 ton R-12 valve is required. What R-134a ton valve should be selected?

Solution: From the Nominal Capacity Table, a 1/2 ton R-134a valve is equivalent to a 1/4 ton R-12 valve.

## HF/HFK Series Thermo™ - expansion valves

For refrigeration, air conditioning and heat pump applications.

Ordering information (continued)

HFESC Series – externally equalized (continued)

Refrigerant	Series	Tons*	Charge	Connections	Cap tube	PCN
R-12	HFESC	1/2	FC	3/8 X 1/2 ODF ANG	5 FT	057397
		1	FC	3/8 X 1/2 ODF ANG	5 FT	057398
		1-1/2	FC	3/8 X 1/2 ODF ANG	5 FT	057399
R-134a R-12 R-450A R-513A	HFESC	1/4	MC	3/8 X 1/2 ODF ANG	5 FT	057572
		1/2	MC	3/8 X 1/2 ODF ANG	5 FT	058069
		1	MC	3/8 X 1/2 ODF ANG	5 FT	057570
		1-1/2	MC	3/8 X 1/2 ODF ANG	5 FT	057568
		2-1/2	MC	3/8 X 1/2 ODF ANG	5 FT	058421
R-22 R-407C	HFESC	1/4	HC	3/8 X 1/2 ODF ANG	5 FT	057409
			HZ	3/8 X 1/2 ODF ANG	5 FT	057428
		1/2	HC	3/8 X 1/2 ODF ANG	5 FT	057291
			HZ	3/8 X 1/2 ODF ANG	5 FT	057429
		1	HC	3/8 X 1/2 ODF ANG	5 FT	057410
			HZ	3/8 X 1/2 ODF ANG	5 FT	057430
		1-1/2	HC	3/8 X 1/2 ODF ANG	5 FT	057292
			HZ	3/8 X 1/2 ODF ANG	5 FT	057321
		2	HZ	3/8 X 1/2 ODF ANG	5 FT	057433
			HC	3/8 X 1/2 ODF ANG	5 FT	057294
		2-1/2	HC	3/8 X 1/2 ODF ANG	5 FT	057411
			HZ	3/8 X 1/2 ODF ANG	5 FT	057434
		3	HC	3/8 X 1/2 ODF ANG	5 FT	057412
			HZ	3/8 X 1/2 ODF ANG	5 FT	057748
5-1/2	HC	3/8 X 1/2 ODF ANG	5 FT	057781		
8	HC	3/8 X 1/2 ODF ANG	5 FT	058609		
R-502 R-404A R-507 **R-448A **R-449A	HFESC	1/4	SC	1/4 X 1/2 ODF ANG	30 IN	066539
			SW45	1/4 X 1/2 ODF ANG	30 IN	066540
			SZ	1/4 X 1/2 ODF ANG	30 IN	066542
		1/2	SC	1/4 X 1/2 ODF ANG	30 IN	066543
			SW45	1/4 X 1/2 ODF ANG	30 IN	066544
			SZ	1/4 X 1/2 ODF ANG	30 IN	066545
		1	SC	3/8 X 1/2 ODF ANG	5 FT	058135
			SW45	3/8 X 1/2 ODF ANG	5 FT	058157
			SZ	3/8 X 1/2 ODF ANG	5 FT	058118
		1-1/2	SC	3/8 X 1/2 ODF ANG	5 FT	058119
			SW45	3/8 X 1/2 ODF ANG	5 FT	058136
			SZ	3/8 X 1/2 ODF ANG	5 FT	058121
		2	SC	3/8 X 1/2 ODF ANG	5 FT	058122
			SW45	3/8 X 1/2 ODF ANG	5 FT	058212
			SZ	3/8 X 1/2 ODF ANG	5 FT	058214
		3-1/2	SC	3/8 X 1/2 ODF ANG	5 FT	058071
			SW45	3/8 X 1/2 ODF ANG	5 FT	066547
			SZ	3/8 X 1/2 ODF ANG	5 FT	066548
		5	SC	3/8 X 1/2 ODF ANG	5 FT	058220
			SW45	3/8 X 1/2 ODF ANG	5 FT	058221
			SZ	3/8 X 1/2 ODF ANG	5 FT	066549
		7	SC	5/8 X 7/8 ODF ANG	5 FT	065458
			SW45	5/8 X 7/8 ODF ANG	5 FT	066550
			SZ	5/8 X 7/8 ODF ANG	5 FT	064058
		10	SC	5/8 X 7/8 ODF ANG	5 FT	064219
			SW45	5/8 X 7/8 ODF ANG	5 FT	066551
			SZ	5/8 X 7/8 ODF ANG	5 FT	064059
		1/4	RC	3/8 X 1/2 ODF ANG	5 FT	057436
			RZ	3/8 X 1/2 ODF ANG	5 FT	057454
		1/2	RC	3/8 X 1/2 ODF ANG	5 FT	057437
			RZ	3/8 X 1/2 ODF ANG	5 FT	057455
		1	RC	3/8 X 1/2 ODF ANG	5 FT	057438
			RW 45	3/8 X 1/2 ODF ANG	5 FT	057446
			RZ	3/8 X 1/2 ODF ANG	5 FT	057456
		1-1/2	RC	3/8 X 1/2 ODF ANG	5 FT	057439
			RW 45	3/8 X 1/2 ODF ANG	5 FT	057448
			RZ	3/8 X 1/2 ODF ANG	5 FT	057322
		2	RC	3/8 X 1/2 ODF ANG	5 FT	057440
			RZ	3/8 X 1/2 ODF ANG	5 FT	057457
		2-1/2	RC	3/8 X 1/2 ODF ANG	5 FT	057441
RZ	3/8 X 1/2 ODF ANG		5 FT	057458		
5	RC	3/8 X 1/2 ODF ANG	5 FT	058595		
	RZ	3/8 X 1/2 ODF ANG	5 FT	059654		

\* For interchangeable refrigerant charges R-134a, R-12, R-450A/R-513A, R-404A/R-507/R-502/R-448A/R-449A and R-22/R-407C the tons of capacity shown in the table are for the first (primary) refrigerant listed. Consult the Nominal Capacity Table for determining the tons of capacity for the secondary refrigerants listed. Example: A 1/4 ton R-12 valve is required. What R-134a ton valve should be selected? Solution: From the Nominal Capacity Table, a 1/2 ton R-134a valve is equivalent to a 1/4 ton R-12 valve.

\*\*Use SZ charge for all R-448A/R-449A applications. Recommend oversizing capacity by 50% for low temperature applications.

## HF/HFK Series Thermo™ - expansion valves

For refrigeration, air conditioning and heat pump applications.

### HFSC Series – internally equalized

Refrigerant	Series	Tons*	Charge	Connections	Cap tube	PCN
R-134a R-12 R-450A R-513A	HFSC	1/4	MC	3/8 X 1/2 ODF ANG	5 FT	057573
		1/2	MC	3/8 X 1/2 ODF ANG	5 FT	058067
R-22 R-407C	HFSC	1/4	HC	3/8 X 1/2 ODF ANG	5 FT	057467
			HC	3/8 X 1/2 ODF ANG	5 FT	057293
		1/2	HZ	3/8 X 1/2 ODF ANG	5 FT	057482
			HC	3/8 X 1/2 ODF ANG	5 FT	057468
		2	HC	3/8 X 1/2 ODF ANG	5 FT	057470
R-404A R-507 R-502 **R-448A **R-449A	HFSC	1/8	SC	3/8 X 1/2 ODF ANG	5 FT	058248
			SW45	1/4 X 1/2 ODF ANG	30 IN	066552
			SZ	1/4 X 1/2 ODF ANG	30 IN	066553
		1/4	SC	3/8 X 1/2 ODF ANG	5 FT	058249
			SW45	1/4 X 1/2 ODF ANG	30 IN	066554
			SZ	1/4 X 1/2 ODF ANG	30 IN	066555
		1/2	SC	3/8 X 1/2 ODF ANG	5 FT	058250
			SW45	1/4 X 1/2 ODF ANG	30 IN	066556
			SZ	1/4 X 1/2 ODF ANG	30 IN	066557
		1	SC	3/8 X 1/2 ODF ANG	5 FT	058251
			SW45	3/8 X 1/2 ODF ANG	5 FT	066558
			SZ	3/2 X 1/2 ODF ANG	5 FT	066559
		1-1/4	SC	3/8 X 1/2 ODF ANG	5 FT	058252
			SW45	3/8 X 1/2 ODF ANG	5 FT	066560
			SZ	3/8 X 1/2 ODF ANG	5 FT	066561
R-502	HFSC	1/4	RC	3/8 X 1/2 ODF ANG	5 FT	057487
			RZ	3/8 X 1/2 ODF ANG	5 FT	057484
		1/2	RC	3/8 X 1/2 ODF ANG	5 FT	057488
			RZ	3/8 X 1/2 ODF ANG	5 FT	057485
		1	RC	3/8 X 1/2 ODF ANG	5 FT	057489
			RZ	3/8 X 1/2 ODF ANG	5 FT	057486

\* For interchangeable refrigerant charges R-134a, R-12, R-450A/R-513A, R-404A/R-507/R-502, R-448A/R-449A and R-22/R-407C the tons of capacity shown in the table are for the first (primary) refrigerant listed. Consult the Nominal Capacity Table for determining the tons of capacity for the secondary refrigerants listed. Example: A 1/4 ton R-12 valve is required. What R-134a ton valve should be selected? Solution: From the Nominal Capacity Table, a 1/2 ton R-134a valve is equivalent to a 1/4 ton R-12 valve.

\*\*Use SZ charge for all R-448A/R-449A applications. Recommend oversizing capacity by 50% for low temperature applications.



# LA (E) Series - DeSuperheating Thermo™ - expansion valves

## For interstage cooling in compound systems

The LA(E) series is a desuperheating (Liquid Injection) valve used in conjunction with hot gas bypass to prevent excessive suction line superheat. LA(E) valves can be used for interstage cooling in compound systems.

### Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- May operate at superheat settings in excess of 20°F allowing the valve to perform in desuperheating applications

### Options

- External superheat adjustment
- SAE or ODF connections
- External or internal equalizer
- Wrench flats on inlets and outlets (SAE only)
- Replaceable inlet strainer (SAE only)



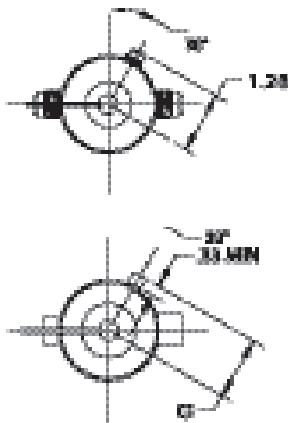
### Specifications

- Maximum working pressure: 500 psig

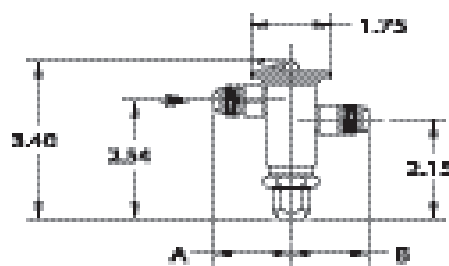
### Nomenclature example: LAES 2 CL 5 FT 3/8 x 1/2 ODF S/T

LA	E	S	2	C	L	5 FT	3/8 x 1/2	ODF	S/T
Series	Equalizer	Connection type	Capacity	Refrigerant code	Charge code	Capillary tube length	Inlet x outlet connection sizes	Connection type	Configuration
De-Superheating Liquid Injection	E = External (Omit for internal)	S = solder (Omit for flare)	NOTE: This is not system capacity (Contact Application Engineering for sizing)		L = Liquid injection (See hot gas bypass charts for valve selection)	5 FT (Std)	(See tables below)	ODF=Solder SAE=Flare	S/T = Straight-thru (only)

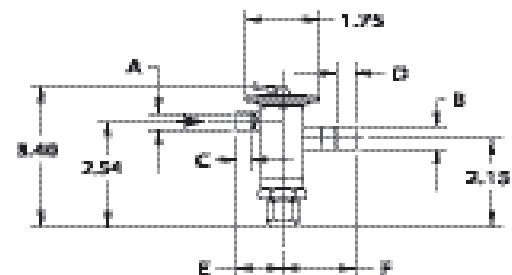
### Dimensional data (in)



SAE Connections



ODF Connections



### External equalizer fitting

Type	I.D.	G	Socket depth
1/4 SAE	-	1.28	-
1/4 ODF	0.25	1.41	0.33

### SAE

Connection size		A MIN	B MIN
Inlet	Outlet		
1/4 SAE	3/8 SAE	1.50	1.64
3/8 SAE	3/8 SAE	1.64	1.64
3/8 SAE	1/2 SAE	1.64	1.72
1/4 SAE	1/2 SAE	1.50	1.72
1/4 SAE	5/8 SAE	1.50	1.98
3/8 SAE	5/8 SAE	1.64	1.98

### ODF

Connection size		A	B	C MIN	D MIN	E	F	G Equalizer	
Inlet	Outlet							1/4 ODF	SAE
1/4 ODF	3/8 ODF	0.25	0.38	0.32	0.32	1.70	1.73	1.28	1.41
3/8 ODF	1/2 ODF	0.38	0.50	0.32	0.38	1.73	1.73		
1/2 ODF	5/8 ODF	0.50	0.63	0.38	0.50	1.73	1.73		
1/4 ODF	3/8 ODF	0.25	0.38	0.32	0.32	1.70	1.73		
3/8 ODF	3/8 ODF	0.38	0.38	0.32	0.32	1.73	1.73		
3/8 ODF	1/2 ODF	0.38	0.50	0.32	0.38	1.73	1.73		
1/2 ODF	1/2 ODF	0.50	0.50	0.38	0.38	1.73	1.73		
1/2 ODF	5/8 ODF	0.50	0.63	0.38	0.50	1.73	1.75		
3/8 ODF	5/8 ODF	0.38	0.63	0.32	0.38	1.73	1.75		
1/2 ODF	7/8 ODF	0.50	0.88	0.38	0.75	1.73	1.73		

# LCL Take-Apart - DeSuperheating Thermo™ - expansion valves

## For interstage cooling in compound systems

The LCL Take-Apart series is a desuperheating (Liquid Injection) valve used in conjunction with hot gas bypass to prevent excessive suction line superheat. LCL valves can be used for interstage cooling in compound systems.

### Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- Take-Apart construction for easy field service

### Options

- Interchangeable, replaceable cages for versatility
- External superheat adjustment
- Interchangeable body flanges
- Interchangeable power assemblies



### Specifications

- Maximum working pressure: 450 psig

### Model nomenclature example: LCLE 2 B 5 FT 3/8 x 1/2 ODF S/T

LCL	E	2	B	5 FT	3/8 x 1/2	ODF	S/T
Valve series	Equalizer	Capacity	Refrigerant code	Capillary tub length	Inlet x outlet Connection sizes	Connection type	Configuration
De-Superheating Liquid Injection Take-Apart	E=external (Omit for internal)	Nominal note: this is not system capacity (Contact application Engineering for sizing)		5 FT (std)	(See table below)	SAE = Flare ODF=Solder	ANG = 90° Angle S/T = Straight-thru

### Ordering information

Description	Equalizer type	PCN by charge			Connections
		Select from table below			
		A	B	C	
LCL 1	Internal	022018	022017	--	Same as TCL & TCLE
LCL 2		022005	021996	045527	
LCL 3		055093	021987	--	
LCL 6		047759	--	--	
LCLE 1	1/4"SAE External	055096	--	--	
LCLE 2		022003	021997	--	
LCLE 3		021991	021985	--	
LCLE 4		--	061054	055097	

NOTE: Add charge suffix symbol "A", "B", or "C" based on the following table.  
Example: LCLE4-A

### Replacement valve guide

If have:	Replace with:
LA(E)S 1/2	LCL 1
LA(E)S 1	LCL 2
LA(E)S 2	LCL 3
LA(E)S 3	LCL 4
LA(E)S 5	LCL 6
LCL 5	LCLE 6
LCLE 5	LCLE 6
LCL 8	LCL 9
LCLE 8	LCLE 9

Note: Valve sizes LCL5, LCL8, LCLE5 and LCLE8 are OBSOLETE.

### LCL (LA) charge codes

Saturated suction	Refrigerant					
	R-134a		R-22		R-404a/r-507	
	Required suction gas		Required suction gas		Required suction gas	
Temp.	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)	C (UL)	A (CL)	B (GL)	--	A (CL)
10°F	B (GL)	C (UL)	B (GL)	B (GL)	A (CL)	B (GL)
0°F	C (UL)	C (UL)	B (GL)	B (GL)	A (CL)	B (GL)
-10°F	C (UL)	C (UL)	B (GL)	C (UL)	B (GL)	B (GL)
-20°F	C (UL)	C (UL)	B (GL)	C (UL)	B (GL)	C (UL)
-30°F	C (UL)	C (UL)	C (UL)	C (UL)	B (GL)	C (UL)
-40°F	C (UL)	C (UL)	C (UL)	C (UL)	B (GL)	C (UL)

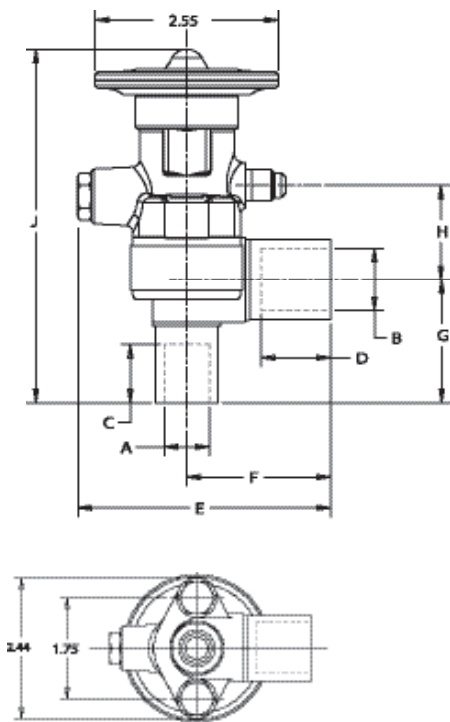
( ) Denotes LA Series valve charge code.

# Thermo™ - Expansion Valves LCL Take-Apart - DeSuperheating

For interstage cooling in compound systems

## Dimensional data

### Angle



## LCL(E) dimensional data (in)

### LCL angle

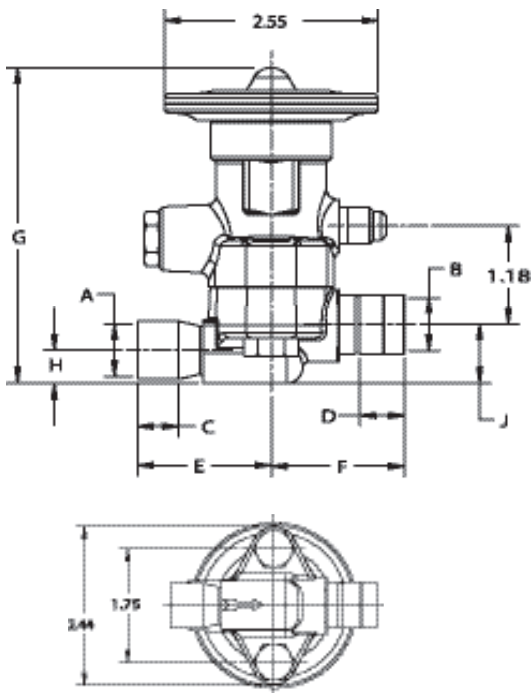
Connection size		A	B	C MIN.	D MIN.	E	F	G	H	J
Inlet	Outlet									
3/8 SAE	1/2 SAE					3.06	1.50	1.13	1.20	4.14
3/8 SAE	5/8 SAE					3.19	1.63	1.13	1.20	4.14
1/2 SAE	5/8 SAE					3.19	1.63	1.38	1.20	4.39
1/4 ODF	3/8 ODF	0.25	0.38	0.31	0.31	2.91	1.34	0.94	1.20	3.95
3/8 ODF	1/2 ODF	0.38	0.50	0.31	0.38	3.03	1.47	1.06	1.20	4.11
3/8 ODF	5/8 ODF	0.38	0.63	0.31	0.50	3.16	1.59	1.06	1.20	4.11
1/2 ODF	5/8 ODF	0.50	0.63	0.38	0.50	3.16	1.59	1.90	1.20	4.20
5/8 ODF	7/8 ODF	0.63	0.88	0.50	0.75	3.56	2.00	1.69	1.20	4.83

### LCL straight thru

3/8 SAE	1/2 SAE					1.78	1.98	3.70	0.38	0.69
3/8 SAE	5/8 SAE					1.78	2.16	3.70	0.38	0.69
1/2 SAE	1/2 SAE					1.97	1.56	3.70	0.38	0.69
3/8 ODF	1/2 ODF	0.38	0.50	0.31	0.38	1.41	1.58	3.69	0.38	0.69
3/8 ODF	5/8 ODF	0.38	0.63	0.31	0.50	1.41	1.63	3.69	0.36	0.67
1/2 ODF	1/2 ODF	0.50	0.50	0.38	0.38	1.41	1.56	3.70	0.38	0.69
1/2 ODF	5/8 ODF	0.50	0.63	0.38	0.50	1.59	1.63	3.69	0.36	0.67
5/8 ODF	5/8 ODF	0.63	0.63	0.50	0.50	1.59	1.63	3.70	0.38	0.69
5/8 ODF	7/8 ODF	0.63	0.88	0.50	0.75	1.59	1.94	3.70	0.38	0.69
5/8 ODF	1-1/8 ODF	0.88	1.13	0.50	0.91	1.59	2.38	3.70	0.38	0.69
7/8 ODF	1-1/8 ODF	0.88	1.13	0.75	0.91	1.94	2.38	3.81	0.38	0.69

Allow 2-1/8" above valve for removal of power assembly.

### Straight-thru



## Remote bulb dimensions

Capillary tubing length (Ft)	Standard remote bulb	
	Diameter	Length
5	5/8	3-1/16
10		3-9/16
15 or 20		4-13/16

## NXT Series Thermo™ - expansion valves

### For high efficiency R-410A air conditioning and heat pump applications

The Emerson NXT Series is a balanced ported valve designed for high efficiency R-410A air conditioning and heat pump applications. NXT Series valves operate over a wide range of conditions and applications, while offering excellent performance, superior reliability, and unparalleled valve life.

#### Features

- Precision superheat control optimized for R-410 A systems
- Enhanced power element design offers extended valve life
- Stainless steel power element prevents corrosion and valve failure
- Stainless steel sensing bulb & capillary tubing prevents direct contact galvanic corrosion and provides better durability for handling and installation
- Laser etched identification markings for permanent legibility
- Hermetic, leak-free construction of all joints
- Compact size allows installation in limited spaces
- Bi-Flow capability allows one valve to control the superheat in both cooling and heating modes for close-coupled or packaged heat pump applications
- Balanced port construction compensates for changes in operating pressures due to varying ambients, gas defrost, heat reclaim, or widely varying evaporator loads
- External equalizer is standard
- Screens on ODF inlet connections

#### Specifications

- Maximum working pressure (MWP): 700 psig
- R-410A operating range: -20°F to +50°F
- UR/CUR file number: SA 5312



Non-Adjustable Superheat

Adjustable Superheat

#### Options

- High flow internal check valve (1-7 tons) allows reverse flow for heat pump applications, eliminating the need for external check valve and improving overall system efficiency
- Adjustable or non-adjustable superheat
- Bleed type pressure equalization available to accommodate PSC type compressors
- ODF connections are standard - Chatleff connections are available
- Standard external equalizer offerings - other configurations are available
  - 1/4" ODF
  - 1/8" tube with 45° Angle Cut
  - Stainless steel tube with 1/4" SAE flare nut

#### Model nomenclature example: NAE 3ZAAODFB15%

N	A	E	3	ZAA	ODF	B15%
Series	Body type	Equalizer	Capacity	Refrigerant code	Connection type	Bleed %
NXT	A = adjustable superheat, with check, straight-through B = adjustable superheat, no check, straight-through C = non-adjustable superheat, with check, straight-through D = non-adjustable superheat, no check, straight-through	E = External Equalizer	(In Tons)	ZAA = R-410A	ODF = Solder CHA = Chatleff	(Omit for None)

# NXT Series Thermo™ - expansion valves

For high efficiency R-410A air conditioning and heat pump applications

## Ordering information

Adjustable, straight-through body style, individually packaged

Refrigerant	Capacity (Tons)	Check valve	Bleed	Inlet x outlet	Bulb cap tube length	External equalizer	Pcn
R-410A	1/2		-	3/8 ODF X 3/8 ODF	30"	30" With Angle Cut	091064
			15%	3/8 ODF X 3/8 ODF	30"	30" With Angle Cut	091065
			-	3/8 ODF X 1/2 ODF	30"	1/4" ODF	091066
	1	√	-	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091000
		√	15%	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091001
		√	-	Chatleff X Chatleff	5 ft	* 5 ft With 1/4" SAE Flare Nut	091002
		√	-	3/8 ODF X 1/2 ODF	5 ft	5 ft With Angle Cut	091003
			-	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091004
			15%	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091005
	1-1/2	√	-	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091006
		√	15%	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091007
		√	-	Chatleff X Chatleff	5 ft	* 5 ft With 1/4" SAE Flare Nut	091008
		√	-	3/8 ODF X 1/2 ODF	5 ft	5 ft With Angle Cut	091009
			-	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091010
			15%	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091011
	2	√	-	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091012
		√	15%	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091013
		√	-	Chatleff X Chatleff	5 ft	* 5 ft With 1/4" SAE Flare Nut	091014
		√	-	3/8 ODF X 1/2 ODF	5 ft	5 ft With Angle Cut	091015
			-	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091016
			15%	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091017
	3	√	-	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091018
		√	15%	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091019
		√	-	Chatleff X Chatleff	5 ft	* 5 ft With 1/4" SAE Flare Nut	091020
		√	-	3/8 ODF X 1/2 ODF	5 ft	5 ft With Angle Cut	091021
			-	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091022
			15%	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091023
	4	√	-	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091024
		√	15%	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091025
		√	-	Chatleff X Chatleff	5 ft	* 5 ft With 1/4" SAE Flare Nut	091026
		√	-	3/8 ODF X 1/2 ODF	5 ft	5 ft With Angle Cut	091027
			-	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091028
			15%	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091029
	5	√	-	3/8 ODF X 1/2 ODF	5 ft	1/4" ODF	091063
		√	-	1/2 ODF X 5/8 ODF	5 ft	1/4" ODF	091030
		√	15%	1/2 ODF X 5/8 ODF	5 ft	1/4" ODF	091031
		√	-	Chatleff X Chatleff	5 ft	* 5 ft With 1/4" SAE Flare Nut	091032
		√	-	1/2 ODF X 5/8 ODF	5 ft	5 ft With Angle Cut	091033
			-	1/2 ODF X 5/8 ODF	5 ft	1/4" ODF	091034
	6		15%	1/2 ODF X 5/8 ODF	5 ft	1/4" ODF	091035
		√	-	1/2 ODF X 5/8 ODF	5 ft	1/4" ODF	091036
		√	15%	1/2 ODF X 5/8 ODF	5 ft	1/4" ODF	091037
√		-	Chatleff X Chatleff	5 ft	* 5 ft With 1/4" SAE Flare Nut	091038	
√		-	1/2 ODF X 5/8 ODF	5 ft	5 ft With Angle Cut	091039	
		-	1/2 ODF X 5/8 ODF	5 ft	1/4" ODF	091040	
7		15%	1/2 ODF X 5/8 ODF	5 ft	1/4" ODF	091041	
	√	-	5/8 ODF X 7/8 ODF	5 ft	1/4" ODF	091042	
	√	15%	5/8 ODF X 7/8 ODF	5 ft	1/4" ODF	091043	
	√	-	Chatleff X Chatleff	5 ft	* 5 ft With 1/4" SAE Flare Nut	091044	
	√	-	5/8 ODF X 7/8 ODF	5 ft	5 ft With Angle Cut	091045	
		-	5/8 ODF X 7/8 ODF	5 ft	1/4" ODF	091046	
	15%	5/8 ODF X 7/8 ODF	5 ft	1/4" ODF	091047		

\* External equalizer has a stainless steel tube and copper flare with 1/4" SAE flare nut

# NXT Series Thermo™ - expansion valves

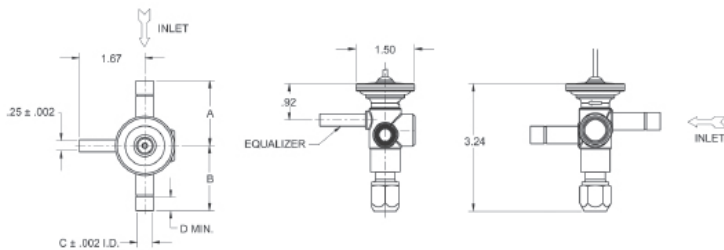
For high efficiency R-410A air conditioning and heat pump applications

## Ordering Information

Adjustable superheat, straight-through body style, individually packaged (continued)

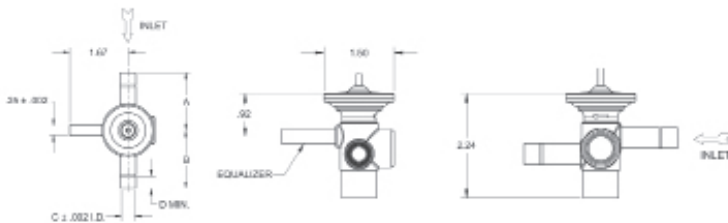
Refrigerant	Capacity (Tons)	Check valve	Bleed	Inlet x outlet	Bulb cap tube length	External equalizer	Pcn
R-410A	8		-	1/2 ODF x 5/8 ODF	5 ft	1/4" ODF	091091
			-	5/8 ODF X 7/8 ODF	5 ft	1/4" ODF	091048
			15%	5/8 ODF X 7/8 ODF	5 ft	1/4" ODF	091049
	10		-	1/2 ODF x 5/8 ODF	5 ft	1/4" ODF	091092
			-	5/8 ODF X 7/8 ODF	5 ft	1/4" ODF	091050
			15%	5/8 ODF X 7/8 ODF	5 ft	1/4" ODF	091051
	12		-	1/2 ODF X 5/8 ODF	5 ft	1/4" ODF	091060
			-	5/8 ODF X 7/8 ODF	5 ft	1/4" ODF	091052
			15%	5/8 ODF X 7/8 ODF	5 ft	1/4" ODF	091053
			-	5/8 ODF X 1-1/8 ODF	5 ft	1/4" ODF	091054
	15		-	7/8 ODF X 1-1/8 ODF	5 ft	1/4" ODF	091055
			-	5/8 ODF X 7/8 ODF	5 ft	1/4" ODF	091056
		15%	5/8 ODF X 7/8 ODF	5 ft	1/4" ODF	091057	
		-	5/8 ODF X 1-1/8 ODF	5 ft	1/4" ODF	091058	
		-	7/8 ODF X 1-1/8 ODF	5 ft	1/4" ODF	091059	

## NXT series dimensional data (in.)



Connections	Dimension			
	A	B	C	D
3/8 ODF	1.65	1.65	0.379	0.34
1/2 ODF	1.65	1.65	0.504	0.48
5/8 ODF	2.15	2.15	0.629	0.75
7/8 ODF	2.15	2.15	0.879	0.75
1-1/8 ODF	2.40	2.40	1.129	0.91
Chatleff	1.80	1.36	-	-

Adjustable - ODF connections with 1/4 ODF equalizer shown



Non-adjustable - ODF connections with 1/4 ODF equalizer shown

## T Series – Take-Apart Thermostatic expansion valves

The T-series Take-Apart valves, with adjustable superheat and replaceable, interchangeable components are ideal for original equipment and field replacements in air conditioning, heat pump, and refrigeration applications.

### Features

- Take-Apart construction for easy field service
- External superheat adjustment
- Bi-Flow capability
- Stainless steel power assembly



### Options

- Replaceable, interchangeable cages
- Interchangeable body flanges and power assemblies
- 1/4 to 100 tons capacity

### Specifications

- Maximum working pressure: 450 psig
- Torque Bolts: 300 in. lb.

### Nomenclature example: TCLEB 5HC5FT3/8x1/2SAEANG

T	CL	N	E	B	5	H	C	5FT	3/8 X 1/2	SAE
Series	Type	Navy	Equalizer	Bleed hole	Capacity	Refrigerant code	Charge code	Capillary tube length code	Inlet x outlet connection sizes	Connection type
Take-Apart Adjustable Superheat	Small Capacity = CL, JL, JR <sup>1</sup> Large Capacity, Balanced Port = ER <sup>1</sup> , IR, HR, MR	(Optional) N= Navy	E= External (Omit for Internal)	(Optional) B = Bleed Hole (Omit for No Bleed Hole)	Nomnal Rating in Tons (See Cage Assembly Interchangeability Tables)	+F = R-12 • H = R-22 +M = R-134a • N = R-407C *P = R-507 *R = R-502 *S = R404A	C = Medium Temp CA = Heat Pump W* (MOP) = Press. Limiting Z = Low Temp	5 FT (std)	Various Sizes Are Available VLF = Valve Less Flange	SAE = Flare ODF = Solder

<sup>1</sup> Extended length capscrews and balanced port

+ = R-12 and R-134a are interchangeable refrigerant charges

\* = R-507, R-502 and R-404A are interchangeable refrigerant charges

• = R-22 and R-407C are interchangeable refrigerant charges

### Power assembly model nomenclature example: X-8019FS-1B

X-8019	F	S	1	B
Series	Refrigerant code F = R-12 H = R-22 M = R-134a N = R-407C P = R-507 R = R-502 S = R-404A	Charge code C = Medium Temp CA = Heat Pump W(MOP) = Press. Limiting Z = Low Temp	Capillary tube Length Code 1 = 5 FT (std) 2 = 10 FT 15 = 30 IN	Equalizer A = Internal B = External



# T Series – Take-Apart

## Thermostatic expansion valves

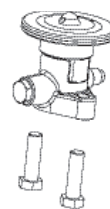
Small capacity ½ to 18 tons  
(R-22 Nominal – Bi Flow)

Step 1: Select cage  
From capacity table

Externally adjustable  
Cage assembly



Superheat Plug  
X28124-1 (ODM)  
(PCN: 058336)



Step 3: Select  
Power assembly

Cap screws

Valve series	Nominal capacity - Tons						Cage assembly <sup>1</sup>	
	R-12	R-134a	R-22	R-404A R-507	R-502	R-407C	Model	PCN
TCL TCLE	1/4	1/4	1/2	1/4	1/4	1/2	X-22440-B1A	037034
	1/4	1/4	1/2	1/4	1/4	1/2	X-22440-B1B	037035
	1/2	3/4	1	1/2	1/2	1	X-22440-B2A	037036
	1/2	3/4	1	1/2	1/2	1	X-22440-B2B	037037
	1	1-1/2	2	1	1	2	X-22440-B3A	037038
	1	1-1/2	2	1	1	2	X-22440-B3B	037039
	2	2-1/2	3	2	2	3	X-22440-B4A	037040
	2	2-1/2	3	2	2	3	X-22440-B4B	037041
	3	3-1/2	5	3	3	5	X-22440-B5B	037043
	4	5-1/2	7-1/2	4-1/2	4-1/2	7-1/2	X-22440-B6B	037045
TJLE	6-1/2	7-1/2	10	7	7	10	X-22440-B7B	037047
	7-1/2	9	12	8	8	12	X-22440-B8B	037049
	7	9	11	7	7	11	XC-724-B4B	093343
TJR	8	11	14	9	9	14	XC-724-B5B	038699
	8	11	14	9	9	14	X-11873-B4B	088837
TJR	11	13	18	12	12	18	X-11873-B5B	089058

<sup>1</sup> Gaskets included on cage.  
Gasket strip X13455-1 (PCN: 027579) replaces all older T-Series Gasket kits.



Angle, ODF



Straight-Thru, SAE

Step 2: Select flange

Series	Flow	Size & style connections		Body flange part	
		Inlet	Outlet	Model	PCN
TCL TCLE	Angle	3/8 SAE	1/2 SAE	C-500-4	056932
		3/8 SAE	5/8 SAE	C-500-5	057153
		1/2 SAE	5/8 SAE	C-500-6	056294
		3/8 ODF	1/2 ODF	C-501-4	065527
		3/8 OFD	5/8 ODF	C-501-5	065748
		1/2 ODF	5/8 ODF	C-501-7	065861
		5/8 ODF or 7/8 ODM	7/8 ODF or 1-1/8 ODM	A-576	027764
	Straight-Thru	3/8 SAE	1/2 SAE	X-6669-4	051176
		3/8 SAE	5/8 SAE	X-6669-1	050563
		1/2 SAE	1/2 SAE	X-6669-5	083378
		1/2 SAE	5/8 SAE	X-6669-2	050842
		3/8 ODF	1/2 ODF	9761-5	027769
		3/8 ODF	5/8 ODF	9761-3	027771
		1/2 ODF	1/2 ODF	9761-9	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	X-6346-16	044733
		5/8 ODF	7/8 ODF	X-6346-17	044846
		5/8 ODF	1-1/8 ODF	X-6346-18	094038
		7/8 ODF	1-1/8 ODF	X-6346-34	071757
TJLE	Angle	5/8 ODF or 7/8 ODM	7/8 ODF or 1-1/8 ODM	B-504	044984
		5/8 ODF	1-1/8 ODF	X-6347-2	094289
	Straight-Thru	7/8 ODF	1-1/8 ODF	X-6347-6	057210
7/8 ODF		1-3/8 ODF	X-6347-7	057323	
TJR <sup>2</sup>	Angle	5/8 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

<sup>2</sup> TJR is balanced ported. TJR flange includes extended length cap screws.

Refrigerant	Equalizer type	Cap tube length	TCL-TCLE-TJLE-TJR Power assemblies <sup>3</sup>			
			Application		Model	PCN
			Temp. Range	MOP <sup>4</sup> (psi)		
R-12	Internal	5 FT	-20 to +50	NONE	XB-1019FC-1A	052951
	1/4 SAE	5 FT	-20 to +50	NONE	XB-1019FC-1B	049881
	Internal	10 FT	-20 to +50	NONE	XB-1019FC-2A	032374
	1/4 SAE	10 FT	-20 to +50	NONE	XB-1019FC-2B	052954
	1/4 SAE	15 FT	-20 to +50	NONE	XB-1019FC-3B	058569
	1/4 SAE	5 FT	-50 to +50	35	XB-1019FW35-1B	079346
	1/4 SAE	5 FT	-50 to +50	55	XB-1019FW55-1B	057432
	1/4 SAE	10 FT	-50 to +50	55	XB-1019FW55-2B	050981
	1/4 SAE	5 FT	-50 to 0	15	XB-1019FW15-1B	077063
	R-22	Internal	5 FT	-20 to +50	NONE	XB-1019HC-1A
1/4 SAE		5 FT	-20 to +50	NONE	XB-1019HC-1B	053416
1/4 SAE		10 FT	-20 to +50	NONE	XB-1019HC-2B	054390
1/4 SAE		5 FT	-20 to +50	NONE	XB-1019HCA-1B	056039
1/4 SAE		5 FT	-50 to +5	35	XB-1019HW35-1B	089975
1/4 SAE		5 FT	-50 to +20	55	XB-1019HW55-1B	039152
1/4 SAE		5 FT	-50 to +30	65	XB-1019HW65-1B	089445
1/4 SAE		5 FT	-50 to +50	100	XB-1019HW100-1B	062437
1/4 SAE		20 FT	-10 to +50	NONE	XB-1019HW-4B	055703
1/4 SAE		10 FT	-50 to +50	100	XB-1019HW100-2B	062658
R-407C	1/4 SAE	5 FT	-50 to +10	NONE	XB-1019HZ-2B	040568
	1/4 SAE	10 FT	-50 to +10	NONE	XB-1019HZ-2B	054105
	1/4 SAE	5 FT	-20 to +50	NONE	XB-1019NC-1B	064837
	1/4 SAE	5 FT	-20 to +50	100	XB-1019NW100-1B	063069
R-507	1/4 SAE	5 FT	-20 to +50	NONE	XB-1019PC-1B	061949
	1/4 SAE	5 FT	-50 to 0	40	XB-1019PW40-1B	064200
	1/4 SAE	5 FT	-50 to +10	NONE	XB-1019PZ-1B	061951
R-134a	1/4 SAE	5 FT	-20 to +50	NONE	XB-1019MC-1B	057878
	1/4 SAE	10 FT	-20 to +50	NONE	XB-1019MC-2B	059548
	1/4 SAE	5 FT	-50 to +50	55	XB-1019MW55-1B	057370
	1/4 SAE	5 FT	-50 to +10	NONE	XB-1019MZ-1B	061946
R-502	1/4 SAE	5 FT	-20 to +50	NONE	XB-1019RC-1B	052955
	1/4 SAE	10 FT	-20 to +50	NONE	XB-1019RC-2B	054415
	1/4 SAE	5 FT	-50 to +20	15	XB-1019RW15-1B	070346
	1/4 SAE	5 FT	-50 to +5	35	XB-1019RW35-1B	063644
	1/4 SAE	5 FT	-50 to +5	45	XB-1019RW45-1B	055881
	1/4 SAE	10 FT	-50 to +5	45	XB-1019RW45-2B	055704
	1/4 SAE	5 FT	-50 to +25	65	XB-1019RW65-1B	063114
R-404A	1/4 SAE	5 FT	-50 to +10	NONE	XB-1019RZ-1B	046474
	1/4 SAE	10 FT	-50 to +10	NONE	XB-1019RZ-2B	047358
	1/4 SAE	5 FT	-20 to +50	NONE	XB-1019SC-1B	059189
	1/4 SAE	5 FT	-50 to 0	40	XB-1019SW40-1B	059130
Misc.	1/4 SAE	5 FT	-50 to +25	65	XB-1019SW65-1B	063541
	1/4 SAE	10 FT	-50 to +10	NONE	XB-1019SZ-2B	061948
	Internal	5 FT		NONE	XB-1019A-1A	037389
	1/4 SAE	5 FT		NONE	XB-1019A-1B	034803
	1/4 SAE	5 FT		NONE	XB-1019B-1B	032207
	1/4 SAE	5 FT		NONE	XB-1019C-1B	035162
	1/4 SAE	5 FT		NONE	XB-1019CW-1B	084768

<sup>3</sup> Cap screws included with Power Assembly

<sup>4</sup> Maximum Operating Pressure Limit to prevent motor overload

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-Apart Thermostatic expansion valves

Large capacity 22 to 100 tons  
(R22 Nominal – Balanced ported and Bi Flow)



Externally adjustable  
double ported  
cage assembly

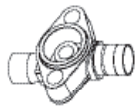
Step 1: Select cage  
from capacity table

Series	Nominal capacity - Tons						Cage assembly <sup>1</sup>	
	R-12	R-134a	R-22	R-404A R-507	R-502	R-407C	Model	PCN
TER	13	16	22	14	14	22	X-91117-B6B	077896
	15	19	26	16	16	26	X-91117-B7B	078117
	20	25	35	21	21	35	X-91117-B8B	071155
	25	31	45	27	27	45	X-91117-B9B	029429
TIR	35	45	55	37	37	55	X-9166-B10B	070738
	35	45	55	37	37	55	X-9144-B10B	071238
THR	45	55	75	48	48	70	X-9144-B11B	020846
	55	68	85	60	60	85	X-9144-B13B	021067
	55	68	100	60	--	100	X-9144-B14B	065123

<sup>1</sup> Gaskets included on cage.



Angle, ODF



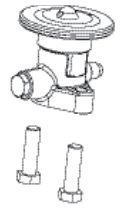
Straight-Thru, ODF

Step 2: Select flange

Series	Style	Size & style connections		Body flange part	
		Inlet	Outlet	Model	PCN
TER <sup>2</sup>	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
TIR	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
THR	ANGLE	1-1/8 ODM	1-1/8 ODM	9149	028030
	STRAIGHT-THRU	1-1/8 ODM	1-1/8 ODM	9148	028032
TMR <sup>2</sup>	ANGLE	1-1/8 ODM	1-1/8 ODM	9149-1	065124
	STRAIGHT-THRU	1-1/8 ODM	1-1/8 ODM	9148-1	065125

<sup>2</sup> TER-TMR Flange includes extended length capscrews.

Superheat plug  
X28124-1 (ODM)  
(PCN: 058336)



Capscrews

Step 3: Select  
power assembly

TER-TIR-THR-TMR Power assemblies <sup>3</sup>						
Refrigerant	Equalizer type	Cap tube length	Application		Model	PCN
			Temp. Range	MOP <sup>4</sup> (psi)		
R-12	1/4 SAE	10 FT	-20 to +40	NONE	XC-726FG-2B	052957
	1/4 SAE	10 FT	-50 to +50	55	XC-726FW55-2B	035000
R-22	1/4 SAE	10 FT	-20 to +50	NONE	XC-726HC-2B	056421
	1/4 SAE	10 FT	-50 to +50	35	XC-726HW35-2B	024511
	1/4 SAE	10 FT	-50 to +30	65	XC-726HW65-2B	025011
	1/4 SAE	10 FT	-20 to +50	NONE	XC-726HCA-2B	059333
	1/4 SAE	10 FT	-50 to +50	100	XC-726HW100-2B	036750
	1/4 SAE	10 FT	-50 to +10	NONE	XC-726HZ-2B	040569
R-134A	1/4 SAE	10 FT	-20 to +50	NONE	XC-726MC-2B	057235
	1/4 SAE	10 FT	-50 to +50	55	XC-726MW55-2B	057372
	1/4 SAE	10 FT	-50 to +10	NONE	XC-726MZ-2B	063075
R-502	1/4 SAE	10 FT	-20 to +50	NONE	XC-726RC-2B	052958
	1/4 SAE	10 FT	-50 to +20	15	XC-726RW15-2B	023351
	1/4 SAE	10 FT	-50 to +50	35	XC-726RW35-2B	070866
	1/4 SAE	10 FT	-50 to +25	65	XC-726RW65-2B	071421
	1/4 SAE	10 FT	-50 to +10	NONE	XC-726RZ-2B	046692
R-404A	1/4 SAE	10 FT	-20 to +50	NONE	XC-726SC-2B	062303
	1/4 SAE	10 FT	-50 to +10	40	XC-726SW40-2B	063127
	1/4 SAE	10 FT	-50 to +25	65	XC-726SW65-2B	061692
	1/4 SAE	10 FT	-50 to +10	NONE	XC-726SZ-2B	063974

<sup>3</sup> Capscrews included with Power Assembly

<sup>4</sup> Maximum Operating Pressure Limit to prevent motor overload

## Additional parts

Description	Model	PCN
Packing nut wrench	E-642	039862
Gasket strip	X-13455-1	027579
Superheat adjustment plug	X-28124-1	058336

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-Apart Thermostatic expansion valves

### Ordering information Valves less flange – (VLF)

#### TCLE/TJLE/TJRE SAE External 5 FT. Cap Tube Length

Model					
R-12	PCN	R-22	PCN	R-502	PCN
TCLE 1/2FC5FTVLF	054413	TCLE 1HC5FTVLF	062884	TCLE 2RC5FTVLF	061215
TCLE 1FC5FTVLF	052940	TCLE 2HC5FTVLF	061724	TCLE 3RC5FTVLF	055501
TCLE 2FC5FTVLF	052941	TCLE 3HC5FTVLF	054395	TCLE 8RC5FTVLF	063501
TCLE 3FC5FTVLF	052942	TCLE 5HC5FTVLF	054399		
TCLE 4FC5FTVLF	052943	TCLE 7-1/2HC5FTVLF	054401		
TCLE 61/2FC5FTVLF	052944	TCLE 7-1/2HW1005FT1/2X5/8SAES/T	054079		
TCLE 71/2FC5FTVLF	052945	TCLE 10HC5FTVLF	054404		
TJLE 8FC5FTVLF	055104	TCLE 10HW1005FTVLF	059076		
TJRE 11FC5FTVLF	055105	TCLE 12HC5FTVLF	060854		
		TJLE 11HC5FTVLF	060855		
		TJLE 14HC5FTVLF	060856		
		TJRE 14HC5FTVLF	060857		
		TJRE 18HC5FTVLF	060858		

#### TCLE/TJLE/TJRE Rapid response power assemblies

Model	PCN
X-8019FWS-1B	031654
X-8019HWS-1B	055652
X-8019HWS-2B	055873
X-8019RWS-1A	032131
X-8019RWS-2B	042426

#### TER/TIR/THR Rapid response power assemblies

Model	PCN
X-7726FWS-2B	035083
X-7726HWS-2B	093565
X-7726RWS-2B	036616

#### TER/TIR/THR 10 FT. cap tube length

Model					
R-12	PCN	R-22	PCN	R-502	PCN
TER 20FC10FTVLF	055109	TER 22HC10FTVLF	061673	TER 14RC5FTVLF	060788
TER 25FC10FTVLF	055111	TER 22HW10010FTVLF	058582		
		TER 26HC10FTSAEVLV	061674		
		TER 35HC10FTVLF	061675		
		TER 35HW10010FTVLF	058038		
		TER 45HC10FTVLF	061676		
		TIR 55HC10FTVLF	061677		
		THR 75HC10FTVLF	064961		
		THR 100HC10FTVLF	062036		
		THR 100HW1005FTVLF	052912		

### Replacement cap screw kits

PCN	Model	Contains Screw #	Pcs. Per Pkg.	Valve Style
054569	KT-30021	PS-286-5	10	TCLE, TJLE
054570	KT-30022	PS-168-5	10	Flange A-00576
054571	KT-30023	PS-259	10	TJR, TER
054572	KT-30024	PS-370	10	TIR, THR, TMR
054573	KT-30025	PS-514-5	10	TJL Angled Flange
054574	KT-30026	PS-517-5	10	TJL Straight-Thru Flanges

### Power assembly model nomenclature example: X-8019FS-1B

X-8019	F	S	1	B
Series	Refrigerant code F = R-12 H = R-22 M = R-134a N = R-407C P = R-507 R = R-502 S = R-404A	Charge code C = Medium temp CA = Heat pump W(MOP) = Press. limiting Z = Low temp	Capillary tube length code 1 = 5 FT (std) 2 = 10 FT 15 = 30 IN	Equalizer A = Internal B = External

# TA Series Thermo™ - expansion valve

For multiple low capacity commercial refrigeration applications including showcase, cold-room, ice making machine and refrigerated truck.

## Features

- Compatible with R22, R134a and R404a
- Capacity range: 0.82 to 19.8 kW @ R22
- Stable and accurate superheat control over wide load and evaporating temperature range
- Easy and precise static superheat adjustment
- High consistency of whole cycle
- Stainless-steel capillary and tube give excellent durability and avoid galvanic corrosion

## Options

- 8 exchangeable orifices cover board capacity range and give flexibility of selection
- Cleanable inlet strainer, convenient for field maintains
- Internal or external equalizer available
- Flare or brazing outlet connections available



## Specifications

Maximum working pressure: 680 psig

## Model Nomenclature Example: TAE HCS SAE 5FT

TA	E	H	C*	SAE	5FT
TA Series	Equalizer	Refrigerant Code	Charge Code	Connection Type & Size (Inlet x Outlet x Equalizer)	Capillary Tube Length
Take-apart Adjustable	E = External Omit for Internal	H=R22 S=R404A M=R134a	S=medium and low temp. W** (MOP)=press. limiting	SAE=Flare (3/8SAE x 1/2SAE x 1/4SAE) ODF=Solder (3/8SAE x 1/2ODF x 1/4ODF) Omit equalizer size for internal	5FT (STD)

## TA Valve Body Selection:

Refrigerant	PCN	Description	Charge Code	MOP	Application Temperature	Equalizer*		Inlet x Outlet x Equalizer
R22	066830	TAE HCS SAE 5FT	HCS	-	-40°C ~ +10°C	EE	1/4 SAE	3/8 SAE x 1/2 SAE x1/4 SAE
	066831	TA HCS SAE 5FT	HCS			IE	-	3/8 SAE x 1/2 SAE
	066832	TAE HCS ODF 5FT	HCS			EE	1/4 ODF	3/8 SAE x 1/2 ODF x1/4 ODF
	066833	TA HCS ODF 5FT	HCS			IE	-	3/8 SAE x 1/2 ODF
	066834	TAE HW100 ODF 5FT	HW100	6.9Bar	-40°C ~ +10°C	EE	1/4 ODF	3/8 SAE x 1/2 ODF x1/4 ODF
	066835	TA HW100 ODF 5FT	HW100			IE	-	3/8 SAE x 1/2 ODF
	066836	TAE HW100 SAE 5FT	HW100			EE	1/4 SAE	3/8 SAE x 1/2 SAE x1/4 SAE
	066837	TA HW100 SAE 5FT	HW100			IE	-	3/8 SAE x 1/2 SAE
R404a	066838	TAE SCS SAE 5FT	SCS	-	-40°C ~ +10°C	EE	1/4 SAE	3/8 SAE x 1/2 SAE x1/4 SAE
	066839	TA SCS SAE 5FT	SCS			IE	-	3/8 SAE x 1/2 SAE
	066840	TAE SCS ODF 5FT	SCS			EE	1/4 ODF	3/8 SAE x 1/2 ODF x1/4 ODF
	066841	TA SCS ODF 5FT	SCS			IE	-	3/8 SAE x 1/2 ODF
	066842	TAE SW75 SAE 5FT	SW75	5.2Bar	-40°C ~ +10°C	EE	1/4 SAE	3/8 SAE x 1/2 SAE x1/4 SAE
	066843	TA SW75 SAE 5FT	SW75			IE	-	3/8 SAE x 1/2 SAE
	066844	TAE SW75 ODF 5FT	SW75			EE	1/4 ODF	3/8 SAE x 1/2 ODF x1/4 ODF
	066845	TA SW75 ODF 5FT	SW75			IE	-	3/8 SAE x 1/2 ODF
R134a	066846	TAE MC SAE 5FT	MC	-	-25°C ~ +10°C	EE	1/4 SAE	3/8 SAE x 1/2 SAE x1/4 SAE
	066847	TA MC SAE 5FT	MC			IE	-	3/8 SAE x 1/2 SAE
	066848	TAE MC ODF 5FT	MC			EE	1/4 ODF	3/8 SAE x 1/2 ODF x1/4 ODF
	066849	TA MC ODF 5FT	MC			IE	-	3/8 SAE x 1/2 ODF
	066850	TAE MW55 SAE 5FT	MW55	3.8Bar	-25°C ~ +10°C	EE	1/4 SAE	3/8 SAE x 1/2 SAE x1/4 SAE
	066851	TA MW55 SAE 5FT	MW55			IE	-	3/8 SAE x 1/2 SAE
	066852	TAE MW55 ODF 5FT	MW55			EE	1/4 ODF	3/8 SAE x 1/2 ODF x1/4 ODF
	066853	TA MW55 ODF 5FT	MW55			IE	-	3/8 SAE x 1/2 ODF

\*EE: External Equalizer; IE: Internal Equalizer.

## TA Orifice Selection

Orifice No.	PCN	Description	Nominal Capacity (kW)*		
			R22	R404a	R134a
X	067000	TAO-00X CAGE ASSEMBLY	0.82	0.55	0.60
0	067001	TAO-000 CAGE ASSEMBLY	1.65	1.05	1.20
1	067002	TAO-001 CAGE ASSEMBLY	3.45	2.20	2.50
2	067003	TAO-002 CAGE ASSEMBLY	4.7	3.00	3.40
3	067004	TAO-003 CAGE ASSEMBLY	7.8	5.00	5.65
4	067005	TAO-004 CAGE ASSEMBLY	12.5	8.00	9.05
5	067006	TAO-005 CAGE ASSEMBLY	17	10.90	12.30
6	067007	TAO-006 CAGE ASSEMBLY	19.8	12.75	14.30

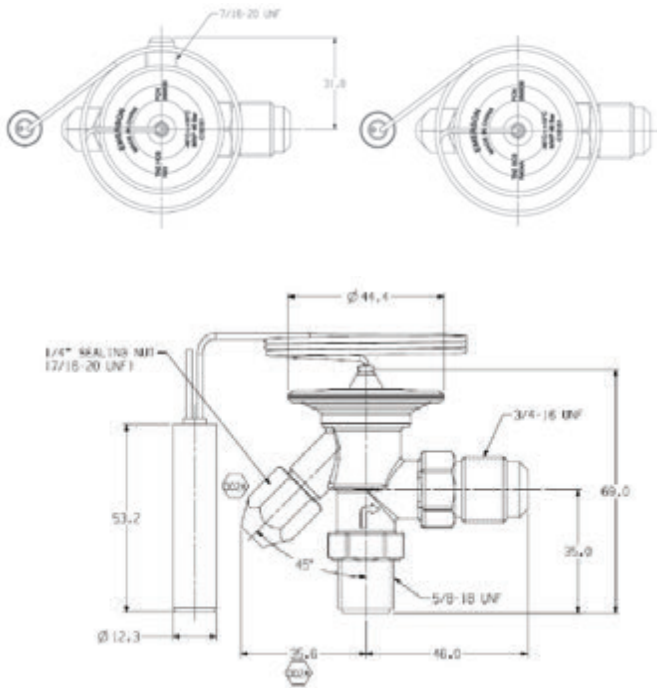
\*The nominal capacities are based upon +4°C dew point evaporating temperature, +38°C bubble point condensing temperature and 1K sub-cooling per Asercom standard.

## Static Superheat and Opening Superheat:

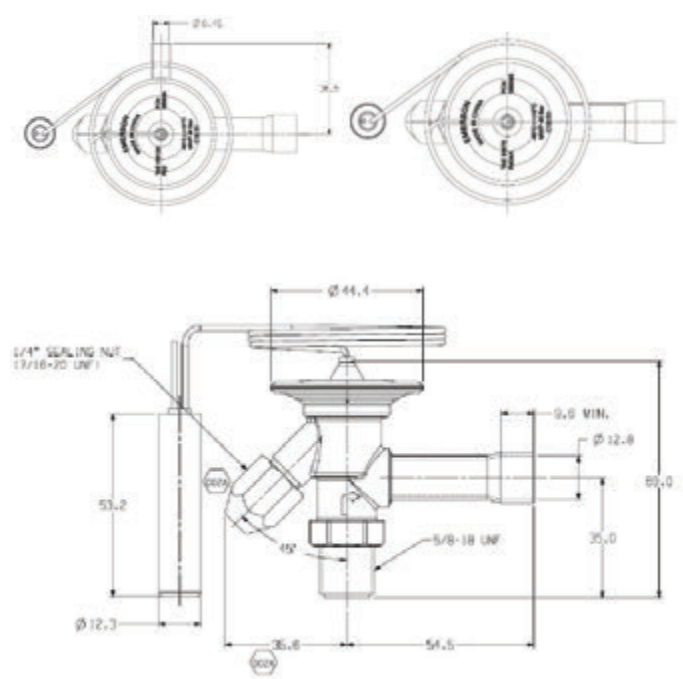
Refrigerant	Static Superheat Range	Static Superheat Omit	Opening Superheat	K/Turn in Adjustment (Evaporation temp. = 0°C)
R134a	0~8K	4K	5K	~3.4K
R22			4.4K	~2.3K
R404A			3.3K	~1.9K

## Dimension (Unit: mm)

SAE x SAE:



SAE x ODF:



## Quick Selection

Included 1.5 bar pressure drop for liquid line components and distributor

Condensing Temperature (°C)	R22		Extended Capacity (kW) Evaporating Temperature (°C)									Orifice Type
	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
60	0.91	0.92	0.93	0.94	0.90	0.80	0.70	0.60	0.51	0.43	0.37	TAO-00X
	1.83	1.85	1.86	1.89	1.82	1.61	1.40	1.21	1.03	0.87	0.75	TAO-000
	3.83	3.87	3.90	3.94	3.81	3.37	2.93	2.52	2.14	1.82	1.57	TAO-001
	5.21	5.27	5.31	5.37	5.18	4.59	3.99	3.43	2.92	2.48	2.13	TAO-002
	8.65	8.75	8.81	8.92	8.60	7.62	6.62	5.70	4.85	4.11	3.54	TAO-003
	13.86	14.02	14.12	14.29	13.79	12.21	10.61	9.13	7.77	6.59	5.67	TAO-004
	18.85	19.06	19.21	19.43	18.75	16.61	14.43	12.42	10.56	8.96	7.72	TAO-005
21.96	22.20	22.37	22.63	21.84	19.34	16.81	14.46	12.30	10.43	8.99	TAO-006	
55	0.89	0.91	0.92	0.93	0.91	0.84	0.70	0.60	0.51	0.44	0.38	TAO-00X
	1.79	1.83	1.85	1.88	1.82	1.68	1.41	1.21	1.04	0.88	0.76	TAO-000
	3.75	3.83	3.87	3.93	3.82	3.52	2.95	2.54	2.16	1.84	1.59	TAO-001
	5.10	5.22	5.28	5.35	5.20	4.80	4.01	3.46	2.95	2.51	2.17	TAO-002
	8.47	8.67	8.75	8.88	8.63	7.96	6.66	5.74	4.89	4.17	3.60	TAO-003
	13.58	13.89	14.03	14.23	13.82	12.76	10.67	9.19	7.84	6.68	5.76	TAO-004
	18.46	18.89	19.08	19.35	18.80	17.35	14.52	12.50	10.67	9.08	7.84	TAO-005
21.50	22.01	22.22	22.54	21.90	20.21	16.91	14.56	12.42	10.57	9.13	TAO-006	
50	0.87	0.89	0.91	0.92	0.90	0.80	0.70	0.61	0.52	0.44	0.38	TAO-00X
	1.75	1.80	1.82	1.85	1.82	1.61	1.40	1.22	1.04	0.88	0.76	TAO-000
	3.66	3.76	3.81	3.88	3.80	3.37	2.93	2.55	2.17	1.85	1.60	TAO-001
	4.98	5.13	5.19	5.28	5.18	4.59	4.00	3.47	2.96	2.51	2.17	TAO-002
	8.27	8.51	8.62	8.77	8.59	7.61	6.63	5.76	4.91	4.17	3.61	TAO-003
	13.26	13.63	13.82	14.05	13.77	12.20	10.63	9.23	7.87	6.69	5.78	TAO-004
	18.03	18.54	18.79	19.11	18.72	16.59	14.46	12.55	10.70	9.09	7.86	TAO-005
21.00	21.60	21.88	22.26	21.80	19.33	16.84	14.62	12.47	10.59	9.15	TAO-006	
45	0.84	0.87	0.89	0.90	0.88	0.79	0.69	0.60	0.51	0.44	0.38	TAO-00X
	1.69	1.74	1.79	1.81	1.78	1.59	1.40	1.20	1.03	0.88	0.76	TAO-000
	3.52	3.65	3.75	3.79	3.72	3.33	2.92	2.52	2.16	1.84	1.60	TAO-001
	4.80	4.97	5.11	5.17	5.07	4.54	3.98	3.43	2.95	2.51	2.18	TAO-002
	7.97	8.25	8.47	8.57	8.41	7.54	6.61	5.70	4.89	4.17	3.61	TAO-003
	12.77	13.22	13.58	13.74	13.48	12.08	10.59	9.13	7.84	6.68	5.79	TAO-004
	17.36	17.98	18.47	18.69	18.33	16.43	14.41	12.41	10.66	9.09	7.87	TAO-005
20.22	20.94	21.51	21.77	21.35	19.13	16.78	14.46	12.42	10.58	9.17	TAO-006	
40	0.79	0.83	0.86	0.88	0.86	0.78	0.68	0.59	0.51	0.43	0.38	TAO-00X
	1.60	1.67	1.72	1.77	1.74	1.57	1.37	1.19	1.02	0.87	0.76	TAO-000
	3.34	3.49	3.60	3.70	3.63	3.27	2.86	2.49	2.13	1.82	1.59	TAO-001
	4.54	4.75	4.91	5.04	4.95	4.46	3.89	3.39	2.91	2.48	2.16	TAO-002
	7.54	7.88	8.15	8.36	8.22	7.40	6.46	5.63	4.83	4.12	3.58	TAO-003
	12.09	12.63	13.06	13.40	13.17	11.86	10.35	9.03	7.74	6.60	5.74	TAO-004
	16.44	17.17	17.76	18.23	17.91	16.13	14.07	12.28	10.52	8.98	7.81	TAO-005
19.14	20.00	20.69	21.23	20.86	18.79	16.39	14.30	12.25	10.46	9.10	TAO-006	
35	0.74	0.78	0.82	0.85	0.84	0.76	0.67	0.58	0.50	0.43	0.37	TAO-00X
	1.49	1.58	1.65	1.70	1.69	1.52	1.34	1.16	1.01	0.86	0.75	TAO-000
	3.12	3.30	3.45	3.56	3.54	3.18	2.81	2.43	2.11	1.80	1.57	TAO-001
	4.25	4.50	4.70	4.85	4.83	4.33	3.82	3.32	2.87	2.45	2.14	TAO-002
	7.05	7.47	7.79	8.05	8.01	7.19	6.34	5.50	4.76	4.07	3.55	TAO-003
	11.30	11.96	12.49	12.90	12.84	11.53	10.16	8.82	7.63	6.53	5.68	TAO-004
	15.37	16.27	16.98	17.54	17.46	15.68	13.82	11.99	10.38	8.88	7.73	TAO-005
17.91	18.95	19.78	20.43	20.33	18.26	16.10	13.97	12.09	10.34	9.00	TAO-006	

Condensing Temperature (°C)	R22		Extended Capacity (kW) Evaporating Temperature (°C)									Orifice Type
	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
30	0.67	0.73	0.77	0.80	0.80	0.73	0.64	0.56	0.48	0.42	0.37	TAO-00X
	1.36	1.46	1.55	1.61	1.61	1.46	1.30	1.12	0.97	0.84	0.74	TAO-000
	2.84	3.06	3.23	3.37	3.37	3.06	2.71	2.34	2.02	1.76	1.54	TAO-001
	3.86	4.17	4.41	4.59	4.59	4.16	3.69	3.19	2.75	2.40	2.10	TAO-002
	6.41	6.92	7.31	7.62	7.62	6.91	6.13	5.30	4.57	3.99	3.48	TAO-003
	10.27	11.08	11.72	12.21	12.22	11.07	9.82	8.49	7.32	6.39	5.58	TAO-004
	13.97	15.07	15.93	16.61	16.62	15.06	13.35	11.54	9.96	8.69	7.59	TAO-005
16.27	17.56	18.56	19.35	19.35	17.54	15.55	13.45	11.60	10.12	8.84	TAO-006	
25	0.59	0.66	0.72	0.76	0.77	0.69	0.62	0.55	0.47	0.41	0.36	TAO-00X
	1.19	1.33	1.45	1.53	1.54	1.40	1.25	1.10	0.95	0.82	0.72	TAO-000
	2.50	2.78	3.03	3.20	3.22	2.92	2.61	2.29	1.99	1.72	1.50	TAO-001
	3.40	3.79	4.13	4.36	4.39	3.98	3.55	3.13	2.71	2.34	2.04	TAO-002
	5.65	6.29	6.85	7.23	7.29	6.61	5.90	5.19	4.50	3.88	3.39	TAO-003
	9.05	10.07	10.98	11.59	11.68	10.59	9.45	8.31	7.21	6.22	5.43	TAO-004
	12.31	13.70	14.93	15.76	15.88	14.40	12.85	11.30	9.81	8.46	7.38	TAO-005
14.34	15.96	17.39	18.35	18.50	16.77	14.97	13.17	11.42	9.85	8.60	TAO-006	
20	0.49	0.58	0.65	0.70	0.72	0.66	0.59	0.52	0.46	0.39	0.35	TAO-00X
	0.99	1.17	1.30	1.40	1.45	1.33	1.20	1.05	0.92	0.79	0.70	TAO-000
	2.08	2.45	2.72	2.93	3.02	2.78	2.50	2.19	1.92	1.66	1.45	TAO-001
	2.83	3.34	3.71	3.99	4.12	3.78	3.41	2.99	2.62	2.26	1.98	TAO-002
	4.70	5.54	6.16	6.63	6.83	6.28	5.65	4.96	4.34	3.75	3.29	TAO-003
	7.53	8.88	9.87	10.62	10.95	10.06	9.06	7.95	6.96	6.01	5.27	TAO-004
	10.25	12.08	13.42	14.44	14.89	13.68	12.32	10.81	9.47	8.17	7.17	TAO-005
11.93	14.07	15.63	16.82	17.34	15.93	14.35	12.59	11.03	9.52	8.35	TAO-006	
15	0.35	0.49	0.57	0.63	0.66	0.62	0.56	0.50	0.44	0.38	0.33	TAO-00X
	0.71	0.98	1.15	1.27	1.32	1.24	1.13	1.00	0.88	0.76	0.67	TAO-000
	1.48	2.04	2.40	2.67	2.77	2.59	2.36	2.09	1.84	1.59	1.40	TAO-001
	2.02	2.78	3.27	3.63	3.77	3.53	3.22	2.84	2.50	2.17	1.91	TAO-002
	3.35	4.61	5.43	6.03	6.25	5.85	5.34	4.72	4.16	3.60	3.17	TAO-003
	5.37	7.39	8.70	9.66	10.02	9.38	8.55	7.56	6.66	5.76	5.09	TAO-004
	7.31	10.06	11.84	13.13	13.62	12.75	11.63	10.29	9.06	7.84	6.92	TAO-005
8.51	11.71	13.79	15.30	15.87	14.86	13.55	11.98	10.55	9.13	8.05	TAO-006	
10	0.35	0.47	0.55	0.60	0.57	0.52	0.47	0.41	0.36	0.32	TAO-00X	
	0.70	0.95	1.11	1.20	1.14	1.05	0.94	0.83	0.73	0.64	TAO-000	
	1.46	1.98	2.32	2.51	2.38	2.19	1.97	1.74	1.52	1.34	TAO-001	
	1.98	2.69	3.16	3.42	3.25	2.98	2.69	2.37	2.07	1.83	TAO-002	
	3.29	4.47	5.25	5.68	5.39	4.95	4.46	3.93	3.43	3.04	TAO-003	
	5.28	7.16	8.41	9.10	8.63	7.93	7.15	6.30	5.50	4.87	TAO-004	
	7.17	9.74	11.44	12.37	11.74	10.79	9.73	8.56	7.48	6.62	TAO-005	
8.36	11.34	13.33	14.41	13.67	12.57	11.33	9.97	8.72	7.71	TAO-006		

Condensing Temperature (°C)	R404A		Extended Capacity (kW) Evaporating Temperature (°C)									Orifice Type
	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
60	0.42	0.42	0.41	0.40	0.39	0.34	0.28	0.23	0.19	0.16	0.13	TAO-00X
	0.85	0.84	0.83	0.81	0.78	0.67	0.56	0.47	0.39	0.32	0.25	TAO-000
	1.78	1.76	1.73	1.69	1.64	1.41	1.17	0.98	0.81	0.66	0.53	TAO-001
	2.42	2.39	2.35	2.30	2.23	1.92	1.60	1.34	1.10	0.90	0.72	TAO-002
	4.02	3.97	3.91	3.83	3.70	3.18	2.65	2.22	1.83	1.49	1.20	TAO-003
	6.45	6.36	6.27	6.13	5.93	5.10	4.25	3.56	2.92	2.39	1.93	TAO-004
	8.76	8.65	8.52	8.33	8.06	6.93	5.78	4.84	3.97	3.25	2.62	TAO-005
10.21	10.08	9.93	9.71	9.39	8.07	6.73	5.63	4.63	3.79	3.05	TAO-006	
55	0.47	0.47	0.47	0.46	0.45	0.39	0.33	0.28	0.23	0.19	0.16	TAO-00X
	0.94	0.94	0.93	0.92	0.90	0.78	0.66	0.56	0.46	0.38	0.31	TAO-000
	1.96	1.97	1.96	1.93	1.88	1.64	1.38	1.16	0.97	0.81	0.66	TAO-001
	2.67	2.68	2.66	2.62	2.56	2.23	1.88	1.58	1.32	1.10	0.90	TAO-002
	4.44	4.45	4.43	4.36	4.25	3.71	3.12	2.63	2.19	1.82	1.49	TAO-003
	7.10	7.13	7.09	6.98	6.81	5.94	5.00	4.21	3.51	2.92	2.39	TAO-004
	9.66	9.70	9.64	9.49	9.26	8.07	6.79	5.73	4.77	3.97	3.25	TAO-005
11.25	11.30	11.22	11.05	10.79	9.40	7.91	6.67	5.56	4.62	3.78	TAO-006	
50	0.50	0.50	0.50	0.50	0.49	0.43	0.37	0.31	0.26	0.22	0.18	TAO-00X
	1.00	1.00	1.00	1.00	0.99	0.86	0.73	0.62	0.52	0.44	0.36	TAO-000
	2.09	2.10	2.10	2.09	2.06	1.80	1.53	1.31	1.10	0.92	0.76	TAO-001
	2.84	2.86	2.86	2.85	2.81	2.45	2.09	1.78	1.49	1.25	1.04	TAO-002
	4.72	4.75	4.75	4.73	4.67	4.07	3.47	2.95	2.48	2.08	1.72	TAO-003
	7.57	7.61	7.61	7.58	7.48	6.52	5.56	4.73	3.98	3.33	2.76	TAO-004
	10.29	10.34	10.35	10.31	10.17	8.87	7.56	6.43	5.40	4.53	3.75	TAO-005
11.98	12.05	12.05	12.01	11.84	10.33	8.80	7.49	6.29	5.28	4.36	TAO-006	
45	0.51	0.52	0.53	0.52	0.52	0.46	0.39	0.34	0.28	0.24	0.20	TAO-00X
	1.02	1.04	1.05	1.05	1.04	0.92	0.78	0.68	0.57	0.48	0.40	TAO-000
	2.14	2.18	2.20	2.20	2.18	1.92	1.64	1.41	1.19	1.01	0.84	TAO-001
	2.92	2.97	3.00	2.99	2.97	2.62	2.23	1.92	1.62	1.37	1.14	TAO-002
	4.85	4.93	4.98	4.97	4.93	4.35	3.71	3.20	2.70	2.27	1.90	TAO-003
	7.76	7.90	7.98	7.96	7.90	6.96	5.95	5.12	4.32	3.64	3.04	TAO-004
	10.55	10.74	10.85	10.82	10.74	9.47	8.08	6.96	5.88	4.95	4.13	TAO-005
12.29	12.51	12.64	12.60	12.51	11.03	9.42	8.11	6.84	5.77	4.81	TAO-006	
40	0.51	0.52	0.53	0.54	0.54	0.48	0.41	0.36	0.30	0.26	0.21	TAO-00X
	1.01	1.05	1.07	1.08	1.08	0.96	0.82	0.71	0.60	0.51	0.43	TAO-000
	2.13	2.20	2.23	2.27	2.25	2.01	1.72	1.49	1.27	1.07	0.90	TAO-001
	2.89	2.99	3.04	3.09	3.07	2.73	2.34	2.03	1.72	1.46	1.22	TAO-002
	4.81	4.97	5.05	5.13	5.10	4.54	3.89	3.37	2.86	2.43	2.03	TAO-003
	7.70	7.96	8.08	8.22	8.17	7.27	6.23	5.39	4.59	3.89	3.25	TAO-004
	10.46	10.83	10.99	11.17	11.10	9.89	8.46	7.33	6.24	5.29	4.42	TAO-005
12.19	12.61	12.80	13.01	12.93	11.52	9.86	8.54	7.26	6.16	5.15	TAO-006	
35	0.50	0.52	0.54	0.54	0.55	0.49	0.42	0.37	0.31	0.27	0.22	TAO-00X
	0.99	1.04	1.07	1.08	1.10	0.98	0.84	0.73	0.63	0.53	0.45	TAO-000
	2.08	2.17	2.24	2.27	2.30	2.05	1.77	1.54	1.31	1.12	0.94	TAO-001
	2.82	2.95	3.05	3.09	3.13	2.79	2.41	2.09	1.78	1.52	1.28	TAO-002
	4.69	4.91	5.07	5.13	5.21	4.63	4.00	3.48	2.96	2.52	2.12	TAO-003
	7.52	7.87	8.12	8.22	8.34	7.42	6.40	5.57	4.74	4.04	3.40	TAO-004
	10.22	10.69	11.04	11.17	11.34	10.09	8.70	7.58	6.45	5.50	4.62	TAO-005
11.91	12.45	12.86	13.01	13.21	11.75	10.14	8.83	7.51	6.40	5.39	TAO-006	

Condensing Temperature (°C)	R404A		Extended Capacity (kW) Evaporating Temperature (°C)									Orifice Type
	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
30	0.47	0.50	0.52	0.54	0.55	0.49	0.43	0.37	0.32	0.27	0.23	TAO-00X
	0.94	1.00	1.04	1.07	1.09	0.98	0.85	0.75	0.64	0.55	0.46	TAO-000
	1.96	2.09	2.18	2.24	2.29	2.06	1.79	1.56	1.34	1.15	0.97	TAO-001
	2.67	2.84	2.96	3.05	3.11	2.80	2.43	2.12	1.82	1.56	1.32	TAO-002
	4.43	4.72	4.93	5.07	5.18	4.66	4.04	3.53	3.03	2.60	2.20	TAO-003
	7.10	7.56	7.89	8.13	8.29	7.47	6.48	5.66	4.86	4.16	3.52	TAO-004
	9.65	10.27	10.72	11.05	11.27	10.15	8.81	7.69	6.60	5.66	4.78	TAO-005
11.24	11.96	12.49	12.87	13.13	11.82	10.26	8.95	7.69	6.59	5.57	TAO-006	
25	0.43	0.47	0.50	0.52	0.54	0.49	0.43	0.37	0.32	0.28	0.24	TAO-00X
	0.85	0.93	1.00	1.04	1.07	0.97	0.85	0.74	0.64	0.55	0.47	TAO-000
	1.78	1.95	2.10	2.19	2.25	2.04	1.79	1.56	1.35	1.16	0.99	TAO-001
	2.43	2.66	2.86	2.98	3.06	2.77	2.43	2.12	1.83	1.58	1.34	TAO-002
	4.03	4.42	4.75	4.95	5.09	4.61	4.04	3.52	3.05	2.63	2.23	TAO-003
	6.46	7.08	7.61	7.92	8.14	7.38	6.46	5.64	4.89	4.21	3.57	TAO-004
	8.79	9.62	10.34	10.77	11.07	10.03	8.79	7.66	6.64	5.72	4.85	TAO-005
10.23	11.20	12.04	12.54	12.90	11.69	10.24	8.93	7.73	6.66	5.65	TAO-006	
20	0.36	0.42	0.47	0.49	0.52	0.47	0.42	0.37	0.32	0.28	0.24	TAO-00X
	0.73	0.84	0.93	0.99	1.04	0.94	0.84	0.74	0.64	0.55	0.47	TAO-000
	1.52	1.76	1.95	2.06	2.17	1.97	1.75	1.54	1.34	1.16	0.99	TAO-001
	2.07	2.39	2.65	2.81	2.96	2.68	2.38	2.10	1.83	1.58	1.34	TAO-002
	3.45	3.98	4.41	4.67	4.91	4.45	3.96	3.49	3.04	2.62	2.23	TAO-003
	5.52	6.37	7.06	7.48	7.87	7.13	6.34	5.58	4.86	4.19	3.57	TAO-004
	7.51	8.67	9.59	10.16	10.70	9.69	8.62	7.59	6.61	5.70	4.86	TAO-005
8.74	10.09	11.17	11.84	12.46	11.29	10.04	8.84	7.70	6.64	5.66	TAO-006	
15	0.27	0.36	0.42	0.46	0.49	0.45	0.40	0.36	0.31	0.27	0.23	TAO-00X
	0.54	0.72	0.84	0.92	0.98	0.90	0.81	0.72	0.63	0.55	0.47	TAO-000
	1.13	1.51	1.76	1.92	2.05	1.89	1.69	1.50	1.32	1.14	0.98	TAO-001
	1.54	2.05	2.39	2.61	2.80	2.57	2.31	2.04	1.79	1.55	1.33	TAO-002
	2.57	3.41	3.98	4.34	4.65	4.27	3.83	3.39	2.98	2.58	2.21	TAO-003
	4.11	5.46	6.37	6.95	7.44	6.84	6.14	5.43	4.77	4.14	3.55	TAO-004
	5.59	7.42	8.66	9.44	10.12	9.30	8.34	7.38	6.49	5.63	4.82	TAO-005
6.51	8.64	10.09	11.00	11.78	10.83	9.72	8.60	7.56	6.55	5.62	TAO-006	
10	0.08	0.27	0.36	0.41	0.45	0.42	0.39	0.35	0.30	0.27	0.23	TAO-00X
	0.17	0.54	0.71	0.82	0.90	0.85	0.77	0.69	0.61	0.53	0.46	TAO-000
	0.35	1.12	1.49	1.71	1.89	1.77	1.61	1.45	1.27	1.11	0.96	TAO-001
	0.48	1.53	2.03	2.33	2.57	2.41	2.20	1.98	1.73	1.51	1.30	TAO-002
	0.79	2.54	3.37	3.87	4.27	4.01	3.65	3.29	2.88	2.52	2.17	TAO-003
	1.27	4.07	5.39	6.20	6.83	6.43	5.85	5.27	4.61	4.03	3.47	TAO-004
	1.73	5.53	7.33	8.42	9.29	8.74	7.95	7.16	6.27	5.48	4.72	TAO-005
2.01	6.44	8.54	9.81	10.82	10.18	9.26	8.34	7.30	6.38	5.49	TAO-006	



Condensing Temperature (°C)	R134a		Extended Capacity (kW) Evaporating Temperature (°C)						Orifice Type
	10	5	0	-5	-10	-15	-20	-25	
60	0.63	0.63	0.63	0.62	0.61	0.53	0.45	0.38	TAO-00X
	1.27	1.28	1.27	1.25	1.24	1.06	0.90	0.77	TAO-000
	2.66	2.67	2.65	2.62	2.59	2.22	1.88	1.61	TAO-001
	3.64	3.65	3.62	3.58	3.54	3.03	2.57	2.19	TAO-002
	6.04	6.05	6.00	5.94	5.86	5.02	4.27	3.64	TAO-003
	9.67	9.70	9.62	9.52	9.40	8.05	6.84	5.83	TAO-004
	13.15	13.19	13.08	12.94	12.78	10.94	9.30	7.93	TAO-005
15.32	15.37	15.24	15.08	14.89	12.75	10.83	9.24	TAO-006	
55	0.63	0.63	0.63	0.63	0.62	0.54	0.46	0.39	TAO-00X
	1.27	1.28	1.28	1.26	1.26	1.08	0.92	0.79	TAO-000
	2.66	2.67	2.67	2.64	2.63	2.27	1.93	1.65	TAO-001
	3.63	3.65	3.65	3.61	3.59	3.10	2.64	2.25	TAO-002
	6.02	6.05	6.05	5.99	5.96	5.14	4.38	3.73	TAO-003
	9.64	9.69	9.70	9.60	9.55	8.23	7.01	5.98	TAO-004
	13.11	13.18	13.19	13.05	12.98	11.19	9.53	8.13	TAO-005
15.27	15.35	15.37	15.21	15.13	13.04	11.11	9.47	TAO-006	
50	0.62	0.63	0.63	0.63	0.63	0.54	0.46	0.40	TAO-00X
	1.24	1.27	1.27	1.27	1.26	1.09	0.93	0.80	TAO-000
	2.60	2.65	2.66	2.65	2.64	2.29	1.95	1.67	TAO-001
	3.55	3.62	3.63	3.62	3.61	3.12	2.66	2.29	TAO-002
	5.89	6.00	6.02	6.01	5.98	5.18	4.41	3.79	TAO-003
	9.45	9.61	9.64	9.63	9.59	8.30	7.07	6.08	TAO-004
	12.84	13.07	13.11	13.10	13.04	11.28	9.61	8.26	TAO-005
14.96	15.23	15.28	15.26	15.19	13.14	11.20	9.63	TAO-006	
45	0.60	0.61	0.62	0.62	0.62	0.54	0.46	0.40	TAO-00X
	1.20	1.23	1.25	1.25	1.26	1.09	0.94	0.80	TAO-000
	2.52	2.58	2.62	2.62	2.64	2.28	1.96	1.68	TAO-001
	3.44	3.52	3.57	3.58	3.60	3.11	2.67	2.30	TAO-002
	5.70	5.84	5.93	5.94	5.97	5.16	4.43	3.81	TAO-003
	9.14	9.35	9.50	9.52	9.57	8.27	7.11	6.11	TAO-004
	12.42	12.72	12.92	12.94	13.01	11.24	9.66	8.31	TAO-005
14.47	14.82	15.05	15.07	15.16	13.09	11.26	9.68	TAO-006	
40	0.57	0.59	0.60	0.61	0.61	0.53	0.46	0.40	TAO-00X
	1.16	1.19	1.22	1.23	1.24	1.08	0.93	0.80	TAO-000
	2.42	2.50	2.55	2.56	2.59	2.25	1.95	1.68	TAO-001
	3.30	3.41	3.48	3.50	3.53	3.08	2.66	2.29	TAO-002
	5.48	5.65	5.78	5.81	5.86	5.11	4.41	3.80	TAO-003
	8.78	9.06	9.26	9.31	9.39	8.18	7.07	6.09	TAO-004
	11.94	12.32	12.59	12.65	12.76	11.12	9.61	8.28	TAO-005
13.91	14.36	14.67	14.74	14.87	12.96	11.20	9.65	TAO-006	
35	0.53	0.56	0.58	0.59	0.60	0.52	0.45	0.39	TAO-00X
	1.08	1.14	1.17	1.20	1.21	1.06	0.91	0.79	TAO-000
	2.25	2.38	2.45	2.50	2.53	2.21	1.91	1.66	TAO-001
	3.08	3.25	3.35	3.42	3.46	3.02	2.61	2.26	TAO-002
	5.11	5.39	5.55	5.67	5.74	5.01	4.33	3.75	TAO-003
	8.18	8.64	8.90	9.08	9.20	8.03	6.94	6.01	TAO-004
	11.13	11.74	12.10	12.34	12.50	10.92	9.44	8.17	TAO-005
12.96	13.68	14.10	14.38	14.57	12.73	11.00	9.52	TAO-006	

Condensing Temperature (°C)	R134a		Extended Capacity (kW) Evaporating Temperature (°C)						Orifice Type
	10	5	0	-5	-10	-15	-20	-25	
30	0.49	0.53	0.55	0.56	0.57	0.51	0.44	0.38	TAO-00X
	0.99	1.06	1.11	1.14	1.16	1.03	0.89	0.78	TAO-000
	2.06	2.22	2.31	2.38	2.43	2.15	1.86	1.62	TAO-001
	2.82	3.03	3.16	3.25	3.31	2.94	2.54	2.22	TAO-002
	4.67	5.03	5.24	5.39	5.49	4.87	4.22	3.68	TAO-003
	7.49	8.06	8.40	8.64	8.80	7.81	6.76	5.90	TAO-004
	10.18	10.95	11.42	11.75	11.97	10.62	9.19	8.01	TAO-005
11.87	12.76	13.31	13.69	13.95	12.37	10.71	9.34	TAO-006	
25	0.43	0.48	0.51	0.53	0.55	0.49	0.43	0.37	TAO-00X
	0.88	0.97	1.03	1.07	1.12	0.99	0.86	0.76	TAO-000
	1.83	2.03	2.16	2.25	2.33	2.06	1.81	1.58	TAO-001
	2.50	2.78	2.95	3.07	3.19	2.82	2.47	2.16	TAO-002
	4.15	4.61	4.89	5.09	5.29	4.68	4.10	3.58	TAO-003
	6.66	7.38	7.84	8.16	8.47	7.50	6.57	5.74	TAO-004
	9.05	10.04	10.66	11.10	11.52	10.19	8.93	7.80	TAO-005
10.54	11.70	12.42	12.93	13.42	11.88	10.41	9.09	TAO-006	
20	0.36	0.42	0.46	0.48	0.52	0.47	0.41	0.36	TAO-00X
	0.73	0.85	0.94	0.97	1.04	0.94	0.82	0.73	TAO-000
	1.52	1.79	1.96	2.03	2.18	1.97	1.72	1.52	TAO-001
	2.08	2.44	2.67	2.77	2.98	2.69	2.35	2.08	TAO-002
	3.45	4.05	4.43	4.59	4.94	4.47	3.91	3.45	TAO-003
	5.53	6.49	7.10	7.36	7.92	7.16	6.26	5.53	TAO-004
	7.51	8.82	9.66	10.01	10.76	9.73	8.51	7.52	TAO-005
8.75	10.28	11.25	11.66	12.54	11.34	9.92	8.76	TAO-006	
15	0.26	0.35	0.41	0.45	0.48	0.44	0.39	0.34	TAO-00X
	0.52	0.71	0.82	0.91	0.96	0.88	0.78	0.69	TAO-000
	1.10	1.48	1.72	1.90	2.01	1.85	1.63	1.45	TAO-001
	1.50	2.03	2.35	2.60	2.75	2.53	2.23	1.98	TAO-002
	2.48	3.36	3.89	4.31	4.56	4.19	3.70	3.29	TAO-003
	3.98	5.39	6.24	6.90	7.30	6.71	5.93	5.27	TAO-004
	5.41	7.33	8.49	9.38	9.93	9.13	8.06	7.17	TAO-005
6.31	8.54	9.89	10.93	11.57	10.64	9.39	8.35	TAO-006	
10		0.25	0.34	0.40	0.43	0.40	0.36	0.32	TAO-00X
		0.50	0.68	0.80	0.87	0.81	0.73	0.65	TAO-000
		1.06	1.43	1.67	1.82	1.70	1.53	1.37	TAO-001
		1.44	1.95	2.28	2.49	2.32	2.09	1.87	TAO-002
		2.39	3.23	3.79	4.13	3.84	3.47	3.09	TAO-003
		3.83	5.18	6.07	6.61	6.16	5.57	4.96	TAO-004
		5.21	7.05	8.25	8.99	8.37	7.57	6.74	TAO-005
	6.07	8.21	9.61	10.47	9.75	8.82	7.86	TAO-006	

# TFE Series R-22 Thermo™ - expansion valves

For large tonnage heat pump, air conditioning, and commercial refrigeration applications

The TFE R-22 series is designed for large tonnage heat pump, air conditioning, and commercial refrigeration applications.

## Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- Replaceable power element
- External superheat adjustment
- ODF connections
- Balanced port construction compensates for changes in operating pressures due to varying ambients, or widely varying evaporator loads
- Bi-Directional control capacity
- External equalizer



## Specifications

- Maximum working pressure: 450 psig

## TFE nominal\* capacity table in Tons

R-134a	R-22/R-407C	R-502, R-404a/R-507
6	8	5
8	10	7
10	12	9
15	20	14

\* See Extended Capacity Tables for ratings at a wide range of conditions per ARI standard 750

## Nomenclature example: TFES 10 HCA 5/8 x 7/8 ODF S/T

TF	E	S	10	H	CA	5/8 x 7/8	ODF	S/T
Series	Equalizer	Connection type	Capacity	Refrigerant code	Charge code	Inlet x outlet connection sizes	Connection type	Configuration
Balanced Port, Replaceable Power Assembly	E = External 1/4" ODF	S = Solder (Only)	Nominal Rating in Tons  (See Nominal Capacity Table below)	• H = R-22 • M = R-134a • N = R-407C • *P = R-507 • *R = R-502 • *S = R-404A	C = Medium Temp CA = Heat Pump	(See Ordering Information Table below)	ODF = Solder	S/T = Straight-Thru

\* = R-507, R-502 and R-404A are interchangeable refrigerant charges, • = R-22 and R-407C are interchangeable refrigerant charges

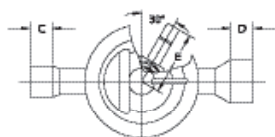
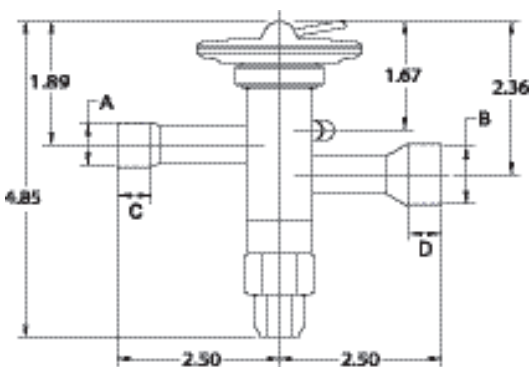
## Ordering information

Valve series	Capacity Tons* (R-22 nominal)	Connections	PCN HCA charge (R-22 Heat pump)
TFES	8	5/8 X 7/8 ODF S/T 6A ODF EE	061608
	10	5/8 X 7/8 ODF S/T 6A ODF EE	061610
	12	5/8 X 7/8 ODF S/T 6A	061609
	20	5/8 X 7/8 ODF S/T 6A	064493

## Inlet/outlet fittings dimensional data (in)

Connections		Inlet		Outlet		Equalizer	
Inlet	Outlet	A	B	C MIN	D MIN.	1/4 ODF	SAE
1/4 ODF	3/8 ODF	0.25	0.38	0.31	0.31	1.70	1.65
	1/2 ODF	0.25	0.50		0.37		
	5/8 ODF	0.25	0.63		0.50		
3/8 ODF	3/8 ODF	0.38	0.38		0.31		
	1/2 ODF	0.38	0.50		0.37		
	5/8 ODF	0.38	0.63		0.50		
1/2 ODF	7/8 ODF	0.38	0.88	0.76			
	1/2 ODF	0.50	0.50	0.37	0.37		
	5/8 ODF	0.50	0.63	0.37	0.50		
5/8 ODF	7/8 ODF	0.50	0.88	0.37	0.76		
	5/8 ODF	0.63	0.63	0.50	0.50		
	7/8 ODF	0.63	0.88	0.50	0.76		
7/8 ODF	1-1/8 ODF	0.63	1.13	0.50	0.91		
	7/8 ODF	0.88	0.88	0.76	0.76		
	1-1/8 ODF	0.88	1.13	0.76	0.91		

## Dimensional data (in)



## Replacement parts

Description	P/N	PCN
Power assembly	X-28458 HC-2	036413
	X-28458 HCA-2	063414
	X-28458 HW100-2	063416
	X-28458 MC-3	063593
	X-28458 MW45-3	063594
	X-28458 SC-2	065439
	X-28458 SW45-2	065298
Seal nut	27676-1	058707

# TFE Series R-410A Thermo™ - expansion valves

For large tonnage heat pump, air conditioning, and commercial refrigeration applications

The TFE R-410A series is designed for large tonnage heat pump, air conditioning, and commercial refrigeration applications.



## Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- Replaceable power element
- External superheat adjustment
- ODF connections
- Balanced port construction compensates for changes in operating pressures due to varying ambients, or widely varying evaporator loads
- Bi-Directional control capacity
- External equalizer
- ZAA charge for R-410A systems

## Specifications

- Maximum working pressure: 630 psig

## TFE nominal\* capacity table in Tons

Model	Typical system application
TFE 12	10-13 Tons
TFE 16	14-17 Tons
TFE 20	18-20 Tons

\*See Extended Capacity Tables for ratings at a wide range of conditions per ARI standard 750

## Nomenclature example: TFES 16 ZAA 5/8 x 7/8 ODF S/T

TF	E	S	16	Z	AA	5/8 x 7/8	ODF	S/T
Series	Equalizer	Connection type	Capacity	Refrigerant code	Charge code	Inlet x outlet connection sizes	Connection type	Configuration
Balanced Port, Replaceable Power Assembly	E = External 1/4" ODF	S = Solder	Nominal Rating in Tons	Z = R-410A	AA = wide range	(See Ordering Information Table Below)	ODF = Solder	S/T = Straight-Thru

## Ordering information

Refrigerant	Tons	Bleed	Inlet x Outlet	Sensing bulb capillary tube length	PCN
R-410A	12	-	5/8 ODF x 7/8 ODF	5 ft.	066146
		15%	5/8 ODF x 7/8 ODF	5 ft.	066147
		-	7/8 ODF x 1-1/8 ODF	10 ft.	066148
	16	-	5/8 ODF x 7/8 ODF	5 ft.	066149
		15%	5/8 ODF x 7/8 ODF	5 ft.	066150
		-	7/8 ODF x 1-1/8 ODF	10 ft.	066151
	20	-	5/8 ODF x 7/8 ODF	5 ft.	066152
		15%	5/8 ODF x 7/8 ODF	5 ft.	066153
		-	7/8 ODF x 1-1/8 ODF	10 ft.	066154

## Inlet/outlet fittings dimensional data (in)

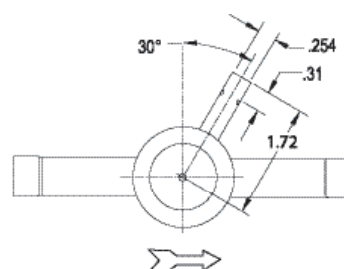
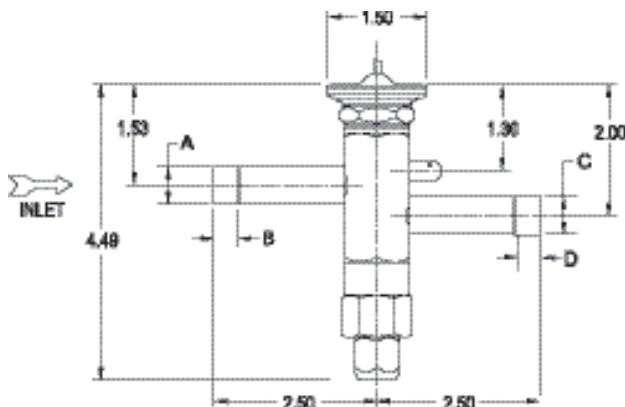
Connections		Inlet		Outlet	
Inlet	Outlet	A	B MIN	C	D MIN.
1/2 ODF	1/2ODF	0.50	0.37	0.50	0.37
	5/8 ODF	0.50	0.37	0.63	0.50
	7/8 ODF	0.50	0.37	0.88	0.76
5/8 ODF	5/8 ODF	0.63	0.50	0.63	0.50
	7/8 ODF	0.63	0.50	0.88	0.76
7/8 ODF	7/8 ODF	0.88	0.76	0.88	0.76
	1-1/8 ODF	0.88	0.76	1.13	0.91

## Replacement parts

Description	P/N	PCN
R-410 A Power assembly*	KT-30032 (X-30669 ZAA-2)	066155*
Seal nut	27676-1	058707

\* Approved for use only on TEF Series R-410A valves (with ZAA charge)

## Dimensional data (in)



# TLE Series Thermo™ - expansion valves

## For large tonnage heat pump, transportation and commercial refrigeration

The TLE series is designed for air conditioning, heat pumps, transportation and commercial refrigeration. Take-Apart construction improves serviceability with replaceable/interchangeable parts. TLE valves do not have an external superheat adjustment.

### Features

- Stainless steel power element prevents corrosion and valve failure
- Non-adjustable superheat to maintain factory setting
- Bi-Flow capability for heat pump applications (external equalizer required)
- Take-Apart construction for easy field service



### Options

- Interchangeable capacity cages, power assemblies and flanges

### Specifications

- Maximum working pressure: 450 psig
- Capscrew Torque: 300 in. lbs.

### Model nomenclature example: TLEB 5HCA5FT3/8x1/2ODFS/T

TL	E	B	5	H	C	5FT	3/8X1/2	ODF	S/T
Series *	Equalizer	Bleed hole	Capacity	Refrigerant code	Charge code	Capillary tube length	Inlet x outlet connection sizes	Connection type	Configuration
Take-Apart Non-Adjustable Superheat	E = External ¾" SAE Standard ¼" ODF Available  (Omit for Internal)	(Optional) B=Bleed Hole  (Omit for No Bleed Hole)	Nominal Rating in Tons  (See Cage Capacity Table)	+F = R-12 • H = R-22 +M = R-134a • N = R-407C *P = R-507 *R = R-502 *S = R-404A	C = Medium Temp CA = Heat Pump W(MOP) = Press. Limiting Z = Low Temp	5 FT (std)	See Tables Below for Various Connections Available VLF = Valve Less Flange	SAE = Flare  ODF = Solder	ANG = 90° Angle S/T = Straight-Thru

+ = R-12 and R-134a are interchangeable refrigerant charges  
 \* = R-507, R-502 and R-404A are interchangeable refrigerant charges  
 • = R-22 and R-407C are interchangeable refrigerant charges  
 † Maximum Operating Pressure

### Dimensional data (in)

#### ODF angle

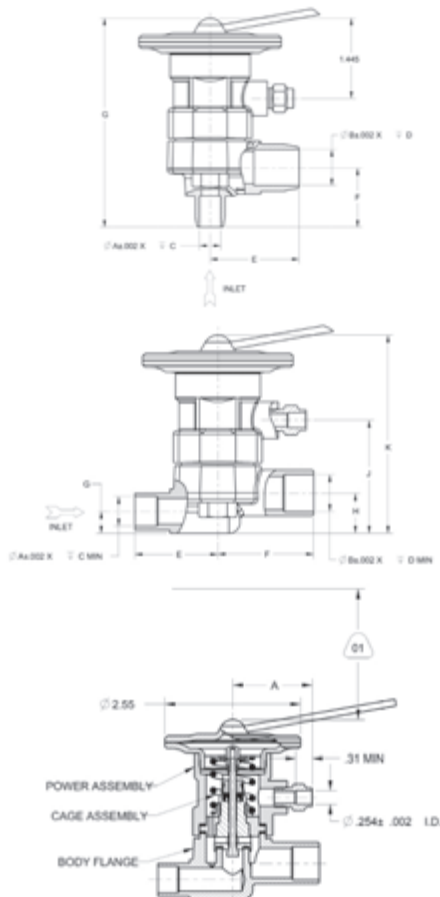
Connection size		A	B	C	D	E	F	G
Inlet	Outlet							
1/4	3/8	0.25	0.38	0.44	0.56	1.34	0.94	3.62
3/8	1/2	0.38	0.50	0.56	0.69	1.47	1.06	3.75
3/8	5/8	0.38	0.63	0.56	0.81	1.59	1.06	3.75
1/2	5/8	0.50	0.63	0.69	0.81	1.59	1.19	3.87
5/8	7/8	0.63	0.88	0.81	1.00	2.00	1.69	4.50
1/2	7/8	0.50	0.88	0.81	1.00	2.00	1.69	4.50

#### ODF straight - thru

Connection size		A	B	C	D	E	F	G	H	J	K
Inlet	Outlet										
1/2	7/8	0.50	0.88	0.38	0.75	1.41	1.94	0.36	0.67	2.01	3.44
3/8	5/8	0.38	0.63	0.31	0.50	1.41	1.63	0.38	0.69	1.92	3.37
1/2	5/8	0.50	0.63	0.38	0.50	1.41	1.63	0.38	0.69	1.92	3.37
3/8	1/2	0.38	0.50	0.31	0.38	1.41	1.56	0.38	0.69	1.92	3.37
1/2	1/2	0.51	0.51	0.38	0.38	1.41	1.56	0.38	0.69	1.92	3.37
1/2	5/8	0.50	0.63	0.37	0.51	1.41	1.64	0.38	0.70	1.94	3.38
1/2	1-1/8	0.50	1.13	0.37	0.82	1.41	2.38	0.39	0.70	1.94	3.38
5/8	5/8	0.63	0.63	0.50	0.51	1.59	1.64	0.39	0.70	1.94	3.38
5/8	7/8	0.63	0.88	0.50	0.75	1.59	1.95	0.39	0.70	1.94	3.38
5/8	1-1/8	0.63	1.13	0.50	0.82	1.59	2.38	0.39	0.70	1.94	3.38
7/8	7/8	0.88	0.88	0.75	0.75	1.95	1.95	0.39	0.70	1.94	3.38
7/8	1-1/8	0.88	1.13	0.75	0.82	1.95	2.38	0.39	0.70	1.94	3.38

#### TLE power element

Equalizer type	A
Internal	1.35
1/4 ODF	1.50
1/4 SAE	1.38
1/4 SAE 90° Elbow	1.77



## TLE Series Thermo™ - expansion valves

For large tonnage heat pump, transportation and commercial refrigeration

### Ordering information

#### Cage capacities in Tons

PCN	Model	R-12	R-134A	R-22/R-407C	R-404/R-507/ R-502
041551	X-22517 B1B	1/4	1/4	1/2	1/4
041556	X-22517 B3B	1	1-1/2	2	1
041560	X-22517 B4A	2	2-1/2	3	2
041558	X-22517 B4B	2	2-1/2	3	2
041562	X-22517 B5B	3	3-1/2	5	3
041564	X-22517 B6B	4	5-1/2	7-1/2	4-1/2
041566	X-22517 B7B	6½	7-1/2	10	7

#### Flanges

Model	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
9761-9	1/2 X 1/2 ODF S/T	027766
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 1-1/8 ODF S/T	094038
X-6346-34	7/8 X 1-1/8 ODF S/T	071757
A-576	5/8 X 7/8 ODF ANG	027764
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-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
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

#### Replacement power assemblies

Model	PCN
XB-1033FW25-1B	083765
XB-1033HC-1B	061760
XB-1033HW-15A	077201
XB-1033HW75-1B	089748
XB-1033HW100-15B	095534
XB-1033HW100-1B	095813

#### Replacement parts

Model	Description	PCN
E-642	Packing nut wrench	039862
X-13455-1	Gasket strip	027579
KT-30021	Replacement cap screws, 10 pcs	054569
KT-30022	Replacement cap screws for flange A-576, 10 pcs	054570

#### Power assembly model nomenclature example: XB1033HC-1B

XB-1033	H	C	1	B
Series	Refrigerant code F = R-12 H = R-22 M = R-134a N = R-407C P = R-507 R = R-502 S = R-404A	Charge code C = Medium Temp CA = Heat Pump W(MOP) = Press. Limiting Z = Low Temp	Capillary tube Length code 1 = 5 FT (std) 2 = 10 FT 15 = 30 FT	Equalizer A = Internal B = External

## TRAE Stretch Series Thermo™ - expansion valves

For AC, heat pumps, close control, industrial process cooling applications, and transportation AC with HP demand

### Features

- Hermetic valve with brazing connections
- Compact size design
- Compatible with R410A / R407C / R22 / R134a
- Maximum working pressure: 46.8 bar
- Bi-Flow application
  - Balanced port in normal and reverse flow directions eliminates disturbance forces resulting from condensing pressure
  - Optimum static superheat in normal and reverse flow
  - Capacities performance in normal and reverse flow correlates to capacity of heat pumps in cooling and heating mode
- Desired reverse superheat setting is much suitable for Heat Pump application in heating model.
- Stainless steel power element with special diaphragms design provides life expectancy against high pressure during reversed flow via external equalizer.



### Options

Special factory setting upon request

### Specifications

Maximum working pressure: 46.9 bar

### Technical data

Maximum working gauge pressure (bar)	46.8
Burst gauge pressure (bar)	234.4
Compatibility	R410A, R407C, R22, R134a

Connections	Copper
Capillary tube length (m)	1.5 (5Ft)
Power element	Stainless Steel
Gross weight (kg)	Approx. 0.50 ~ 0.53 kg (Depend on valve size)

Charge code	System refriger.	Maximum bulb temperature (°C)	Evaporating temperature range (°C)
HCA	R22	65	-29 ~ 10
HW100	R22	65	-46 ~ 10
NW100	R407C	65	-46 ~ 10
ZAA	R410A	65	-29 ~ 10
MC	R134a	65	-29 ~ 10

### R410A Selection table

Model	PCN	Capacity, R410A [Tons] <sup>1</sup>	Capacity, R410A [kW] <sup>2</sup>	Connection	
				Inlet × outlet	Equalizer
TRAE 8 ZAA	066797	8	32	5/8 × 7/8 ODF	1/4 ODF
TRAE 10 ZAA	066798	10	40	5/8 × 7/8 ODF	1/4 ODF
TRAE 12 ZAA	066799	12	48	5/8 × 7/8 ODF	1/4 ODF
TRAE 15 ZAA	066800	15	60	5/8 × 7/8 ODF	1/4 ODF
TRAE 15 ZAA	066801	15	60	5/8 × 1-1/8 ODF	1/4 ODF
TRAE 18 ZAA	066802	18	72	5/8 × 1-1/8 ODF	1/4 ODF

1. Nominal capacity is rated at 37.8°C liquid inlet and 4.4°C evap temperature; with 160 Psi pressure drop across TXV per ARI-750.

2. The nominal capacities are based +4°C dew point evaporating temperature, +38°C bubble point condensing temperature and 1K subcooling per Asercom standard.

\*See extended capacity tables for ratings at a wide range of conditions per Asercom standard.

## R407C Selection table

Model	PCN	Capacity, R410A [Tons] <sup>1</sup>	Capacity, R410A [kW] <sup>2</sup>	Connection	
				Inlet × outlet	Equalizer
TRAE 8 NW100	066790	8	36	5/8 × 7/8 ODF	1/4 ODF
TRAE 10 NW100	066791	10	46	5/8 × 7/8 ODF	1/4 ODF
TRAE 12 NW100	066792	12	55	5/8 × 7/8 ODF	1/4 ODF
TRAE 12 NW100	066793	12	55	5/8 × 7/8 ODF	1/4 ODF
TRAE 15 NW100	066794	15	68	5/8 × 1-1/8 ODF	1/4 ODF

1. Nominal capacity is rated at 37.8°C liquid inlet and 4.4°C evap temperature; with 160 Psi pressure drop across TXV per ARI-750.
2. The nominal capacities are based +4°C dew point evaporating temperature, +38°C bubble point (+43°C dew point) condensing temperature and 1K subcooling per Asercom standard.

\*See extended capacity tables for ratings at a wide range of conditions per Asercom standard.

## R22 Selection table

Model	PCN	Capacity, R410A [Tons] <sup>1</sup>	Capacity, R410A [kW] <sup>2</sup>	Connection	
				Inlet × outlet	Equalizer
TRAE 8 HCA	066780	8	32	5/8 × 7/8 ODF	1/4 ODF
TRAE 10 HCA	066781	10	40	5/8 × 7/8 ODF	1/4 ODF
TRAE 12 HCA	066782	12	48	5/8 × 7/8 ODF	1/4 ODF
TRAE 12 HCA	066783	12	48	5/8 × 1-1/8 ODF	1/4 ODF
TRAE 15 HCA	066784	15	61	5/8 × 1-1/8 ODF	1/4 ODF
TRAE 8 HW100	066785	8	32	5/8 × 7/8 ODF	1/4 ODF
TRAE 10 HW100	066786	10	40	5/8 × 7/8 ODF	1/4 ODF
TRAE 12 HW100	066787	12	48	5/8 × 7/8 ODF	1/4 ODF
TRAE 12 HW100	066788	12	48	5/8 × 1-1/8 ODF	1/4 ODF
TRAE 15 HW100	066789	15	61	5/8 × 1-1/8 ODF	1/4 ODF

1. Nominal capacity is rated at 37.8°C liquid inlet and 4.4°C evap temperature; with 160 Psi pressure drop across TXV per ARI-750.
2. The nominal capacities are based +4°C dew point evaporating temperature, +38°C bubble point (+43°C dew point) condensing temperature and 1K subcooling per Asercom standard.

\*See extended capacity tables for ratings at a wide range of conditions per Asercom standard.

## R134a Selection table

Model	PCN	Capacity, R410A [Tons] <sup>1</sup>	Capacity, R410A [kW] <sup>2</sup>	Connection	
				Inlet × outlet	Equalizer
TRAE 6 MC	067061	6	24	5/8 × 7/8 ODF	1/4 ODF
TRAE 7 MC	067062	7	28	5/8 × 7/8 ODF	1/4 ODF
TRAE 9 MC	067063	9	36	5/8 × 7/8 ODF	1/4 ODF
TRAE 9 MC	067064	9	36	5/8 × 1-1/8 ODF	1/4 ODF
TRAE 11 MC	067065	11	44	5/8 × 1-1/8 ODF	1/4 ODF

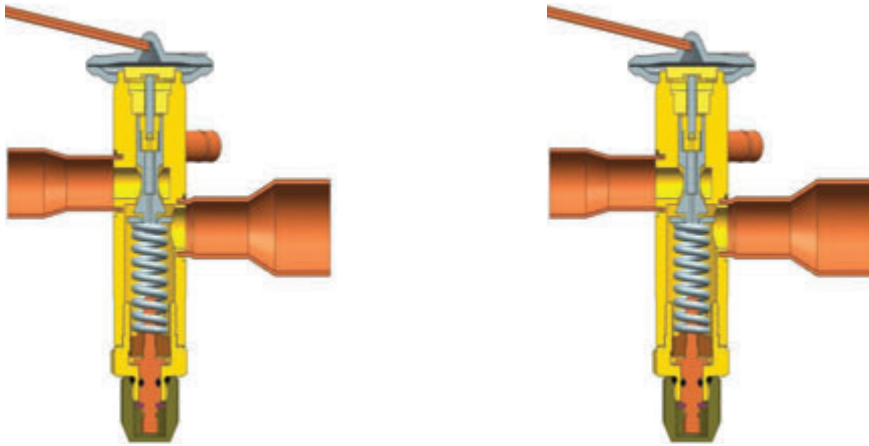
1. Nominal capacity is rated at 37.8°C liquid inlet and 4.4°C evap temperature; with 160 Psi pressure drop across TXV per ARI-750.
2. The nominal capacities are based +4°C dew point evaporating temperature, +38°C bubble point (+43°C dew point) condensing temperature and 1K subcooling per Asercom standard.

\*See extended capacity tables for ratings at a wide range of conditions per Asercom standard.

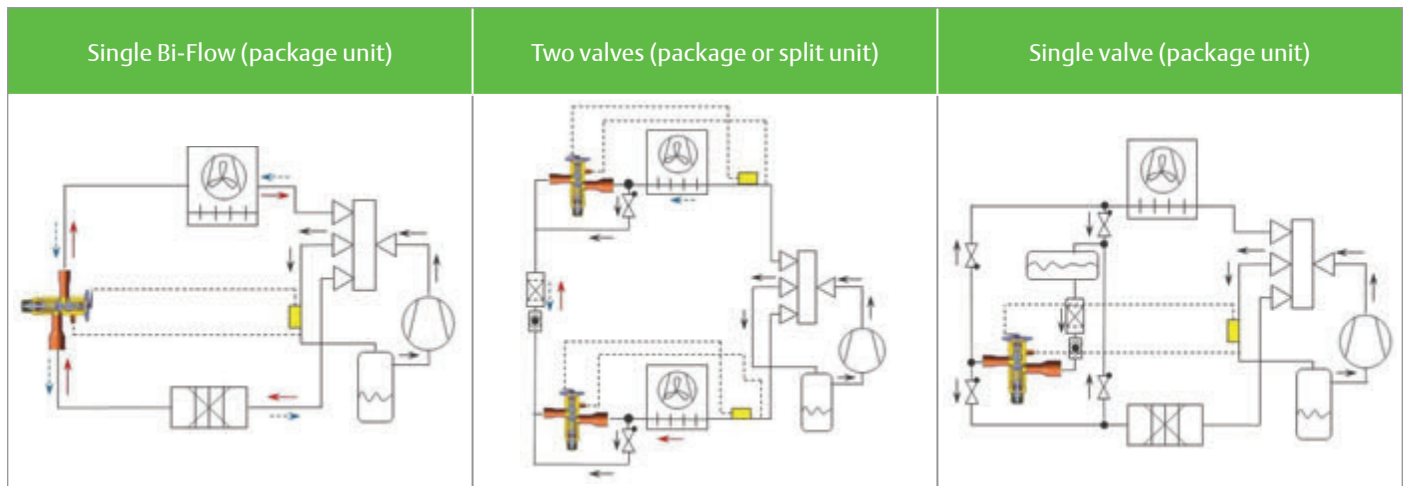


## Quick Selection

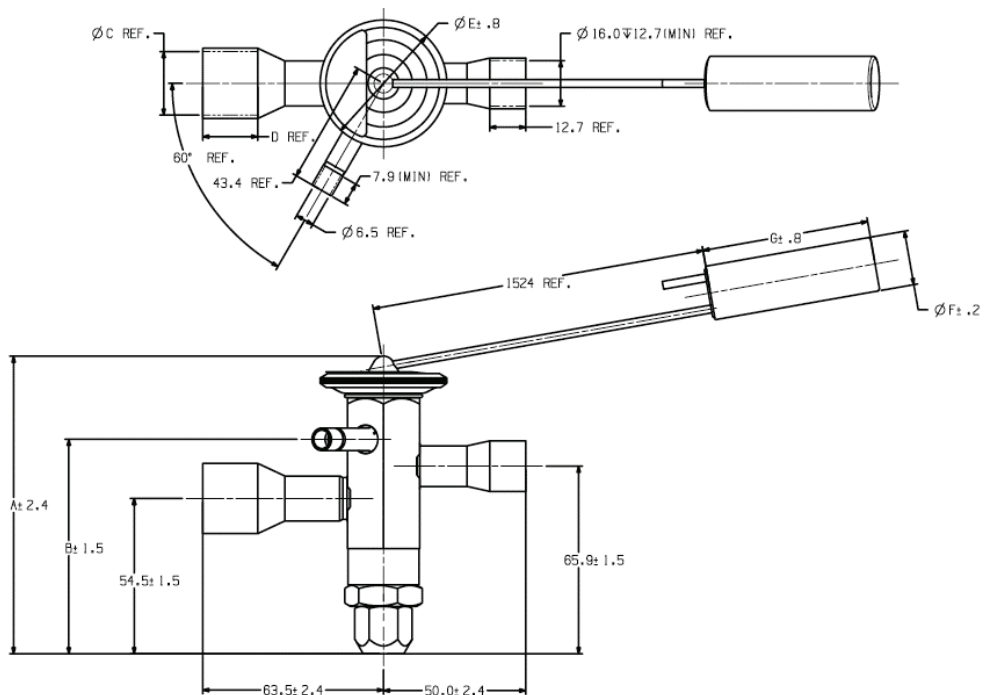
The valve pin is balanced against inlet pressure changes in both flow directions. The inlet pressure impact negatively performance of Thermo™-expansion valves.



## Typical applications in reversible chillers and heat pumps



Note:   
 → : Flow direction in cooling mode   
 ← : Flow direction in heating mode   
 → : Flow direction independent from heating and cooling mode



PCN	Model	A	B	C	D	E	F	G
066780	TRAE 8 HCA	103.7	75.3	22.3	19.3	44.4	19.1	58.7
066781	TRAE 10 HCA	103.7	75.3	22.3	19.3	44.4	19.1	58.7
066782	TRAE 12 HCA	107.9	79.5	22.3	19.3	44.4	19.1	58.7
066783	TRAE 12 HCA	107.9	79.5	28.7	23.1	44.4	19.1	58.7
066784	TRAE 15 HCA	107.9	79.5	28.7	23.1	44.4	19.1	58.7
066785	TRAE 8 HW100	103.7	75.3	22.3	19.3	44.4	19.1	58.7
066786	TRAE 10 HW100	103.7	75.3	22.3	19.3	44.4	19.1	58.7
066787	TRAE 12 HW100	107.9	79.5	22.3	19.3	44.4	19.1	58.7
066788	TRAE 12 HW100	107.9	79.5	28.7	23.1	44.4	19.1	58.7
066789	TRAE 15 HW100	107.9	79.5	28.7	23.1	44.4	19.1	58.7
066790	TRAE 8 NW100	103.7	75.3	22.3	19.3	44.4	12.6	53.2
066791	TRAE 10 NW100	103.7	75.3	22.3	19.3	44.4	12.6	53.2
066792	TRAE 12 NW100	107.9	79.5	22.3	19.3	44.4	12.6	53.2
066793	TRAE 12 NW100	107.9	79.5	28.7	23.1	44.4	12.6	53.2
066794	TRAE 15 NW100	107.9	79.5	28.7	23.1	44.4	12.6	53.2
066797	TRAE 8 ZAA	104.5	75.3	22.3	19.3	44.5	19.1	58.7
066798	TRAE 10 ZAA	104.5	75.3	22.3	19.3	44.5	19.1	58.7
066799	TRAE 12 ZAA	104.5	75.3	22.3	19.3	44.5	19.1	58.7
066800	TRAE 15 ZAA	108.7	79.5	22.3	19.3	44.5	19.1	58.7
066801	TRAE 15 ZAA	108.7	79.5	28.7	23.1	44.5	19.1	58.7
066802	TRAE 18 ZAA	108.7	79.5	28.7	23.1	44.5	19.1	58.7
067061	TRAE 6 MC	103.7	75.3	22.3	19.3	44.4	12.6	53.2
067062	TRAE 7 MC	103.7	75.3	22.3	19.3	44.4	12.6	53.2
067063	TRAE 9 MC	107.9	79.5	22.3	19.3	44.4	12.6	53.2
067064	TRAE 9 MC	107.9	79.5	28.7	23.1	44.4	12.6	53.2
067065	TRAE 11 MC	107.9	79.5	22.3	19.3	44.4	12.6	53.2

Condensing Temperature (°C)	R410A		Extended Capacity (kW) Evaporating Temperature (°C)						Model
	10	5	0	-5	-10	-15	-20	-25	
65	25.8	26.1	26.3	26.3	26.2	26.0	25.7	25.4	TRAE 8 ZAA
	32.2	32.6	32.8	32.9	32.8	32.5	32.2	31.7	TRAE 10 ZAA
	38.6	39.1	39.4	39.4	39.3	39.0	38.6	38.1	TRAE 12 ZAA
	48.3	48.9	49.2	49.3	49.1	48.8	48.3	47.6	TRAE 15 ZAA
	0.2	58.7	59.1	59.1	59.0	58.5	57.9	57.1	TRAE 18 ZAA
60	28.3	28.8	29.1	29.3	29.4	29.3	29.1	28.8	TRAE 8 ZAA
	35.4	36.0	36.4	36.6	36.7	36.6	36.4	36.0	TRAE 10 ZAA
	42.5	43.2	43.7	44.0	44.0	43.9	43.6	43.2	TRAE 12 ZAA
	53.1	54.0	54.6	55.0	55.1	54.9	54.6	54.0	TRAE 15 ZAA
	63.7	64.8	65.6	66.0	66.1	65.9	65.5	64.8	TRAE 18 ZAA
55	29.6	30.3	30.8	31.1	31.3	31.3	31.2	31.0	TRAE 8 ZAA
	37.0	37.8	38.5	38.9	39.1	39.1	39.0	38.8	TRAE 10 ZAA
	44.3	45.4	46.2	46.6	46.9	47.0	46.8	46.5	TRAE 12 ZAA
	55.4	56.8	57.7	58.3	58.6	58.7	58.6	58.2	TRAE 15 ZAA
	66.5	68.1	69.2	70.0	70.4	70.5	70.3	69.8	TRAE 18 ZAA
50	29.9	30.9	31.6	32.1	32.4	32.6	32.6	32.5	TRAE 8 ZAA
	37.4	38.6	39.5	40.1	40.5	40.7	40.7	40.6	TRAE 10 ZAA
	44.9	46.3	47.4	48.1	48.6	48.8	48.9	48.7	TRAE 12 ZAA
	56.1	57.9	59.2	60.1	60.7	61.0	61.1	60.9	TRAE 15 ZAA
	67.4	69.5	71.1	72.2	72.9	73.3	73.3	73.1	TRAE 18 ZAA

Condensing Temperature (°C)	R410A		Extended Capacity (kW) Evaporating Temperature (°C)						Model
	10	5	0	-5	-10	-15	-20	-25	
45	29.6	30.8	31.7	32.4	32.9	33.2	33.3	33.4	TRAE 8 ZAA
	37.0	38.5	39.6	40.5	41.1	41.5	41.7	41.7	TRAE 10 ZAA
	44.4	46.2	47.6	48.6	49.3	49.8	50.0	50.0	TRAE 12 ZAA
	55.5	57.7	59.5	60.8	61.7	62.2	62.5	62.5	TRAE 15 ZAA
	66.6	69.3	71.4	72.9	74.0	74.7	75.0	75.0	TRAE 18 ZAA
40	28.6	30.1	31.3	32.2	32.8	33.3	33.6	33.7	TRAE 8 ZAA
	35.7	37.6	39.1	40.2	41.0	41.6	42.0	42.1	TRAE 10 ZAA
	42.8	45.1	46.9	48.2	49.3	49.9	50.4	50.6	TRAE 12 ZAA
	53.5	56.4	58.6	60.3	61.6	62.4	63.0	63.2	TRAE 15 ZAA
	64.2	67.7	70.3	72.4	73.9	74.9	75.6	75.9	TRAE 18 ZAA
35	26.8	28.7	30.2	31.4	32.3	32.9	33.4	33.6	TRAE 8 ZAA
	33.5	35.9	37.8	39.3	40.4	41.2	41.7	42.1	TRAE 10 ZAA
	40.2	43.1	45.4	47.1	48.4	49.4	50.1	50.5	TRAE 12 ZAA
	50.2	53.9	56.7	58.9	60.6	61.8	62.6	63.1	TRAE 15 ZAA
	60.3	64.6	68.0	70.7	72.7	74.1	75.1	75.7	TRAE 18 ZAA

## Quick selection

Included 1.5 bar pressure drop for liquid line components and distributor

Condensing Temperature (°C)	R410A		Extended Capacity (kW) Evaporating Temperature (°C)						Model
	10	5	0	-5	-10	-15	-20	-25	
55°C bubble point/ 59.2°C dew point	34.8	35.2	35.3	35.3	35.1	34.8	34.4	33.9	TRAE 8 NW100
	43.5	43.9	44.1	44.1	43.9	43.5	43.0	42.4	TRAE 10 NW100
	52.2	52.7	53.0	52.9	52.7	52.2	51.6	50.8	TRAE 12 NW100
	65.2	65.9	66.2	66.2	65.9	65.3	64.5	63.6	TRAE 15 NW100
50°C bubble point/ 54.4°C dew point	34.6	35.2	35.6	35.7	35.7	35.5	35.2	34.8	TRAE 8 NW100
	43.3	44.0	44.5	44.7	44.6	44.4	44.0	43.5	TRAE 10 NW100
	52.0	52.8	53.4	53.6	53.5	53.3	52.8	52.2	TRAE 12 NW100
	65.0	66.1	66.7	67.0	66.9	66.6	66.0	65.3	TRAE 15 NW100
5°C bubble point/ 49.6°C dew point	34.0	34.8	35.4	35.7	35.8	35.8	35.6	35.3	TRAE 8 NW100
	42.4	43.5	44.2	44.6	44.8	44.7	44.5	44.1	TRAE 10 NW100
	50.9	52.2	53.0	53.5	53.7	53.6	53.4	52.9	TRAE 12 NW100
	63.7	65.2	66.3	66.9	67.1	67.1	66.7	66.1	TRAE 15 NW100
40°C bubble point/ 44.9°C dew point	32.7	33.8	34.6	35.2	35.5	35.6	35.6	35.4	TRAE 8 NW100
	40.9	42.3	43.3	44.0	44.4	44.5	44.4	44.2	TRAE 10 NW100
	49.0	50.7	52.0	52.8	53.2	53.4	53.3	53.0	TRAE 12 NW100
	61.3	63.4	65.0	66.0	66.5	66.8	66.7	66.3	TRAE 15 NW100
35°C bubble point/ 40.1°C dew point	30.9	32.4	33.5	34.2	34.7	35.0	35.1	35.1	TRAE 8 NW100
	38.6	40.4	41.8	42.8	43.4	43.8	43.9	43.8	TRAE 10 NW100
	46.3	48.5	50.2	51.3	52.1	52.5	52.7	52.6	TRAE 12 NW100
	57.9	60.7	62.7	64.2	65.1	65.7	65.9	65.7	TRAE 15 NW100
30°C bubble point/ 35.2°C dew point	28.4	30.3	31.8	32.8	33.6	34.1	34.3	34.4	TRAE 8 NW100
	35.5	37.9	39.7	41.1	42.0	42.6	42.9	43.0	TRAE 10 NW100
	42.5	45.5	47.7	49.3	50.4	51.1	51.5	51.6	TRAE 12 NW100
	53.2	56.9	59.6	61.6	63.0	63.9	64.4	64.5	TRAE 15 NW100
25°C bubble point/ 30.4°C dew point	25.1	27.7	29.6	31.0	32.0	32.7	33.2	33.4	TRAE 8 NW100
	31.3	34.6	37.0	38.7	40.0	40.9	41.5	41.8	TRAE 10 NW100
	37.6	41.5	44.3	46.5	48.0	49.1	49.7	50.1	TRAE 12 NW100
	47.0	51.8	55.4	58.1	60.0	61.3	62.2	62.6	TRAE 15 NW100

Quick selection (Included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature [°C]	R22 Capacity in normal flow direction [kW]								Model
	Evaporating temperature [°C]								
	10	5	0	-5	-10	-15	-20	-25	
65	33.5	33.9	34.1	34.2	34.2	34.0	33.8	33.4	TRAE 8 HCA
	41.9	42.4	42.7	42.8	42.7	42.5	42.2	41.8	TRAE 10 HCA
	50.3	50.9	51.2	51.3	51.3	51.0	50.6	50.1	TRAE 12 HCA
	62.9	63.6	64.0	64.2	64.1	63.8	63.3	62.7	TRAE 15 HCA
	33.5	33.9	34.1	34.2	34.2	34.0	33.8	33.4	TRAE 8 HW100
	41.9	42.4	42.7	42.8	42.7	42.5	42.2	41.8	TRAE 10 HW100
	50.3	50.9	51.2	51.3	51.3	51.0	50.6	50.1	TRAE 12 HW100
	62.9	63.6	64.0	64.2	64.1	63.8	63.3	62.7	TRAE 15 HW100
60	33.4	33.9	34.3	34.5	34.6	34.5	34.3	34.1	TRAE 8 HCA
	41.7	42.4	42.8	43.1	43.2	43.1	42.9	42.6	TRAE 10 HCA
	50.0	50.9	51.4	51.7	51.8	51.7	51.5	51.1	TRAE 12 HCA
	62.5	63.6	64.3	64.7	64.8	64.7	64.4	63.9	TRAE 15 HCA
	33.4	33.9	34.3	34.5	34.6	34.5	34.3	34.1	TRAE 8 HW100
	41.7	42.4	42.8	43.1	43.2	43.1	42.9	42.6	TRAE 10 HW100
	50.0	50.9	51.4	51.7	51.8	51.7	51.5	51.1	TRAE 12 HW100
	62.5	63.6	64.3	64.7	64.8	64.7	64.4	63.9	TRAE 15 HW100
55	32.7	33.5	34.0	34.4	34.5	34.6	34.5	34.4	TRAE 8 HCA
	40.9	41.8	42.5	42.9	43.2	43.2	43.2	42.9	TRAE 10 HCA
	49.1	50.2	51.0	51.5	51.8	51.9	51.8	51.5	TRAE 12 HCA
	61.4	62.8	63.8	64.4	64.8	64.9	64.7	64.4	TRAE 15 HCA
	32.7	33.5	34.0	34.4	34.5	34.6	34.5	34.4	TRAE 8 HW100
	40.9	41.8	42.5	42.9	43.2	43.2	43.2	42.9	TRAE 10 HW100
	49.1	50.2	51.0	51.5	51.8	51.9	51.8	51.5	TRAE 12 HW100
	61.4	62.8	63.8	64.4	64.8	64.9	64.7	64.4	TRAE 15 HW100
50	31.7	32.6	33.3	33.9	34.2	34.4	34.4	34.3	TRAE 8 HCA
	39.6	40.8	41.7	42.3	42.7	42.9	43.0	42.9	TRAE 10 HCA
	47.5	48.9	50.0	50.8	51.3	51.5	51.6	51.5	TRAE 12 HCA
	59.4	61.2	62.5	63.5	64.1	64.4	64.5	64.3	TRAE 15 HCA
	31.7	32.6	33.3	33.9	34.2	34.4	34.4	34.3	TRAE 8 HW100
	39.6	40.8	41.7	42.3	42.7	42.9	43.0	42.9	TRAE 10 HW100
	47.5	48.9	50.0	50.8	51.3	51.5	51.6	51.5	TRAE 12 HW100
	59.4	61.2	62.5	63.5	64.1	64.4	64.5	64.3	TRAE 15 HW100
45	31.7	32.6	33.3	33.9	34.2	34.4	34.4	34.3	TRAE 8 HCA
	39.6	40.8	41.7	42.3	42.7	42.9	43.0	42.9	TRAE 10 HCA
	47.5	48.9	50.0	50.8	51.3	51.5	51.6	51.5	TRAE 12 HCA
	59.4	61.2	62.5	63.5	64.1	64.4	64.5	64.3	TRAE 15 HCA
	31.7	32.6	33.3	33.9	34.2	34.4	34.4	34.3	TRAE 8 HW100
	39.6	40.8	41.7	42.3	42.7	42.9	43.0	42.9	TRAE 10 HW100
	47.5	48.9	50.0	50.8	51.3	51.5	51.6	51.5	TRAE 12 HW100
	59.4	61.2	62.5	63.5	64.1	64.4	64.5	64.3	TRAE 15 HW100

Condensing temperature [°C]	R22 Capacity in normal flow direction [kW]								Model
	Evaporating temperature [°C]								
	10	5	0	-5	-10	-15	-20	-25	
40	28.1	29.7	30.9	31.8	32.4	32.9	33.2	33.3	TRAE 8 HCA
	35.1	37.1	38.6	39.7	40.5	41.1	41.5	41.6	TRAE 10 HCA
	42.2	44.5	46.3	47.6	48.6	49.3	49.8	50.0	TRAE 12 HCA
	52.7	55.6	57.9	59.6	60.8	61.7	62.2	62.5	TRAE 15 HCA
	28.1	29.7	30.9	31.8	32.4	32.9	33.2	33.3	TRAE 8 HW100
	35.1	37.1	38.6	39.7	40.5	41.1	41.5	41.6	TRAE 10 HW100
	42.2	44.5	46.3	47.6	48.6	49.3	49.8	50.0	TRAE 12 HW100
	52.7	55.6	57.9	59.6	60.8	61.7	62.2	62.5	TRAE 15 HW100
35	25.5	27.5	29.0	30.2	31.1	31.7	32.1	32.4	TRAE 8 HCA
	31.9	34.4	36.3	37.7	38.8	39.6	40.2	40.5	TRAE 10 HCA
	38.3	41.2	43.5	45.3	46.6	47.5	48.2	48.6	TRAE 12 HCA
	47.8	51.5	54.4	56.6	58.2	59.4	60.2	60.7	TRAE 15 HCA
	25.5	27.5	29.0	30.2	31.1	31.7	32.1	32.4	TRAE 8 HW100
	31.9	34.4	36.3	37.7	38.8	39.6	40.2	40.5	TRAE 10 HW100
	38.3	41.2	43.5	45.3	46.6	47.5	48.2	48.6	TRAE 12 HW100
	47.8	51.5	54.4	56.6	58.2	59.4	60.2	60.7	TRAE 15 HW100

# TRAE+ Series Thermo™ - expansion valves

## For refrigeration, air conditioning, heat pump, and chiller applications

The TRAE Plus series is a large capacity valve designed for refrigeration, air conditioning, heat pump, and chiller applications.

### Features

- Suitable for Bi-Flow applications
- Replaceable power element and cage assembly for full serviceability
- Stainless steel power element prevents corrosion and valve failure
- Double balanced port design improves operation and stability over wide loads and evaporator temperature ranges
- Solid copper connections
- External superheat adjustment
- Square body with straight-thru connections
- Large diaphragm provides superior stability
- Permanent inlet strainer



### Options

- Cages (For available cage kits, see T Series)

### Specifications

- Maximum working pressure: 450 psig
- Torque power assembly: 375 - 425 in. lb.
- UR/CUR file number: SA5312

### Model nomenclature example: TRAE+ 30HC10FT7/8X1-1/8ODFS/T

TRA	E	+	30	H	C	10 FT	7/8 X 1-1/8	ODF	S/T
Series	Equalizer	Replaceable components	Capacity	Refrigerant code	Charge code	Capillary tube length	Inlet x outlet connection sizes	Connection type	Configuration
Double balanced port design	E = external 1/4" SAE	Cage and power assembly	Nominal Rating in Tons  (See Nominal Capacity Table below)	+F = R-12 • H = R-22 • M = R-134a • N = R-407C *P = R-507 *R = R-502 *S = R-404A	C = medium temp CA = heat pump W(mop) <sup>1</sup> = press. limiting Z = low temp	10 Ft (std)	5/8 X 7/8 7/8 X 1-1/8 1-1 1/2 X 1-3/8	ODF = solder (only)	S/t = Straight-thru (only)

+ = R-12 and R-134a are interchangeable refrigerant charges  
 \* = R-507, R-502 and R-404A are interchangeable refrigerant charges  
 • = R-22 and R-407C are interchangeable refrigerant charges  
<sup>1</sup> Maximum Operating Pressure

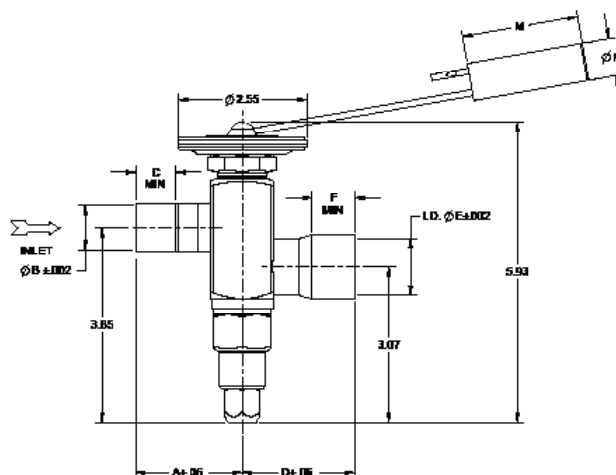
### TRAE+ Series – nominal\* capacity table in Tons (kW)

R-12	R-134a	R-22/R-407C	R-507/R-404A/R-502
7½ (27)	9 (32)	10 (35)	8 (28)
10 (35)	13 (46)	15 (53)	12 (42)
12 (42)	14 (50)	20 (71)	14 (50)
18 (64)	22 (78)	30 (106)	20 (71)
25 (88)	30 (106)	40 (142)	30 (106)

All capacities shown are at 100°F condensing, 40°F evaporator temperature.  
 \*See Extended Capacity Tables for ratings at a wide range of conditions per ARI standard 750.

### TRAE+ dimensional data (in.)

Connection size		A	B	C	D	E	F
Inlet (ODF)	Outlet (ODF)						
5/8	7/8	1.57	0.629	0.5	2.09	0.879	0.75
5/8	1-1/8	1.57	0.629	0.5	2.21	1.13	0.91
7/8	7/8	2.09	0.879	0.75	2.09	0.879	0.75
7/8	1-1/8	2.09	0.879	0.75	2.21	1.13	0.91
7/8	1-3/8	2.09	0.879	0.75	2.39	1.38	0.97
1-1/8	1-1/8	2.21	1.13	0.91	2.21	1.13	0.91
1-1/8	1-3/8	2.21	1.13	0.91	2.39	1.38	0.97



# TRAE Series Thermo™ - expansion Valves

For chiller, heat pump, refrigeration, and air conditioning applications

The TRAE series is a large capacity valve for chiller, heat pump, refrigeration, and air conditioning applications.

## Features

- Suitable for Bi-Flow applications
- Stainless steel power element prevents corrosion and valve failure
- Balanced port design improves valve operation and stability over wide loads and evaporator temperature range
- Solid copper connections
- External superheat adjustment
- Integral body with straight-thru connections
- Large diaphragm provides superior stability



## Specifications

- Maximum Working Pressure: 450 psig
- UR/CUR file number: SA5312

## Model nomenclature example: TRAE 50HC10FT7/8X1-1/8ODFS/T

TRA	E	50	H	C	10 FT	7/8 X 1-1/8	ODF	S/T
Series	Equalizer	Capacity	Refrigerant code	Charge code	Capillary tube length	Inlet x outlet Connection sizes	Connection type	Configuration
Hermetic balanced port design	E = External 1/4" Sae	Nominal Rating in Tons  (See Nominal Capacity Table below)	+F = R-12 • H = R-22 +M = R-134a • N = R-407C *P = R-507 *R = R-502 *S = R-404A	C = medium temp CA = heat pump W(mop) <sup>1</sup> = press. limiting Z = low temp	10 Ft (std)	1/4 X 3/8 3/8 X 1/2 7/8 X 1-1/8	ODF = solder (only)	S/t = straight-thru (only)

+ = R-12 and R-134a are interchangeable refrigerant charges  
 \* = R-507, R-502 and R-404A are interchangeable refrigerant charges  
 • = R-22 and R-407C are interchangeable refrigerant charges  
<sup>1</sup> Maximum Operating Pressure

## TRAE Series – nominal\* capacity table in Tons (kW)

R-12	R-134a	R-22/R-407C	R-507/R-404A/R-502
30 (106)	40 (142)	50 (177)	35 (124)
35 (124)	45 (159)	60 (212)	40 (142)
40 (142)	50 (177)	70 (248)	50 (177)

All capacities shown are at 100°F condensing, 40°F evaporator temperature.  
 \*See Extended Capacity Tables for ratings at a wide range of conditions per ARI standard 750.

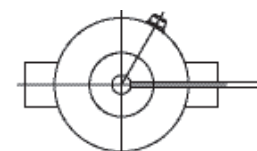
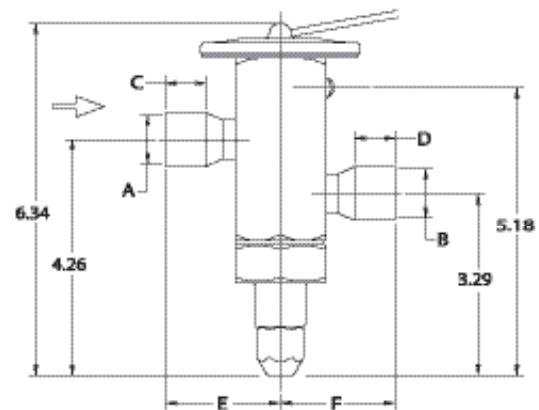
## TRAE dimensional data (in.)

Remote bulb tubing length 10' standard

Connection size		A	B	C MIN	D MIN	E	F
Inlet (ODF)	Outlet (ODF)						
7/8 ODF	7/8 ODF	0.88	0.88	0.75	0.75	2.09	2.09
7/8 ODF	1-1/8 ODF	0.88	1.13	0.75	0.91	2.90	2.21
7/8 ODF	1-3/8 ODF	0.88	1.38	0.75	0.97	2.90	2.39
1-1/8 ODF	1-1/8 ODF	1.13	1.13	0.91	0.91	2.21	2.21
1-1/8 ODF	1-3/8 ODF	1.13	1.38	0.91	0.97	2.21	2.39
1-3/8 ODF	1-3/8 ODF	1.38	1.38	0.91	0.97	2.39	2.39

## Remote bulb table

Remote bulb tubing length	Bulb length
5, 10, 15 ft.	4-7/8
20, 30 ft.	
40, 50 ft.	6-3/16



# TRAE+/TRAE Series Thermo™ - expansion valves

For refrigeration, air conditioning, heat pump, and chiller applications

## Ordering information

Refrigerant	Series	Tons*	Charge	Connections	Cap tube	PCN	
R-22 R-407C R-404A R-134A	TRAE+	10	HC	5/8 X 7/8 ODF S/T	5 FT	062718	
			HCA	5/8 X 7/8 ODF S/T	10 FT	063138	
			HCA	7/8 X 1-1/8 ODF S/T	10 FT	063554	
			HC	7/8 X 1-1/8 ODF S/T	15 FT	063100	
		15	HC	7/8 X 1-1/8 ODF S/T	10 FT	062721	
			HCA	5/8 X 7/8 ODF S/T	10 FT	063510	
			HCA	7/8 X 1-1/8 ODF S/T	10 FT	062722	
			HCA	7/8 X 1-3/8 ODF S/T	10 FT	063141	
			HW100	5/8 X 7/8 ODF S/T	10 FT	063103	
			20	HC	7/8 X 1-3/8 ODF S/T	10 FT	063650
				HCA	7/8 X 1-1/8 ODF S/T	10 FT	062725
				HCA	1-1/2 X 1-1/8 ODF S/T	10 FT	064581
		HW90		7/8 X 1-1/8 ODF S/T	15 FT	064018	
		HC		7/8 X 1-1/8 ODF S/T	10 FT	062724	
		SC		7/8 X 1-1/8 ODF S/T	10 FT	063461	
		SZ		5/8 X 7/8 ODF S/T	10 FT	064923	
		30		HC	7/8 X 1-1/8 ODF S/T	10 FT	062727
			HC	1-1/8 X 1-3/8 ODF S/T	10 FT	062728	
			HCA	1-1/8 X 1-3/8 ODF S/T	10 FT	062730	
			HW100	7/8 X 1-3/8 ODF S/T	5 FT	063425	
			MC	1-1/8 X 1-3/8 ODF S/T	10 FT	064001	
			40	HC	1-1/8 X 1-3/8 ODF S/T	10 FT	062733
		HC		1-1/8 X 1-3/8 ODF S/T	15 FT	063153	
		HCA		1-1/8 X 1-3/8 ODF S/T	10 FT	062734	
	TRAE	35	SC	1-1/8 X 1-3/8 ODF S/T	10 FT	064217	
		40	MC	1-1/8 X 1-3/8 ODF S/T	15 FT	063941	
		50	HC	1-1/8 X 1-3/8 ODF S/T	10 FT	061700	
		60	HC	1-1/8 X 1-3/8 ODF S/T	10 FT	061865	
		70	HC	1-1/8 X 1-3/8 ODF S/T	10 FT	061866	

(+) Replaceable power assembly

## Cage replacement kits for TRAE+ Series Valves

Cage kits are cross referenced by capacity and tonnage in the table below. Each cage kit consists of a replacement cage and cage removal wrench. In addition, the cage removal wrench (KT-20294) can be ordered as a separate item

PCN	TRAE+ KIT Model	Nominal capacity - Tons		
		R-22	R-12/R-134a	R-507/R-404A/ R-502
063387	KT-20289	10	9	8
063388	KT-20290	15	13	12
063389	KT-20291	20	14	14
063390	KT-20292	30	22	20
063391	KT-20293	40	30	30
063392	KT-20294	Cage wrench kit for all tonnages		

## Replacement parts

Description	Model	PCN
Power assembly	X-28458HCA-2	063414
	X-28458MC-3	063593
	X-28458SC-2	065439
	X-28458HW100-2	063416
	X-28458SW45-2	065298
Seal nut	27676-1	058707



# TRAES Series Thermo™ - expansion valves

## Features

- Compact hermetic design, saves room for installation and minimizes external leakage.
- Superheat adjustable.
- Covering 8-15Ton cooling capacity range, aligned with Copeland brand compressors.
- Straight-through configuration.
- ODF Connection



- Balanced port design, able to control the superheat stably even during the variable head pressure or partial load condition.
- Stainless power element, no corrosion and long life time.

## Nomenclature example : TRAES15 HCA 5FT 5/8\*7/8 ODF S/T

TRA	E	S	15	H	CA	5FT	5/8*7/8	ODF	S/T
Series	Equalizer E=External	Small	Nominal Capacity (Tons)	Refrigerant Code H=R22 M=R134a N=R407C S=R404A	Charge Code C=Medium Temp. CA=HP Z=Low Temp. W(MOP code)=Press. Limiting	Capillary length 5Ft/1.5M 10Ft/3m	Connection size Inlet* outlet	Connection type solder	Configuration straight through

## Product selection

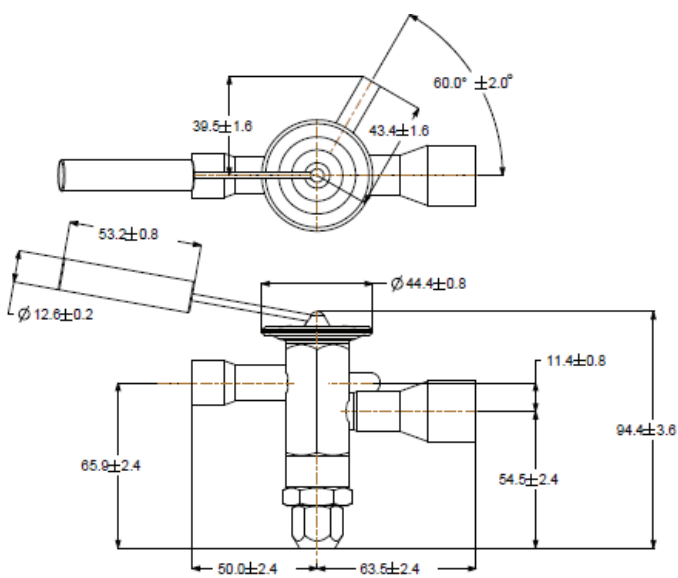
Refrigerant	Charge	Description	Nominal capacity(Tons)	PCN
R22	HC	TRAES 8 HC	8	066688
		TRAES 10 HC	10	066689
		TRAES 12 HC	12	066690
		TRAES 15 HC	15	066691
	HCA	TRAES 8 HCA	8	066684
		TRAES 10 HCA	10	066685
		TRAES 12 HCA	12	066686
		TRAES 15 HCA	15	066687
	HW100	TRAES 8 HW100	8	066736
		TRAES 10 HW100	10	066738
		TRAES 12 HW100	12	066752
		TRAES 15 HW100	15	066739
R404A	SC	TRAES 5 SC	5	066740
		TRAES 7 SC	7	066741
		TRAES 7.5 SC	7.5	066743
		TRAES 10 SC	10	066744
	SZ	TRAES 5 SZ	5	066745
		TRAES 7 SZ	7	066746
		TRAES 7.5 SZ	7.5	066747
		TRAES 10 SZ	10	066748
	SW45	TRAES 5 SW45	5	066753
		TRAES 7 SW45	7	066754
		TRAES 7.5 SW45	7.5	066755
		TRAES 10 SW45	10	066756
R407C	NC	TRAES 8 NC	8	066696
		TRAES 10 NC	10	066697
		TRAES 12 NC	12	066698
		TRAES 15 NC	15	066699
R134a	R134a	TRAES 6 MC	6	066734
		TRAES 7 MC	7	066750
		TRAES 9 MC	9	066751
		TRAES 11 MC	11	066735

NOTE: Nominal capacity rated per ARI 750-2007, 37.8 liquid temperature, 4.4 evaporating temperature, pressure drop across the valve R22/R407C/R404A 6.89bar R134a 4.13bar

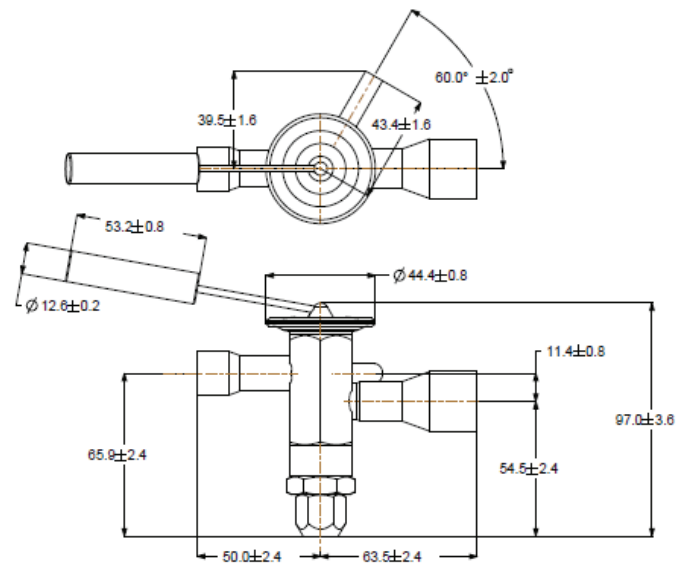
Refrigerant	Evaporating temp.	Condensing temp.	Sub-cooling
R404A, R134a, R22	+4.4°C	+37.8°C	1K
R407C	+4.4°C Dew point	+37.8°C bulb / +43°C Dew point	1K

## Technical data

MWP	450psig (31bar)
Temperature range	HC / HCA: -29 ~ +10 HW100: -46 ~ +10 SC: -29 ~ +10 SZ: -46 ~ -12 SW45: -46 ~ -12 NC: -29 ~ +10 MC: -29 ~ +10
Static superheat	6A (3.3K)
Compatible lubricant	POE oil, Mineral oil
External leakage	2.835 g/year
Weight	600 g (excludes remote bulb strap and accessories)
Connection	5/8 ODF * 7/8 ODF * 1/4 ODF (Inlet* Outlet* External equalizer)
Length of bulb capillary	5FT



TRAES8/TRAES10/TRAES12 (R22, R407C)  
TRAES6/TRAES7/TRAES9 (R134a)  
TRAES5/TRAES7/TRAES7.5 (R404A)



TRAES15 (R22, R407C)  
TRAES11 (R134a)  
TRAES10 (R404A)

# R134a (kW)

Model	Nominal capacity	Evaporating temperature																	
		-30 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	8	14.58	17.85	19.28	20.62	21.87	23.05	24.17	25.25	26.28	27.27	28.23	29.15	30.05	30.92	31.77	32.60	33.40	34.19
TRAES	10	18.10	22.16	23.94	25.59	28.61	30.01	30.01	31.34	32.62	33.85	35.04	36.19	37.31	38.39	39.44	40.46	41.46	42.44
TRAES	12	21.87	26.78	28.93	30.92	34.57	36.26	36.26	37.8	39.42	40.91	42.34	43.73	45.08	46.38	47.65	48.89	50.10	51.28
TRAES	15	27.14	33.24	35.91	38.39	42.92	45.01	45.01	47.01	48.93	50.78	52.56	54.29	55.96	57.58	59.16	60.69	62.19	63.66
Model	Nominal capacity	Evaporating temperature																	
		-20 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	8	117.73	21.72	23.46	25.08	26.60	28.04	29.41	30.72	31.97	33.18	34.34	35.47	36.56	37.62	38.65	39.66	40.64	41.59
TRAES	10	22.17	27.15	29.33	31.35	35.05	36.76	36.76	38.40	39.96	41.47	42.93	44.34	45.70	47.03	48.31	49.57	50.79	51.99
TRAES	12	26.60	32.58	35.19	37.62	42.06	44.11	44.1	46.08	47.96	49.77	51.5	53.20	54.84	56.43	57.98	59.48	60.95	62.39
TRAES	15	33.25	40.73	43.99	47.03	52.58	55.14	55.14	57.59	59.95	62.21	64.39	66.50	68.55	70.54	72.47	74.35	76.19	77.98
Model	Nominal capacity	Evaporating temperature																	
		-10 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	8	21.06	25.79	27.86	29.78	31.59	33.30	34.92	36.47	37.96	39.40	40.78	42.12	43.41	44.67	45.90	47.09	48.25	49.39
TRAES	10	26.32	32.2	34.82	37.23	41.62	43.65	43.65	45.59	47.46	49.25	50.98	52.65	54.27	55.84	57.37	58.86	60.31	61.73
TRAES	12	31.59	38.69	41.79	44.67	49.95	52.38	52.38	54.71	56.95	59.10	61.17	63.18	65.12	67.01	68.84	70.63	72.38	74.08
TRAES	15	39.49	48.36	52.23	55.84	62.43	65.48	65.48	68.39	71.18	73.87	76.46	78.97	81.40	83.76	86.06	88.29	90.47	92.60
Model	Nominal capacity	Evaporating temperature																	
		0 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	8	21.12	25.87	27.94	29.87	31.68	33.39	35.02	36.58	38.07	39.51	40.90	42.24	43.54	44.80	46.03	47.22	48.39	49.53
TRAES	10	26.40	32.33	34.92	37.33	41.74	43.78	43.78	45.72	47.59	49.39	51.12	52.80	54.42	56.00	57.54	59.03	60.49	61.91
TRAES	12	31.68	38.80	41.91	44.80	50.09	52.53	52.53	54.87	57.11	59.27	61.35	63.36	65.31	67.20	69.04	70.84	72.59	74.29
TRAES	15	39.60	48.50	52.38	56.00	62.61	65.67	65.67	68.59	71.39	74.08	76.68	79.20	81.63	84.00	86.30	88.55	90.73	92.87
Model	Nominal capacity	Evaporating temperature																	
		10 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	8	21.62	26.48	28.60	30.58	32.43	34.18	35.85	37.45	38.98	40.45	41.87	43.24	44.57	45.86	47.12	48.34	49.54	50.70
TRAES	10	27.03	33.10	35.75	38.22	42.73	44.82	44.82	46.81	48.72	50.56	52.33	54.05	55.71	57.33	58.90	60.43	61.92	63.38
TRAES	12	32.43	39.72	42.90	45.86	51.28	53.78	53.78	56.17	58.46	60.67	62.80	64.86	66.86	68.80	70.68	72.52	74.31	76.06
TRAES	15	40.54	49.65	53.63	57.33	64.10	67.22	67.22	70.21	73.08	75.84	78.50	81.08	83.57	85.99	88.35	90.65	92.88	95.07

Note: Nominal capacity rated per ARI 750-2007, 37.8 liquid temperature, 4.4 evaporating temperature, pressure drop across the valve 6.89bar.

## R134a (kW)

Model	Nominal capacity	Evaporating temperature																	
		-30 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	6	9.62	11.78	12.73	13.61	14.43	15.21	15.96	16.66	17.35	18.00	18.63	19.24	19.84	20.41	20.97	21.51	22.05	22.56
TRAES	7	14.63	15.80	16.89	18.89	19.81	20.69	19.81	20.69	21.53	22.35	23.13	23.89	24.62	25.34	26.03	26.71	27.37	28.01
TRAES	9	17.68	19.09	20.41	22.82	23.93	25.00	23.93	25.00	26.02	27.00	27.95	28.86	29.75	30.62	31.45	32.27	33.07	33.85
TRAES	11	21.94	23.70	25.34	28.33	29.71	31.03	29.71	31.03	32.30	33.52	34.69	35.83	36.93	38.01	39.05	40.06	41.05	42.02
Model	Nominal capacity	Evaporating temperature																	
		-20 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	6	14.58	17.85	19.28	20.62	21.87	23.05	24.17	25.25	26.28	27.27	28.23	29.15	30.05	30.92	31.77	32.60	33.40	34.19
TRAES	7	18.10	22.16	23.94	25.59	28.61	30.01	30.01	31.34	32.62	33.85	35.04	36.19	37.31	38.39	39.44	40.46	41.46	42.44
TRAES	9	21.87	26.78	28.93	30.92	34.57	36.26	36.26	37.87	39.42	40.91	42.34	43.73	45.08	46.38	47.65	48.89	50.10	51.28
TRAES	11	27.14	33.24	35.91	38.39	42.92	45.01	45.01	47.01	48.93	50.78	52.56	54.29	55.96	57.58	59.16	60.69	62.19	63.66
Model	Nominal capacity	Evaporating temperature																	
		-10 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	6	18.68	22.88	24.71	26.42	28.02	29.54	30.98	32.36	33.68	34.95	36.18	37.36	38.51	39.63	40.71	41.77	42.80	43.81
TRAES	7	23.19	28.40	30.68	32.80	36.67	38.46	38.46	40.17	41.81	43.39	44.91	46.38	47.81	49.19	50.54	51.86	53.14	54.39
TRAES	9	28.02	34.32	37.07	39.63	44.31	46.47	46.47	48.53	50.52	52.42	54.26	56.04	57.77	59.44	61.07	62.66	64.21	65.72
TRAES	11	34.79	42.60	46.02	49.19	55.00	57.69	57.69	60.25	62.71	65.08	67.36	69.57	71.71	73.79	75.81	77.78	79.70	81.58
Model	Nominal capacity	Evaporating temperature																	
		0 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	6	19.59	24.00	25.92	27.71	29.39	30.98	32.49	33.94	35.32	36.66	37.94	39.19	40.39	41.57	42.71	43.81	44.90	45.95
TRAES	7	24.32	29.79	32.18	34.40	38.46	40.34	40.34	42.13	43.85	45.51	47.10	48.65	50.15	51.60	53.01	54.39	55.73	57.05
TRAES	9	29.39	36.00	38.88	41.57	46.47	48.74	48.74	50.91	52.99	54.99	56.92	58.78	60.59	62.35	64.06	65.72	67.34	68.93
TRAES	11	36.49	44.69	48.27	51.60	57.69	60.51	60.51	63.20	65.78	68.26	70.66	72.97	75.22	77.40	79.52	81.59	83.60	85.57
Model	Nominal capacity	Evaporating temperature																	
		10 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	6	20.39	24.97	26.97	28.83	30.58	32.23	33.81	35.31	36.75	38.14	39.48	40.77	42.03	43.25	44.43	45.59	46.71	47.81
TRAES	7	25.31	31.00	33.48	35.79	40.02	41.97	41.97	43.83	45.62	47.35	49.01	50.62	52.17	53.69	55.16	56.59	57.99	59.35
TRAES	9	30.58	37.45	40.45	43.25	48.35	50.71	50.71	52.97	55.13	57.21	59.22	61.16	63.04	64.87	66.65	68.38	70.07	71.72
TRAES	11	37.96	46.49	50.22	53.69	60.02	62.95	62.95	65.75	68.44	71.02	73.51	75.92	78.26	80.53	82.74	84.89	86.98	89.03

Note: Nominal capacity rated per ARI 750-2007, 37.8 liquid temperature, 4.4 evaporating temperature, pressure drop across the valve 4.13bar

## Liquid temperature correction factor :

	Refrigerant liquid temperature °C															
	-18	-12	-7	-1	4	10	16	21	27	32	38	43	49	54	60	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature -18 . However, they may be used for any evaporator temperature from -40 to +4 since the variation in the actual factors across this range is insignificant.

# R407C (kW)

Model	Nominal capacity	Evaporating temperature																	
		-30 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	8	10.09	12.36	13.35	14.27	15.14	15.96	16.73	17.48	18.19	18.88	19.54	20.18	20.80	21.41	21.99	22.57	23.12	23.67
TRAES	10	15.49	16.73	17.89	20.00	20.97	21.91	20.97	21.91	22.80	23.66	24.49	25.30	26.07	26.83	27.57	28.28	28.98	29.66
TRAES	12	18.62	20.11	21.50	24.04	25.21	26.34	25.21	26.34	27.41	28.45	29.44	30.41	31.35	32.25	33.14	34.00	34.84	35.66
TRAES	15	23.24	25.10	26.83	30.00	31.46	32.86	31.46	32.86	34.20	35.49	36.74	37.94	39.11	40.25	41.35	42.42	43.47	44.49
Model	Nominal capacity	Evaporating temperature																	
		-20 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	8	15.09	18.48	19.96	21.34	22.63	23.85	25.02	26.13	27.20	28.22	29.22	30.17	31.10	32.00	32.88	33.73	34.57	35.38
TRAES	10	18.91	23.16	25.01	26.74	29.90	31.36	31.36	32.75	34.09	35.37	36.62	37.82	38.98	40.11	41.21	42.28	43.33	44.34
TRAES	12	22.73	27.84	30.07	32.15	35.94	37.69	37.69	39.37	40.98	42.53	44.02	45.46	46.86	48.22	49.54	50.83	52.08	53.31
TRAES	15	28.36	34.74	37.52	40.11	44.85	47.03	47.03	49.13	51.13	53.06	54.92	56.73	58.47	60.17	61.82	63.42	64.99	66.52
Model	Nominal capacity	Evaporating temperature																	
		-10 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	8	18.84	23.07	24.92	26.64	28.26	29.79	31.24	32.63	33.96	35.24	36.48	37.68	38.84	39.96	41.06	42.12	43.16	44.18
TRAES	10	23.61	28.92	31.23	33.39	37.33	39.15	39.15	40.90	42.57	44.17	45.72	47.22	48.67	50.09	51.46	52.80	54.10	55.37
TRAES	12	28.38	34.76	37.55	40.14	44.88	47.07	47.07	49.16	51.17	53.10	54.96	56.77	58.51	60.21	61.86	63.47	65.03	66.56
TRAES	15	35.42	43.38	46.85	50.09	56.00	58.73	58.73	61.34	63.85	66.26	68.58	70.83	73.01	75.13	77.19	79.19	81.15	83.06
Model	Nominal capacity	Evaporating temperature																	
		0 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	8	19.67	24.09	26.02	27.82	29.50	31.10	32.62	34.07	35.46	36.80	38.09	39.34	40.55	41.72	42.87	43.98	45.07	46.13
TRAES	10	24.65	30.19	32.61	34.86	38.98	40.88	40.88	42.70	44.44	46.12	47.74	49.30	50.82	52.29	53.73	55.12	56.48	57.81
TRAES	12	29.63	36.29	39.20	41.91	46.86	49.14	49.14	51.33	53.42	55.44	57.39	59.27	61.09	62.86	64.59	66.26	67.90	69.50
TRAES	15	36.98	45.29	48.92	52.29	58.47	61.32	61.32	64.05	66.66	69.18	71.61	73.95	76.23	78.44	80.59	82.68	84.73	86.72
Model	Nominal capacity	Evaporating temperature																	
		10 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	8	20.39	24.97	26.97	28.84	30.59	32.24	33.81	35.32	36.76	38.15	39.49	40.78	42.04	43.26	44.44	45.60	46.72	47.82
TRAES	10	25.56	31.30	33.81	36.14	40.41	42.38	42.38	44.27	46.07	47.81	49.49	51.11	52.69	54.21	55.70	57.15	58.56	59.94
TRAES	12	30.72	37.63	40.64	43.45	48.58	50.95	50.95	53.21	55.39	57.48	59.49	61.44	63.34	65.17	66.96	68.70	70.39	72.05
TRAES	15	38.34	46.95	50.71	54.21	60.61	63.57	63.57	66.40	69.11	71.72	74.24	76.67	79.03	81.32	83.55	85.72	87.84	89.90

Note: Nominal capacity rated per ARI 750-2007, 37.8 liquid temperature, 4.4 evaporating temperature, pressure drop across the valve 6.89bar

## R404A (kW)

Model	Nominal capacity	Evaporating temperature																	
		-30 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	5	7.65	9.37	10.12	10.82	11.48	12.10	12.69	13.25	13.80	14.32	14.82	15.31	15.78	16.23	16.68	17.11	17.53	17.95
TRAES	7	11.71	12.65	13.52	15.12	15.86	16.56	15.86	16.56	17.24	17.89	18.52	19.12	19.71	20.28	20.84	21.38	21.91	22.43
TRAES	7.5	14.05	15.18	16.22	18.14	19.02	19.87	19.02	19.87	20.68	21.46	22.21	22.94	23.65	24.34	25.00	25.65	26.28	26.90
TRAES	10	17.57	18.97	20.28	22.68	23.79	24.84	23.79	24.84	25.86	26.83	27.78	28.69	29.57	30.43	31.26	32.07	32.86	33.64
Model	Nominal capacity	Evaporating temperature																	
		-20 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	5	10.95	13.41	14.48	15.48	16.42	17.31	18.16	18.96	19.74	20.48	21.20	21.90	22.57	23.22	23.86	24.48	25.09	25.68
TRAES	7	13.68	16.75	18.10	19.35	21.63	22.69	22.69	23.69	24.66	25.59	26.49	27.36	28.20	29.02	29.81	30.59	31.34	32.08
TRAES	7.5	16.41	20.10	21.71	23.21	25.95	27.22	27.22	28.43	29.59	30.70	31.78	32.82	33.83	34.81	35.77	36.70	37.60	38.49
TRAES	10	20.52	25.13	27.14	29.02	32.44	34.03	34.03	35.54	36.99	38.39	39.74	41.04	42.30	43.53	44.72	45.88	47.02	48.12
Model	Nominal capacity	Evaporating temperature																	
		-10 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	5	13.34	16.34	17.65	18.87	20.01	21.09	22.12	23.11	24.05	24.96	25.84	26.68	27.50	28.30	29.08	29.83	30.57	31.29
TRAES	7	16.67	20.42	22.05	23.57	26.36	27.64	27.64	28.87	30.05	31.19	32.28	33.34	34.37	35.36	36.33	37.28	38.20	39.09
TRAES	7.5	20.00	24.49	26.46	28.28	31.62	33.16	33.16	34.64	36.05	37.41	38.73	40.00	41.23	42.42	43.59	44.72	45.82	46.90
TRAES	10	25.01	30.62	33.08	35.36	39.54	41.47	41.47	43.31	45.08	46.78	48.42	50.01	51.55	53.04	54.50	55.91	57.29	58.64
Model	Nominal capacity	Evaporating temperature																	
		0 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	5	13.50	16.54	17.86	19.09	20.25	21.35	22.39	23.38	24.34	25.26	26.14	27.00	27.83	28.64	29.43	30.19	30.94	31.66
TRAES	7	16.87	20.66	22.32	23.86	26.67	27.98	27.98	29.22	30.41	31.56	32.67	33.74	34.78	35.79	36.77	37.72	38.65	39.56
TRAES	7.5	20.24	24.79	26.77	28.62	32.00	33.56	33.56	35.05	36.49	37.86	39.19	40.48	41.72	42.93	44.11	45.26	46.37	47.46
TRAES	10	25.30	30.99	33.48	35.79	40.01	41.96	41.96	43.83	45.62	47.34	49.00	50.61	52.17	53.68	55.15	56.58	57.98	59.35
Model	Nominal capacity	Evaporating temperature																	
		10 °C																	
		Pressure drop across the valve(bar)																	
		4.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0
TRAES	5	14.15	17.33	18.72	20.01	21.23	22.37	23.47	24.51	25.51	26.47	27.40	28.30	29.17	30.02	30.84	31.64	32.42	33.18
TRAES	7	17.68	21.65	23.39	25.00	27.96	29.32	29.32	30.62	31.87	33.08	34.24	35.36	36.45	37.51	38.53	39.54	40.51	41.46
TRAES	7.5	21.21	25.98	28.06	30.00	33.54	35.18	35.18	36.74	38.24	39.68	41.08	42.42	43.73	45.00	46.23	47.43	48.60	49.74
TRAES	10	26.52	32.48	35.08	37.51	41.93	43.98	43.98	45.94	47.81	49.62	51.36	53.04	54.67	56.26	57.80	59.30	60.77	62.20

Note: Nominal capacity rated per ARI 750-2007, 37.8 liquid temperature, 4.4 evaporating temperature, pressure drop across the valve 4.13bar

## Liquid temperature correction factor :

	Refrigerant liquid temperature °C															
	-18	-12	-7	-1	4	10	16	21	27	32	38	43	49	54	60	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	.080	.070	0.50	
R-407C correction factor	1.77	1.69	1.62	1.54	1.46	1.38	1.30	1.23	1.15	1.07	1.00	0.91	0.84	0.76	0.68	

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature -18. However, they may be used for any evaporator temperature from -40 to +4 since the variation in the actual factors across this range is insignificant.

# VAEM Series Thermo™ - expansion valves

For R134a bus AC and other AC applications that require high efficiency in replacement of parts

VAEM Series is a uni-flow hermetic Thermal Expansion Valve designed for R134a bus AC and other AC applications that require high efficiency in replacement of parts.

VAEM Series features a MIO connector which signifies reliable connection and is ideal for those applications requiring field installation and replacements. VAEM Series valve is the perfect superheat control solution for bus AC.

The fully mechanical design offers prominent heat and moisture resistant capabilities for excellent performance and superior reliability in bus AC where operating condition is relatively tough.



## Features

- Hermetic, leak free construction
- Balanced port design valve compensates for changes in evaporator temperatures or widely varying evaporator loads to assure accurate control and reliable operation.
- Stainless steel power element eliminates corrosion, prevents valve failure and enhances operating cycle
- Nominal capacity range 1.5 to 11 tonnages @ARI condition for R134a application
- Standard straight through configuration
- Features with transportation standard MIO connections
- Laser etched identification markings for permanent legibility
- Superheat adjustable configuration

## Nomenclature example: VAEM10 MC 5FT 5/8\*3/4\*1/4 MIO S/T

V	A	E	M	10	M	C	5FT	5/8*3/4*1/4	MIO	S/T
Series	Adjustable	Equalizer E=External	Connection MIO Type	Capacity (Nominal Rating in Tons)	Refrigerant code M=R134a	Charging code C=medium temperature	Capillary tube length 5 FT/1.5M	Inlet x outlet x external equalizer tube Connection sizes	Equalizer connection MIO type	Configuration S/T = Straight Through

## Nominal capacity: Tons (kW)

Model	*Ari capacity	#Asercom capacity	Model	*Ari capacity	#Asercom capacity
VAEM 1-1/2 MC	1-1/2 (5.28)	1.8 (6.47)	VAEM 6 MC	6 (21.10)	7.1 (25.01)
VAEM 2-1/4 MC	2-1/4 (7.91)	2.8 (9.74)	VAEM 7 MC	7 (24.62)	8.8 (31.13)
VAEM 3-1/2 MC	3-1/2 (12.31)	4.3 (15.12)	VAEM 9 MC	9 (31.65)	10.7 (37.60)
VAEM 4-1/4 MC	4-1/4 (14.95)	5.2 (18.36)	VAEM 10 MC	10 (35.17)	12.0 (42.20)
			VAEM 11 MC	11 (38.69)	13.3 (46.47)

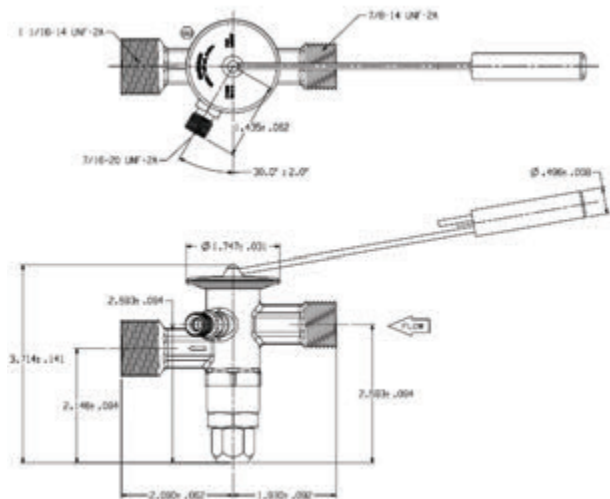
\*ARI Capacity: ARI 750-2007, 37.8 liquid temperature, 4.4 evaporator temperature, 4.13 bar pressure drop across valve  
#Asercom Capacity: 38°C condensing temperature, 4.0°C evaporator temperature, supercooling degree 1K.

## Technical data

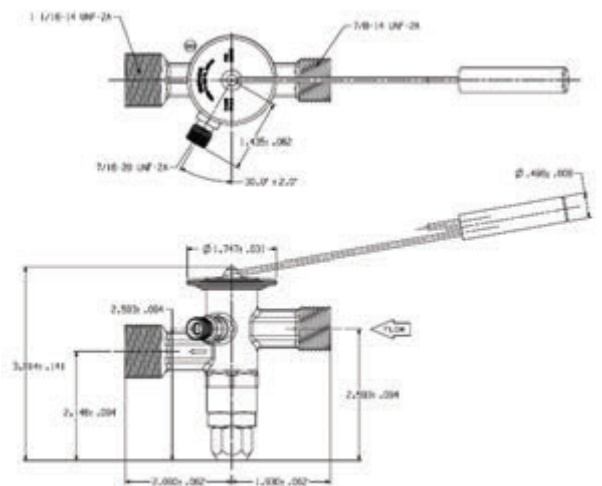
Max. working pressure	700psig (48.2bar)			
Operating temp. Range	MC: -29 ~ +10			
Standard static superheat	6A (3.3K)			
Compatible refrigerating oil	POE oil, Mineral oil			
External leakage ratio	<=2.835 g/year			
Net weight	0.47 ~ 0.63 kg (excluding sensing bulb strap, weight may vary across models)			
Connections (inlet x outlet x external equalizer) Standard S/T = Straight Through	VAEM 1-1/2 MC	1/2 x 5/8 x 1/4 MIO	-	
	VAEM 2-1/4 MC			
	VAEM 3-1/2 MC	-	3/8 x 1/2 x 1/4 MIO	
	VAEM 4-1/4 MC	1/2 x 5/8 x 1/4 MIO		
	VAEM 6 MC	-	-	5/8 x 3/4 x 1/4 MIO
	VAEM 7 MC			
	VAEM 9 MC			
	VAEM 10 MC			
VAEM 11 MC				
VAEM 11 MC				
Bulb cap tube length	5 FT (1.5M) standard cap tube			

## Dimensional data (inch)

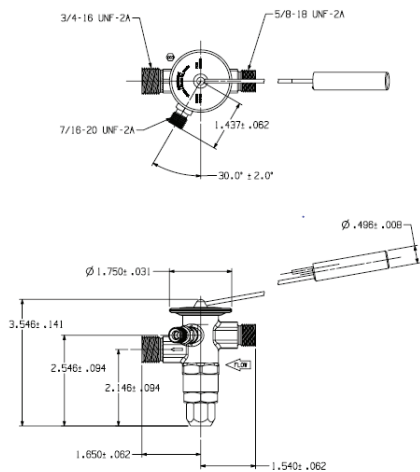
VAEM 6MC~VAEM 9MC, 5/8X3/4X1/4MIO:



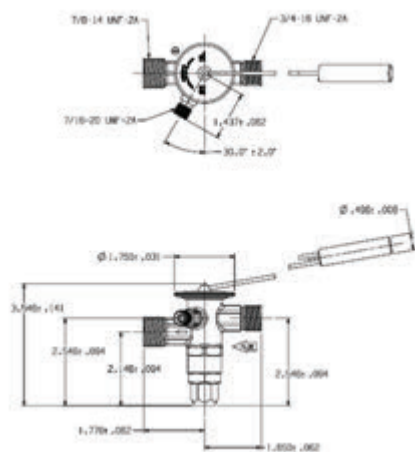
VAEM 10MC~VAEM 11MC, 5/8X3/4X1/4MIO:



VAEM 1-1/2MC~VAEM 4-1/2MC, 3/8X1/2X1/4MIO:

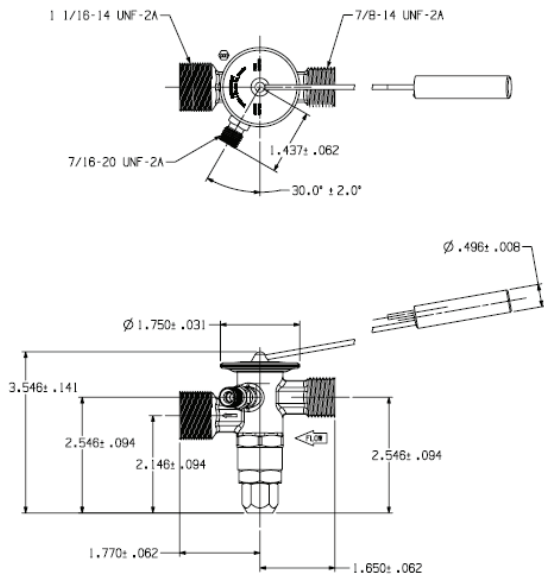


VAEM 1-1/2MC~VAEM 4-1/2MC, 1/2X5/8X1/4MIO:





VAEM 1-1/2MC~VAEM 4-1/2MC, 5/8X3/4X1/4MIO:



PCN for ordering:

PCN	Model
066709	VAEM 11MC 5/8*3/4*1/4MIO
066711	VAEM 10MC 5/8*3/4*1/4MIO
066708	VAEM 9MC 5/8*3/4*1/4MIO
066707	VAEM 7MC 5/8*3/4*1/4MIO
066710	VAEM 6MC 5/8*3/4*1/4MIO
066706	VAEM 4-1/4MC 5/8*3/4*1/4MIO
066705	VAEM 4-1/4MC 3/8*1/2*1/4MIO
066704	VAEM 4-1/4MC 1/2*5/8*1/4MIO
066703	VAEM 3-1/2MC 3/8*1/2*1/4MIO
066702	VAEM 2-1/4MC 3/8*1/2*1/4MIO
066701	VAEM 2-1/4MC 1/2*5/8*1/4MIO
066700	VAEM 1-1/2MC 1/2*5/8*1/4MIO

## Extended capacity tables: R134a (kW)

Model	Nominal capacity	Evaporator temperature																	
		10°C						5°C						0°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4	6	7	8	10	11	4	6	7	8	10	11	4	6	7	8	10	11
VAEM 1-1/2	5.3	5.27	6.46	6.97	7.46	8.34	8.74	5.17	6.33	6.84	7.31	8.17	8.57	5.07	6.21	6.70	7.17	8.01	8.40
VAEM 2-1/4	7.9	7.91	9.69	10.46	11.18	12.50	13.11	7.75	9.50	10.26	10.97	12.26	12.86	7.60	9.31	10.05	10.75	12.02	12.60
VAEM 3-1/2	12.3	12.30	15.07	16.27	17.40	19.45	20.40	12.06	14.77	15.96	17.06	19.07	20.00	11.82	14.48	15.64	16.72	18.69	19.61
VAEM 4-1/4	14.9	14.94	18.30	19.76	21.13	23.62	24.77	14.65	17.94	19.38	20.72	23.16	24.29	14.36	17.58	18.99	20.30	22.70	23.81
VAEM 6	20.2	20.39	24.97	26.97	28.83	32.23	33.81	19.92	24.40	26.35	28.17	31.50	33.04	19.59	24.00	25.92	27.71	30.98	32.49
VAEM 7	25.2	25.31	31.00	33.48	35.79	40.02	41.97	24.82	30.39	32.83	35.09	39.24	41.15	24.32	29.79	32.18	34.40	38.46	40.34
VAEM 9	30.5	30.58	37.45	40.45	43.25	48.35	50.71	29.99	36.72	39.67	42.41	47.41	49.72	29.39	36.00	38.88	41.57	46.47	48.74
VAEM 10	34.2	34.31	42.02	45.38	48.52	54.24	56.89	33.64	41.20	44.50	47.57	53.19	55.78	32.97	40.38	43.62	46.63	52.13	54.68
VAEM 11	37.8	37.96	46.49	50.22	53.69	60.02	62.95	37.22	45.59	49.24	52.64	58.85	61.73	36.49	44.69	48.27	51.60	57.69	60.51

Model	Nominal capacity	Evaporator temperature																	
		-5°C						-10°C						-15°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4	6	7	8	10	11	4	6	7	8	10	11	4	6	7	8	10	11
VAEM 1-1/2	5.3	4.95	6.06	6.55	7.00	7.83	8.21	4.83	5.92	6.39	6.83	7.64	8.01	3.95	4.84	5.23	5.59	6.25	6.56
VAEM 2-1/4	7.9	7.42	9.09	9.82	10.50	11.74	12.31	7.25	8.88	9.59	10.25	11.46	12.02	5.93	7.27	7.85	8.39	9.38	9.84
VAEM 3-1/2	12.3	11.55	14.14	15.28	16.33	18.26	19.15	11.27	13.81	14.91	15.94	17.82	18.69	9.23	11.30	12.21	13.05	14.59	15.30
VAEM 4-1/4	14.9	14.02	17.17	18.55	19.83	22.17	23.25	13.69	16.76	18.11	19.36	21.64	22.70	11.21	13.72	14.82	15.85	17.72	18.58
VAEM 6	20.2	19.07	23.36	25.23	26.97	30.15	31.63	18.68	22.88	24.71	26.42	29.54	30.98	15.24	18.66	20.16	21.55	24.10	25.27
VAEM 7	25.2	23.76	29.09	31.43	33.60	37.56	39.39	23.19	28.40	30.68	32.80	36.67	38.46	18.98	23.25	25.11	26.85	30.02	31.48
VAEM 9	30.5	28.70	35.16	37.97	40.60	45.39	47.60	28.02	34.32	37.07	39.63	44.31	46.47	22.94	28.09	30.34	32.44	36.27	38.04
VAEM 10	34.2	32.20	39.44	42.60	45.54	50.92	53.40	31.43	38.50	41.58	44.45	49.70	52.13	25.73	31.52	34.04	36.39	40.69	42.67
VAEM 11	37.8	35.63	43.64	47.14	50.39	56.34	59.09	34.79	42.60	46.02	49.19	55.00	57.69	28.48	34.87	37.67	40.27	45.02	47.22

Model	Nominal capacity	Evaporator temperature																	
		-20°C						-25°C						-30°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4	6	7	8	10	11	4	6	7	8	10	11	4	6	7	8	10	11
VAEM 1-1/2	5.3	3.77	4.07	4.35	4.87	5.11	5.33	3.41	3.68	3.94	4.40	4.62	4.82	3.05	3.29	3.52	3.94	4.13	4.31
VAEM 2-1/4	7.9	5.66	6.11	6.53	7.30	7.66	8.00	5.11	5.52	5.91	6.60	6.92	7.23	4.57	4.94	5.28	5.90	6.19	6.47
VAEM 3-1/2	12.3	8.80	9.50	10.16	11.36	11.91	12.44	7.96	8.59	9.19	10.27	10.77	11.25	7.11	7.68	8.21	9.18	9.63	10.06
VAEM 4-1/4	14.9	10.68	11.54	12.34	13.79	14.47	15.11	9.66	10.43	11.15	12.47	13.08	13.66	8.64	9.33	9.97	11.15	11.69	12.21
VAEM 6	20.2	14.58	17.85	19.28	20.62	23.05	24.17	13.14	14.19	15.17	16.96	17.79	18.58	11.78	12.73	13.61	15.21	15.96	16.66
VAEM 7	25.2	18.10	22.16	23.94	25.59	28.61	30.01	16.37	17.68	18.90	21.13	22.16	23.14	14.63	15.80	16.89	18.89	19.81	20.69
VAEM 9	30.5	21.87	26.78	28.93	30.92	34.57	36.26	19.78	21.36	22.83	25.53	26.78	27.97	17.68	19.09	20.41	22.82	23.93	25.00
VAEM 10	34.2	24.53	26.50	28.33	31.67	33.22	34.70	22.18	23.96	25.62	28.64	30.04	31.37	19.83	21.42	22.90	25.61	26.86	28.05
VAEM 11	37.8	27.14	33.24	35.91	38.39	42.92	45.01	24.55	26.52	28.35	31.69	33.24	34.72	21.94	23.70	25.34	28.33	29.71	31.03

Note: Nominal Capacity based on ARI 750-2007, 37.8°C liquid temperature, 4.4°C evaporator temperature, 4.13 bar pressure drop across valve

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °C															
	-18	-12	-7	-1	4	10	16	21	27	32	38	43	49	54	60	
R-134a Correction Factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of -18°C. However, they may be used for any evaporator temperature from -40°C to +4°C since the variation of the actual factors across this range is insignificant.

## ZZ Series Thermo™ - expansion valve

For low evaporating temperatures below -40°F.

The ZZ series is designed for ultra low temperature applications such as environmental test chambers and other applications where the desired evaporator temperature is below -40°F.

### Features

- Take-Apart 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

### Options

- Interchangeable cages, power assemblies, and flanges for maximum flexibility



### Specifications

- Maximum working pressure: 450 psig

### Model nomenclature example: ZZC 6BG12510FT3/8X5/8ODFANG

ZZ	C	6	B	G125	10 FT	3/8 x 5/8	ODF	ANG
Series	Type	Capacity	Refrigerant code	Charge code	Capillary tube length	Inlet x outlet connection sizes	Connection type	Configuration
Ultra low temperature	Small capacity = C, JR	(Nominal @ -40°F)	B = R-13/R-23 H = R-22 R = R-502	Z = Low temp 1G(MOP) <sup>2</sup> = Press. Limiting W(MOP) <sup>2</sup> = Press. Limiting	10 FT (std)	3/8 X 1/2 3/8 X 5/8 1/2 X 1/2 1/2 X 5/8 5/8 X 5/8 5/8 X 7/8 5/8 X 1-1/8 7/8 X 1-1/8	SAE = Flare ODF=Solder	ANG = 90° Angle S/T = Straight-thru
Take-apart	Large capacity Balanced port = ER, IR	Tons						

<sup>1</sup>Reacts more quickly to changes in temperature

<sup>2</sup>Maximum Operating Pressure

R-13/R-23 Valve type	R-22 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	
ZZ ER 20BG	--	7/8 ODF x 1-1/8 ODM

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

Refrigerant	Evaporator temperature	Liquid temperature at valve inlet	Pressure drop across valve
R-23	-40°F	0°F	150 psig
R-22	-40°F	20°F	150 psig

## ZZ Series Thermo™ - expansion valve

For low evaporating temperatures below - 40°F.

### Ordering information

#### Cage assemblies & gaskets

Valve	Model	PCN
ZZC1BG, ZZC3/4RHW, ZZC3/4RW	X10110-B1B	021288
ZZC2-1/2BG, ZZC1 1/2HW, ZZC1-1/2RW	X10110-B2B	020871
ZZC4BG, ZZC2 1/2HW, ZZC2-1/2RW	X10110-B3B	096091
ZZC6BG, ZZC4HW, ZZC3-1/2RW	X10110-B4B	096312
ZZC9BG, ZZC6HW, ZZC5RW	X10110-B5B	096425
ZZC13BG, ZZC8HW, ZZC8RW	X10110-B6B	096646
ZZER6BG, ZZER4HW, ZZC3 1/2RW	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

#### Power assemblies

Model	PCN
XC-726 BG 30-2B 10FT. SAE EE	094594
XC-726 BG 125-2B 10 FT. SAE EE	039130
XC-726 HW 35-2B 10 FT. SAE EE	024511
XC-726 HW 65-2B 10 FT. SAE EE	025011
XC-726 HW 85-3B 15 FT. SAE EE	023357
XC-726 HW 100-2B 10FT. SAE EE	036750
XC-726 HZ-2B 10FT. SAE EE	040569

Replacement power assembly consists of: power assembly, and bulb clamps

#### Flanges

Model	PCN	Connections
9761-2	027770	1/2 X 7/8 ODF S/T
9761-3	027771	3/8 X 5/8 ODF S/T
9761-4	027268	1/2 X 5/8 ODF S/T
9761-5	027769	3/8 X 1/2 ODF S/T
9761-9	027766	1/2 X 1/2 ODF S/T
A-576	027764	5/8 X 7/8 ODF ANG
C-500-4	056932	3/8 X 1/2 SAE ANG
C-500-5	057153	3/8 X 5/8 SAE ANG
C-500-6	056294	1/2 X 5/8 SAE ANG
C-501-4	065527	3/8 X 1/2 ODF ANG
C-501-5	065748	3/8 X 5/8 ODF ANG
C-501-7	065861	1/2 X 5/8 ODF ANG
X-6346-16	044733	5/8 X 5/8 ODF S/T
X-6346-17	044846	5/8 X 7/8 ODF S/T
X-6346-18	094038	5/8 X 1-1/8 ODF S/T
X-6346-34	071757	7/8 X 1-1/8 ODF S/T
X-6669-1	050563	3/8 X 5/8 SAE S/T
X-6669-2	050842	1/2 X 5/8 SAE S/T
X-6669-4	051176	3/8 X 1/2 SAE S/T
X-6669-5	083378	1/2 X 1/2 SAE S/T

#### Replacement gasket set

Model	PCN
X-13455-1	027579

Gasket set includes necessary body flange gasket & seat gasket

# TXV extended capacity tables

## R-12 conventional valves (Tons)– A Series 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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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	1.58	1.80	2.01	2.25	2.47	2.66
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
TCLE	1/4	0.30	0.35	0.38	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	1.48	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	2.84	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	7.51	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

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 60 Psi pressure drop across the TXV per ARI 750-2001.

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
AA/AN/AAC/ANC/AFA	1/8	0.17	0.2	0.22	0.25	0.27	0.29	0.13	0.15	0.16	0.18	0.19	0.21	0.08	0.09	0.1	0.11	0.12	0.13
AA/AN/AAC/ANC/AFA	1/4	0.29	0.33	0.37	0.42	0.46	0.5	0.23	0.26	0.29	0.31	0.34	0.36	0.15	0.17	0.19	0.21	0.22	0.24
AA/AN/AAC/ANC/AFA	1/2	0.47	0.54	0.61	0.68	0.74	0.8	0.37	0.41	0.46	0.51	0.55	0.59	0.24	0.27	0.3	0.33	0.35	0.38
AA/AN/AAC/ANC/AFA	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	0.5	0.54
AA/AN/AAC/ANC/AFA	2-1/2	1.39	1.61	1.79	2.01	2.2	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
AA/AN/AAC/ANC/AFA	2	1.7	1.96	2.19	2.45	2.69	2.9	1.33	1.49	1.66	1.82	1.97	2.1	0.87	0.97	1.09	1.19	1.29	1.38
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	3	2.76	3.19	3.56	3.98	4.36	4.71	2.16	2.41	2.7	2.96	3.19	3.42	1.4	1.57	1.75	1.92	2.07	2.21
TCLE	1/4	0.25	0.29	0.32	0.36	0.4	0.43	0.2	0.22	0.25	0.27	0.3	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	0.8	0.37	0.41	0.46	0.51	0.55	0.59	0.24	0.27	0.3	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	0.9	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	5.9	6.37	2.92	3.26	3.65	4	4.32	4.62	1.9	2.12	2.38	2.6	2.81	3
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	6.2	7.16	8	8.95	9.8	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
TJL	7	5.49	6.34	7.09	7.92	8.68	9.38	4.3	4.81	5.38	5.89	6.36	6.8	2.8	3.13	3.5	3.83	4.14	4.43
TJL	8	7	8.08	9.04	10.1	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

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 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	
R-134a 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	
R-22 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	
R-404A/R-507 correction factor	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	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-22 conventional valves (Tons)– A Series 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
AA/AN/AFA	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
AA/AN/AAC/ANC	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
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

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 100 Psi pressure drop across the TXV per ARI 750-2001.

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
AA/AN/AFA	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
AA/AN/AAC/ANC	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
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

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 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	
R-134a 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	
R-22 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	
R-404A/R-507 correction factor	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	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

# TXV extended capacity tables

## R-134a conventional valves (Tons)– A Series 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
AA/AN/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
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

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 60 Psi pressure drop across the TXV per ARI 750-2001.

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
AA/AN/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
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

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °f															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

## TXV extended capacity tables

### R-450A/R-513A conventional valves (Tons) A 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
AA/AN/AAC/ANC/AFA	1/8	0.11	0.13	0.15	0.16	0.18	0.19	0.11	0.13	0.14	0.16	0.17	0.19	0.10	0.12	0.13	0.15	0.16	0.18
AA/AN/AAC/ANC/AFA	1/5	0.19	0.22	0.25	0.28	0.30	0.33	0.19	0.22	0.24	0.27	0.30	0.32	0.18	0.21	0.23	0.26	0.28	0.31
AA/AN/AAC/ANC/AFA	1/4	0.35	0.40	0.45	0.50	0.55	0.59	0.34	0.39	0.44	0.49	0.53	0.58	0.32	0.37	0.41	0.46	0.51	0.55
AA/AN/AAC/ANC/AFA	1/2	0.55	0.63	0.70	0.79	0.86	0.93	0.53	0.62	0.69	0.77	0.84	0.91	0.51	0.58	0.65	0.73	0.80	0.86
AA/AN/AAC/ANC/AFA	3/4	0.79	0.91	1.02	1.14	1.24	1.34	0.77	0.89	0.99	1.11	1.21	1.31	0.73	0.84	0.94	1.05	1.15	1.25
AA/AN/AAC/ANC/AFA	1	1.16	1.33	1.49	1.67	1.83	1.97	1.13	1.30	1.46	1.63	1.78	1.93	1.07	1.24	1.38	1.55	1.70	1.83
AA/AN/AAC/ANC/AFA	1-1/2	1.62	1.87	2.09	2.34	2.56	2.77	1.58	1.83	2.04	2.29	2.50	2.70	1.50	1.74	1.94	2.17	2.38	2.57
AA/AN/AAC/ANC/AFA	2	1.98	2.29	2.56	2.86	3.14	3.39	1.94	2.24	2.50	2.79	3.06	3.31	1.84	2.12	2.37	2.65	2.91	3.14
AA/AN/AAC/ANC/AFA	2-1/2	2.36	2.73	3.05	3.41	3.73	4.03	2.30	2.66	2.97	3.33	3.64	3.94	2.19	2.53	2.83	3.16	3.46	3.74
AA/AN/AAC/ANC/AFA	3	3.23	3.73	4.17	4.66	5.10	5.51	3.15	3.64	4.07	4.55	4.98	5.38	2.99	3.46	3.86	4.32	4.73	5.11

Note: standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 60 Psi pressure drop across the TXV.

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
AA/AN/AAC/ANC/AFA	1/8	0.08	0.09	0.10	0.11	0.12	0.13	0.06	0.06	0.07	0.08	0.08	0.09	0.03	0.04	0.04	0.04	0.05	0.05
AA/AN/AAC/ANC/AFA	1/5	0.13	0.15	0.17	0.19	0.21	0.22	0.10	0.11	0.12	0.13	0.15	0.16	0.06	0.06	0.07	0.08	0.08	0.09
AA/AN/AAC/ANC/AFA	1/4	0.23	0.27	0.30	0.34	0.37	0.40	0.18	0.20	0.22	0.24	0.26	0.28	0.10	0.11	0.13	0.14	0.15	0.16
AA/AN/AAC/ANC/AFA	1/2	0.37	0.42	0.47	0.53	0.58	0.63	0.28	0.31	0.35	0.38	0.41	0.44	0.16	0.18	0.20	0.22	0.24	0.25
AA/AN/AAC/ANC/AFA	3/4	0.53	0.61	0.68	0.76	0.84	0.90	0.40	0.45	0.50	0.55	0.59	0.63	0.23	0.26	0.29	0.31	0.34	0.36
AA/AN/AAC/ANC/AFA	1	0.78	0.90	1.00	1.12	1.23	1.33	0.59	0.66	0.74	0.81	0.87	0.93	0.34	0.38	0.42	0.46	0.50	0.53
AA/AN/AAC/ANC/AFA	1-1/2	1.09	1.26	1.41	1.58	1.73	1.86	0.83	0.93	1.03	1.13	1.22	1.31	0.47	0.53	0.59	0.65	0.70	0.75
AA/AN/AAC/ANC/AFA	2	1.33	1.54	1.72	1.93	2.11	2.28	1.01	1.13	1.26	1.39	1.50	1.60	0.58	0.65	0.72	0.79	0.85	0.91
AA/AN/AAC/ANC/AFA	2-1/2	1.59	1.83	2.05	2.29	2.51	2.71	1.20	1.35	1.51	1.65	1.78	1.90	0.69	0.77	0.86	0.94	1.02	1.09
AA/AN/AAC/ANC/AFA	3	2.17	2.51	2.80	3.14	3.44	3.71	1.65	1.84	2.06	2.25	2.44	2.60	0.94	1.05	1.17	1.29	1.39	1.49

### Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.



# TXV extended capacity tables

## R-404A/R-507 conventional valves (Tons)– A Series 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
AA/AN/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
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

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 100 Psi pressure drop across the TXV per ARI 750-2001.

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
AA/AN/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
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	0.35	0.39	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

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

## TXV extended capacity tables

### R-448A/R-449A conventional valves (Tons) - A 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
AA/AN/AAC/ANC/AFA	1/5	0.15	0.18	0.20	0.22	0.24	0.26	0.15	0.17	0.19	0.22	0.24	0.26	0.15	0.17	0.19	0.21	0.23	0.25
AA/AN/AAC/ANC/AFA	1/4	0.27	0.31	0.34	0.38	0.42	0.45	0.26	0.30	0.34	0.38	0.41	0.45	0.26	0.30	0.33	0.37	0.40	0.44
AA/AN/AAC/ANC/AFA	1/2	0.47	0.54	0.60	0.67	0.74	0.80	0.46	0.53	0.60	0.67	0.73	0.79	0.45	0.52	0.58	0.65	0.71	0.77
AA/AN/AAC/ANC/AFA	1	0.75	0.86	0.96	1.08	1.18	1.28	0.74	0.85	0.95	1.07	1.17	1.26	0.72	0.83	0.93	1.04	1.14	1.23
AA/AN/AAC/ANC/AFA	1-1/2	1.07	1.23	1.38	1.54	1.69	1.82	1.06	1.22	1.36	1.53	1.67	1.81	1.03	1.19	1.33	1.49	1.63	1.76
AA/AN/AAC/ANC/AFA	2	1.57	1.82	2.03	2.27	2.49	2.69	1.56	1.80	2.01	2.25	2.46	2.66	1.52	1.76	1.96	2.20	2.40	2.60
AA/AN/AAC/ANC/AFA	2-3/4	2.21	2.55	2.85	3.19	3.49	3.77	2.19	2.52	2.82	3.16	3.46	3.73	2.13	2.46	2.75	3.08	3.37	3.64
AA/AN/AAC/ANC/AFA	3-1/2	2.71	3.13	3.49	3.91	4.28	4.62	2.68	3.09	3.46	3.87	4.24	4.57	2.61	3.02	3.38	3.77	4.13	4.47
AA/AN/AAC/ANC/AFA	4	3.21	3.71	4.15	4.64	5.08	5.49	3.18	3.67	4.10	4.59	5.03	5.43	3.10	3.58	4.01	4.48	4.91	5.30
AA/AN/AAC/ANC/AFA	5-1/2	4.39	5.07	5.67	6.34	6.95	7.50	4.35	5.02	5.61	6.28	6.87	7.43	4.24	4.90	5.48	6.13	6.71	7.25

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 100 Psi pressure drop across the TXV.

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
AA/AN/AAC/ANC/AFA	1/5	0.14	0.17	0.19	0.21	0.23	0.24	0.13	0.15	0.16	0.18	0.19	0.21	0.09	0.10	0.11	0.12	0.13	0.14
AA/AN/AAC/ANC/AFA	1/4	0.25	0.29	0.32	0.36	0.39	0.43	0.23	0.25	0.28	0.31	0.34	0.36	0.15	0.17	0.19	0.21	0.23	0.24
AA/AN/AAC/ANC/AFA	1/2	0.44	0.51	0.57	0.63	0.69	0.75	0.40	0.45	0.50	0.55	0.59	0.63	0.27	0.30	0.34	0.37	0.40	0.43
AA/AN/AAC/ANC/AFA	1	0.70	0.81	0.91	1.01	1.11	1.20	0.64	0.72	0.80	0.88	0.95	1.01	0.43	0.48	0.54	0.59	0.64	0.68
AA/AN/AAC/ANC/AFA	1-1/2	1.00	1.16	1.30	1.45	1.59	1.71	0.92	1.02	1.15	1.26	1.36	1.45	0.62	0.69	0.77	0.85	0.92	0.98
AA/AN/AAC/ANC/AFA	2	1.48	1.71	1.91	2.14	2.34	2.53	1.35	1.51	1.69	1.85	2.00	2.14	0.91	1.02	1.14	1.25	1.35	1.44
AA/AN/AAC/ANC/AFA	2-3/4	2.08	2.40	2.68	3.00	3.28	3.54	1.90	2.12	2.37	2.60	2.80	3.00	1.28	1.43	1.60	1.75	1.89	2.02
AA/AN/AAC/ANC/AFA	3-1/2	2.54	2.94	3.28	3.67	4.02	4.34	2.32	2.60	2.90	3.18	3.44	3.67	1.57	1.75	1.96	2.15	2.32	2.48
AA/AN/AAC/ANC/AFA	4	3.02	3.49	3.90	4.36	4.77	5.16	2.76	3.08	3.45	3.77	4.08	4.36	1.86	2.08	2.33	2.55	2.75	2.94
AA/AN/AAC/ANC/AFA	5-1/2	4.13	4.77	5.33	5.96	6.53	7.05	3.77	4.21	4.71	5.16	5.58	5.96	2.55	2.85	3.18	3.49	3.76	4.02

### Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 Correction Factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a Correction Factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 Correction Factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 Correction Factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A Correction Factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A Correction Factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-407C conventional valves (Tons)– A Series 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
AA/AN/AFA	1/5	0.14	0.16	0.18	0.20	0.22	0.24	0.14	0.16	0.18	0.20	0.22	0.24	0.14	0.16	0.18	0.20	0.22	0.24
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	1/2	0.44	0.51	0.57	0.64	0.70	0.75	0.43	0.50	0.56	0.62	0.68	0.73	0.41	0.47	0.53	0.59	0.65	0.70
AA/AN/AAC/ANC/AFA	1	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
AA/AN/AAC/ANC/AFA	1-1/4	1.00	1.15	1.29	1.44	1.58	1.71	0.98	1.13	1.27	1.41	1.55	1.67	0.95	1.10	1.23	1.37	1.50	1.62
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	2-1/2	2.07	2.39	2.67	2.99	3.27	3.54	2.04	2.36	2.63	2.94	3.23	3.48	1.95	2.25	2.52	2.81	3.08	3.33
AA/AN/AAC/ANC/AFA	3-1/4	2.54	2.93	3.28	3.67	4.02	4.34	2.49	2.88	3.21	3.59	3.94	4.25	2.39	2.76	3.09	3.45	3.78	4.08
AA/AN/AAC/ANC/AFA	4	3.02	3.49	3.90	4.36	4.78	5.16	2.96	3.42	3.82	4.27	4.68	5.06	2.84	3.28	3.67	4.10	4.49	4.85
AA/AN/AAC/ANC/AFA	5-1/4	4.12	4.76	5.32	5.95	6.51	7.04	4.05	4.68	5.23	5.85	6.40	6.92	3.89	4.49	5.02	5.61	6.15	6.64
TCLE	1/2	0.38	0.44	0.49	0.55	0.60	0.65	0.37	0.43	0.48	0.53	0.59	0.63	0.36	0.42	0.46	0.52	0.57	0.61
TCLE	1	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
TCLE	2	1.43	1.65	1.85	2.06	2.26	2.44	1.41	1.63	1.82	2.04	2.23	2.41	1.35	1.56	1.74	1.95	2.13	2.31
TCLE	3	2.64	3.05	3.41	3.81	4.17	4.51	2.59	2.99	3.34	3.74	4.10	4.42	2.49	2.88	3.21	3.59	3.94	4.25
TCLE	5	3.85	4.45	4.97	5.56	6.09	6.58	3.77	4.35	4.87	5.44	5.96	6.44	3.62	4.18	4.67	5.23	5.72	6.18
TCLE	7-1/2	5.58	6.44	7.20	8.05	8.82	9.53	5.48	6.33	7.07	7.91	8.66	9.36	5.26	6.07	6.79	7.59	8.32	8.98
TCLE	10	7.69	8.88	9.93	11.10	12.16	13.13	7.55	8.72	9.75	10.90	11.94	12.89	7.25	8.37	9.36	10.46	11.46	12.38
TCLE	12	9.27	10.70	11.97	13.38	14.66	15.83	9.10	10.51	11.75	13.13	14.39	15.54	8.74	10.09	11.28	12.62	13.82	14.93
TJL	11	8.22	9.49	10.61	11.86	13.00	14.04	8.07	9.32	10.42	11.65	12.76	13.78	7.75	8.95	10.01	11.19	12.25	13.24
TJL	14	10.48	12.10	13.53	15.13	16.57	17.90	10.29	11.88	13.28	14.85	16.27	17.57	9.88	11.41	12.76	14.26	15.62	16.87

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 100 Psi pressure drop across the TXV per ARI 750-2001.

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
AA/AN/AFA	1/5	0.11	0.13	0.14	0.16	0.17	0.19	0.09	0.10	0.11	0.12	0.13	0.14	0.05	0.06	0.06	0.07	0.07	0.08
AA/AN/AAC/ANC/AFA	1/4	0.20	0.23	0.26	0.29	0.32	0.34	0.15	0.17	0.19	0.21	0.22	0.24	0.09	0.10	0.11	0.12	0.13	0.14
AA/AN/AAC/ANC/AFA	1/2	0.35	0.40	0.45	0.51	0.55	0.60	0.26	0.29	0.33	0.36	0.38	0.41	0.17	0.19	0.21	0.23	0.25	0.27
AA/AN/AAC/ANC/AFA	1	0.56	0.65	0.72	0.81	0.89	0.96	0.42	0.47	0.53	0.58	0.62	0.66	0.27	0.30	0.34	0.37	0.40	0.43
AA/AN/AAC/ANC/AFA	1-1/4	0.80	0.92	1.03	1.15	1.26	1.37	0.61	0.68	0.76	0.84	0.90	0.96	0.38	0.42	0.48	0.52	0.56	0.60
AA/AN/AAC/ANC/AFA	2	1.18	1.36	1.52	1.70	1.87	2.02	0.90	1.01	1.13	1.23	1.33	1.42	0.56	0.63	0.70	0.77	0.83	0.89
AA/AN/AAC/ANC/AFA	2-1/2	1.65	1.91	2.13	2.38	2.61	2.82	1.26	1.41	1.58	1.73	1.86	1.99	0.79	0.88	0.99	1.08	1.17	1.25
AA/AN/AAC/ANC/AFA	3-1/4	2.02	2.33	2.61	2.92	3.19	3.45	1.54	1.72	1.93	2.11	2.28	2.43	0.97	1.08	1.21	1.33	1.43	1.53
AA/AN/AAC/ANC/AFA	4	2.40	2.77	3.10	3.46	3.79	4.10	1.83	2.05	2.29	2.51	2.71	2.89	1.15	1.29	1.44	1.57	1.70	1.82
AA/AN/AAC/ANC/AFA	5-1/4	3.28	3.79	4.23	4.73	5.19	5.60	2.50	2.80	3.13	3.42	3.70	3.95	1.57	1.76	1.96	2.15	2.32	2.48
TCLE	1/2	0.30	0.35	0.39	0.43	0.47	0.51	0.23	0.26	0.29	0.31	0.34	0.36	0.14	0.16	0.18	0.19	0.21	0.22
TCLE	1	0.56	0.65	0.72	0.81	0.89	0.96	0.43	0.48	0.54	0.59	0.64	0.68	0.27	0.30	0.34	0.37	0.40	0.43
TCLE	2	1.14	1.32	1.47	1.65	1.80	1.95	0.87	0.97	1.09	1.19	1.29	1.38	0.55	0.61	0.69	0.75	0.81	0.87
TCLE	3	2.10	2.42	2.71	3.03	3.32	3.59	1.60	1.79	2.00	2.19	2.37	2.53	1.01	1.13	1.26	1.38	1.49	1.60
TCLE	5	3.06	3.53	3.95	4.42	4.84	5.23	2.33	2.61	2.91	3.19	3.45	3.68	1.47	1.64	1.84	2.01	2.17	2.32
TCLE	7-1/2	4.44	5.13	5.73	6.41	7.02	7.58	3.38	3.78	4.23	4.63	5.00	5.34	2.13	2.38	2.66	2.92	3.15	3.37
TCLE	10	6.12	7.07	7.90	8.83	9.68	10.45	4.66	5.21	5.83	6.38	6.89	7.37	2.93	3.28	3.66	4.01	4.33	4.63
TCLE	12	7.38	8.52	9.53	10.65	11.67	12.60	5.62	6.28	7.03	7.70	8.31	8.89	3.54	3.96	4.43	4.85	5.24	5.60
TJL	11	6.54	7.55	8.44	9.44	10.34	11.17	4.98	5.57	6.23	6.82	7.37	7.87	3.13	3.50	3.91	4.29	4.63	4.95
TJL	14	8.34	9.63	10.77	12.04	13.19	14.24	6.35	7.10	7.94	8.70	9.39	10.04	4.00	4.47	5.00	5.48	5.92	6.32

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

## TXV extended capacity tables

### R-410A conventional valves (Tons)– A 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)					
		110	140	160	210	245	285	110	140	160	210	245	285	110	140	160	210	245	285
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 160 Psi pressure drop across the TXV per ARI 750-2001.

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)					
		140	160	210	245	285	330	140	160	210	245	285	330	140	160	210	245	285	330
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	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

### Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-502 conventional valves (Tons)– A Series 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
AA/AN/AAC/ANC/AFA	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
AA/AN/AAC/ANC/AFA	1/4	0.30	0.35	0.39	0.43	0.47	0.51	0.29	0.33	0.37	0.42	0.46	0.50	0.28	0.32	0.36	0.40	0.44	0.48
AA/AN/AAC/ANC/AFA	1/2	0.48	0.55	0.62	0.69	0.76	0.82	0.47	0.54	0.61	0.68	0.74	0.80	0.45	0.52	0.58	0.65	0.71	0.77
AA/AN/AAC/ANC/AFA	1	0.68	0.79	0.88	0.98	1.08	1.16	0.67	0.77	0.86	0.97	1.06	1.14	0.64	0.74	0.83	0.92	1.01	1.09
AA/AN/AAC/ANC/AFA	1-1/2	1.41	1.63	1.82	2.04	2.23	2.41	1.38	1.59	1.78	1.99	2.18	2.36	1.32	1.52	1.70	1.91	2.09	2.25
AA/AN/AAC/ANC/AFA	2	1.73	2.00	2.23	2.50	2.74	2.95	1.69	1.95	2.18	2.44	2.67	2.89	1.62	1.87	2.09	2.34	2.56	2.77
AA/AN/AAC/ANC/AFA	2-1/2	2.05	2.37	2.65	2.96	3.24	3.50	2.01	2.32	2.59	2.90	3.18	3.43	1.92	2.22	2.48	2.77	3.04	3.28
AA/AN/AAC/ANC/AFA	3	2.81	3.24	3.63	4.06	4.44	4.80	2.75	3.18	3.55	3.97	4.35	4.70	2.62	3.03	3.38	3.78	4.14	4.47
TCLE	1/4	0.26	0.30	0.34	0.38	0.41	0.44	0.25	0.29	0.32	0.36	0.40	0.43	0.24	0.28	0.31	0.35	0.38	0.41
TCLE	1/2	0.48	0.55	0.62	0.69	0.76	0.82	0.47	0.54	0.61	0.68	0.74	0.80	0.45	0.52	0.58	0.65	0.71	0.77
TCLE	1	0.97	1.12	1.25	1.40	1.53	1.66	0.95	1.10	1.23	1.37	1.50	1.62	0.91	1.05	1.17	1.31	1.44	1.55
TCLE	2	1.80	2.08	2.32	2.60	2.85	3.07	1.76	2.03	2.27	2.54	2.78	3.01	1.68	1.94	2.17	2.42	2.66	2.87
TCLE	3	2.62	3.03	3.38	3.78	4.14	4.47	2.56	2.96	3.30	3.70	4.05	4.37	2.44	2.82	3.15	3.52	3.86	4.17
TCLE	4-1/2	3.80	4.39	4.91	5.48	6.01	6.49	3.72	4.30	4.80	5.37	5.88	6.35	3.55	4.10	4.58	5.12	5.61	6.06
TCLE	7	5.23	6.04	6.75	7.55	8.27	8.93	5.12	5.91	6.61	7.39	8.10	8.74	4.89	5.65	6.31	7.06	7.73	8.35
TCLE	8	6.31	7.29	8.15	9.11	9.98	10.78	6.18	7.14	7.98	8.92	9.77	10.55	5.90	6.81	7.62	8.52	9.33	10.08
TJL	7	5.59	6.45	7.22	8.07	8.84	9.55	5.47	6.32	7.06	7.90	8.65	9.34	5.22	6.03	6.74	7.53	8.25	8.91
TJL	9	7.13	8.23	9.20	10.29	11.27	12.18	6.98	8.06	9.01	10.07	11.04	11.92	6.66	7.69	8.60	9.61	10.53	11.37

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 100 Psi pressure drop across the TXV per ARI 750-2001.

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
AA/AN/AAC/ANC/AFA	1/8	0.15	0.17	0.19	0.22	0.24	0.26	0.11	0.12	0.14	0.15	0.16	0.17	0.07	0.08	0.09	0.10	0.10	0.11
AA/AN/AAC/ANC/AFA	1/4	0.26	0.30	0.34	0.38	0.41	0.44	0.20	0.22	0.25	0.27	0.30	0.32	0.13	0.15	0.16	0.18	0.19	0.21
AA/AN/AAC/ANC/AFA	1/2	0.41	0.47	0.53	0.59	0.65	0.70	0.32	0.36	0.40	0.44	0.47	0.51	0.21	0.23	0.26	0.29	0.31	0.33
AA/AN/AAC/ANC/AFA	1	0.59	0.68	0.76	0.85	0.93	1.01	0.46	0.51	0.58	0.63	0.68	0.73	0.29	0.32	0.36	0.40	0.43	0.46
AA/AN/AAC/ANC/AFA	1-1/2	1.21	1.40	1.56	1.75	1.91	2.07	0.96	1.07	1.20	1.31	1.42	1.52	0.61	0.68	0.76	0.84	0.90	0.96
AA/AN/AAC/ANC/AFA	2	1.49	1.72	1.92	2.15	2.36	2.54	1.17	1.31	1.46	1.60	1.73	1.85	0.75	0.84	0.94	1.03	1.11	1.19
AA/AN/AAC/ANC/AFA	2-1/2	1.76	2.03	2.27	2.54	2.78	3.01	1.39	1.55	1.74	1.90	2.06	2.20	0.89	1.00	1.11	1.22	1.32	1.41
AA/AN/AAC/ANC/AFA	3	2.41	2.78	3.11	3.48	3.81	4.12	1.90	2.12	2.38	2.60	2.81	3.00	1.21	1.35	1.51	1.66	1.79	1.91
TCLE	1/4	0.22	0.25	0.28	0.32	0.35	0.38	0.17	0.19	0.21	0.23	0.25	0.27	0.11	0.12	0.14	0.15	0.16	0.17
TCLE	1/2	0.41	0.47	0.53	0.59	0.65	0.70	0.33	0.37	0.41	0.45	0.49	0.52	0.21	0.23	0.26	0.29	0.31	0.33
TCLE	1	0.84	0.97	1.08	1.21	1.33	1.43	0.66	0.74	0.83	0.90	0.98	1.04	0.42	0.47	0.53	0.58	0.62	0.66
TCLE	2	1.54	1.78	1.99	2.22	2.43	2.63	1.22	1.36	1.53	1.67	1.80	1.93	0.78	0.87	0.98	1.07	1.15	1.23
TCLE	3	2.25	2.60	2.90	3.25	3.56	3.84	1.78	1.99	2.23	2.44	2.63	2.81	1.13	1.26	1.41	1.55	1.67	1.79
TCLE	4-1/2	3.26	3.76	4.21	4.71	5.15	5.57	2.58	2.88	3.23	3.53	3.82	4.08	1.64	1.83	2.05	2.25	2.43	2.59
TCLE	7	4.50	5.20	5.81	6.50	7.12	7.69	3.55	3.97	4.44	4.86	5.25	5.61	2.26	2.53	2.83	3.09	3.34	3.57
TCLE	8	5.42	6.26	7.00	7.82	8.57	9.26	4.28	4.79	5.35	5.86	6.33	6.77	2.73	3.05	3.41	3.74	4.04	4.32
TJL	7	4.81	5.55	6.21	6.94	7.61	8.21	3.80	4.25	4.75	5.20	5.62	6.01	2.42	2.71	3.03	3.31	3.58	3.83
TJL	9	6.13	7.08	7.91	8.85	9.69	10.47	4.84	5.41	6.05	6.63	7.16	7.65	3.08	3.44	3.85	4.22	4.56	4.87

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-12 balanced ported valves (Tons)– 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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
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: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 60 Psi pressure drop across the TXV per ARI 750-2001.

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69

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.

# TXV extended capacity tables

## R-12 balanced ported valves (Tons)– 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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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	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	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	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	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	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	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	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	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	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	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	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	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
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
TIR	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

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.



# TXV extended capacity tables

## R-22 balanced ported valves (Tons)– 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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
TFE	8	6.30	7.27	8.13	9.09	9.96	10.76	6.23	7.19	8.04	8.99	9.85	10.64	6.07	7.01	7.84	8.76	9.60	10.37
TFE	10	8.63	9.97	11.14	12.46	13.65	14.74	8.53	9.85	11.01	12.31	13.48	14.56	8.31	9.60	10.73	11.99	13.14	14.19
TFE	12	10.71	12.37	13.83	15.46	16.93	18.29	10.59	12.23	13.67	15.28	16.74	18.08	10.32	11.92	13.32	14.90	16.32	17.62
TFE	20	16.35	18.88	21.11	23.60	25.85	27.92	16.17	18.67	20.87	23.33	25.56	27.61	15.75	18.19	20.33	22.73	24.90	26.90
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	85	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: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 100 Psi pressure drop across the TXV per ARI 750-2001.

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69

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.



# TXV extended capacity tables

## R-22 balanced ported valves (Tons)– 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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
TFE	8	5.50	6.35	7.10	7.94	8.70	9.39	4.39	4.91	5.49	6.01	6.49	6.94	2.89	3.23	3.61	3.96	4.27	4.57
TFE	10	7.54	8.71	9.73	10.88	11.92	12.88	6.02	6.73	7.53	8.24	8.90	9.52	3.96	4.43	4.95	5.42	5.86	6.26
TFE	12	9.35	10.80	12.07	13.50	14.78	15.97	7.47	8.35	9.34	10.23	11.05	11.81	4.92	5.50	6.15	6.74	7.28	7.78
TFE	20	14.28	16.49	18.44	20.61	22.58	24.39	11.40	12.75	14.25	15.61	16.86	18.02	7.51	8.40	9.39	10.28	11.11	11.87
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	85	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

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69

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.

# TXV extended capacity tables

## R-134a balanced ported valves (Tons)– 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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
TFE	6	6.01	6.94	7.76	8.67	9.50	10.26	5.89	6.80	7.60	8.50	9.31	10.06	5.63	6.50	7.27	8.13	8.90	9.62
TFE	8	8.23	9.50	10.62	11.88	13.01	14.06	8.06	9.31	10.41	11.63	12.74	13.77	7.71	8.90	9.95	11.13	12.19	13.17
TFE	10	10.22	11.80	13.19	14.75	16.16	17.45	10.01	11.56	12.92	14.45	15.83	17.10	9.57	11.05	12.35	13.81	15.13	16.34
TFE	15	15.60	18.01	20.14	22.52	24.67	26.64	15.28	17.64	19.73	22.05	24.16	26.10	14.61	16.87	18.86	21.09	23.10	24.95
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: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 60 Psi pressure drop across the TXV per ARI 750-2001.

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-134a balanced ported valves (Tons)– 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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
TFE	6	4.64	5.36	5.99	6.70	7.34	7.92	3.46	3.87	4.33	4.74	5.12	5.47	2.12	2.37	2.65	2.90	3.14	3.35
TFE	8	6.35	7.33	8.20	9.17	10.04	10.84	4.74	5.30	5.93	6.49	7.01	7.49	2.91	3.25	3.64	3.98	4.30	4.60
TFE	10	7.88	9.10	10.17	11.37	12.46	13.46	5.88	6.57	7.35	8.05	8.70	9.30	3.61	4.04	4.51	4.94	5.34	5.71
TFE	15	12.03	13.89	15.53	17.36	19.02	20.55	8.97	10.03	11.21	12.28	13.27	14.18	5.51	6.16	6.89	7.54	8.15	8.71
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

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-450A/R-513A balanced ported valves (Tons) B Series and HF 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
BA/BN	1/4	0.30	0.34	0.38	0.43	0.47	0.51	0.29	0.33	0.37	0.42	0.46	0.50	0.28	0.32	0.36	0.40	0.44	0.47
BA/BN	1/2	0.56	0.65	0.73	0.81	0.89	0.96	0.55	0.63	0.71	0.79	0.87	0.94	0.52	0.60	0.67	0.75	0.82	0.89
BA/BN	3/4	0.88	1.01	1.13	1.26	1.38	1.49	0.85	0.99	1.10	1.23	1.35	1.46	0.81	0.94	1.05	1.17	1.28	1.39
BA/BN	1	1.16	1.34	1.50	1.68	1.84	1.99	1.14	1.31	1.47	1.64	1.80	1.94	1.08	1.25	1.39	1.56	1.71	1.84
BA/BN	1-1/2	1.48	1.71	1.91	2.13	2.34	2.52	1.44	1.67	1.86	2.08	2.28	2.46	1.37	1.58	1.77	1.98	2.17	2.34
BA/BN	1-3/4	1.78	2.06	2.30	2.57	2.82	3.04	1.74	2.01	2.25	2.51	2.75	2.97	1.65	1.91	2.13	2.39	2.61	2.82
BA/BN	2-1/4	2.31	2.67	2.99	3.34	3.66	3.95	2.26	2.61	2.91	3.26	3.57	3.85	2.14	2.48	2.77	3.10	3.39	3.66
BA/BN	3	2.92	3.37	3.77	4.22	4.62	4.99	2.85	3.29	3.68	4.12	4.51	4.87	2.71	3.13	3.50	3.91	4.29	4.63
BA/BN	3-1/2	3.64	4.20	4.70	5.25	5.75	6.21	3.55	4.10	4.58	5.12	5.61	6.06	3.37	3.89	4.35	4.87	5.33	5.76
HF	1/5	0.17	0.19	0.22	0.24	0.27	0.29	0.16	0.19	0.21	0.24	0.26	0.28	0.16	0.18	0.20	0.23	0.25	0.27
HF	1/4	0.31	0.36	0.40	0.45	0.50	0.53	0.31	0.35	0.39	0.44	0.48	0.52	0.29	0.34	0.37	0.42	0.46	0.50
HF	1/2	0.56	0.65	0.73	0.81	0.89	0.96	0.55	0.63	0.71	0.79	0.87	0.94	0.52	0.60	0.67	0.75	0.82	0.89
HF	3/4	0.85	0.98	1.10	1.23	1.35	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
HF	1	1.15	1.33	1.48	1.66	1.82	1.96	1.12	1.29	1.45	1.62	1.77	1.91	1.06	1.23	1.37	1.54	1.68	1.82
HF	1-1/2	1.48	1.71	1.91	2.13	2.34	2.52	1.44	1.67	1.86	2.08	2.28	2.46	1.37	1.58	1.77	1.98	2.17	2.34
HF	2	1.94	2.24	2.51	2.80	3.07	3.32	1.90	2.19	2.45	2.74	3.00	3.24	1.80	2.08	2.33	2.60	2.85	3.08
HF	3-1/2	3.46	4.00	4.47	4.99	5.47	5.91	3.38	3.90	4.36	4.88	5.34	5.77	3.21	3.71	4.14	4.63	5.07	5.48
HF	4-1/2	4.82	5.56	6.22	6.95	7.62	8.23	4.70	5.43	6.07	6.79	7.44	8.03	4.47	5.16	5.77	6.45	7.06	7.63
HF	6	6.09	7.04	7.87	8.80	9.63	10.41	5.95	6.87	7.68	8.59	9.41	10.16	5.65	6.53	7.30	8.16	8.94	9.65
HF	9	9.04	10.44	11.67	13.05	14.29	15.44	8.82	10.19	11.39	12.74	13.95	15.07	8.38	9.68	10.82	12.10	13.26	14.32
HF	11-1/2	11.90	13.74	15.36	17.17	18.81	20.32	11.61	13.41	14.99	16.76	18.36	19.84	11.03	12.74	14.25	15.93	17.45	18.84

Note: Standard capacity is rate at 100F liquid inlet and 40F evaporator temperature; with 60 Psi pressure drop across the TXV.

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
BA/BN	1/4	0.20	0.23	0.26	0.29	0.32	0.34	0.15	0.17	0.19	0.21	0.22	0.24	0.09	0.10	0.11	0.12	0.13	0.14
BA/BN	1/2	0.38	0.44	0.49	0.55	0.60	0.65	0.29	0.32	0.36	0.39	0.42	0.45	0.16	0.18	0.20	0.22	0.24	0.26
BA/BN	3/4	0.59	0.68	0.76	0.85	0.93	1.01	0.45	0.50	0.56	0.61	0.66	0.71	0.25	0.28	0.32	0.35	0.38	0.40
BA/BN	1	0.78	0.90	1.01	1.13	1.24	1.34	0.59	0.66	0.74	0.81	0.88	0.94	0.34	0.38	0.42	0.46	0.50	0.54
BA/BN	1-1/2	0.99	1.15	1.28	1.44	1.57	1.70	0.75	0.84	0.94	1.03	1.11	1.19	0.43	0.48	0.54	0.59	0.64	0.68
BA/BN	1-3/4	1.20	1.39	1.55	1.73	1.90	2.05	0.91	1.02	1.14	1.25	1.35	1.44	0.52	0.58	0.65	0.71	0.77	0.82
BA/BN	2-1/4	1.56	1.80	2.01	2.25	2.46	2.66	1.18	1.32	1.47	1.62	1.74	1.87	0.67	0.75	0.84	0.92	1.00	1.06
BA/BN	3	1.97	2.27	2.54	2.84	3.11	3.36	1.49	1.67	1.86	2.04	2.21	2.36	0.85	0.95	1.06	1.17	1.26	1.35
BA/BN	3-1/2	2.45	2.83	3.16	3.53	3.87	4.18	1.86	2.07	2.32	2.54	2.74	2.93	1.06	1.18	1.32	1.45	1.57	1.67
HF	1/5	0.11	0.13	0.15	0.16	0.18	0.19	0.09	0.10	0.11	0.12	0.13	0.14	0.05	0.05	0.06	0.07	0.07	0.08
HF	1/4	0.21	0.24	0.27	0.30	0.33	0.36	0.16	0.18	0.20	0.22	0.24	0.25	0.09	0.10	0.11	0.12	0.13	0.14
HF	1/2	0.38	0.44	0.49	0.55	0.60	0.65	0.29	0.32	0.36	0.39	0.42	0.45	0.16	0.18	0.20	0.22	0.24	0.26
HF	3/4	0.57	0.66	0.74	0.83	0.91	0.98	0.43	0.49	0.54	0.59	0.64	0.69	0.25	0.28	0.31	0.34	0.37	0.39
HF	1	0.77	0.89	1.00	1.12	1.22	1.32	0.59	0.65	0.73	0.80	0.87	0.93	0.33	0.37	0.42	0.46	0.49	0.53
HF	1-1/2	0.99	1.15	1.28	1.44	1.57	1.70	0.75	0.84	0.94	1.03	1.11	1.19	0.43	0.48	0.54	0.59	0.64	0.68
HF	2	1.31	1.51	1.69	1.89	2.07	2.23	0.99	1.11	1.24	1.36	1.47	1.57	0.57	0.63	0.71	0.77	0.84	0.89
HF	3-1/2	2.33	2.69	3.01	3.36	3.68	3.98	1.77	1.97	2.21	2.42	2.61	2.79	1.01	1.13	1.26	1.38	1.49	1.59
HF	4-1/2	3.24	3.74	4.19	4.68	5.13	5.54	2.46	2.75	3.07	3.37	3.64	3.89	1.40	1.57	1.75	1.92	2.07	2.22
HF	6	4.10	4.74	5.30	5.92	6.49	7.01	3.11	3.48	3.89	4.26	4.60	4.92	1.77	1.98	2.22	2.43	2.62	2.81
HF	9	6.09	7.03	7.86	8.78	9.62	10.39	4.61	5.16	5.77	6.32	6.82	7.29	2.63	2.94	3.29	3.60	3.89	4.16
HF	11-1/2	8.01	9.25	10.34	11.56	12.66	13.68	6.07	6.79	7.59	8.31	8.98	9.60	3.46	3.87	4.33	4.74	5.12	5.48

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.10	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 0oF. However, they may be used for any evaporator temperature from -40oF to +40oF since the variation in the actual factors across this range is insignificant.

# TXV extended capacity tables

## R-404A/R-507 balanced ported valves (Tons)– 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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
TFE	5	4.62	5.33	5.96	6.67	7.30	7.89	4.51	5.21	5.82	6.51	7.13	7.70	4.28	4.94	5.53	6.18	6.77	7.31
TFE	7	6.32	7.30	8.16	9.12	9.99	10.79	6.17	7.12	7.97	8.91	9.76	10.54	5.86	6.77	7.57	8.46	9.27	10.01
TFE	9	7.84	9.05	10.12	11.32	12.40	13.39	7.66	8.85	9.89	11.06	12.11	13.08	7.28	8.41	9.40	10.51	11.51	12.43
TFE	14	11.98	13.83	15.47	17.29	18.94	20.46	11.70	13.51	15.10	16.89	18.50	19.98	11.11	12.83	14.34	16.04	17.57	18.97
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

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

## TXV extended capacity tables

### R-404A/R-507 balanced ported valves (Tons)– 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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
BA/BN	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
TFE	5	3.82	4.41	4.93	5.51	6.04	6.52	3.00	3.35	3.75	4.11	4.44	4.74	1.96	2.19	2.45	2.68	2.90	3.10
TFE	7	5.23	6.04	6.75	7.55	8.27	8.93	4.10	4.58	5.13	5.61	6.06	6.48	2.68	3.00	3.35	3.67	3.96	4.24
TFE	9	6.50	7.51	8.39	9.38	10.28	11.10	5.10	5.70	6.38	6.98	7.54	8.06	3.33	3.72	4.16	4.56	4.93	5.27
TFE	14	9.92	11.45	12.81	14.32	15.68	16.94	7.78	8.70	9.73	10.65	11.51	12.30	5.08	5.68	6.35	6.96	7.51	8.03
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

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.



# TXV extended capacity tables

## R-448A/R-449A (Tons) balance ported valves - B Series and H 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
BA/BN	1/2	0.40	0.46	0.52	0.58	0.64	0.69	0.40	0.46	0.51	0.57	0.63	0.68	0.39	0.45	0.50	0.56	0.61	0.66
BA/BN	1	0.76	0.88	0.99	1.10	1.21	1.30	0.76	0.87	0.97	1.09	1.19	1.29	0.74	0.85	0.95	1.06	1.17	1.26
BA/BN	1-1/2	1.19	1.37	1.53	1.72	1.88	2.03	1.18	1.36	1.52	1.70	1.86	2.01	1.15	1.33	1.48	1.66	1.82	1.96
BA/BN	2	1.59	1.84	2.05	2.30	2.51	2.72	1.57	1.82	2.03	2.27	2.49	2.69	1.54	1.77	1.98	2.22	2.43	2.62
BA/BN	2-1/2	2.01	2.32	2.59	2.90	3.18	3.43	1.99	2.29	2.57	2.87	3.14	3.39	1.94	2.24	2.50	2.80	3.07	3.31
BA/BN	3	2.43	2.81	3.14	3.51	3.85	4.16	2.41	2.78	3.11	3.48	3.81	4.11	2.35	2.71	3.04	3.39	3.72	4.02
BA/BN	4	3.15	3.64	4.06	4.54	4.98	5.38	3.12	3.60	4.02	4.50	4.93	5.32	3.04	3.51	3.93	4.39	4.81	5.19
BA/BN	5	3.99	4.61	5.15	5.76	6.31	6.82	3.95	4.56	5.10	5.70	6.25	6.75	3.86	4.45	4.98	5.57	6.10	6.59
BA/BN	6	4.96	5.72	6.40	7.15	7.84	8.46	4.90	5.66	6.33	7.08	7.75	8.38	4.79	5.53	6.18	6.91	7.57	8.18
HF	1/4	0.22	0.26	0.29	0.32	0.36	0.38	0.22	0.26	0.29	0.32	0.35	0.38	0.22	0.25	0.28	0.31	0.34	0.37
HF	1/2	0.43	0.49	0.55	0.61	0.67	0.73	0.42	0.49	0.54	0.61	0.67	0.72	0.41	0.47	0.53	0.59	0.65	0.70
HF	1	0.76	0.88	0.99	1.10	1.21	1.30	0.76	0.87	0.97	1.09	1.19	1.29	0.74	0.85	0.95	1.06	1.17	1.26
HF	1-1/2	1.16	1.34	1.50	1.68	1.84	1.99	1.15	1.33	1.49	1.66	1.82	1.97	1.13	1.30	1.45	1.62	1.78	1.92
HF	2	1.57	1.82	2.03	2.27	2.49	2.69	1.56	1.80	2.01	2.25	2.46	2.66	1.52	1.76	1.96	2.20	2.40	2.60
HF	2-1/2	2.02	2.33	2.60	2.91	3.19	3.44	2.00	2.30	2.58	2.88	3.15	3.41	1.95	2.25	2.51	2.81	3.08	3.33
HF	3-1/2	2.66	3.07	3.43	3.84	4.20	4.54	2.63	3.04	3.40	3.80	4.16	4.49	2.57	2.97	3.32	3.71	4.06	4.39
HF	6	4.73	5.46	6.11	6.83	7.48	8.08	4.68	5.41	6.04	6.76	7.40	8.00	4.57	5.28	5.90	6.60	7.23	7.81
HF	8-1/2	6.58	7.60	8.49	9.50	10.40	11.23	6.51	7.52	8.40	9.40	10.29	11.12	6.36	7.34	8.20	9.17	10.05	10.85
HF	10-1/2	8.35	9.65	10.78	12.06	13.21	14.27	8.27	9.55	10.67	11.93	13.07	14.12	8.07	9.32	10.42	11.65	12.76	13.78
HF	16	12.37	14.28	15.97	17.85	19.56	21.13	12.24	14.14	15.80	17.67	19.36	20.91	11.95	13.80	15.43	17.25	18.89	20.41
HF	10	16.23	18.74	20.95	23.42	25.65	27.71	16.06	18.54	20.73	23.18	25.39	27.42	15.67	18.10	20.24	22.62	24.78	26.77

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 100 Psi pressure drop across the TXV.

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
BA/BN	1/2	0.38	0.44	0.49	0.54	0.60	0.64	0.34	0.39	0.43	0.47	0.51	0.54	0.23	0.26	0.29	0.32	0.34	0.37
BA/BN	1	0.72	0.83	0.93	1.03	1.13	1.22	0.65	0.73	0.82	0.90	0.97	1.04	0.44	0.49	0.55	0.61	0.65	0.70
BA/BN	1-1/2	1.12	1.29	1.44	1.61	1.77	1.91	1.02	1.14	1.27	1.40	1.51	1.61	0.69	0.77	0.86	0.94	1.02	1.09
BA/BN	2	1.49	1.73	1.93	2.16	2.36	2.55	1.36	1.53	1.71	1.87	2.02	2.16	0.92	1.03	1.15	1.26	1.36	1.46
BA/BN	2-1/2	1.89	2.18	2.44	2.72	2.98	3.22	1.72	1.93	2.15	2.36	2.55	2.72	1.16	1.30	1.45	1.59	1.72	1.84
BA/BN	3	2.29	2.64	2.95	3.30	3.62	3.91	2.09	2.33	2.61	2.86	3.09	3.30	1.41	1.58	1.76	1.93	2.09	2.23
BA/BN	4	2.96	3.42	3.82	4.27	4.68	5.05	2.70	3.02	3.38	3.70	4.00	4.27	1.82	2.04	2.28	2.50	2.70	2.88
BA/BN	5	3.75	4.33	4.84	5.41	5.93	6.41	3.43	3.83	4.28	4.69	5.07	5.42	2.31	2.59	2.89	3.17	3.42	3.66
BA/BN	6	4.66	5.38	6.01	6.72	7.36	7.95	4.25	4.75	5.32	5.82	6.29	6.72	2.87	3.21	3.59	3.93	4.25	4.54
HF	1/4	0.21	0.24	0.27	0.31	0.33	0.36	0.19	0.22	0.24	0.26	0.29	0.31	0.13	0.15	0.16	0.18	0.19	0.21
HF	1/2	0.40	0.46	0.52	0.58	0.63	0.68	0.37	0.41	0.46	0.50	0.54	0.58	0.25	0.28	0.31	0.34	0.36	0.39
HF	1	0.72	0.83	0.93	1.03	1.13	1.22	0.65	0.73	0.82	0.90	0.97	1.04	0.44	0.49	0.55	0.61	0.65	0.70
HF	1-1/2	1.09	1.26	1.41	1.58	1.73	1.87	1.00	1.12	1.25	1.37	1.48	1.58	0.67	0.75	0.84	0.92	1.00	1.07
HF	2	1.48	1.71	1.91	2.14	2.34	2.53	1.35	1.51	1.69	1.85	2.00	2.14	0.91	1.02	1.14	1.25	1.35	1.44
HF	2-1/2	1.89	2.19	2.45	2.73	3.00	3.24	1.73	1.93	2.16	2.37	2.56	2.74	1.17	1.31	1.46	1.60	1.73	1.85
HF	3-1/2	2.50	2.88	3.23	3.61	3.95	4.27	2.28	2.55	2.85	3.12	3.37	3.61	1.54	1.72	1.93	2.11	2.28	2.44
HF	6	4.45	5.13	5.74	6.42	7.03	7.59	4.06	4.54	5.07	5.56	6.00	6.42	2.74	3.06	3.43	3.75	4.05	4.33
HF	8-1/2	6.18	7.14	7.98	8.92	9.77	10.56	5.64	6.31	7.06	7.73	8.35	8.92	3.81	4.26	4.76	5.22	5.64	6.03
HF	10-1/2	7.85	9.06	10.13	11.33	12.41	13.41	7.17	8.01	8.96	9.81	10.60	11.33	4.84	5.41	6.05	6.63	7.16	7.65
HF	16	11.62	13.42	15.01	16.78	18.38	19.85	10.61	11.87	13.27	14.53	15.70	16.78	7.17	8.01	8.96	9.81	10.60	11.33
HF	10	15.25	17.61	19.68	22.01	24.11	26.04	13.92	15.56	17.40	19.06	20.59	22.01	9.40	10.51	11.75	12.87	13.90	14.86

## Refrigerant liquid temperature correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-407C balanced ported valves (Tons)– 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
BA/BN	1/2	0.38	0.44	0.49	0.55	0.60	0.65	0.37	0.43	0.48	0.53	0.59	0.63	0.36	0.42	0.46	0.52	0.57	0.61
BA/BN	1	0.72	0.83	0.93	1.04	1.14	1.23	0.70	0.81	0.90	1.01	1.11	1.20	0.68	0.79	0.88	0.98	1.08	1.16
BA/BN	1-1/2	1.12	1.29	1.45	1.62	1.77	1.91	1.10	1.27	1.42	1.59	1.74	1.88	1.05	1.21	1.36	1.52	1.66	1.79
BA/BN	2	1.49	1.72	1.92	2.15	2.36	2.54	1.47	1.70	1.90	2.12	2.32	2.51	1.41	1.63	1.82	2.04	2.23	2.41
BA/BN	2-1/2	1.88	2.17	2.43	2.71	2.97	3.21	1.85	2.14	2.39	2.67	2.93	3.16	1.78	2.06	2.30	2.57	2.81	3.04
BA/BN	3	2.28	2.63	2.94	3.29	3.60	3.89	2.24	2.59	2.89	3.23	3.54	3.83	2.15	2.48	2.78	3.10	3.40	3.67
BA/BN	4	2.96	3.42	3.82	4.27	4.68	5.06	2.90	3.35	3.74	4.19	4.59	4.95	2.79	3.22	3.60	4.03	4.41	4.76
BA/BN	5	3.74	4.32	4.83	5.40	5.91	6.39	3.67	4.24	4.74	5.30	5.80	6.27	3.52	4.06	4.54	5.08	5.57	6.01
BA/BN	6	4.65	5.37	6.00	6.71	7.35	7.94	4.57	5.28	5.90	6.60	7.23	7.80	4.38	5.06	5.65	6.32	6.93	7.48
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	0.38	0.44	0.49	0.55	0.60	0.65
HF	1	0.72	0.83	0.93	1.04	1.14	1.23	0.70	0.81	0.90	1.01	1.11	1.20	0.68	0.79	0.88	0.98	1.08	1.16
HF	1-1/2	1.09	1.26	1.41	1.57	1.72	1.86	1.07	1.24	1.38	1.54	1.69	1.83	1.03	1.19	1.33	1.49	1.63	1.76
HF	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	1.39	1.61	1.79	2.01	2.20	2.37
HF	2-1/2	1.88	2.17	2.43	2.71	2.97	3.21	1.85	2.14	2.39	2.67	2.93	3.16	1.78	2.06	2.30	2.57	2.81	3.04
HF	3	2.49	2.88	3.21	3.59	3.94	4.25	2.44	2.82	3.15	3.52	3.86	4.17	2.35	2.71	3.03	3.39	3.72	4.01
HF	5-1/2	4.43	5.12	5.72	6.39	7.00	7.57	4.34	5.01	5.60	6.26	6.86	7.41	4.17	4.82	5.38	6.02	6.59	7.12
HF	8	6.16	7.11	7.95	8.89	9.74	10.52	6.05	6.99	7.81	8.73	9.57	10.33	5.81	6.71	7.50	8.39	9.19	9.92
HF	10	7.80	9.01	10.07	11.26	12.33	13.32	7.65	8.83	9.88	11.04	12.10	13.06	7.35	8.49	9.49	10.61	11.62	12.55
HF	15	11.57	13.36	14.94	16.70	18.29	19.76	11.35	13.11	14.65	16.38	17.95	19.38	10.90	12.59	14.07	15.73	17.23	18.62
HF	20	15.22	17.57	19.65	21.97	24.06	25.99	14.94	17.25	19.29	21.56	23.62	25.51	14.35	16.57	18.53	20.71	22.69	24.51
TFE	8	6.05	6.99	7.81	8.73	9.57	10.33	5.94	6.86	7.67	8.57	9.39	10.14	5.70	6.58	7.36	8.23	9.01	9.73
TFE	10	8.28	9.56	10.69	11.95	13.09	14.14	8.13	9.39	10.50	11.73	12.85	13.88	7.80	9.01	10.07	11.26	12.33	13.32
TFE	12	10.28	11.87	13.27	14.84	16.25	17.56	10.09	11.65	13.03	14.56	15.95	17.23	9.69	11.19	12.51	13.99	15.32	16.55
TFE	20	15.69	18.12	20.26	22.65	24.81	26.80	15.40	17.78	19.88	22.23	24.35	26.30	14.79	17.08	19.09	21.35	23.39	25.26
TRAE+	10	8.90	10.28	11.49	12.85	14.07	15.20	8.73	10.08	11.27	12.60	13.80	14.91	8.39	9.69	10.83	12.11	13.27	14.33
TRAE+	15	12.97	14.98	16.74	18.72	20.51	22.15	12.73	14.70	16.43	18.37	20.13	21.74	12.22	14.11	15.78	17.64	19.32	20.87
TRAE+	20	14.48	16.72	18.69	20.90	22.89	24.73	14.21	16.41	18.35	20.51	22.47	24.27	13.64	15.75	17.61	19.69	21.57	23.29
TRAE+	30	21.94	25.33	28.32	31.67	34.69	37.47	21.45	24.77	27.69	30.96	33.92	36.63	20.68	23.88	26.70	29.85	32.70	35.32
TRAE+	40	30.16	34.83	38.94	43.53	47.69	51.51	29.60	34.18	38.21	42.72	46.80	50.55	28.43	32.83	36.70	41.04	44.95	48.55
TRAE	50	40.71	47.01	52.56	58.76	64.37	69.53	39.97	46.15	51.60	57.69	63.20	68.26	38.37	44.31	49.54	55.38	60.67	65.53
TRAE	60	44.41	51.28	57.33	64.10	70.22	75.84	43.59	50.33	56.27	62.92	68.92	74.44	41.86	48.34	54.04	60.42	66.19	71.49
TRAE	70	52.85	61.03	68.23	76.28	83.56	90.26	51.88	59.91	66.98	74.88	82.03	88.60	49.82	57.53	64.32	71.91	78.77	85.08
TJR	14	11.08	12.79	14.30	15.99	17.52	18.92	10.88	12.56	14.05	15.70	17.20	18.58	10.45	12.07	13.49	15.08	16.52	17.85
TJR	18	13.27	15.32	17.13	19.15	20.98	22.66	13.03	15.05	16.82	18.81	20.60	22.25	12.51	14.45	16.15	18.06	19.78	21.36
TER	22	16.59	19.16	21.42	23.95	26.23	28.33	16.28	18.80	21.02	23.50	25.74	27.80	15.63	18.05	20.18	22.56	24.71	26.69
TER	26	19.60	22.63	25.30	28.29	30.99	33.47	19.24	22.22	24.84	27.77	30.42	32.86	18.48	21.34	23.86	26.67	29.22	31.56
TER	35	26.39	30.47	34.07	38.09	41.73	45.07	25.90	29.91	33.44	37.38	40.95	44.23	24.87	28.72	32.11	35.90	39.32	42.47
TER	45	33.93	39.18	43.80	48.97	53.65	57.95	33.30	38.45	42.99	48.06	52.65	56.87	31.98	36.93	41.29	46.16	50.56	54.62
TIR	55	41.47	47.89	53.54	59.86	65.57	70.82	40.71	47.01	52.56	58.76	64.37	69.53	39.08	45.13	50.45	56.41	61.79	66.74
THR	75	52.78	60.95	68.14	76.18	83.45	90.14	51.81	59.83	66.89	74.78	81.92	88.48	49.74	57.43	64.21	71.79	78.65	84.95
THR	100	64.08	73.99	82.73	92.49	101.32	109.44	62.91	72.64	81.22	90.80	99.47	107.44	60.40	69.74	77.98	87.18	95.50	103.15
TMR	100	75.39	87.05	97.33	108.82	119.20	128.75	74.01	85.46	95.55	106.82	117.02	126.40	71.06	82.05	91.74	102.57	112.36	121.36

Note: Standard capacity is rated at 100°F liquid inlet and 40°F evaporator temperature; with 100 Psi pressure drop across the TXV per ARI 750-2001.

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.



# TXV extended capacity tables

## R-407C balanced ported valves (Tons)– 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
BA/BN	1/2	0.30	0.35	0.39	0.43	0.47	0.51	0.23	0.26	0.29	0.31	0.34	0.36	0.14	0.16	0.18	0.19	0.21	0.22
BA/BN	1	0.57	0.66	0.74	0.82	0.90	0.97	0.43	0.48	0.54	0.59	0.64	0.68	0.27	0.30	0.34	0.37	0.40	0.43
BA/BN	1-1/2	0.89	1.03	1.15	1.28	1.41	1.52	0.68	0.76	0.85	0.93	1.01	1.08	0.43	0.48	0.54	0.59	0.64	0.68
BA/BN	2	1.19	1.37	1.54	1.72	1.88	2.03	0.90	1.01	1.13	1.23	1.33	1.42	0.57	0.64	0.71	0.78	0.84	0.90
BA/BN	2-1/2	1.50	1.73	1.94	2.17	2.37	2.56	1.14	1.27	1.43	1.56	1.69	1.80	0.72	0.80	0.90	0.99	1.06	1.14
BA/BN	3	1.82	2.10	2.35	2.63	2.88	3.11	1.38	1.54	1.73	1.89	2.04	2.18	0.87	0.97	1.09	1.19	1.29	1.38
BA/BN	4	2.35	2.71	3.03	3.39	3.72	4.01	1.79	2.00	2.24	2.45	2.65	2.83	1.13	1.26	1.41	1.55	1.67	1.79
BA/BN	5	2.98	3.44	3.85	4.30	4.71	5.09	2.27	2.54	2.84	3.11	3.36	3.59	1.43	1.60	1.79	1.96	2.11	2.26
BA/BN	6	3.70	4.27	4.78	5.34	5.85	6.32	2.82	3.15	3.53	3.86	4.17	4.46	1.77	1.98	2.21	2.42	2.62	2.80
HF	1/4	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
HF	1/2	0.32	0.37	0.41	0.46	0.51	0.55	0.24	0.27	0.30	0.33	0.35	0.38	0.15	0.17	0.19	0.21	0.22	0.24
HF	1	0.57	0.66	0.74	0.82	0.90	0.97	0.43	0.48	0.54	0.59	0.64	0.68	0.27	0.30	0.34	0.37	0.40	0.43
HF	1-1/2	0.87	1.00	1.12	1.26	1.38	1.49	0.66	0.74	0.83	0.90	0.98	1.04	0.42	0.47	0.53	0.58	0.62	0.66
HF	2	1.17	1.35	1.51	1.69	1.85	2.00	0.89	1.00	1.11	1.22	1.32	1.41	0.56	0.63	0.70	0.77	0.83	0.89
HF	2-1/2	1.50	1.73	1.94	2.17	2.37	2.56	1.14	1.27	1.43	1.56	1.69	1.80	0.72	0.80	0.90	0.99	1.06	1.14
HF	3	1.98	2.29	2.56	2.86	3.13	3.38	1.51	1.69	1.89	2.07	2.23	2.39	0.95	1.06	1.19	1.30	1.41	1.50
HF	5-1/2	3.52	4.06	4.54	5.08	5.57	6.01	2.68	3.00	3.35	3.67	3.96	4.24	1.69	1.89	2.11	2.31	2.50	2.67
HF	8	4.90	5.66	6.33	7.07	7.75	8.37	3.73	4.17	4.66	5.11	5.52	5.90	2.35	2.63	2.94	3.22	3.48	3.72
HF	10	6.20	7.16	8.00	8.95	9.80	10.59	4.72	5.28	5.90	6.46	6.98	7.46	2.97	3.32	3.71	4.07	4.39	4.70
HF	15	9.20	10.62	11.88	13.28	14.55	15.71	7.01	7.84	8.76	9.60	10.37	11.08	4.41	4.93	5.51	6.04	6.52	6.97
HF	20	12.11	13.98	15.63	17.48	19.15	20.68	9.22	10.31	11.53	12.63	13.64	14.58	5.81	6.50	7.26	7.96	8.59	9.19
TFE	8	4.81	5.55	6.21	6.94	7.61	8.21	3.66	4.09	4.58	5.01	5.41	5.79	2.31	2.58	2.89	3.16	3.42	3.65
TFE	10	6.59	7.61	8.51	9.51	10.42	11.25	5.02	5.61	6.28	6.87	7.42	7.94	3.16	3.53	3.95	4.33	4.67	5.00
TFE	12	8.18	9.45	10.56	11.81	12.93	13.97	6.23	6.97	7.79	8.53	9.21	9.85	3.92	4.38	4.90	5.37	5.80	6.20
TFE	20	12.49	14.42	16.12	18.03	19.75	21.33	9.51	10.63	11.89	13.02	14.07	15.04	5.98	6.69	7.48	8.19	8.84	9.46
TRAE+	10	7.08	8.18	9.14	10.22	11.19	12.09	5.39	6.03	6.74	7.38	7.97	8.52	3.39	3.79	4.24	4.64	5.01	5.36
TRAE+	15	10.32	11.92	13.32	14.90	16.32	17.62	7.86	8.79	9.83	10.76	11.63	12.43	4.95	5.53	6.19	6.78	7.32	7.83
TRAE+	20	11.52	13.30	14.87	16.63	18.21	19.67	8.77	9.81	10.96	12.01	12.97	13.87	5.52	6.17	6.90	7.56	8.16	8.73
TRAE+	30	17.46	20.16	22.54	25.20	27.61	29.82	13.30	14.87	16.63	18.21	19.67	21.03	8.37	9.36	10.46	11.46	12.38	13.23
TRAE+	40	24.00	27.71	30.98	34.64	37.95	40.99	18.28	20.44	22.85	25.03	27.04	28.90	11.50	12.86	14.38	15.75	17.01	18.18
TRAE	50	32.40	37.41	41.83	46.77	51.23	55.33	24.67	27.58	30.84	33.78	36.49	39.01	15.53	17.36	19.41	21.27	22.97	24.56
TRAE	60	35.34	40.81	45.62	51.01	55.88	60.35	26.91	30.09	33.64	36.85	39.80	42.55	16.94	18.94	21.18	23.20	25.05	26.78
TRAE	70	42.06	48.57	54.30	60.71	66.50	71.83	32.03	35.81	40.04	43.86	47.37	50.64	20.16	22.54	25.20	27.61	29.82	31.88
TJR	14	8.82	10.18	11.39	12.73	13.95	15.06	6.72	7.51	8.40	9.20	9.94	10.63	4.23	4.73	5.29	5.79	6.26	6.69
TJR	18	10.56	12.19	13.63	15.24	16.70	18.03	8.04	8.99	10.05	11.01	11.89	12.71	5.06	5.66	6.33	6.93	7.48	8.00
TER	22	13.20	15.24	17.04	19.05	20.87	22.54	10.05	11.24	12.56	13.76	14.86	15.89	6.33	7.08	7.91	8.67	9.36	10.01
TER	26	15.60	18.01	20.14	22.52	24.67	26.64	11.88	13.28	14.85	16.27	17.57	18.78	7.48	8.36	9.35	10.24	11.06	11.83
TER	35	21.00	24.25	27.11	30.31	33.20	35.86	15.99	17.88	19.99	21.90	23.65	25.28	10.06	11.25	12.58	13.78	14.88	15.91
TER	45	27.00	31.18	34.86	38.97	42.69	46.11	20.56	22.99	25.70	28.15	30.41	32.51	12.94	14.47	16.18	17.72	19.14	20.46
TIR	55	33.00	38.11	42.60	47.63	52.18	56.36	25.13	28.10	31.41	34.41	37.17	39.73	15.82	17.69	19.78	21.66	23.40	25.01
THR	75	42.00	48.50	54.22	60.62	66.41	71.73	31.98	35.75	39.98	43.79	47.30	50.56	20.13	22.51	25.16	27.56	29.77	31.83
THR	100	51.00	58.89	65.84	73.61	80.64	87.10	38.84	43.42	48.55	53.18	57.45	61.41	24.44	27.32	30.55	33.47	36.15	38.64
TMR	100	60.00	69.28	77.46	86.60	94.87	102.47	45.69	51.08	57.11	62.56	67.58	72.24	28.76	32.15	35.95	39.38	42.54	45.47

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-410A balanced ported valves (Tons) – B 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)				
		75	110	140	160	210	240	285	75	110	140	160	210	240	285	75	110	140	160	210	240	285
BA/BN	1	0.8	1.0	1.1	1.2	1.3	1.4	1.6	0.8	1.0	1.1	1.2	1.3	1.4	1.5	0.8	0.9	1.1	1.1	1.3	1.4	1.5
	1-1/2	1.3	1.6	1.8	1.9	2.2	1.4	1.6	1.3	1.6	1.7	1.9	2.1	2.3	2.5	1.3	1.5	1.7	1.8	2.1	2.2	2.4
	2	1.8	2.2	2.5	2.6	3.0	3.2	3.5	1.8	2.2	2.4	2.6	3.0	3.2	3.5	1.7	2.1	2.4	2.6	2.9	3.1	3.4
	3	2.3	2.8	3.1	3.3	3.8	4.1	4.5	2.3	2.8	3.1	3.3	3.8	4.1	4.4	2.2	2.7	3.0	3.2	3.7	4.0	4.3
	3-1/2	3.0	3.6	4.0	4.3	5.0	5.3	5.8	2.9	3.6	4.0	4.3	4.9	5.3	5.7	2.9	3.5	3.9	4.2	4.8	5.1	5.6
	4-1/2	4.1	5.0	5.6	6.0	6.9	7.4	8.0	4.1	5.0	5.6	6.0	6.9	7.3	8.0	4.0	4.9	5.5	5.9	6.7	7.2	7.8
	6	5.1	6.1	6.9	7.4	8.5	9.0	9.9	5.0	6.1	6.8	7.3	8.4	9.0	9.8	4.9	5.9	6.7	7.2	8.2	8.8	9.6
7-1/2	6.2	7.5	8.5	9.1	10.4	11.1	12.1	6.2	7.5	8.4	9.0	10.3	11.0	12.0	6.0	7.3	8.2	8.8	10.1	10.8	11.8	

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)				
		75	110	140	160	210	240	285	75	110	140	160	210	240	285	75	110	140	160	210	240	285
BA/BN	1	0.8	0.9	1.0	1.1	1.3	1.4	1.5	0.7	0.9	1.0	1.1	1.2	1.3	1.4	0.7	0.9	1.0	1.0	1.2	1.3	1.4
	1-1/2	1.2	1.5	1.7	1.8	2.0	2.2	2.4	1.2	1.4	1.6	1.7	2.0	2.1	2.3	1.1	1.4	1.6	1.7	1.9	2.0	2.2
	2	1.7	2.1	2.3	2.5	2.8	3.0	3.3	1.6	2.0	2.3	2.4	2.8	3.0	3.2	1.6	1.9	2.2	2.3	2.7	2.8	3.1
	3	2.2	2.6	3.0	3.2	3.6	3.9	4.2	2.1	2.5	2.9	3.1	3.5	3.8	4.1	2.0	2.5	2.8	3.0	3.4	3.6	3.9
	3-1/2	2.8	3.4	3.8	4.1	4.7	5.0	5.5	2.7	3.3	3.7	4.0	4.5	4.8	5.3	2.6	3.2	3.6	3.8	4.4	4.7	5.1
	4-1/2	3.9	4.7	5.3	5.7	6.5	7.0	7.6	3.8	4.6	5.2	5.5	6.3	6.8	7.4	3.6	4.4	5.0	5.3	6.1	6.5	7.1
	6	4.8	5.8	6.5	7.0	8.0	8.5	9.3	4.6	5.6	6.3	6.8	7.7	8.3	9.0	4.5	5.4	6.1	6.5	7.5	8.0	8.7
7-1/2	5.9	7.1	8.0	8.6	9.8	10.5	11.4	5.7	6.9	7.8	8.3	9.5	10.2	11.1	5.5	6.6	7.5	8.0	9.2	9.8	10.7	

Note: Standard capacity is rated at 100 °F liquid inlet and 40 °F evap temperature; with 160 Psi pressure drop across TXV per ARI-750-2001. These ratings assume vapor free liquid entering the thermal expansion valve.

## R-410A balanced ported valves (Tons) – NXT Series

Valve type	Nominal rating Tons	Evaporator temperature																				
		50 °F								40 °F								20 °F				
		Pressure drop across valve (PSI)								Pressure drop across valve (PSI)								Pressure drop across valve (PSI)				
		75	110	140	160	210	240	285	75	110	140	160	210	240	285	75	110	140	160	210	240	285
NXT-Series	1/2	0.4	0.5	0.5	0.6	0.6	0.7	0.8	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.4	0.5	0.5	0.5	0.6	0.7	0.7
	1	0.7	0.8	0.9	1.0	1.2	1.2	1.3	0.7	0.8	0.9	1.0	1.1	1.2	1.3	0.7	0.8	0.9	1.0	1.1	1.2	1.3
	1-1/2	1.0	1.3	1.4	1.5	1.7	1.9	2.0	1.0	1.2	1.4	1.5	1.7	1.8	2.0	1.0	1.2	1.4	1.5	1.7	1.8	2.0
	2	1.4	1.7	1.9	2.0	2.3	2.5	2.7	1.4	1.7	1.9	2.0	2.3	2.4	2.7	1.3	1.6	1.8	2.0	2.2	2.4	2.6
	3	2.1	2.5	2.8	3.0	3.5	3.7	4.0	2.1	2.5	2.8	3.0	3.4	3.7	4.0	2.0	2.4	2.7	2.9	3.4	3.6	3.9
	4	2.8	3.3	3.8	4.0	4.6	4.9	5.4	2.7	3.3	3.7	4.0	4.6	4.9	5.3	2.7	3.2	3.7	3.9	4.5	4.8	5.2
	5	3.5	4.2	4.7	5.0	5.8	6.2	6.7	3.4	4.1	4.7	5.0	5.7	6.1	6.7	3.3	4.1	4.6	4.9	5.6	6.0	6.5
	6	4.1	5.0	5.7	6.1	6.9	7.4	8.1	4.1	5.0	5.6	6.0	6.9	7.3	8.0	4.0	4.9	5.5	5.9	6.7	7.2	7.8
	7	4.8	5.9	6.6	7.1	8.1	8.6	9.4	4.8	5.8	6.5	7.0	8.0	8.6	9.3	4.7	5.7	6.4	6.8	7.8	8.4	9.1
	8	5.8	7.0	7.9	8.5	9.7	10.4	11.3	5.7	7.0	7.8	8.4	9.6	10.3	11.2	5.6	6.8	7.7	8.2	9.4	10.1	11.0
	10	7.1	8.6	9.7	10.4	11.9	12.7	13.9	7.1	8.5	9.6	10.3	11.8	12.6	13.8	6.9	8.4	9.4	10.1	11.6	12.4	13.5
	12	8.7	10.6	11.9	12.7	14.6	15.6	17.0	8.6	10.5	11.8	12.6	14.5	15.5	16.9	8.5	10.2	11.6	12.4	14.2	15.1	16.5
	15	10.2	12.4	14.0	14.9	17.1	18.3	19.9	10.1	12.3	13.8	14.8	16.9	18.1	19.7	9.9	12.0	13.5	14.5	16.6	17.7	19.3

Valve type	Nominal rating Tons	Evaporator temperature																				
		0 °F								-20 °F								-40 °F				
		Pressure drop across valve (PSI)								Pressure drop across valve (PSI)								Pressure drop across valve (PSI)				
		75	110	140	160	210	240	285	75	110	140	160	210	240	285	75	110	140	160	210	240	285
NXT-Series	1/2	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.3	0.4	0.5	0.6	0.6	0.6	0.7
	1	0.7	0.8	0.9	1.0	1.1	1.2	1.3	0.6	0.6	0.9	0.9	1.1	1.1	1.2	0.6	0.7	0.8	0.9	1.0	1.1	1.2
	1-1/2	1.0	1.2	1.3	1.4	1.6	1.8	1.9	0.9	1.1	1.3	1.4	1.6	1.7	1.8	0.9	1.1	1.2	1.3	1.5	1.6	1.8
	2	1.3	1.6	1.8	1.9	2.2	2.3	2.5	1.3	1.5	1.7	1.8	2.1	2.3	2.5	1.2	1.5	1.7	1.8	2.0	2.2	2.4
	3	2.0	2.4	2.7	2.9	3.3	3.5	3.8	1.9	2.3	2.6	2.8	3.2	3.4	3.7	1.8	2.2	2.5	2.7	3.1	3.3	3.6
	4	2.6	3.2	3.6	3.8	4.4	4.7	5.1	2.5	3.1	3.5	3.7	4.2	4.5	4.9	2.4	3.0	3.3	3.6	4.1	4.4	4.8
	5	3.3	3.9	4.5	4.8	5.5	5.8	6.4	3.2	3.8	4.3	4.6	5.3	5.7	6.2	3.0	3.7	4.2	4.5	5.1	5.5	5.9
	6	3.9	4.7	5.3	5.7	6.5	7.0	7.6	3.8	4.6	5.2	5.5	6.3	6.8	7.4	3.7	4.4	5.0	5.3	6.1	6.5	7.1
	7	4.8	5.9	6.6	6.7	8.1	8.6	9.4	4.4	5.4	6.0	6.5	7.4	7.9	8.6	4.3	5.2	5.8	6.2	7.1	7.6	8.3
	8	5.5	6.6	7.5	8.0	9.2	9.8	10.7	5.3	6.4	7.2	7.7	8.9	9.5	10.3	5.1	6.2	7.0	7.5	8.6	9.2	10.0
	10	6.7	8.1	9.2	9.8	11.3	12.0	13.1	6.5	7.9	8.9	9.5	10.9	11.7	12.7	6.3	7.6	8.6	9.2	10.5	11.2	12.3
	12	8.2	10.0	11.3	12.0	13.8	14.7	16.1	8.0	9.7	10.9	11.7	13.4	14.3	15.6	7.7	9.3	10.5	11.2	12.9	13.8	15.0
	15	9.6	11.7	13.2	14.1	16.1	17.3	18.8	9.3	11.3	12.8	13.7	15.6	16.7	18.2	9.0	10.3	12.3	13.2	15.1	15.1	17.6

Note: Standard capacity is rated at 100 °F liquid inlet and 40 °F evap temperature; with 160 Psi pressure drop across TXV per ARI-750-2001. These ratings assume vapor free liquid entering the thermal expansion valve.

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F									
	50	60	70	80	90	100	110	120	130	140
R-410A correction factor	1.37	1.30	1.23	1.15	1.08	1.00	0.92	0.84	0.75	0.65

These factors include corrections for liquid refrigerant density and net refrigeration effect, and are based on an average evaporator temperature of 0°F with a maximum 7°F Change in Superheat. 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.

# TXV extended capacity tables

## R-502 balanced ported valves (Tons)– 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
BA/BN	1/4	0.26	0.30	0.34	0.38	0.41	0.44	0.25	0.29	0.32	0.36	0.40	0.43	0.24	0.28	0.31	0.35	0.38	0.41
BA/BN	1/2	0.49	0.57	0.63	0.71	0.77	0.84	0.48	0.55	0.62	0.69	0.76	0.82	0.46	0.53	0.59	0.66	0.73	0.79
BA/BN	1	0.76	0.88	0.98	1.10	1.20	1.30	0.74	0.85	0.96	1.07	1.17	1.26	0.71	0.82	0.92	1.02	1.12	1.21
BA/BN	1-1/4	1.02	1.18	1.32	1.47	1.61	1.74	0.99	1.14	1.28	1.43	1.57	1.69	0.95	1.10	1.23	1.37	1.50	1.62
BA/BN	1-1/2	1.28	1.48	1.65	1.85	2.02	2.19	1.26	1.45	1.63	1.82	1.99	2.15	1.20	1.39	1.55	1.73	1.90	2.05
BA/BN	2	1.55	1.79	2.00	2.24	2.45	2.65	1.52	1.76	1.96	2.19	2.40	2.60	1.45	1.67	1.87	2.09	2.29	2.48
BA/BN	2-1/2	2.01	2.32	2.59	2.90	3.18	3.43	1.97	2.27	2.54	2.84	3.11	3.36	1.88	2.17	2.43	2.71	2.97	3.21
BA/BN	3	2.54	2.93	3.28	3.67	4.02	4.34	2.49	2.88	3.21	3.59	3.94	4.25	2.38	2.75	3.07	3.44	3.76	4.06
BA/BN	4	3.17	3.66	4.09	4.58	5.01	5.41	3.10	3.58	4.00	4.47	4.90	5.29	2.96	3.42	3.82	4.27	4.68	5.06
HF	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
HF	1/4	0.27	0.31	0.35	0.39	0.43	0.46	0.27	0.31	0.35	0.39	0.43	0.46	0.25	0.29	0.32	0.36	0.40	0.43
HF	1/2	0.49	0.57	0.63	0.71	0.77	0.84	0.48	0.55	0.62	0.69	0.76	0.82	0.46	0.53	0.59	0.66	0.73	0.79
HF	1	0.74	0.85	0.96	1.07	1.17	1.26	0.73	0.84	0.94	1.05	1.15	1.25	0.70	0.81	0.90	1.01	1.11	1.20
HF	1-1/4	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
HF	1-1/2	1.28	1.48	1.65	1.85	2.02	2.19	1.26	1.45	1.63	1.82	1.99	2.15	1.20	1.39	1.55	1.73	1.90	2.05
HF	2	1.69	1.95	2.18	2.44	2.67	2.89	1.66	1.92	2.14	2.40	2.62	2.83	1.58	1.82	2.04	2.28	2.50	2.70
HF	3-1/2	3.01	3.48	3.89	4.34	4.76	5.14	2.95	3.41	3.81	4.26	4.66	5.04	2.81	3.24	3.63	4.06	4.44	4.80
HF	5	4.19	4.84	5.41	6.05	6.62	7.16	4.10	4.73	5.29	5.92	6.48	7.00	3.92	4.53	5.06	5.66	6.20	6.69
HF	7	5.30	6.12	6.84	7.65	8.38	9.05	5.19	5.99	6.70	7.49	8.21	8.86	4.96	5.73	6.40	7.16	7.84	8.47
HF	10	7.87	9.09	10.16	11.36	12.44	13.44	7.70	8.89	9.94	11.11	12.17	13.15	7.35	8.49	9.49	10.61	11.62	12.55
HF	13	10.36	11.96	13.37	14.95	16.38	17.69	10.14	11.71	13.09	14.64	16.03	17.32	9.68	11.18	12.50	13.97	15.31	16.53
TFE	5	4.11	4.75	5.31	5.93	6.50	7.02	4.03	4.65	5.20	5.82	6.37	6.88	3.84	4.43	4.96	5.54	6.07	6.56
TFE	7	5.63	6.50	7.27	8.13	8.90	9.62	5.51	6.36	7.11	7.95	8.71	9.41	5.26	6.07	6.79	7.59	8.32	8.98
TFE	9	6.99	8.07	9.02	10.09	11.05	11.94	6.85	7.91	8.84	9.89	10.83	11.70	6.53	7.54	8.43	9.43	10.32	11.15
TFE	14	10.68	12.33	13.79	15.42	16.89	18.24	10.45	12.07	13.49	15.08	16.52	17.85	9.97	11.51	12.87	14.39	15.76	17.03
TRAE+	8	6.05	6.99	7.81	8.73	9.57	10.33	5.93	6.85	7.66	8.56	9.38	10.13	5.66	6.54	7.31	8.17	8.95	9.67
TRAE+	12	8.82	10.18	11.39	12.73	13.95	15.06	8.64	9.98	11.15	12.47	13.66	14.76	8.24	9.51	10.64	11.89	13.03	14.07
TRAE+	14	9.85	11.37	12.72	14.22	15.57	16.82	9.64	11.13	12.45	13.91	15.24	16.46	9.20	10.62	11.88	13.28	14.55	15.71
TRAE+	20	14.93	17.24	19.27	21.55	23.61	25.50	14.61	16.87	18.86	21.09	23.10	24.95	13.95	16.11	18.01	20.14	22.06	23.82
TRAE+	30	20.52	23.69	26.49	29.62	32.44	35.04	20.09	23.20	25.94	29.00	31.77	34.31	19.17	22.14	24.75	27.67	30.31	32.74
TRAE	35	27.70	31.99	35.76	39.98	43.80	47.31	27.12	31.32	35.01	39.14	42.88	46.32	25.88	29.88	33.41	37.35	40.92	44.20
TRAE	40	30.22	34.90	39.01	43.62	47.78	51.61	29.58	34.16	38.19	42.70	46.77	50.52	28.23	32.60	36.44	40.75	44.64	48.21
TRAE	50	35.96	41.52	46.42	51.90	56.86	61.41	35.21	40.66	45.46	50.82	55.67	60.13	35.21	40.66	45.46	50.82	55.67	60.13
TJR	9	7.54	8.71	9.73	10.88	11.92	12.88	7.38	8.52	9.53	10.65	11.67	12.60	7.05	8.14	9.10	10.18	11.15	12.04
TJR	12	9.03	10.43	11.66	13.03	14.28	15.42	8.84	10.21	11.41	12.76	13.98	15.10	8.44	9.75	10.90	12.19	13.35	14.42
TER	14	11.29	13.04	14.58	16.30	17.85	19.28	11.05	12.76	14.27	15.95	17.47	18.87	10.56	12.19	13.63	15.24	16.70	18.03
TER	16	13.34	15.40	17.22	19.25	21.09	22.78	13.06	15.08	16.86	18.85	20.65	22.30	12.48	14.41	16.11	18.01	19.73	21.31
TER	21	17.96	20.74	23.19	25.92	28.40	30.67	17.58	20.30	22.70	25.37	27.80	30.02	16.80	19.39	21.68	24.24	26.56	28.69
TER	27	23.09	26.66	29.81	33.33	36.51	39.43	22.60	26.10	29.18	32.62	35.73	38.60	21.59	24.93	27.87	31.16	34.14	36.87
TIR	37	28.22	32.59	36.43	40.73	44.62	48.19	27.62	31.89	35.66	39.87	43.67	47.17	26.39	30.47	34.06	38.08	41.72	45.06
THR	48	35.91	41.47	46.36	51.83	56.78	61.33	35.15	40.59	45.38	50.73	55.58	60.03	33.58	38.77	43.35	48.47	53.09	57.35
THR	60	43.61	50.36	56.30	62.95	68.95	74.48	42.69	49.29	55.11	61.62	67.50	72.91	40.78	47.09	52.64	58.86	64.48	69.64
TMR	60	51.30	59.24	66.23	74.05	81.11	87.61	50.22	57.99	64.83	72.49	79.40	85.77	47.97	55.39	61.93	69.24	75.85	81.92

Note: Standard capacity is rated at 100F liquid inlet and 40F evaporator temperature; with 100 Psi pressure drop across the TXV per ARI 750-2001.

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

## TXV extended capacity tables

### R-502 balanced ported valves (Tons)– 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
BA/BN	1/4	0.22	0.25	0.28	0.32	0.35	0.38	0.17	0.19	0.21	0.23	0.25	0.27	0.11	0.12	0.14	0.15	0.16	0.17
BA/BN	1/2	0.42	0.48	0.54	0.61	0.66	0.72	0.33	0.37	0.41	0.45	0.49	0.52	0.21	0.23	0.26	0.29	0.31	0.33
BA/BN	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	0.33	0.37	0.41	0.45	0.49	0.52
BA/BN	1-1/4	0.87	1.00	1.12	1.26	1.38	1.49	0.69	0.77	0.86	0.94	1.02	1.09	0.44	0.49	0.55	0.60	0.65	0.70
BA/BN	1-1/2	1.10	1.27	1.42	1.59	1.74	1.88	0.87	0.97	1.09	1.19	1.29	1.38	0.55	0.61	0.69	0.75	0.81	0.87
BA/BN	2	1.34	1.55	1.73	1.93	2.12	2.29	1.05	1.17	1.31	1.44	1.55	1.66	0.67	0.75	0.84	0.92	0.99	1.06
BA/BN	2-1/2	1.73	2.00	2.23	2.50	2.74	2.95	1.36	1.52	1.70	1.86	2.01	2.15	0.87	0.97	1.09	1.19	1.29	1.38
BA/BN	3	2.19	2.53	2.83	3.16	3.46	3.74	1.73	1.93	2.16	2.37	2.56	2.74	1.10	1.23	1.38	1.51	1.63	1.74
BA/BN	4	2.72	3.14	3.51	3.93	4.30	4.65	2.15	2.40	2.69	2.94	3.18	3.40	1.37	1.53	1.71	1.88	2.03	2.17
HF	1/8	0.12	0.14	0.15	0.17	0.19	0.20	0.10	0.11	0.13	0.14	0.15	0.16	0.06	0.07	0.08	0.08	0.09	0.09
HF	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
HF	1/2	0.42	0.48	0.54	0.61	0.66	0.72	0.33	0.37	0.41	0.45	0.49	0.52	0.21	0.23	0.26	0.29	0.31	0.33
HF	1	0.64	0.74	0.83	0.92	1.01	1.09	0.50	0.56	0.63	0.68	0.74	0.79	0.32	0.36	0.40	0.44	0.47	0.51
HF	1-1/4	0.86	0.99	1.11	1.24	1.36	1.47	0.68	0.76	0.85	0.93	1.01	1.08	0.43	0.48	0.54	0.59	0.64	0.68
HF	1-1/2	1.10	1.27	1.42	1.59	1.74	1.88	0.87	0.97	1.09	1.19	1.29	1.38	0.55	0.61	0.69	0.75	0.81	0.87
HF	2	1.46	1.69	1.88	2.11	2.31	2.49	1.15	1.29	1.44	1.57	1.70	1.82	0.73	0.82	0.91	1.00	1.08	1.15
HF	3-1/2	2.59	2.99	3.34	3.74	4.10	4.42	1.65	1.84	2.06	2.26	2.44	2.61	1.30	1.45	1.63	1.78	1.92	2.06
HF	5	3.60	4.16	4.65	5.20	5.69	6.15	2.84	3.18	3.55	3.89	4.20	4.49	1.81	2.02	2.26	2.48	2.68	2.86
HF	7	4.56	5.27	5.89	6.58	7.21	7.79	3.60	4.02	4.50	4.93	5.32	5.69	2.29	2.56	2.86	3.14	3.39	3.62
HF	10	6.76	7.81	8.73	9.76	10.69	11.54	5.34	5.97	6.68	7.31	7.90	8.44	3.40	3.80	4.25	4.66	5.03	5.38
HF	13	8.90	10.28	11.49	12.85	14.07	15.20	7.03	7.86	8.79	9.63	10.40	11.12	4.48	5.01	5.60	6.13	6.63	7.08
TFE	5	3.54	4.09	4.57	5.11	5.60	6.05	2.79	3.12	3.49	3.82	4.13	4.41	1.78	1.99	2.23	2.44	2.63	2.81
TFE	7	4.84	5.59	6.25	6.99	7.65	8.27	3.82	4.27	4.78	5.23	5.65	6.04	2.43	2.72	3.04	3.33	3.59	3.84
TFE	9	6.01	6.94	7.76	8.67	9.50	10.26	4.75	5.31	5.94	6.50	7.03	7.51	3.02	3.38	3.78	4.14	4.47	4.78
TFE	14	9.18	10.60	11.85	13.25	14.51	15.68	7.25	8.11	9.06	9.93	10.72	11.46	4.61	5.15	5.76	6.31	6.82	7.29
TRAE+	8	5.20	6.00	6.71	7.51	8.22	8.88	4.11	4.60	5.14	5.63	6.08	6.50	2.62	2.93	3.28	3.59	3.88	4.14
TRAE+	12	7.58	8.75	9.79	10.94	11.99	12.95	5.99	6.70	7.49	8.20	8.86	9.47	3.81	4.26	4.76	5.22	5.64	6.02
TRAE+	14	8.47	9.78	10.93	12.23	13.39	14.47	6.69	7.48	8.36	9.16	9.89	10.58	4.26	4.76	5.33	5.83	6.30	6.74
TRAE+	20	12.83	14.81	16.56	18.52	20.29	21.91	10.13	11.33	12.66	13.87	14.98	16.02	6.45	7.21	8.06	8.83	9.54	10.20
TRAE+	30	17.64	20.37	22.77	25.46	27.89	30.13	13.93	15.57	17.41	19.07	20.60	22.03	8.87	9.92	11.09	12.15	13.12	14.02
TRAE	35	23.81	27.49	30.74	34.37	37.65	40.66	18.80	21.02	23.50	25.74	27.81	29.73	11.97	13.38	14.96	16.39	17.70	18.93
TRAE	40	25.97	29.99	33.53	37.48	41.06	44.35	20.51	22.93	25.64	28.08	30.33	32.43	13.06	14.60	16.33	17.88	19.32	20.65
TRAE	50	30.91	35.69	39.90	44.61	48.87	52.79	24.41	27.29	30.51	33.42	36.10	38.60	15.54	17.37	19.43	21.28	22.98	24.57
TJR	9	6.70	7.74	8.65	9.67	10.59	11.44	7.31	8.17	9.14	10.01	10.81	11.56	6.89	7.70	8.61	9.43	10.19	11.56
TJR	12	8.02	9.26	10.36	11.58	12.68	13.70	8.75	9.78	10.94	11.98	12.94	13.84	8.25	9.22	10.31	11.29	12.20	13.84
TER	14	10.03	11.58	12.95	14.48	15.86	17.13	10.95	12.24	13.68	14.99	16.19	17.31	10.31	11.53	12.89	14.12	15.26	17.31
TER	16	11.85	13.59	15.30	17.11	18.74	20.24	12.93	14.46	16.16	17.71	19.13	20.45	12.19	13.63	15.23	16.69	18.02	20.45
TER	21	15.96	18.43	20.60	23.03	25.23	27.26	17.14	19.47	21.76	23.84	25.75	27.53	16.41	18.35	20.51	22.47	24.27	27.53
TER	27	20.51	23.69	26.48	29.61	32.44	35.04	22.38	25.02	27.98	30.65	33.10	35.39	21.09	23.58	26.37	28.88	31.20	35.39
TIR	37	25.07	28.95	32.37	36.19	39.64	42.82	27.35	30.58	34.19	37.45	40.45	43.25	25.78	28.82	32.22	35.30	38.12	43.25
THR	48	31.90	36.84	41.19	46.05	50.44	54.49	34.81	38.92	43.51	47.66	51.48	55.04	32.80	36.67	41.00	44.92	48.52	55.04
THR	60	38.74	44.74	50.02	55.92	61.26	66.71	42.27	47.26	52.84	57.88	62.52	66.84	39.84	44.54	49.79	54.55	58.92	66.84
TMR	60	45.58	52.63	58.84	65.79	72.07	77.84	49.73	55.60	62.84	68.09	73.55	78.62	46.86	52.39	58.58	64.17	69.31	78.62

### Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

## TXV extended capacity tables

### R-410A balance ported valves (Tons) - TFE 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)						
		75	110	140	160	210	240	285	75	110	140	160	210	240	285	75	110	140	160	210	240	285
TFES	12	8.1	9.9	11.1	11.9	13.6	14.6	15.9	8.1	9.8	11.0	11.8	13.5	14.5	15.7	7.9	9.6	10.8	11.5	13.2	14.1	15.4
	16	12.4	15.0	16.9	18.1	20.7	22.1	24.1	12.3	14.8	16.7	17.9	20.5	21.9	23.9	12.0	14.5	16.4	17.5	20.1	21.5	23.4
	20	13.3	16.1	18.2	19.5	22.3	23.8	26.0	13.2	16.0	18.1	19.3	22.1	23.6	25.8	12.9	15.7	17.7	18.9	21.6	23.1	25.2
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)						
		75	110	140	160	210	240	285	75	110	140	160	210	240	285	75	110	140	160	210	240	285
TFES	12	7.7	9.3	10.5	11.2	12.9	13.8	15.0	7.5	9.0	10.2	10.9	12.5	13.3	14.5	7.2	8.7	9.8	10.5	12.0	12.9	14.0
	16	11.7	14.1	16.0	17.1	19.5	20.9	22.8	11.3	13.7	15.5	16.5	18.9	20.2	22.1	10.9	13.2	14.9	15.9	18.3	19.5	21.3
	20	12.6	15.2	17.2	18.4	21.1	22.5	24.5	12.2	14.8	16.7	17.8	20.4	21.8	23.8	11.8	14.3	16.1	17.2	19.7	21.1	22.9

Note: Standard capacity is rated at 100 °F liquid inlet and 40 °F evap temperature; with 160 Psi pressure drop across TXV per ARI 750-2001. These ratings assume vapor free liquid entering the thermal expansion valve.

### Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-12 conventional valves (kW) – A Series, T Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
AA/AN/AAC/ANC	1/8	0.71	0.87	0.94	1.00	1.12	1.17	0.71	0.87	0.94	1.00	1.12	1.17	0.67	0.82	0.89	0.95	1.06	1.12
AA/AN/AAC/ANC/AFA	1/4	1.24	1.52	1.64	1.75	1.96	2.05	1.20	1.47	1.59	1.70	1.90	2.00	1.17	1.43	1.55	1.65	1.85	1.94
AA/AN/AAC/ANC/AFA	1/2	1.98	2.43	2.62	2.80	3.13	3.29	1.95	2.38	2.58	2.75	3.08	3.23	1.88	2.30	2.48	2.65	2.97	3.11
AA/AN/AAC/ANC/AFA	1	2.83	3.47	3.75	4.01	4.48	4.70	2.80	3.43	3.70	3.95	4.42	4.64	2.69	3.30	3.56	3.80	4.25	4.46
AA/AN/AAC/ANC/AFA	1-1/2	5.88	7.20	7.77	8.31	9.29	9.74	5.77	7.07	7.63	8.16	9.12	9.57	5.52	6.76	7.31	7.81	8.73	9.16
AA/AN/AAC/ANC/AFA	2	7.22	8.84	9.55	10.21	11.42	11.98	7.08	8.67	9.37	10.01	11.19	11.74	6.80	8.32	8.99	9.61	10.75	11.27
AA/AN/AAC/ANC	2-1/2	8.57	10.49	11.33	12.12	13.55	14.21	8.39	10.28	11.10	11.86	13.27	13.91	8.07	9.89	10.68	11.41	12.76	13.38
AA/AN/AAC/ANC/AFA	3	11.72	14.35	15.50	16.57	18.53	19.43	11.47	14.05	15.17	16.22	18.14	19.02	11.01	13.48	14.56	15.57	17.41	18.26
TCLE	1/4	1.06	1.30	1.40	1.50	1.68	1.76	1.06	1.30	1.40	1.50	1.68	1.76	0.99	1.21	1.31	1.40	1.57	1.64
TCLE	1/2	2.02	2.47	2.67	2.85	3.19	3.35	1.98	2.43	2.62	2.80	3.13	3.29	1.88	2.30	2.48	2.65	2.97	3.11
TCLE	1	4.07	4.99	5.39	5.76	6.44	6.75	4.00	4.90	5.29	5.66	6.32	6.63	3.82	4.68	5.06	5.41	6.05	6.34
TCLE	2	7.50	9.19	9.93	10.61	11.87	12.45	7.36	9.02	9.74	10.41	11.64	12.21	7.04	8.63	9.32	9.96	11.14	11.68
TCLE	3	10.94	13.40	14.47	15.47	17.30	18.14	10.73	13.14	14.19	15.17	16.96	17.79	10.27	12.57	13.58	14.52	16.23	17.02
TCLE	4	15.86	19.42	20.98	22.43	25.08	26.30	15.54	19.03	20.56	21.98	24.57	25.77	14.90	18.25	19.72	21.08	23.56	24.71
TCLE	6-1/2	21.84	26.75	28.89	30.89	34.53	36.22	21.42	26.23	28.33	30.29	33.86	35.52	20.53	25.15	27.16	29.04	32.46	34.05
TCLE	7-1/2	26.34	32.26	34.84	37.25	41.64	43.68	25.84	31.65	34.19	36.55	40.86	42.85	24.78	30.35	32.78	35.04	39.18	41.09
TJL	7	23.33	28.57	30.86	32.99	36.89	38.69	22.90	28.05	30.30	32.39	36.21	37.98	21.95	26.88	29.03	31.04	34.70	36.40
TJL	8	29.77	36.46	39.38	42.10	47.07	49.37	29.21	35.77	38.63	41.30	46.18	48.43	28.00	34.29	37.04	39.60	44.27	46.44

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
AA/AN/AAC/ANC	1/8	0.60	0.74	0.80	0.85	0.95	1.00	0.46	0.50	0.53	0.59	0.62	0.65	0.28	0.31	0.33	0.37	0.38	0.40
AA/AN/AAC/ANC/AFA	1/4	1.03	1.26	1.36	1.45	1.62	1.70	0.81	0.88	0.94	1.05	1.10	1.15	0.53	0.57	0.61	0.69	0.72	0.75
AA/AN/AAC/ANC/AFA	1/2	1.66	2.04	2.20	2.35	2.63	2.76	1.31	1.41	1.51	1.69	1.77	1.85	0.85	0.92	0.98	1.10	1.15	1.20
AA/AN/AAC/ANC/AFA	1	2.37	2.90	3.14	3.35	3.75	3.93	1.88	2.03	2.17	2.42	2.54	2.65	1.20	1.30	1.39	1.55	1.63	1.70
AA/AN/AAC/ANC/AFA	1-1/2	4.92	6.03	6.51	6.96	7.78	8.16	3.86	4.17	4.46	4.98	5.22	5.46	2.51	2.71	2.90	3.24	3.40	3.55
AA/AN/AAC/ANC/AFA	2	6.02	7.37	7.96	8.51	9.52	9.98	4.71	5.09	5.44	6.08	6.37	6.66	3.08	3.33	3.56	3.98	4.17	4.36
AA/AN/AAC/ANC	2-1/2	7.15	8.76	9.46	10.11	11.31	11.86	5.59	6.04	6.46	7.22	7.57	7.91	3.65	3.94	4.21	4.71	4.94	5.16
AA/AN/AAC/ANC/AFA	3	9.77	11.97	12.93	13.82	15.45	16.20	7.65	8.26	8.83	9.87	10.35	10.81	4.96	5.35	5.72	6.40	6.71	7.01
TCLE	1/4	0.89	1.08	1.17	1.25	1.40	1.47	0.71	0.76	0.82	0.91	0.96	1.00	0.46	0.50	0.53	0.59	0.62	0.65
TCLE	1/2	1.66	2.04	2.20	2.35	2.63	2.76	1.31	1.41	1.51	1.69	1.77	1.85	0.85	0.92	0.98	1.10	1.15	1.20
TCLE	1	3.40	4.16	4.50	4.81	5.37	5.64	2.66	2.87	3.07	3.43	3.59	3.75	1.73	1.87	2.00	2.24	2.35	2.45
TCLE	2	6.23	7.63	8.24	8.81	9.85	10.33	4.89	5.28	5.64	6.31	6.61	6.91	3.19	3.44	3.68	4.11	4.31	4.51
TCLE	3	9.10	11.14	12.04	12.87	14.38	15.09	7.12	7.69	8.22	9.19	9.63	10.06	4.64	5.01	5.35	5.99	6.28	6.56
TCLE	4	13.20	16.17	17.47	18.67	20.88	21.90	10.34	11.17	11.94	13.34	14.00	14.62	6.73	7.26	7.77	8.68	9.11	9.51
TCLE	6-1/2	18.20	22.28	24.07	25.73	28.77	30.17	14.27	15.41	16.47	18.42	19.32	20.18	9.27	10.02	10.71	11.97	12.56	13.12
TCLE	7-1/2	21.95	26.88	29.03	31.04	34.70	36.40	17.20	18.58	19.87	22.21	23.29	24.33	11.19	12.08	12.92	14.44	15.15	15.82
TJL	7	19.43	23.80	25.71	27.48	30.73	32.23	15.22	16.44	17.58	19.65	20.61	21.53	9.91	10.71	11.45	12.80	13.42	14.02
TJL	8	24.78	30.35	32.78	35.04	39.18	41.09	19.43	20.99	22.44	25.09	26.31	27.48	12.64	13.65	14.59	16.32	17.11	17.87

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-22 conventional valves (kW) – A Series, T Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
AA/AN/AFA	1/5	0.53	0.65	0.70	0.75	0.84	0.88	0.52	0.64	0.69	0.74	0.82	0.86	0.50	0.61	0.66	0.70	0.78	0.82
AA/AN/AAC/ANC	1/4	0.92	1.13	1.22	1.30	1.46	1.53	0.90	1.11	1.20	1.28	1.43	1.50	0.89	1.08	1.17	1.25	1.40	1.47
AA/AN/AAC/ANC/AFA	1/2	1.63	1.99	2.15	2.30	2.57	2.70	1.59	1.95	2.10	2.25	2.51	2.64	1.56	1.91	2.06	2.20	2.46	2.58
AA/AN/AAC/ANC/AFA	1	2.58	3.16	3.42	3.65	4.09	4.29	2.55	3.12	3.37	3.61	4.03	4.23	2.48	3.03	3.28	3.50	3.92	4.11
AA/AN/AAC/ANC/AFA	1-1/2	3.72	4.55	4.92	5.26	5.88	6.16	3.65	4.47	4.82	5.16	5.77	6.05	3.58	4.38	4.73	5.06	5.65	5.93
AA/AN/AAC/ANC/AFA	2	5.45	6.68	7.21	7.71	8.62	9.04	5.37	6.58	7.11	7.60	8.50	8.91	5.24	6.42	6.93	7.41	8.28	8.69
AA/AN/AAC/ANC/AFA	2-1/2	7.65	9.36	10.12	10.81	12.09	12.68	7.54	9.24	9.98	10.66	11.92	12.50	7.36	9.02	9.74	10.41	11.64	12.21
AA/AN/AAC/ANC/AFA	3	9.38	11.49	12.41	13.27	14.83	15.56	9.24	11.32	12.22	13.07	14.61	15.32	9.03	11.06	11.94	12.77	14.27	14.97
AA/AN/AAC/ANC	4	11.12	13.61	14.70	15.72	17.58	18.43	10.97	13.43	14.51	15.51	17.34	18.19	10.73	13.14	14.19	15.17	16.96	17.79
AA/AN/AAC/ANC/AFA	5	15.22	18.64	20.14	21.53	24.07	25.24	15.00	18.37	19.84	21.21	23.72	24.87	14.66	17.95	19.39	20.73	23.17	24.30
TCLE	1/2	1.38	1.69	1.83	1.95	2.18	2.29	1.37	1.68	1.81	1.94	2.17	2.27	1.35	1.65	1.78	1.90	2.13	2.23
TCLE	1	2.62	3.21	3.47	3.70	4.14	4.34	2.58	3.16	3.41	3.65	4.08	4.27	2.51	3.08	3.32	3.55	3.97	4.17
TCLE	2	5.27	6.46	6.98	7.46	8.34	8.75	5.21	6.38	6.89	7.37	8.24	8.64	5.10	6.24	6.74	7.21	8.06	8.45
TCLE	3	9.74	11.92	12.88	13.77	15.39	16.14	9.60	11.75	12.70	13.57	15.17	15.92	9.38	11.49	12.41	13.27	14.83	15.56
TCLE	5	14.20	17.39	18.78	20.08	22.44	23.54	13.98	17.13	18.50	19.78	22.11	23.19	13.66	16.74	18.08	19.32	21.61	22.66
TCLE	7-1/2	20.60	25.23	27.25	29.14	32.58	34.17	20.35	24.92	26.92	28.77	32.17	33.74	19.82	24.28	26.22	28.04	31.34	32.87
TCLE	10	28.39	34.77	37.56	40.15	44.89	47.08	28.05	34.36	37.11	39.67	44.35	46.52	27.33	33.47	36.15	38.65	43.21	45.32
TCLE	12	34.23	41.93	45.28	48.41	54.13	56.77	33.81	41.41	44.73	47.81	53.46	56.07	32.96	40.36	43.60	46.61	52.11	54.65
TJL	11	30.34	37.16	40.13	42.90	47.97	50.31	29.97	36.71	39.65	42.39	47.39	49.70	29.21	35.77	38.63	41.30	46.18	48.43
TJL	14	38.66	47.34	51.14	54.67	61.12	64.11	38.22	46.82	50.57	54.06	60.44	63.39	37.24	45.61	49.26	52.67	58.88	61.76

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
AA/AN/AFA	1/5	0.46	0.56	0.61	0.65	0.73	0.76	0.35	0.38	0.41	0.46	0.48	0.50	0.25	0.27	0.29	0.32	0.34	0.35
AA/AN/AAC/ANC	1/4	0.81	1.00	1.08	1.15	1.29	1.35	0.64	0.69	0.74	0.82	0.86	0.90	0.42	0.46	0.49	0.55	0.58	0.60
AA/AN/AAC/ANC/AFA	1/2	1.42	1.73	1.87	2.00	2.24	2.35	1.13	1.22	1.31	1.46	1.53	1.60	0.74	0.80	0.86	0.96	1.01	1.05
AA/AN/AAC/ANC/AFA	1	2.27	2.77	3.00	3.20	3.58	3.76	1.81	1.95	2.08	2.33	2.44	2.55	1.20	1.30	1.39	1.55	1.63	1.70
AA/AN/AAC/ANC/AFA	1-1/2	3.22	3.95	4.26	4.56	5.09	5.34	2.58	2.79	2.98	3.34	3.50	3.65	1.70	1.84	1.96	2.19	2.30	2.40
AA/AN/AAC/ANC/AFA	2	4.78	5.85	6.32	6.76	7.56	7.93	3.79	4.09	4.37	4.89	5.13	5.36	2.51	2.71	2.90	3.24	3.40	3.55
AA/AN/AAC/ANC/AFA	2-1/2	6.69	8.19	8.85	9.46	10.58	11.10	5.35	5.77	6.17	6.90	7.24	7.56	3.50	3.79	4.05	4.52	4.75	4.96
AA/AN/AAC/ANC/AFA	3	8.18	10.02	10.82	11.56	12.93	13.56	6.55	7.07	7.56	8.45	8.87	9.26	4.32	4.66	4.99	5.58	5.85	6.11
AA/AN/AAC/ANC	4	9.74	11.92	12.88	13.77	15.39	16.14	7.75	8.37	8.95	10.01	10.50	10.96	5.10	5.51	5.89	6.58	6.90	7.21
AA/AN/AAC/ANC/AFA	5	13.28	16.26	17.56	18.77	20.99	22.01	10.62	11.47	12.26	13.71	14.38	15.02	6.97	7.53	8.05	9.00	9.44	9.86
TCLE	1/2	1.20	1.47	1.59	1.70	1.90	2.00	0.96	1.03	1.10	1.23	1.29	1.35	0.64	0.69	0.74	0.82	0.86	0.90
TCLE	1	2.30	2.82	3.04	3.25	3.64	3.82	1.84	1.99	2.13	2.38	2.49	2.60	1.20	1.30	1.39	1.55	1.63	1.70
TCLE	2	4.60	5.64	6.09	6.51	7.28	7.63	3.68	3.98	4.25	4.75	4.98	5.21	2.44	2.64	2.82	3.15	3.31	3.45
TCLE	3	8.50	10.41	11.24	12.02	13.43	14.09	6.80	7.34	7.85	8.77	9.20	9.61	4.46	4.82	5.15	5.76	6.04	6.31
TCLE	5	12.39	15.17	16.39	17.52	19.59	20.55	9.88	10.67	11.40	12.75	13.37	13.97	6.51	7.04	7.52	8.41	8.82	9.21
TCLE	7-1/2	17.98	22.02	23.79	25.43	28.43	29.82	14.34	15.49	16.55	18.51	19.41	20.28	9.45	10.21	10.91	12.20	12.80	13.37
TCLE	10	24.78	30.35	32.78	35.04	39.18	41.09	19.79	21.37	22.85	25.55	26.79	27.99	13.03	14.07	15.04	16.82	17.64	18.42
TCLE	12	29.88	36.59	39.52	42.25	47.24	49.55	23.86	25.77	27.55	30.80	32.31	33.74	15.72	16.98	18.15	20.29	21.28	22.23
TJL	11	26.48	32.43	35.03	37.45	41.87	43.91	21.13	22.83	24.40	27.28	28.62	29.89	13.91	15.03	16.06	17.96	18.84	19.67
TJL	14	33.77	41.36	44.68	47.76	53.40	56.00	26.97	29.14	31.15	34.82	36.52	38.15	17.77	19.19	20.52	22.94	24.06	25.13

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.



# TXV extended capacity tables

## R-134a conventional valves (kW) – A Series, T Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
AA/AN/AFA	1/8	0.50	0.61	0.66	0.70	0.78	0.82	0.50	0.61	0.66	0.70	0.78	0.82	0.46	0.56	0.61	0.65	0.73	0.76
AA/AN/AAC/ANC	1/4	0.89	1.08	1.17	1.25	1.40	1.47	0.85	1.04	1.12	1.20	1.34	1.41	0.81	1.00	1.08	1.15	1.29	1.35
AA/AN/AAC/ANC/AFA	1/2	1.52	1.86	2.01	2.15	2.41	2.52	1.52	1.86	2.01	2.15	2.41	2.52	1.45	1.78	1.92	2.05	2.29	2.41
AA/AN/AAC/ANC/AFA	3/4	2.48	3.03	3.28	3.50	3.92	4.11	2.41	2.95	3.18	3.40	3.81	3.99	2.30	2.82	3.04	3.25	3.64	3.82
AA/AN/AAC/ANC/AFA	1	3.54	4.34	4.68	5.01	5.60	5.87	3.47	4.25	4.59	4.91	5.49	5.75	3.29	4.03	4.36	4.66	5.21	5.46
AA/AN/AAC/ANC/AFA	1-1/2	5.20	6.37	6.88	7.36	8.23	8.63	5.10	6.24	6.74	7.21	8.06	8.45	4.89	5.98	6.46	6.91	7.72	8.10
AA/AN/AAC/ANC/AFA	2	7.29	8.93	9.65	10.31	11.53	12.09	7.15	8.76	9.46	10.11	11.31	11.86	6.83	8.37	9.04	9.66	10.80	11.33
AA/AN/AAC/ANC/AFA	2-1/2	8.96	10.97	11.85	12.67	14.16	14.85	8.74	10.71	11.57	12.37	13.83	14.50	8.39	10.28	11.10	11.86	13.27	13.91
AA/AN/AAC/ANC	3	10.62	13.01	14.05	15.02	16.79	17.61	10.41	12.75	13.77	14.72	16.46	17.26	9.95	12.18	13.16	14.07	15.73	16.50
AA/AN/AAC/ANC/AFA	4	14.51	17.78	19.20	20.53	22.95	24.07	14.23	17.43	18.83	20.13	22.50	23.60	13.59	16.65	17.98	19.22	21.49	22.54
TCLE	1/4	1.31	1.60	1.73	1.85	2.07	2.17	1.31	1.60	1.73	1.85	2.07	2.17	1.24	1.52	1.64	1.75	1.96	2.05
TCLE	3/4	2.48	3.03	3.28	3.50	3.92	4.11	2.44	2.99	3.23	3.45	3.86	4.05	2.34	2.86	3.09	3.30	3.69	3.87
TCLE	1-1/2	5.03	6.16	6.65	7.11	7.95	8.34	4.92	6.03	6.51	6.96	7.78	8.16	4.71	5.77	6.23	6.66	7.44	7.81
TCLE	2-1/2	9.27	11.36	12.27	13.12	14.66	15.38	9.10	11.14	12.04	12.87	14.38	15.09	8.71	10.67	11.52	12.32	13.77	14.44
TCLE	3-1/2	13.52	16.56	17.89	19.12	21.38	22.43	13.24	16.22	17.51	18.72	20.93	21.96	12.67	15.52	16.77	17.92	20.04	21.02
TCLE	5-1/2	19.65	24.06	25.99	27.79	31.06	32.58	19.22	23.54	25.43	27.18	30.39	31.88	18.41	22.55	24.35	26.03	29.11	30.53
TCLE	7-1/2	27.08	33.17	35.82	38.30	42.82	44.91	26.51	32.47	35.08	37.50	41.92	43.97	25.35	31.04	33.53	35.85	40.08	42.03
TCLE	9	32.64	39.97	43.18	46.16	51.61	54.13	31.97	39.15	42.29	45.21	50.54	53.01	30.59	37.46	40.46	43.25	48.36	50.72
TJL	9	28.92	35.42	38.26	40.90	45.73	47.96	28.32	34.68	37.46	40.05	44.78	46.96	27.08	33.17	35.82	38.30	42.82	44.91
TJL	11	36.89	45.18	48.80	52.17	58.32	61.17	36.11	44.22	47.77	51.06	57.09	59.88	34.55	42.32	45.71	48.86	54.63	57.30

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
AA/AN/AFA	1/8	0.39	0.48	0.52	0.55	0.62	0.65	0.28	0.31	0.33	0.37	0.38	0.40	0.18	0.19	0.20	0.23	0.24	0.25
AA/AN/AAC/ANC	1/4	0.67	0.82	0.89	0.95	1.06	1.12	0.50	0.54	0.57	0.64	0.67	0.70	0.32	0.34	0.37	0.41	0.43	0.45
AA/AN/AAC/ANC/AFA	1/2	1.20	1.47	1.59	1.70	1.90	2.00	0.89	0.96	1.02	1.14	1.20	1.25	0.53	0.57	0.61	0.69	0.72	0.75
AA/AN/AAC/ANC/AFA	3/4	1.91	2.34	2.53	2.70	3.02	3.17	1.42	1.53	1.64	1.83	1.92	2.00	0.89	0.96	1.02	1.14	1.20	1.25
AA/AN/AAC/ANC/AFA	1	2.73	3.34	3.61	3.85	4.31	4.52	2.02	2.18	2.33	2.60	2.73	2.85	1.24	1.34	1.43	1.60	1.68	1.75
AA/AN/AAC/ANC/AFA	1-1/2	4.00	4.90	5.29	5.66	6.32	6.63	3.01	3.25	3.47	3.88	4.07	4.26	1.84	1.99	2.13	2.38	2.49	2.60
AA/AN/AAC/ANC/AFA	2	5.63	6.89	7.45	7.96	8.90	9.33	4.21	4.55	4.86	5.44	5.70	5.96	2.58	2.79	2.98	3.34	3.50	3.65
AA/AN/AAC/ANC/AFA	2-1/2	6.90	8.45	9.13	9.76	10.91	11.45	5.13	5.54	5.93	6.63	6.95	7.26	3.15	3.40	3.64	4.07	4.27	4.46
AA/AN/AAC/ANC	3	8.18	10.02	10.82	11.56	12.93	13.56	6.09	6.58	7.03	7.86	8.24	8.61	3.75	4.05	4.33	4.84	5.08	5.31
AA/AN/AAC/ANC/AFA	4	11.19	13.70	14.80	15.82	17.69	18.55	8.35	9.02	9.65	10.79	11.31	11.81	5.13	5.54	5.93	6.63	6.95	7.26
TCLE	1/4	1.03	1.26	1.36	1.45	1.62	1.70	0.78	0.84	0.90	1.01	1.05	1.10	0.46	0.50	0.53	0.59	0.62	0.65
TCLE	3/4	1.91	2.34	2.53	2.70	3.02	3.17	1.45	1.57	1.68	1.87	1.97	2.05	0.89	0.96	1.02	1.14	1.20	1.25
TCLE	1-1/2	3.89	4.77	5.15	5.51	6.16	6.46	2.90	3.14	3.35	3.75	3.93	4.11	1.77	1.91	2.04	2.29	2.40	2.50
TCLE	2-1/2	7.15	8.76	9.46	10.11	11.31	11.86	5.35	5.77	6.17	6.90	7.24	7.56	3.29	3.56	3.80	4.25	4.46	4.66
TCLE	3-1/2	10.44	12.79	13.81	14.77	16.51	17.32	7.79	8.41	8.99	10.05	10.55	11.01	4.78	5.16	5.52	6.17	6.47	6.76
TCLE	5-1/2	15.15	18.56	20.04	21.43	23.96	25.13	11.29	12.20	13.04	14.58	15.29	15.97	6.94	7.49	8.01	8.96	9.39	9.81
TCLE	7-1/2	20.89	25.58	27.63	29.54	33.02	34.64	15.58	16.82	17.99	20.11	21.09	22.03	9.56	10.32	11.04	12.34	12.94	13.52
TCLE	9	25.17	30.83	33.30	35.59	39.80	41.74	18.76	20.27	21.66	24.22	25.40	26.53	11.54	12.47	13.33	14.90	15.63	16.32
TJL	9	22.30	27.31	29.50	31.54	35.26	36.98	16.64	17.97	19.21	21.48	22.53	23.53	10.23	11.05	11.81	13.21	13.85	14.47
TJL	11	28.43	34.81	37.60	40.20	44.95	47.14	21.20	22.90	24.48	27.38	28.71	29.99	13.03	14.07	15.04	16.82	17.64	18.42

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.



## TXV extended capacity tables

### R-450A/R-513A conventional valves (kW) A Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
AA/AN/AAC/ANC/AFA	1/8	0.40	0.46	0.51	0.57	0.63	0.68	0.39	0.45	0.50	0.56	0.61	0.66	0.37	0.42	0.47	0.53	0.58	0.63
AA/AN/AAC/ANC/AFA	1/5	0.68	0.78	0.88	0.98	1.07	1.16	0.66	0.76	0.85	0.96	1.05	1.13	0.63	0.73	0.81	0.91	0.99	1.07
AA/AN/AAC/ANC/AFA	1/4	1.22	1.40	1.57	1.75	1.92	2.08	1.19	1.37	1.53	1.71	1.88	2.03	1.13	1.30	1.45	1.63	1.78	1.92
AA/AN/AAC/ANC/AFA	1/2	1.92	2.22	2.48	2.77	3.04	3.28	1.88	2.17	2.42	2.71	2.97	3.20	1.78	2.06	2.30	2.57	2.82	3.04
AA/AN/AAC/ANC/AFA	3/4	2.77	3.20	3.58	4.00	4.38	4.73	2.70	3.12	3.49	3.90	4.27	4.62	2.57	2.97	3.32	3.71	4.06	4.39
AA/AN/AAC/ANC/AFA	1	4.07	4.70	5.25	5.87	6.43	6.95	3.97	4.59	5.13	5.73	6.28	6.78	3.77	4.36	4.87	5.45	5.97	6.45
AA/AN/AAC/ANC/AFA	1-1/2	5.71	6.59	7.37	8.24	9.03	9.75	5.57	6.43	7.19	8.04	8.81	9.52	5.29	6.11	6.83	7.64	8.37	9.04
AA/AN/AAC/ANC/AFA	2	6.98	8.06	9.01	10.08	11.04	11.92	6.81	7.87	8.80	9.84	10.77	11.64	6.47	7.47	8.36	9.34	10.24	11.06
AA/AN/AAC/ANC/AFA	2-1/2	8.31	9.59	10.73	11.99	13.14	14.19	8.11	9.37	10.47	11.71	12.82	13.85	7.71	8.90	9.95	11.12	12.18	13.16
AA/AN/AAC/ANC/AFA	3	11.36	13.12	14.67	16.40	17.96	19.40	11.09	12.81	14.32	16.01	17.53	18.94	10.54	12.17	13.60	15.21	16.66	17.99

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
AA/AN/AAC/ANC/AFA	1/8	0.27	0.31	0.34	0.38	0.42	0.45	0.20	0.23	0.25	0.28	0.30	0.32	0.12	0.13	0.14	0.16	0.17	0.18
AA/AN/AAC/ANC/AFA	1/5	0.46	0.53	0.59	0.66	0.72	0.78	0.35	0.39	0.43	0.47	0.51	0.55	0.20	0.22	0.25	0.27	0.29	0.31
AA/AN/AAC/ANC/AFA	1/4	0.82	0.94	1.06	1.18	1.29	1.40	0.62	0.69	0.78	0.85	0.92	0.98	0.35	0.40	0.44	0.48	0.52	0.56
AA/AN/AAC/ANC/AFA	1/2	1.29	1.49	1.67	1.87	2.05	2.21	0.98	1.10	1.23	1.34	1.45	1.55	0.56	0.63	0.70	0.77	0.83	0.88
AA/AN/AAC/ANC/AFA	3/4	1.86	2.15	2.41	2.69	2.95	3.18	1.41	1.58	1.77	1.93	2.09	2.23	0.81	0.90	1.01	1.10	1.19	1.28
AA/AN/AAC/ANC/AFA	1	2.74	3.16	3.54	3.95	4.33	4.68	2.08	2.32	2.60	2.84	3.07	3.28	1.19	1.32	1.48	1.62	1.75	1.87
AA/AN/AAC/ANC/AFA	1-1/2	3.84	4.44	4.96	5.55	6.08	6.56	2.91	3.26	3.64	3.99	4.31	4.61	1.66	1.86	2.08	2.28	2.46	2.63
AA/AN/AAC/ANC/AFA	2	4.70	5.43	6.07	6.78	7.43	8.02	3.56	3.98	4.45	4.88	5.27	5.63	2.03	2.27	2.54	2.78	3.01	3.21
AA/AN/AAC/ANC/AFA	2-1/2	5.59	6.46	7.22	8.07	8.84	9.55	4.24	4.74	5.30	5.80	6.27	6.70	2.42	2.71	3.02	3.31	3.58	3.83
AA/AN/AAC/ANC/AFA	3	7.65	8.83	9.87	11.04	12.09	13.06	5.80	6.48	7.25	7.94	8.57	9.17	3.31	3.70	4.14	4.53	4.89	5.23

### Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-404A/R-507 conventional valves (kW) – A Series, T Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve(kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
AA/AN/AFA	1/8	0.39	0.48	0.52	0.55	0.62	0.65	0.39	0.48	0.52	0.55	0.62	0.65	0.35	0.43	0.47	0.50	0.56	0.59
AA/AN/AAC/ANC	1/4	0.67	0.82	0.89	0.95	1.06	1.12	0.67	0.82	0.89	0.95	1.06	1.12	0.64	0.78	0.84	0.90	1.01	1.06
AA/AN/AAC/ANC/AFA	1/2	1.17	1.43	1.55	1.65	1.85	1.94	1.17	1.43	1.55	1.65	1.85	1.94	1.10	1.34	1.45	1.55	1.74	1.82
AA/AN/AAC/ANC/AFA	3/4	1.91	2.34	2.53	2.70	3.02	3.17	1.84	2.25	2.44	2.60	2.91	3.05	1.77	2.17	2.34	2.50	2.80	2.94
AA/AN/AAC/ANC/AFA	1	2.73	3.34	3.61	3.85	4.31	4.52	2.66	3.25	3.51	3.75	4.20	4.40	2.51	3.08	3.32	3.55	3.97	4.17
AA/AN/AAC/ANC/AFA	1-1/2	4.00	4.90	5.29	5.66	6.32	6.63	3.89	4.77	5.15	5.51	6.16	6.46	3.72	4.55	4.92	5.26	5.88	6.16
AA/AN/AAC/ANC/AFA	2	5.59	6.85	7.40	7.91	8.84	9.28	5.49	6.72	7.26	7.76	8.68	9.10	5.20	6.37	6.88	7.36	8.23	8.63
AA/AN/AAC/ANC/AFA	2-1/2	6.87	8.41	9.08	9.71	10.86	11.39	6.69	8.19	8.85	9.46	10.58	11.10	6.37	7.80	8.43	9.01	10.08	10.57
AA/AN/AAC/ANC	3	8.14	9.97	10.77	11.51	12.87	13.50	7.97	9.76	10.54	11.26	12.59	13.21	7.58	9.28	10.02	10.71	11.98	12.56
AA/AN/AAC/ANC/AFA	4	11.15	13.66	14.75	15.77	17.63	18.49	10.90	13.35	14.42	15.42	17.24	18.08	10.34	12.66	13.67	14.62	16.34	17.14
TCLE	1/4	1.03	1.26	1.36	1.45	1.62	1.70	0.99	1.21	1.31	1.40	1.57	1.64	0.96	1.17	1.26	1.35	1.51	1.59
TCLE	3/4	1.91	2.34	2.53	2.70	3.02	3.17	1.88	2.30	2.48	2.65	2.97	3.11	1.77	2.17	2.34	2.50	2.80	2.94
TCLE	1-1/2	3.86	4.73	5.10	5.46	6.10	6.40	3.79	4.64	5.01	5.36	5.99	6.28	3.58	4.38	4.73	5.06	5.65	5.93
TCLE	2-1/2	7.12	8.71	9.41	10.06	11.25	11.80	6.97	8.54	9.23	9.86	11.03	11.56	6.62	8.11	8.76	9.36	10.47	10.98
TCLE	3-1/2	10.41	12.75	13.77	14.72	16.46	17.26	10.16	12.44	13.44	14.37	16.06	16.85	9.63	11.79	12.74	13.62	15.22	15.97
TCLE	5-1/2	15.08	18.47	19.95	21.33	23.84	25.01	14.73	18.04	19.48	20.83	23.28	24.42	13.98	17.13	18.50	19.77	22.11	23.19
TCLE	7-1/2	20.78	25.45	27.49	29.39	32.86	34.46	20.28	24.84	26.83	28.69	32.07	33.64	19.29	23.63	25.52	27.28	30.50	31.99
TCLE	9	25.06	30.70	33.16	35.44	39.63	41.56	24.46	29.96	32.36	34.59	38.68	40.56	23.26	28.48	30.77	32.89	36.77	38.57
TJL	9	22.20	27.18	29.36	31.39	35.09	36.81	21.70	26.58	28.71	30.69	34.31	35.99	20.60	25.23	27.25	29.14	32.58	34.17
TJL	11	28.32	34.68	37.46	40.05	44.78	46.96	27.65	33.86	36.57	39.10	43.71	45.85	26.27	32.17	34.75	37.15	41.53	43.56

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
AA/AN/AFA	1/8	0.32	0.39	0.42	0.45	0.50	0.53	0.25	0.30	0.33	0.35	0.39	0.41	0.18	0.22	0.23	0.25	0.28	0.29
AA/AN/AAC/ANC	1/4	0.57	0.69	0.75	0.80	0.90	0.94	0.42	0.52	0.56	0.60	0.67	0.70	0.28	0.35	0.37	0.40	0.45	0.47
AA/AN/AAC/ANC/AFA	1/2	0.99	1.21	1.31	1.40	1.57	1.64	0.78	0.95	1.03	1.10	1.23	1.29	0.50	0.61	0.66	0.70	0.78	0.82
AA/AN/AAC/ANC/AFA	3/4	1.56	1.91	2.06	2.20	2.46	2.58	1.24	1.52	1.64	1.75	1.96	2.05	0.81	1.00	1.08	1.15	1.29	1.35
AA/AN/AAC/ANC/AFA	1	2.23	2.73	2.95	3.15	3.53	3.70	1.77	2.17	2.34	2.50	2.80	2.94	1.13	1.39	1.50	1.60	1.79	1.88
AA/AN/AAC/ANC/AFA	1-1/2	3.29	4.03	4.36	4.66	5.21	5.46	2.58	3.16	3.42	3.65	4.09	4.29	1.70	2.08	2.25	2.40	2.69	2.82
AA/AN/AAC/ANC/AFA	2	4.64	5.68	6.13	6.56	7.33	7.69	3.65	4.47	4.82	5.16	5.77	6.05	2.37	2.90	3.14	3.35	3.75	3.93
AA/AN/AAC/ANC/AFA	2-1/2	5.70	6.98	7.54	8.06	9.01	9.45	4.46	5.46	5.90	6.31	7.05	7.40	2.90	3.56	3.84	4.11	4.59	4.81
AA/AN/AAC/ANC	3	6.76	8.28	8.94	9.56	10.69	11.21	5.31	6.50	7.02	7.51	8.40	8.81	3.47	4.25	4.59	4.91	5.49	5.75
AA/AN/AAC/ANC/AFA	4	9.24	11.32	12.22	13.07	14.61	15.32	7.22	8.84	9.55	10.21	11.42	11.98	4.74	5.81	6.28	6.71	7.50	7.87
TCLE	1/4	0.85	1.04	1.12	1.20	1.34	1.41	0.67	0.82	0.89	0.95	1.06	1.12	0.42	0.52	0.56	0.60	0.67	0.70
TCLE	3/4	1.59	1.95	2.11	2.25	2.52	2.64	1.24	1.52	1.64	1.75	1.96	2.05	0.81	1.00	1.08	1.15	1.29	1.35
TCLE	1-1/2	3.22	3.95	4.26	4.56	5.09	5.34	2.51	3.08	3.32	3.55	3.97	4.17	1.63	1.99	2.15	2.30	2.57	2.70
TCLE	2-1/2	5.91	7.24	7.82	8.36	9.35	9.80	4.64	5.68	6.13	6.56	7.33	7.69	3.04	3.73	4.03	4.31	4.81	5.05
TCLE	3-1/2	8.60	10.54	11.38	12.17	13.60	14.27	6.76	8.28	8.94	9.56	10.69	11.21	4.43	5.42	5.85	6.26	7.00	7.34
TCLE	5-1/2	12.50	15.30	16.53	17.67	19.76	20.72	9.81	12.01	12.97	13.87	15.50	16.26	6.41	7.85	8.48	9.06	10.13	10.63
TCLE	7-1/2	17.20	21.07	22.76	24.33	27.20	28.53	13.49	16.52	17.84	19.07	21.33	22.37	8.81	10.80	11.66	12.47	13.94	14.62
TCLE	9	20.74	25.41	27.44	29.34	32.80	34.40	16.28	19.94	21.54	23.03	25.75	27.00	10.66	13.05	14.10	15.07	16.85	17.67
TJL	9	18.37	22.50	24.30	25.98	29.05	30.47	14.41	17.65	19.06	20.38	22.78	23.89	9.42	11.53	12.46	13.32	14.89	15.62
TJL	11	23.43	28.70	31.00	33.14	37.05	38.86	18.41	22.55	24.35	26.03	29.11	30.53	12.04	14.74	15.92	17.02	19.03	19.96

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-448A/R-449A conventional valves (kW) - A Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
AA/AN/AAC/ANC/AFA	1/5	0.54	0.62	0.69	0.78	0.85	0.92	0.53	0.61	0.69	0.77	0.84	0.91	0.52	0.60	0.67	0.75	0.82	0.89
AA/AN/AAC/ANC/AFA	1/4	0.93	1.08	1.20	1.35	1.48	1.59	0.92	1.07	1.19	1.33	1.46	1.58	0.90	1.04	1.16	1.30	1.43	1.54
AA/AN/AAC/ANC/AFA	1/2	1.64	1.89	2.12	2.37	2.59	2.80	1.62	1.87	2.10	2.34	2.57	2.77	1.58	1.83	2.05	2.29	2.50	2.71
AA/AN/AAC/ANC/AFA	1	2.63	3.04	3.39	3.80	4.16	4.49	2.60	3.00	3.36	3.76	4.11	4.44	2.54	2.93	3.28	3.67	4.02	4.34
AA/AN/AAC/ANC/AFA	1-1/2	3.76	4.34	4.85	5.43	5.95	6.42	3.72	4.30	4.80	5.37	5.88	6.36	3.63	4.19	4.69	5.24	5.74	6.20
AA/AN/AAC/ANC/AFA	2	5.54	6.40	7.15	8.00	8.76	9.46	5.48	6.33	7.08	7.92	8.67	9.37	5.35	6.18	6.91	7.73	8.46	9.14
AA/AN/AAC/ANC/AFA	2-3/4	7.78	8.98	10.04	11.22	12.29	13.28	7.69	8.88	9.93	11.11	12.17	13.14	7.51	8.67	9.70	10.84	11.88	12.83
AA/AN/AAC/ANC/AFA	3-1/2	9.53	11.00	12.30	13.75	15.07	16.27	9.43	10.89	12.17	13.61	14.91	16.10	9.20	10.63	11.88	13.29	14.55	15.72
AA/AN/AAC/ANC/AFA	4	11.31	13.06	14.60	16.32	17.88	19.31	11.19	12.92	14.45	16.15	17.70	19.11	10.93	12.62	14.10	15.77	17.27	18.66
AA/AN/AAC/ANC/AFA	5-1/2	15.47	17.86	19.97	22.32	24.45	26.41	15.31	17.67	19.76	22.09	24.20	26.14	14.94	17.25	19.29	21.56	23.62	25.52

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
AA/AN/AAC/ANC/AFA	1/5	0.50	0.58	0.65	0.73	0.80	0.86	0.46	0.52	0.58	0.63	0.68	0.73	0.31	0.35	0.39	0.43	0.46	0.49
AA/AN/AAC/ANC/AFA	1/4	0.88	1.01	1.13	1.27	1.39	1.50	0.80	0.90	1.00	1.10	1.18	1.27	0.54	0.60	0.68	0.74	0.80	0.85
AA/AN/AAC/ANC/AFA	1/2	1.54	1.78	1.99	2.22	2.44	2.63	1.41	1.57	1.76	1.93	2.08	2.22	0.95	1.06	1.19	1.30	1.41	1.50
AA/AN/AAC/ANC/AFA	1	2.47	2.85	3.19	3.57	3.91	4.22	2.26	2.52	2.82	3.09	3.34	3.57	1.52	1.70	1.90	2.09	2.25	2.41
AA/AN/AAC/ANC/AFA	1-1/2	3.53	4.08	4.56	5.10	5.59	6.03	3.23	3.61	4.03	4.42	4.77	5.10	2.18	2.44	2.72	2.98	3.22	3.44
AA/AN/AAC/ANC/AFA	2	5.21	6.01	6.72	7.52	8.23	8.89	4.75	5.32	5.94	6.51	7.03	7.52	3.21	3.59	4.01	4.40	4.75	5.08
AA/AN/AAC/ANC/AFA	2-3/4	7.31	8.44	9.43	10.55	11.55	12.48	6.67	7.46	8.34	9.13	9.87	10.55	4.50	5.04	5.63	6.17	6.66	7.12
AA/AN/AAC/ANC/AFA	3-1/2	8.95	10.34	11.56	12.92	14.16	15.29	8.18	9.14	10.22	11.19	12.09	12.93	5.52	6.17	6.90	7.56	8.16	8.73
AA/AN/AAC/ANC/AFA	4	10.63	12.27	13.72	15.34	16.80	18.15	9.70	10.85	12.13	13.29	14.35	15.34	6.55	7.33	8.19	8.97	9.69	10.36
AA/AN/AAC/ANC/AFA	5-1/2	14.53	16.78	18.76	20.98	22.98	24.82	13.27	14.84	16.59	18.17	19.63	20.98	8.96	10.02	11.20	12.27	13.25	14.17

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-404A/R-507 conventional valves (kW) – A Series, T Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
AA/AN/AFA	1/8	0.50	0.61	0.66	0.70	0.78	0.82	0.50	0.61	0.66	0.70	0.78	0.82	0.50	0.61	0.66	0.70	0.78	0.82
AA/AN/AAC/ANC	1/4	0.89	1.08	1.17	1.25	1.40	1.47	0.85	1.04	1.12	1.20	1.34	1.41	0.81	1.00	1.08	1.15	1.29	1.35
AA/AN/AAC/ANC/AFA	1/2	1.56	1.91	2.06	2.20	2.46	2.58	1.52	1.86	2.01	2.15	2.41	2.52	1.45	1.78	1.92	2.05	2.29	2.41
AA/AN/AAC/ANC/AFA	3/4	2.48	3.03	3.28	3.50	3.92	4.11	2.44	2.99	3.23	3.45	3.86	4.05	2.34	2.86	3.09	3.30	3.69	3.87
AA/AN/AAC/ANC/AFA	1	3.54	4.34	4.68	5.01	5.60	5.87	3.47	4.25	4.59	4.91	5.49	5.75	3.36	4.12	4.45	4.76	5.32	5.58
AA/AN/AAC/ANC/AFA	1-1/2	5.24	6.42	6.93	7.41	8.28	8.69	5.13	6.29	6.79	7.26	8.12	8.51	4.92	6.03	6.51	6.96	7.78	8.16
AA/AN/AAC/ANC/AFA	2	7.33	8.97	9.69	10.36	11.59	12.15	7.22	8.84	9.55	10.21	11.42	11.98	6.90	8.45	9.13	9.76	10.91	11.45
AA/AN/AAC/ANC/AFA	2-1/2	8.99	11.01	11.89	12.72	14.22	14.91	8.81	10.80	11.66	12.47	13.94	14.62	8.46	10.36	11.19	11.97	13.38	14.03
AA/AN/AAC/ANC	3	10.69	13.09	14.14	15.12	16.90	17.73	10.48	12.83	13.86	14.82	16.57	17.38	10.05	12.31	13.30	14.22	15.90	16.67
AA/AN/AAC/ANC/AFA	4	14.58	17.86	19.29	20.63	23.06	24.19	14.34	17.56	18.97	20.28	22.67	23.78	13.77	16.87	18.22	19.47	21.77	22.84
TCLE	1/4	1.35	1.65	1.78	1.90	2.13	2.23	1.31	1.60	1.73	1.85	2.07	2.17	1.27	1.56	1.69	1.80	2.02	2.11
TCLE	3/4	2.51	3.08	3.32	3.55	3.97	4.17	2.48	3.03	3.28	3.50	3.92	4.11	2.37	2.90	3.14	3.35	3.75	3.93
TCLE	1-1/2	5.06	6.20	6.70	7.16	8.00	8.39	4.99	6.11	6.60	7.06	7.89	8.28	4.78	5.85	6.32	6.76	7.56	7.93
TCLE	2-1/2	9.35	11.45	12.36	13.22	14.78	15.50	9.17	11.23	12.13	12.97	14.50	15.20	8.81	10.80	11.66	12.47	13.94	14.62
TCLE	3-1/2	13.63	16.69	18.03	19.27	21.55	22.60	13.35	16.35	17.65	18.87	21.10	22.13	12.81	15.69	16.95	18.12	20.26	21.25
TCLE	5-1/2	19.75	24.19	26.13	27.94	31.23	32.76	19.40	23.76	25.66	27.43	30.67	32.17	18.62	22.81	24.63	26.33	29.44	30.88
TCLE	7-1/2	27.22	33.34	36.01	38.50	43.04	45.14	26.73	32.73	35.36	37.80	42.26	44.32	25.67	31.43	33.95	36.30	40.58	42.56
TCLE	9	32.82	40.19	43.41	46.41	51.89	54.42	32.21	39.45	42.62	45.56	50.93	53.42	30.94	37.89	40.93	43.76	48.92	51.31
TJL	9	29.10	35.64	38.49	41.15	46.01	48.25	28.57	34.99	37.79	40.40	45.17	47.37	27.44	33.60	36.29	38.80	43.38	45.50
TJL	11	37.10	45.44	49.08	52.47	58.66	61.52	36.43	44.61	48.19	51.51	57.60	60.41	34.98	42.84	46.27	49.46	55.30	58.00

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
AA/AN/AFA	1/8	0.39	0.48	0.52	0.55	0.62	0.65	0.32	0.39	0.42	0.45	0.50	0.53	0.18	0.22	0.23	0.25	0.28	0.29
AA/AN/AAC/ANC	1/4	0.71	0.87	0.94	1.00	1.12	1.17	0.53	0.65	0.70	0.75	0.84	0.88	0.32	0.39	0.42	0.45	0.50	0.53
AA/AN/AAC/ANC/AFA	1/2	1.24	1.52	1.64	1.75	1.96	2.05	0.92	1.13	1.22	1.30	1.46	1.53	0.60	0.74	0.80	0.85	0.95	1.00
AA/AN/AAC/ANC/AFA	3/4	1.98	2.43	2.62	2.80	3.13	3.29	1.49	1.82	1.97	2.10	2.35	2.47	0.96	1.17	1.26	1.35	1.51	1.59
AA/AN/AAC/ANC/AFA	1	2.83	3.47	3.75	4.01	4.48	4.70	2.16	2.64	2.86	3.05	3.41	3.58	1.35	1.65	1.78	1.90	2.13	2.23
AA/AN/AAC/ANC/AFA	1-1/2	4.18	5.12	5.53	5.91	6.60	6.93	3.19	3.90	4.21	4.51	5.04	5.28	1.98	2.43	2.62	2.80	3.13	3.29
AA/AN/AAC/ANC/AFA	2	5.84	7.15	7.73	8.26	9.24	9.69	4.46	5.46	5.90	6.31	7.05	7.40	2.80	3.43	3.70	3.95	4.42	4.64
AA/AN/AAC/ANC/AFA	2-1/2	7.15	8.76	9.46	10.11	11.31	11.86	5.45	6.68	7.21	7.71	8.62	9.04	3.43	4.21	4.54	4.86	5.43	5.69
AA/AN/AAC/ANC	3	8.50	10.41	11.24	12.02	13.43	14.09	6.48	7.93	8.57	9.16	10.24	10.74	4.07	4.99	5.39	5.76	6.44	6.75
AA/AN/AAC/ANC/AFA	4	11.61	14.22	15.36	16.42	18.36	19.25	8.85	10.84	11.71	12.52	13.99	14.68	5.56	6.81	7.35	7.86	8.79	9.22
TCLE	1/4	1.06	1.30	1.40	1.50	1.68	1.76	0.81	1.00	1.08	1.15	1.29	1.35	0.50	0.61	0.66	0.70	0.78	0.82
TCLE	3/4	1.98	2.43	2.62	2.80	3.13	3.29	1.52	1.86	2.01	2.15	2.41	2.52	0.96	1.17	1.26	1.35	1.51	1.59
TCLE	1-1/2	4.04	4.94	5.34	5.71	6.38	6.69	3.08	3.77	4.07	4.36	4.87	5.11	1.95	2.38	2.58	2.75	3.08	3.23
TCLE	2-1/2	7.43	9.10	9.83	10.51	11.75	12.33	5.66	6.94	7.49	8.01	8.96	9.39	3.58	4.38	4.73	5.06	5.65	5.93
TCLE	3-1/2	10.83	13.27	14.33	15.32	17.13	17.96	8.25	10.10	10.91	11.66	13.04	13.68	5.20	6.37	6.88	7.36	8.23	8.63
TCLE	5-1/2	15.72	19.25	20.79	22.23	24.85	26.06	11.97	14.65	15.83	16.92	18.92	19.84	7.54	9.23	9.97	10.66	11.92	12.50
TCLE	7-1/2	21.66	26.53	28.66	30.64	34.26	35.93	16.50	20.20	21.82	23.33	26.08	27.36	10.37	12.70	13.72	14.67	16.40	17.20
TCLE	9	26.13	32.00	34.56	36.95	41.31	43.32	19.89	24.37	26.32	28.14	31.46	32.99	12.53	15.35	16.58	17.72	19.81	20.78
TJL	9	23.15	28.35	30.63	32.74	36.61	38.39	17.63	21.59	23.32	24.93	27.87	29.23	11.08	13.57	14.66	15.67	17.52	18.37
TJL	11	29.52	36.16	39.06	41.75	46.68	48.96	22.48	27.53	29.74	31.79	35.54	37.28	14.16	17.34	18.73	20.03	22.39	23.48

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-410A conventional valves (kW)– A Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		750	1000	1100	1450	1700	2000	750	1000	1100	1450	1700	2000	750	1000	1100	1450	1700	2000
AA/AN/AAC/ANC	1/4	1.20	1.39	1.46	1.67	1.81	1.97	1.20	1.39	1.46	1.67	1.81	1.97	1.17	1.35	1.41	1.62	1.76	1.91
AA/AN/AAC/ANC/AFA	1/2	2.12	2.45	2.57	2.95	3.20	3.47	2.09	2.41	2.53	2.90	3.14	3.41	2.05	2.37	2.49	2.85	3.09	3.35
AA/AN/AAC/ANC/AFA	1	3.40	3.92	4.12	4.73	5.12	5.55	3.36	3.88	4.07	4.68	5.06	5.49	3.29	3.80	3.99	4.58	4.96	5.38
AA/AN/AAC/ANC/AFA	1-1/2	4.89	5.64	5.92	6.79	7.35	7.98	4.81	5.56	5.83	6.69	7.25	7.86	4.71	5.44	5.70	6.55	7.09	7.69
AA/AN/AAC/ANC/AFA	2	7.19	8.30	8.70	9.99	10.82	11.74	7.12	8.22	8.62	9.89	10.71	11.62	6.94	8.01	8.40	9.65	10.45	11.33
AA/AN/AAC/ANC/AFA	3	10.09	11.65	12.22	14.03	15.19	16.48	9.98	11.53	12.09	13.88	15.03	16.30	9.70	11.20	11.75	13.49	14.60	15.84
AA/AN/AAC/ANC/AFA	4	12.35	14.27	14.96	17.18	18.60	20.17	12.21	14.10	14.79	16.98	18.39	19.94	11.89	13.73	14.40	16.54	17.91	19.42
AA/AN/AAC/ANC	5	14.66	16.92	17.75	20.38	22.06	23.93	14.51	16.76	17.58	20.18	21.85	23.70	14.12	16.31	17.11	19.64	21.27	23.07

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		1000	1100	1450	1700	2000	2300	1000	1100	1450	1700	2000	2300	1000	1100	1450	1700	2000	2300
AA/AN/AAC/ANC	1/4	1.20	1.26	1.45	1.57	1.70	1.83	0.85	0.89	1.02	1.11	1.20	1.29	0.57	0.59	0.68	0.74	0.80	0.86
AA/AN/AAC/ANC/AFA	1/2	2.12	2.23	2.56	2.77	3.00	3.22	1.45	1.52	1.75	1.89	2.05	2.20	0.96	1.00	1.15	1.25	1.35	1.45
AA/AN/AAC/ANC/AFA	1	3.36	3.53	4.05	4.38	4.76	5.10	2.34	2.45	2.81	3.05	3.30	3.54	1.56	1.63	1.88	2.03	2.20	2.36
AA/AN/AAC/ANC/AFA	1-1/2	4.81	5.05	5.80	6.28	6.81	7.30	3.36	3.53	4.05	4.38	4.76	5.10	2.23	2.34	2.69	2.91	3.15	3.38
AA/AN/AAC/ANC/AFA	2	7.12	7.46	8.57	9.28	10.06	10.79	4.96	5.20	5.97	6.46	7.01	7.52	3.29	3.45	3.96	4.29	4.66	4.99
AA/AN/AAC/ANC/AFA	3	9.98	10.47	12.02	13.02	14.12	15.14	6.94	7.28	8.35	9.05	9.81	10.52	4.60	4.83	5.54	6.00	6.51	6.98
AA/AN/AAC/ANC/AFA	4	12.25	12.85	14.75	15.97	17.32	18.58	8.50	8.91	10.23	11.08	12.02	12.88	5.66	5.94	6.82	7.38	8.01	8.59
AA/AN/AAC/ANC	5	14.51	15.22	17.48	18.92	20.53	22.01	10.09	10.58	12.15	13.15	14.27	15.30	6.69	7.02	8.06	8.72	9.46	10.15

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-502 conventional valves (kW)– A Series, T Series

Valve type	Nominal rating	Evaporator temperature																		
		10°C						0°C						-10°C						
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100	
AA/AN/AAC/ANC	1/4	0.60	0.74	0.80	0.85	0.95	1.00	0.60	0.74	0.80	0.85	0.95	1.00	0.57	0.69	0.75	0.80	0.90	0.94	
AA/AN/AAC/ANC/AFA	1/2	1.06	1.30	1.40	1.50	1.68	1.76	1.03	1.26	1.36	1.45	1.62	1.70	0.99	1.21	1.31	1.40	1.57	1.64	
AA/AN/AAC/ANC/AFA	3/4	1.70	2.08	2.25	2.40	2.69	2.82	1.66	2.04	2.20	2.35	2.63	2.76	1.59	1.95	2.11	2.25	2.52	2.64	
AA/AN/AAC/ANC/AFA	1	2.41	2.95	3.18	3.40	3.81	3.99	2.37	2.90	3.14	3.35	3.75	3.93	2.27	2.77	3.00	3.20	3.58	3.76	
AA/AN/AAC/ANC/AFA	2	4.99	6.11	6.60	7.06	7.89	8.28	4.89	5.98	6.46	6.91	7.72	8.10	4.67	5.72	6.18	6.61	7.39	7.75	
AA/AN/AAC/ANC/AFA	2-1/2	6.12	7.50	8.10	8.66	9.68	10.16	5.98	7.33	7.91	8.46	9.46	9.92	5.73	7.02	7.59	8.11	9.07	9.51	
AA/AN/AAC/ANC	3	7.26	8.89	9.60	10.26	11.47	12.03	7.12	8.71	9.41	10.06	11.25	11.80	6.80	8.32	8.99	9.61	10.75	11.27	
AA/AN/AAC/ANC/AFA	4	9.95	12.18	13.16	14.07	15.73	16.50	9.74	11.92	12.88	13.77	15.39	16.14	9.27	11.36	12.27	13.12	14.66	15.38	
TCLE	1/4	0.92	1.13	1.22	1.30	1.46	1.53	0.89	1.08	1.17	1.25	1.40	1.47	0.85	1.04	1.12	1.20	1.34	1.41	
TCLE	3/4	1.70	2.08	2.25	2.40	2.69	2.82	1.66	2.04	2.20	2.35	2.63	2.76	1.59	1.95	2.11	2.25	2.52	2.64	
TCLE	1-1/2	3.43	4.21	4.54	4.86	5.43	5.69	3.36	4.12	4.45	4.76	5.32	5.58	3.22	3.95	4.26	4.56	5.09	5.34	
TCLE	2-1/2	6.37	7.80	8.43	9.01	10.08	10.57	6.23	7.63	8.24	8.81	9.85	10.33	5.95	7.28	7.87	8.41	9.40	9.86	
TCLE	3-1/2	9.27	11.36	12.27	13.12	14.66	15.38	9.06	11.10	11.99	12.82	14.33	15.03	8.64	10.58	11.43	12.22	13.66	14.32	
TCLE	5-1/2	13.45	16.48	17.80	19.02	21.27	22.31	13.17	16.13	17.42	18.62	20.82	21.84	12.57	15.39	16.62	17.77	19.87	20.84	
TCLE	7-1/2	18.51	22.68	24.49	26.18	29.27	30.70	18.12	22.20	23.98	25.63	28.66	30.06	17.31	21.20	22.90	24.48	27.37	28.71	
TCLE	9	22.34	27.36	29.55	31.59	35.32	37.04	21.88	26.79	28.94	30.94	34.59	36.28	20.89	25.58	27.63	29.54	33.02	34.64	
TJL	9	19.79	24.24	26.18	27.99	31.29	32.82	19.36	23.72	25.62	27.38	30.62	32.11	18.48	22.63	24.45	26.13	29.22	30.64	
TJL	11	25.24	30.91	33.39	35.70	39.91	41.86	24.71	30.26	32.69	34.94	39.07	40.98	23.58	28.88	31.19	33.34	37.28	39.10	

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
AA/AN/AAC/ANC	1/4	0.53	0.65	0.70	0.75	0.84	0.88	0.39	0.42	0.45	0.50	0.53	0.55	0.25	0.27	0.29	0.32	0.34	0.35
AA/AN/AAC/ANC/AFA	1/2	0.92	1.13	1.22	1.30	1.46	1.53	0.71	0.76	0.82	0.91	0.96	1.00	0.46	0.50	0.53	0.59	0.62	0.65
AA/AN/AAC/ANC/AFA	3/4	1.45	1.78	1.92	2.05	2.29	2.41	1.13	1.22	1.31	1.46	1.53	1.60	0.74	0.80	0.86	0.96	1.01	1.05
AA/AN/AAC/ANC/AFA	1	2.09	2.56	2.76	2.95	3.30	3.46	1.63	1.76	1.88	2.10	2.20	2.30	1.03	1.11	1.19	1.33	1.39	1.45
AA/AN/AAC/ANC/AFA	2	4.28	5.25	5.67	6.06	6.77	7.10	3.40	3.67	3.92	4.39	4.60	4.81	2.16	2.33	2.49	2.79	2.92	3.05
AA/AN/AAC/ANC/AFA	2-1/2	5.27	6.46	6.98	7.46	8.34	8.75	4.14	4.47	4.78	5.35	5.61	5.86	2.66	2.87	3.07	3.43	3.59	3.75
AA/AN/AAC/ANC	3	6.23	7.63	8.24	8.81	9.85	10.33	4.92	5.31	5.68	6.35	6.66	6.96	3.15	3.40	3.64	4.07	4.27	4.46
AA/AN/AAC/ANC/AFA	4	8.53	10.45	11.29	12.07	13.49	14.15	6.73	7.26	7.77	8.68	9.11	9.51	4.28	4.63	4.95	5.53	5.80	6.06
TCLE	1/4	0.78	0.95	1.03	1.10	1.23	1.29	0.60	0.65	0.69	0.78	0.81	0.85	0.39	0.42	0.45	0.50	0.53	0.55
TCLE	3/4	1.45	1.78	1.92	2.05	2.29	2.41	1.17	1.26	1.35	1.51	1.58	1.65	0.74	0.80	0.86	0.96	1.01	1.05
TCLE	1-1/2	2.97	3.64	3.93	4.21	4.70	4.93	2.34	2.52	2.70	3.02	3.16	3.30	1.49	1.61	1.72	1.92	2.01	2.10
TCLE	2-1/2	5.45	6.68	7.21	7.71	8.62	9.04	4.32	4.66	4.99	5.58	5.85	6.11	2.76	2.98	3.19	3.56	3.74	3.90
TCLE	3-1/2	7.97	9.76	10.54	11.26	12.59	13.21	6.30	6.81	7.28	8.13	8.53	8.91	4.00	4.32	4.62	5.16	5.42	5.66
TCLE	5-1/2	11.54	14.13	15.27	16.32	18.25	19.14	9.13	9.86	10.55	11.79	12.37	12.92	5.81	6.27	6.70	7.49	7.86	8.21
TCLE	7-1/2	15.93	19.51	21.07	22.53	25.19	26.42	12.57	13.57	14.51	16.22	17.02	17.77	8.00	8.64	9.24	10.33	10.83	11.31
TCLE	9	19.19	23.50	25.38	27.13	30.34	31.82	15.15	16.37	17.50	19.56	20.51	21.43	9.66	10.44	11.16	12.48	13.09	13.67
TJL	9	17.03	20.85	22.53	24.08	26.92	28.24	13.45	14.53	15.53	17.37	18.21	19.02	8.57	9.25	9.89	11.06	11.60	12.12
TJL	11	21.70	26.58	28.71	30.69	34.31	35.99	17.13	18.51	19.78	22.12	23.20	24.23	10.90	11.78	12.59	14.08	14.76	15.42

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-12 balanced ported valves (kW)– B, HF, TRAE and T Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
BA/BN	1/4	1.06	1.30	1.40	1.50	1.68	1.76	1.06	1.30	1.40	1.50	1.68	1.76	0.99	1.21	1.31	1.40	1.57	1.64
BA/BN	1/2	2.02	2.47	2.67	2.85	3.19	3.35	1.98	2.43	2.62	2.80	3.13	3.29	1.91	2.34	2.53	2.70	3.02	3.17
BA/BN	1	3.19	3.90	4.21	4.51	5.04	5.28	3.12	3.82	4.12	4.41	4.93	5.17	2.97	3.64	3.93	4.21	4.70	4.93
BA/BN	1-1/4	4.25	5.20	5.62	6.01	6.72	7.04	4.14	5.07	5.48	5.86	6.55	6.87	4.00	4.90	5.29	5.66	6.32	6.63
BA/BN	1-1/2	5.35	6.55	7.07	7.56	8.45	8.86	5.24	6.42	6.93	7.41	8.28	8.69	5.03	6.16	6.65	7.11	7.95	8.34
BA/BN	2	6.48	7.93	8.57	9.16	10.24	10.74	6.37	7.80	8.43	9.01	10.08	10.57	6.09	7.46	8.05	8.61	9.63	10.10
BA/BN	2-1/2	8.39	10.28	11.10	11.86	13.27	13.91	8.25	10.10	10.91	11.66	13.04	13.68	7.89	9.67	10.44	11.16	12.48	13.09
BA/BN	3	10.62	13.01	14.05	15.02	16.79	17.61	10.41	12.75	13.77	14.72	16.46	17.26	9.98	12.23	13.21	14.12	15.78	16.55
BA/BN	3-1/2	13.20	16.17	17.47	18.67	20.88	21.90	12.96	15.87	17.14	18.32	20.49	21.49	12.43	15.22	16.44	17.57	19.65	20.61
HF/HN	1/8	0.60	0.74	0.80	0.85	0.95	1.00	0.60	0.74	0.80	0.85	0.95	1.00	0.57	0.69	0.75	0.80	0.90	0.94
HF/HN	1/4	1.13	1.39	1.50	1.60	1.79	1.88	1.10	1.34	1.45	1.55	1.74	1.82	1.06	1.30	1.40	1.50	1.68	1.76
HF/HN	1/2	2.02	2.47	2.67	2.85	3.19	3.35	1.98	2.43	2.62	2.80	3.13	3.29	1.91	2.34	2.53	2.70	3.02	3.17
HF/HN	1	3.12	3.82	4.12	4.41	4.93	5.17	3.04	3.73	4.03	4.31	4.81	5.05	2.90	3.56	3.84	4.11	4.59	4.81
HF/HN	1-1/4	4.18	5.12	5.53	5.91	6.60	6.93	4.11	5.03	5.43	5.81	6.49	6.81	3.93	4.81	5.20	5.56	6.21	6.52
HF/HN	1-1/2	5.35	6.55	7.07	7.56	8.45	8.86	5.24	6.42	6.93	7.41	8.28	8.69	5.03	6.16	6.65	7.11	7.95	8.34
HF/HN	2	7.08	8.67	9.37	10.01	11.19	11.74	6.94	8.50	9.18	9.81	10.97	11.51	6.66	8.15	8.80	9.41	10.52	11.04
HF/HN	3-1/2	12.57	15.39	16.62	17.77	19.87	20.84	12.32	15.09	16.30	17.42	19.48	20.43	11.82	14.48	15.64	16.72	18.69	19.61
HF/HN	5	17.49	21.42	23.13	24.73	27.65	29.00	17.17	21.03	22.71	24.28	27.15	28.47	16.46	20.16	21.78	23.28	26.03	27.30
HF/HN	6	22.16	27.14	29.32	31.34	35.04	36.75	21.70	26.58	28.71	30.69	34.31	35.99	20.82	25.49	27.54	29.44	32.91	34.52
HF/HN	9	32.85	40.23	43.46	46.46	51.94	54.48	32.21	39.45	42.62	45.56	50.93	53.42	30.90	37.85	40.88	43.71	48.86	51.25
HF/HN	12	43.26	52.98	57.23	61.18	68.40	71.74	42.41	51.94	56.10	59.98	67.05	70.33	40.67	49.82	53.81	57.52	64.31	67.45
TRAE+	7-1/2	25.28	30.96	33.44	35.75	39.96	41.91	24.78	30.35	32.78	35.04	39.18	41.09	23.75	29.09	31.42	33.59	37.56	39.39
TRAE+	10	36.85	45.13	48.75	52.12	58.27	61.11	36.11	44.22	47.77	51.06	57.09	59.88	34.62	42.40	45.80	48.96	54.74	57.41
TRAE+	12	41.13	50.38	54.42	58.17	65.04	68.21	40.32	49.38	53.34	57.02	63.75	66.86	38.66	47.34	51.14	54.67	61.12	64.11
TRAE+	18	62.34	76.35	82.47	88.16	98.57	103.38	61.10	74.83	80.83	86.41	96.61	101.32	58.59	71.75	77.50	82.85	92.63	97.16
TRAE+	25	85.67	104.92	113.33	121.15	135.45	142.06	84.00	102.88	111.13	118.80	132.82	139.31	80.54	98.63	106.54	113.89	127.34	133.55
TRAE	30	115.65	141.64	152.99	163.56	182.86	191.79	113.39	138.87	150.00	160.35	179.28	188.03	108.75	133.19	143.86	153.79	171.95	180.34
TRAE	35	126.17	154.52	166.90	178.43	199.49	209.22	123.69	151.49	163.62	174.92	195.57	205.11	118.63	145.29	156.93	167.76	187.56	196.72
TRAE	40	150.13	183.87	198.61	212.32	237.38	248.96	147.19	180.27	194.72	208.16	232.73	244.09	141.18	172.90	186.76	199.65	223.22	234.11
TJR	8	31.47	38.54	41.63	44.51	49.76	52.19	30.87	37.81	40.84	43.66	48.81	51.19	29.59	36.25	39.15	41.85	46.79	49.08
TJR	11	37.70	46.17	49.87	53.32	59.61	62.52	36.96	45.26	48.89	52.27	58.44	61.29	35.44	43.40	46.88	50.11	56.03	58.76
TER	13	47.12	57.71	62.33	66.63	74.50	78.14	46.20	56.58	61.11	65.33	73.04	76.61	44.29	54.24	58.58	62.63	70.02	73.44
TER	15	55.68	68.20	73.66	78.75	88.04	92.34	54.59	66.85	72.21	77.20	86.31	90.52	52.36	64.12	69.26	74.04	82.78	86.82
TER	20	74.98	91.83	99.19	106.03	118.55	124.34	73.49	90.01	97.22	103.93	116.20	121.87	70.48	86.32	93.24	99.68	111.44	116.88
TER	25	96.39	118.06	127.52	136.32	152.41	159.85	94.48	115.72	124.99	133.62	149.39	156.68	90.62	110.99	119.88	128.16	143.29	150.28
TIR	35	110.77	135.66	146.53	156.65	175.14	183.69	83.65	102.45	110.66	118.30	132.26	138.72	110.77	135.66	146.53	156.65	175.14	183.69
THR	45	149.92	183.61	198.32	212.02	237.04	248.61	146.98	180.01	194.44	207.86	232.40	243.74	140.96	172.64	186.48	199.35	222.88	233.76
THR	55	182.06	222.98	240.85	257.47	287.87	301.92	178.49	218.60	236.12	252.42	282.21	295.99	171.16	209.63	226.42	242.06	270.63	283.84
TMR	55	214.17	262.30	283.32	302.88	338.63	355.16	209.99	257.19	277.79	296.97	332.03	348.23	201.39	246.65	266.41	284.81	318.43	333.97

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.



# TXV extended capacity tables

## R-12 balanced ported valves (kW)– B, HF, TRAE and T Series

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kpa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
BA/BN	1/4	0.89	1.08	1.17	1.25	1.40	1.47	0.71	0.76	0.82	0.91	0.96	1.00	0.46	0.50	0.53	0.59	0.62	0.65
BA/BN	1/2	1.70	2.08	2.25	2.40	2.69	2.82	1.35	1.45	1.55	1.74	1.82	1.90	0.85	0.92	0.98	1.10	1.15	1.20
BA/BN	1	2.66	3.25	3.51	3.75	4.20	4.40	2.05	2.22	2.37	2.65	2.78	2.90	1.35	1.45	1.55	1.74	1.82	1.90
BA/BN	1-1/4	3.54	4.34	4.68	5.01	5.60	5.87	2.76	2.98	3.19	3.56	3.74	3.90	1.81	1.95	2.08	2.33	2.44	2.55
BA/BN	1-1/2	4.46	5.46	5.90	6.31	7.05	7.40	3.50	3.79	4.05	4.52	4.75	4.96	2.27	2.45	2.62	2.92	3.07	3.20
BA/BN	2	5.42	6.63	7.16	7.66	8.56	8.98	4.25	4.59	4.91	5.48	5.75	6.01	2.76	2.98	3.19	3.56	3.74	3.90
BA/BN	2-1/2	7.01	8.58	9.27	9.91	11.08	11.62	5.49	5.93	6.34	7.08	7.43	7.76	3.58	3.86	4.13	4.62	4.84	5.06
BA/BN	3	8.85	10.84	11.71	12.52	13.99	14.68	6.94	7.49	8.01	8.96	9.39	9.81	4.50	4.86	5.19	5.80	6.09	6.36
BA/BN	3-1/2	11.01	13.48	14.56	15.57	17.41	18.26	8.64	9.33	9.97	11.15	11.70	12.22	5.59	6.04	6.46	7.22	7.57	7.91
HF/HN	1/8	0.50	0.61	0.66	0.70	0.78	0.82	0.39	0.42	0.45	0.50	0.53	0.55	0.25	0.27	0.29	0.32	0.34	0.35
HF/HN	1/4	0.96	1.17	1.26	1.35	1.51	1.59	0.74	0.80	0.86	0.96	1.01	1.05	0.50	0.54	0.57	0.64	0.67	0.70
HF/HN	1/2	1.70	2.08	2.25	2.40	2.69	2.82	1.35	1.45	1.55	1.74	1.82	1.90	0.85	0.92	0.98	1.10	1.15	1.20
HF/HN	1	2.58	3.16	3.42	3.65	4.09	4.29	2.02	2.18	2.33	2.60	2.73	2.85	1.31	1.41	1.51	1.69	1.77	1.85
HF/HN	1-1/4	3.47	4.25	4.59	4.91	5.49	5.75	2.73	2.94	3.15	3.52	3.69	3.85	1.77	1.91	2.04	2.29	2.40	2.50
HF/HN	1-1/2	4.46	5.46	5.90	6.31	7.05	7.40	3.50	3.79	4.05	4.52	4.75	4.96	2.27	2.45	2.62	2.92	3.07	3.20
HF/HN	2	5.88	7.20	7.77	8.31	9.29	9.74	4.60	4.97	5.31	5.94	6.23	6.51	3.01	3.25	3.47	3.88	4.07	4.26
HF/HN	3-1/2	10.48	12.83	13.86	14.82	16.57	17.38	8.21	8.87	9.48	10.60	11.12	11.61	5.35	5.77	6.17	6.90	7.24	7.56
HF/HN	5	14.58	17.86	19.29	20.63	23.06	24.19	11.43	12.35	13.20	14.76	15.48	16.17	7.43	8.03	8.58	9.60	10.07	10.51
HF/HN	6	18.44	22.59	24.40	26.08	29.16	30.58	14.44	15.60	16.68	18.65	19.56	20.43	9.42	10.17	10.87	12.16	12.75	13.32
HF/HN	9	27.36	33.51	36.20	38.70	43.27	45.38	21.45	23.17	24.77	27.69	29.05	30.34	13.95	15.07	16.11	18.01	18.89	19.72
HF/HN	12	36.00	44.09	47.63	50.91	56.92	59.70	28.21	30.47	32.58	36.42	38.20	39.90	18.34	19.81	21.17	23.67	24.83	25.93
TRAE+	7-1/2	21.06	25.80	27.86	29.79	33.30	34.93	16.50	17.82	19.05	21.30	22.34	23.33	10.73	11.59	12.39	13.85	14.52	15.17
TRAE+	10	30.69	37.59	40.60	43.40	48.53	50.90	24.04	25.96	27.76	31.03	32.55	33.99	15.65	16.90	18.07	20.20	21.19	22.13
TRAE+	12	34.23	41.93	45.28	48.41	54.13	56.77	26.83	28.98	30.98	34.64	36.33	37.95	17.45	18.85	20.15	22.53	23.63	24.68
TRAE+	18	51.90	63.56	68.65	73.39	82.06	86.06	40.67	43.93	46.97	52.51	55.07	57.52	26.44	28.56	30.53	34.14	35.81	37.40
TRAE+	25	71.33	87.36	94.36	100.88	112.78	118.29	55.93	60.41	64.58	72.21	75.73	79.10	36.36	39.27	41.98	46.94	49.23	51.41
TRAE	30	96.32	117.97	127.42	136.22	152.30	159.73	75.51	81.56	87.19	97.48	102.24	106.78	49.10	53.03	56.70	63.39	66.48	69.44
TRAE	35	105.07	128.68	138.99	148.59	166.13	174.23	82.34	88.94	95.08	106.30	111.49	116.45	53.56	57.85	61.85	69.15	72.52	75.75
TRAE	40	125.03	153.13	165.40	176.82	197.69	207.34	97.99	105.84	113.15	126.50	132.68	138.57	63.72	68.83	73.58	82.26	86.28	90.11
TJR	8	26.23	32.13	34.70	37.10	41.48	43.50	20.57	22.22	23.75	26.55	27.85	29.09	13.35	14.42	15.41	17.23	18.07	18.87
TJR	11	31.40	38.46	41.54	44.41	49.65	52.07	24.60	26.57	28.41	31.76	33.31	34.79	16.00	17.28	18.48	20.66	21.67	22.63
TER	13	39.22	48.04	51.89	55.47	62.02	65.04	30.76	33.23	35.52	39.71	41.65	43.50	20.00	21.60	23.10	25.82	27.08	28.29
TER	15	46.37	56.80	61.35	65.58	73.32	76.90	36.36	39.27	41.98	46.94	49.23	51.41	23.65	25.54	27.31	30.53	32.02	33.44
TER	20	62.45	76.48	82.61	88.31	98.74	103.55	48.92	52.84	56.49	63.16	66.24	69.19	31.82	34.37	36.75	41.09	43.09	45.01
TER	25	80.25	98.29	106.16	113.49	126.89	133.08	62.91	67.95	72.64	81.21	85.17	88.96	40.92	44.20	47.25	52.83	55.41	57.87
TIR	35	98.09	120.14	129.77	138.73	155.10	162.67	76.89	83.05	88.78	99.26	104.11	108.74	49.98	53.99	57.72	64.53	67.68	70.69
THR	45	124.86	152.92	165.17	176.57	197.41	207.05	97.85	105.69	112.98	126.32	132.48	138.37	63.65	68.75	73.50	82.17	86.18	90.01
THR	55	151.62	185.69	200.57	214.42	239.73	251.43	118.84	128.36	137.22	153.42	160.91	168.06	77.28	83.47	89.23	99.77	104.64	109.29
TMR	55	178.38	218.47	235.98	252.27	282.04	295.81	139.79	151.00	161.42	180.47	189.28	197.70	90.91	98.19	104.97	117.36	123.09	128.56

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69

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.



# TXV extended capacity tables

## R-22 balanced ported valves (kW)– B, HF, TFE, TRAE and T Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C					0°C					-10°C							
		Pressure drop across valve (kPa)					Pressure drop across valve (kPa)					Pressure drop across valve (kPa)							
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
BA/BN	1/2	1.38	1.69	1.83	1.95	2.18	2.29	1.37	1.68	1.81	1.94	2.17	2.27	1.35	1.65	1.78	1.90	2.13	2.23
BA/BN	1	2.66	3.25	3.51	3.75	4.20	4.40	2.60	3.19	3.45	3.68	4.12	4.32	2.55	3.12	3.37	3.60	4.03	4.23
BA/BN	1-1/2	4.11	5.03	5.43	5.81	6.49	6.81	4.06	4.97	5.37	5.74	6.42	6.73	3.96	4.86	5.24	5.61	6.27	6.57
BA/BN	2	5.52	6.76	7.31	7.81	8.73	9.16	5.43	6.65	7.18	7.68	8.58	9.00	5.31	6.50	7.02	7.51	8.40	8.81
BA/BN	2-1/2	6.94	8.50	9.18	9.81	10.97	11.51	6.86	8.40	9.07	9.69	10.84	11.37	6.69	8.19	8.85	9.46	10.58	11.10
BA/BN	3	8.43	10.32	11.15	11.92	13.32	13.97	8.31	10.18	10.99	11.75	13.14	13.78	8.11	9.93	10.72	11.46	12.82	13.44
BA/BN	4	10.90	13.35	14.42	15.42	17.24	18.08	10.75	13.16	14.22	15.20	17.00	17.83	10.51	12.88	13.91	14.87	16.62	17.44
BA/BN	5	13.81	16.91	18.26	19.52	21.83	22.89	13.63	16.69	18.03	19.27	21.55	22.60	13.28	16.26	17.56	18.77	20.99	22.01
BA/BN	6	17.17	21.03	22.71	24.28	27.15	28.47	16.92	20.72	22.38	23.93	26.75	28.06	16.53	20.25	21.87	23.38	26.14	27.41
HF/HN	1/4	0.78	0.95	1.03	1.10	1.23	1.29	0.77	0.94	1.02	1.09	1.21	1.27	0.74	0.91	0.98	1.05	1.18	1.23
HF/HN	1/2	1.49	1.82	1.97	2.10	2.35	2.47	1.45	1.78	1.92	2.06	2.30	2.41	1.42	1.73	1.87	2.00	2.24	2.35
HF/HN	1	2.66	3.25	3.51	3.75	4.20	4.40	2.60	3.19	3.45	3.68	4.12	4.32	2.55	3.12	3.37	3.60	4.03	4.23
HF/HN	1-1/2	4.04	4.94	5.34	5.71	6.38	6.69	3.98	4.87	5.26	5.62	6.29	6.59	3.89	4.77	5.15	5.51	6.16	6.46
HF/HN	2	5.42	6.63	7.16	7.66	8.56	8.98	5.37	6.58	7.11	7.60	8.50	8.91	5.24	6.42	6.93	7.41	8.28	8.69
HF/HN	2-1/2	6.94	8.50	9.18	9.81	10.97	11.51	6.88	8.43	9.10	9.73	10.88	11.41	6.69	8.19	8.85	9.46	10.58	11.10
HF/HN	3	9.17	11.23	12.13	12.97	14.50	15.20	9.08	11.12	12.01	12.84	14.35	15.05	8.85	10.84	11.71	12.52	13.99	14.68
HF/HN	5-1/2	16.32	19.99	21.59	23.08	25.80	27.06	16.15	19.78	21.37	22.84	25.54	26.78	15.72	19.25	20.79	22.23	24.85	26.06
HF/HN	8	22.73	27.83	30.06	32.14	35.93	37.69	22.46	27.50	29.71	31.76	35.51	37.24	21.88	26.79	28.94	30.94	34.59	36.28
HF/HN	10	28.78	35.25	38.07	40.70	45.51	47.73	28.52	34.93	37.73	40.33	45.09	47.29	27.72	33.95	36.67	39.20	43.83	45.97
HF/HN	15	42.83	52.46	56.66	60.58	67.73	71.03	42.23	51.72	55.86	59.72	66.77	70.03	41.10	50.34	54.37	58.12	64.98	68.16
HF/HN	20	56.29	68.94	74.46	79.60	89.00	93.34	55.39	67.84	73.27	78.33	87.58	91.85	54.09	66.25	71.56	76.50	85.53	89.70
TFE	8	22.30	27.31	29.50	31.54	35.26	36.98	22.05	27.00	29.16	31.18	34.86	36.56	21.49	26.32	28.43	30.39	33.98	35.63
TFE	10	30.55	37.42	40.41	43.20	48.30	50.66	30.19	36.98	39.94	42.70	47.73	50.06	29.42	36.03	38.92	41.60	46.51	48.78
TFE	12	37.91	46.43	50.15	53.62	59.95	62.87	37.48	45.91	49.59	53.01	59.27	62.16	36.53	44.74	48.33	51.67	57.76	60.58
TFE	20	57.88	70.89	76.57	81.85	91.51	95.98	57.23	70.09	75.70	80.93	90.48	94.90	54.98	67.33	72.73	77.75	86.93	91.17
TRAE+	10	32.82	40.19	43.41	46.41	51.89	54.42	32.44	39.73	42.91	45.88	51.29	53.79	31.61	38.72	41.82	44.71	49.98	52.42
TRAE+	15	47.86	58.62	63.31	67.69	75.67	79.37	47.30	57.93	62.57	66.89	74.79	78.44	46.09	56.45	60.97	65.18	72.88	76.43
TRAE+	20	53.42	65.42	70.67	75.55	84.46	88.58	52.78	64.65	69.83	74.65	83.46	87.53	51.44	63.00	68.04	72.74	81.33	85.30
TRAE+	30	80.96	99.16	107.10	114.49	128.01	134.26	80.01	98.00	105.85	113.16	126.51	132.69	77.95	95.47	103.12	110.24	123.25	129.27
TRAE+	40	111.26	136.27	147.19	157.35	175.92	184.51	109.98	134.70	145.50	155.54	173.90	182.39	107.16	131.24	141.75	151.54	169.43	177.70
TRAE	50	150.20	183.96	198.70	212.42	237.49	249.08	148.46	181.82	196.39	209.95	234.73	246.19	144.68	177.20	191.39	204.61	228.76	239.92
TRAE	60	163.83	200.65	216.73	231.69	259.04	271.68	161.95	198.34	214.24	229.03	256.06	268.56	157.81	193.28	208.77	223.18	249.52	261.70
TRAE	70	195.02	238.85	257.99	275.80	308.35	323.40	192.74	236.06	254.97	272.58	304.75	319.62	187.83	230.05	248.48	265.64	296.99	311.48
TJR	14	40.89	50.08	54.09	57.82	64.65	67.80	36.14	44.26	47.81	51.11	57.14	59.93	39.40	48.26	52.12	55.72	62.30	65.34
TJR	18	48.96	59.96	64.77	69.24	77.41	81.19	48.40	59.27	64.02	68.44	76.52	80.26	47.15	57.75	62.38	66.68	74.56	78.19
TER	22	61.21	74.96	80.97	86.56	96.78	101.50	60.49	74.08	80.02	85.55	95.64	100.31	58.94	72.19	77.97	83.36	93.19	97.74
TER	26	72.32	88.58	95.67	102.28	114.35	119.93	63.95	78.32	84.59	90.43	101.11	106.04	69.67	85.32	92.16	98.52	110.15	115.53
TER	35	97.35	119.23	128.78	137.67	153.92	161.44	96.22	117.84	127.29	136.07	152.14	159.56	93.77	114.85	124.05	132.62	148.27	155.51
TER	45	125.17	153.31	165.59	177.02	197.92	207.58	123.72	151.53	163.67	174.97	195.62	205.17	120.57	147.67	159.50	170.52	190.64	199.95
TIR	55	153.00	187.38	202.40	216.37	241.91	253.72	151.23	185.21	200.05	213.86	239.11	250.78	147.37	180.49	194.95	208.41	233.01	244.39
THR	70	194.74	238.50	257.61	275.40	307.90	322.93	192.47	235.72	254.61	272.19	304.32	319.17	187.55	229.70	248.10	265.23	296.54	311.02
THR	85	236.44	289.57	312.78	334.37	373.84	392.09	233.71	286.23	309.17	330.51	369.52	387.56	227.73	278.91	301.26	322.06	360.07	377.64
TMR	100	278.17	340.69	367.99	393.40	439.83	461.30	274.95	336.74	363.72	388.83	434.73	455.95	267.94	328.16	354.45	378.93	423.65	444.33

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69

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.

# TXV extended capacity tables

## R-22 balanced ported valves (kW)– B, HF, TFE, TRAE and T Series

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
BA/BN	1/2	1.20	1.47	1.59	1.70	1.90	2.00	0.96	1.03	1.10	1.23	1.29	1.35	0.64	0.69	0.74	0.82	0.86	0.90
BA/BN	1	2.30	2.82	3.04	3.25	3.64	3.82	1.84	1.99	2.13	2.38	2.49	2.60	1.20	1.30	1.39	1.55	1.63	1.70
BA/BN	1-1/2	3.61	4.42	4.78	5.11	5.71	5.99	2.87	3.10	3.31	3.70	3.88	4.06	1.88	2.03	2.17	2.42	2.54	2.65
BA/BN	2	4.81	5.90	6.37	6.81	7.61	7.98	3.82	4.13	4.41	4.94	5.18	5.41	2.51	2.71	2.90	3.24	3.40	3.55
BA/BN	2-1/2	6.09	7.46	8.05	8.61	9.63	10.10	4.85	5.24	5.60	6.26	6.57	6.86	3.19	3.44	3.68	4.11	4.31	4.51
BA/BN	3	7.36	9.02	9.74	10.41	11.64	12.21	5.88	6.35	6.79	7.59	7.96	8.31	3.86	4.17	4.46	4.98	5.22	5.46
BA/BN	4	9.52	11.66	12.60	13.47	15.06	15.79	7.61	8.22	8.79	9.83	10.31	10.76	4.99	5.39	5.76	6.44	6.76	7.06
BA/BN	5	12.04	14.74	15.92	17.02	19.03	19.96	9.63	10.40	11.12	12.43	13.04	13.62	6.34	6.84	7.32	8.18	8.58	8.96
BA/BN	6	14.97	18.34	19.81	21.18	23.68	24.83	11.97	12.92	13.82	15.45	16.20	16.92	7.89	8.53	9.12	10.19	10.69	11.16
HF/HN	1/4	0.67	0.82	0.89	0.95	1.06	1.12	0.53	0.57	0.61	0.69	0.72	0.75	0.35	0.38	0.41	0.46	0.48	0.50
HF/HN	1/2	1.27	1.56	1.69	1.80	2.02	2.11	1.03	1.11	1.19	1.33	1.39	1.45	0.67	0.73	0.78	0.87	0.91	0.95
HF/HN	1	2.30	2.82	3.04	3.25	3.64	3.82	1.84	1.99	2.13	2.38	2.49	2.60	1.20	1.30	1.39	1.55	1.63	1.70
HF/HN	1-1/2	3.54	4.34	4.68	5.01	5.60	5.87	2.80	3.02	3.23	3.61	3.79	3.95	1.84	1.99	2.13	2.38	2.49	2.60
HF/HN	2	4.74	5.81	6.28	6.71	7.50	7.87	3.79	4.09	4.37	4.89	5.13	5.36	2.48	2.68	2.86	3.20	3.36	3.50
HF/HN	2-1/2	6.09	7.46	8.05	8.61	9.63	10.10	4.21	4.55	4.86	5.44	5.70	5.96	3.19	3.44	3.68	4.11	4.31	4.51
HF/HN	3	8.00	9.80	10.58	11.31	12.65	13.27	6.41	6.92	7.40	8.27	8.68	9.06	4.21	4.55	4.86	5.44	5.70	5.96
HF/HN	5-1/2	14.27	17.47	18.87	20.18	22.56	23.66	11.40	12.31	13.16	14.72	15.43	16.12	7.50	8.11	8.67	9.69	10.16	10.61
HF/HN	8	19.86	24.32	26.27	28.09	31.40	32.93	15.86	17.13	18.31	20.47	21.47	22.43	10.44	11.28	12.06	13.48	14.14	14.77
HF/HN	10	25.13	30.78	33.25	35.54	39.74	41.68	20.07	21.68	23.18	25.91	27.18	28.39	13.20	14.26	15.25	17.05	17.88	18.67
HF/HN	15	37.17	45.52	49.17	52.57	58.77	61.64	29.74	32.12	34.34	38.39	40.26	42.05	19.58	21.14	22.60	25.27	26.51	27.68
HF/HN	20	49.21	60.26	65.09	69.59	77.80	81.60	39.15	42.29	45.21	50.55	53.01	55.37	25.77	27.84	29.76	33.27	34.89	36.45
TFE	8	19.47	23.85	25.76	27.53	30.78	32.29	15.54	16.79	17.94	20.06	21.04	21.98	10.23	11.05	11.81	13.21	13.85	14.47
TFE	10	26.69	32.69	35.31	37.75	42.20	44.26	21.31	23.02	24.61	27.51	28.85	30.14	14.02	15.14	16.19	18.10	18.98	19.83
TFE	12	33.10	40.54	43.79	46.81	52.33	54.89	26.44	28.56	30.53	34.14	35.81	37.40	17.42	18.81	20.11	22.48	23.58	24.63
TFE	20	50.55	61.91	66.87	71.49	79.93	83.83	40.36	43.59	46.60	52.10	54.64	57.07	26.59	28.72	30.70	34.32	36.00	37.60
TRAE+	10	28.67	35.12	37.93	40.55	45.34	47.55	22.90	24.74	26.45	29.57	31.01	32.39	15.08	16.29	17.41	19.47	20.42	21.33
TRAE+	15	41.77	51.16	55.26	59.07	66.05	69.27	33.35	36.02	38.51	43.05	45.15	47.16	21.98	23.74	25.38	28.38	29.77	31.09
TRAE+	20	46.66	57.14	61.72	65.98	73.77	77.37	37.24	40.22	43.00	48.08	50.42	52.67	24.53	26.50	28.33	31.67	33.22	34.69
TRAE+	30	70.69	86.58	93.52	99.98	111.78	117.23	56.43	60.95	65.16	72.85	76.40	79.80	37.17	40.15	42.92	47.99	50.33	52.57
TRAE+	40	97.17	119.01	128.55	137.42	153.64	161.14	77.60	83.81	89.60	100.18	105.07	109.74	51.08	55.18	58.98	65.95	69.17	72.24
TRAE	50	131.19	160.68	173.55	185.53	207.43	217.56	104.75	113.14	120.95	135.23	141.83	148.14	68.96	74.48	79.63	89.03	93.37	97.52
TRAE	60	143.09	175.24	189.29	202.36	226.24	237.28	114.24	123.39	131.91	147.48	154.68	161.55	75.23	81.25	86.86	97.12	101.86	106.38
TRAE	70	170.31	208.59	225.30	240.85	269.28	282.43	135.97	146.87	157.01	175.54	184.11	192.29	89.53	96.70	103.38	115.58	121.22	126.61
TJR	14	35.72	43.75	47.25	50.51	56.48	59.23	28.50	30.78	32.91	36.79	38.59	40.30	18.76	20.27	21.66	24.22	25.40	26.53
TJR	18	42.76	52.37	56.57	60.48	67.61	70.91	34.13	36.86	39.40	44.06	46.21	48.26	22.48	24.28	25.96	29.02	30.44	31.79
TER	22	53.45	65.47	70.71	75.60	84.52	88.64	42.66	46.07	49.26	55.07	57.76	60.33	28.11	30.36	32.46	36.29	38.06	39.75
TER	26	63.15	77.35	83.54	89.31	99.85	104.73	50.45	54.49	58.25	65.12	68.30	71.34	33.21	35.87	38.34	42.87	44.96	46.96
TER	35	85.03	104.14	112.49	120.25	134.45	141.01	67.90	73.34	78.40	87.65	91.93	96.02	44.71	48.29	51.63	57.72	60.54	63.23
TER	45	109.32	133.88	144.61	154.60	172.84	181.28	87.30	94.29	100.80	112.70	118.20	123.46	57.49	62.10	66.38	74.22	77.84	81.30
TIR	55	133.64	163.67	176.78	188.99	211.30	221.61	106.66	115.21	123.16	137.70	144.42	150.84	70.23	75.86	81.10	90.67	95.10	99.33
THR	70	170.06	208.28	224.97	240.50	268.89	282.02	135.76	146.64	156.76	175.26	183.82	191.99	89.42	96.59	103.25	115.44	121.08	126.46
THR	100	206.49	252.90	273.16	292.02	326.49	342.42	164.86	178.07	190.36	212.83	223.22	233.14	108.57	117.27	125.37	140.17	147.01	153.54
TMR	100	242.95	297.55	321.39	343.58	384.14	402.89	193.96	209.50	223.96	250.40	262.62	274.30	127.72	137.96	147.48	164.89	172.94	180.63

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69

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.

# TXV extended capacity tables

## R-134a balanced ported valves (kW)– B, HF, TFE, TRAE and T Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
BA/BN	1/2	1.31	1.60	1.73	1.85	2.07	2.17	1.31	1.60	1.73	1.85	2.07	2.17	1.24	1.52	1.64	1.75	1.96	2.05
BA/BN	3/4	2.51	3.08	3.32	3.55	3.97	4.17	2.48	3.03	3.28	3.50	3.92	4.11	2.37	2.90	3.14	3.35	3.75	3.93
BA/BN	1	3.93	4.81	5.20	5.56	6.21	6.52	3.86	4.73	5.10	5.46	6.10	6.40	3.68	4.51	4.87	5.21	5.82	6.11
BA/BN	1-1/2	5.24	6.42	6.93	7.41	8.28	8.69	5.13	6.29	6.79	7.26	8.12	8.51	4.92	6.03	6.51	6.96	7.78	8.16
BA/BN	2	6.62	8.11	8.76	9.36	10.47	10.98	6.51	7.98	8.62	9.21	10.30	10.80	6.23	7.63	8.24	8.81	9.85	10.33
BA/BN	2-1/4	8.04	9.84	10.63	11.36	12.71	13.33	7.86	9.63	10.40	11.11	12.43	13.03	7.54	9.23	9.97	10.66	11.92	12.50
BA/BN	3	10.41	12.75	13.77	14.72	16.46	17.26	10.20	12.49	13.49	14.42	16.12	16.91	9.74	11.92	12.88	13.77	15.39	16.14
BA/BN	3-1/2	13.17	16.13	17.42	18.62	20.82	21.84	12.89	15.78	17.05	18.22	20.37	21.37	12.32	15.09	16.30	17.42	19.48	20.43
BA/BN	4-1/4	16.35	20.03	21.64	23.13	25.86	27.12	16.04	19.64	21.21	22.68	25.36	26.59	15.33	18.77	20.28	21.68	24.24	25.42
HF/HN	1/4	0.74	0.91	0.98	1.05	1.18	1.23	0.74	0.91	0.98	1.05	1.18	1.23	0.71	0.87	0.94	1.00	1.12	1.17
HF/HN	1/2	1.42	1.73	1.87	2.00	2.24	2.35	1.38	1.69	1.83	1.95	2.18	2.29	1.31	1.60	1.73	1.85	2.07	2.17
HF/HN	3/4	2.51	3.08	3.32	3.55	3.97	4.17	2.48	3.03	3.28	3.50	3.92	4.11	2.37	2.90	3.14	3.35	3.75	3.93
HF/HN	1	3.86	4.73	5.10	5.46	6.10	6.40	3.75	4.60	4.96	5.31	5.93	6.22	3.61	4.42	4.78	5.11	5.71	5.99
HF/HN	1-1/2	5.17	6.33	6.84	7.31	8.17	8.57	5.06	6.20	6.70	7.16	8.00	8.39	4.85	5.94	6.42	6.86	7.67	8.04
HF/HN	1-3/4	6.62	8.11	8.76	9.36	10.47	10.98	6.51	7.98	8.62	9.21	10.30	10.80	6.23	7.63	8.24	8.81	9.85	10.33
HF/HN	2-1/2	8.74	10.71	11.57	12.37	13.83	14.50	8.57	10.49	11.33	12.12	13.55	14.21	8.21	10.06	10.86	11.61	12.99	13.62
HF/HN	4	15.58	19.08	20.61	22.03	24.63	25.83	15.26	18.69	20.18	21.58	24.12	25.30	14.58	17.86	19.29	20.63	23.06	24.19
HF/HN	6	21.66	26.53	28.66	30.64	34.26	35.93	21.24	26.01	28.10	30.04	33.58	35.22	20.32	24.89	26.88	28.74	32.13	33.70
HF/HN	7-1/2	27.44	33.60	36.29	38.80	43.38	45.50	26.87	32.91	35.54	38.00	42.48	44.56	25.70	31.48	34.00	36.35	40.64	42.62
HF/HN	11	40.71	49.86	53.85	57.57	64.37	67.51	39.86	48.82	52.73	56.37	63.02	66.10	38.13	46.69	50.44	53.92	60.28	63.22
HF/HN	14	53.56	65.60	70.85	75.75	84.69	88.82	52.46	64.25	69.40	74.19	82.95	87.00	50.20	61.48	66.40	70.99	79.37	83.24
TFE	6	21.28	26.06	28.14	30.09	33.64	35.28	20.85	25.54	27.58	29.49	32.97	34.58	19.93	24.41	26.37	28.19	31.51	33.05
TFE	8	29.13	35.68	38.54	41.20	46.07	48.31	28.53	34.94	37.74	40.35	45.11	47.32	27.29	33.43	36.11	38.60	43.15	45.26
TFE	10	36.18	44.31	47.86	51.16	57.20	60.00	35.44	43.40	46.88	50.11	56.03	58.76	33.88	41.49	44.82	47.91	53.57	56.18
TFE	15	55.22	67.64	73.05	78.10	87.32	91.58	54.09	66.25	71.56	76.50	85.53	89.70	51.72	63.34	68.42	73.14	81.78	85.77
TRAE+	9	31.29	38.33	41.40	44.26	49.48	51.89	30.66	37.55	40.55	43.35	48.47	50.84	29.35	35.94	38.82	41.50	46.40	48.67
TRAE+	13	45.63	55.89	60.36	64.53	72.15	75.67	44.71	54.76	59.15	63.23	70.69	74.14	42.76	52.37	56.57	60.48	67.61	70.91
TRAE+	14	50.94	62.39	67.39	72.04	80.54	84.48	49.88	61.09	65.98	70.54	78.86	82.71	47.72	58.44	63.13	67.49	75.45	79.13
TRAE+	22	77.21	94.56	102.14	109.19	122.08	128.03	75.61	92.61	100.03	106.93	119.56	125.39	72.32	88.58	95.67	102.28	114.35	119.93
TRAE+	30	106.13	129.98	140.40	150.09	167.80	176.00	103.93	127.29	137.49	146.99	164.33	172.36	99.44	121.79	131.54	140.63	157.23	164.90
TRAE	40	143.30	175.50	189.57	202.66	226.58	237.63	140.33	171.86	185.63	198.45	221.87	232.70	134.24	164.41	177.58	189.84	212.25	222.61
TRAE	45	156.29	191.42	206.75	221.03	247.12	259.18	153.07	187.47	202.49	216.47	242.02	253.84	146.41	179.32	193.69	207.06	231.50	242.80
TRAE	50	185.99	227.79	246.04	263.03	294.08	308.43	182.17	223.11	240.99	257.63	288.03	302.09	174.24	213.40	230.50	246.41	275.50	288.94
TJR	11	39.01	47.78	51.61	55.17	61.68	64.69	38.20	46.78	50.53	54.02	60.39	63.34	36.53	44.74	48.33	51.67	57.76	60.58
TJR	13	46.69	57.19	61.77	66.03	73.83	77.43	45.74	56.02	60.50	64.68	72.32	75.85	43.75	53.59	57.88	61.88	69.18	72.56
TER	16	58.37	71.49	77.22	82.55	92.30	96.80	57.17	70.02	75.63	80.85	90.40	94.81	54.69	66.98	72.35	77.35	86.48	90.70
TER	19	68.99	84.50	91.27	97.57	109.09	114.41	67.58	82.77	89.40	95.57	106.85	112.07	64.64	79.17	85.51	91.42	102.21	107.19
TER	25	92.85	113.72	122.83	131.32	146.82	153.98	90.94	111.38	120.31	128.61	143.79	150.81	87.01	106.57	115.11	123.06	137.58	144.30
TER	31	119.40	146.24	157.96	168.86	188.79	198.01	116.93	143.20	154.68	165.36	184.88	193.90	111.86	137.00	147.98	158.20	176.87	185.51
TIR	45	145.95	178.76	193.08	206.41	230.77	242.04	142.91	175.03	189.05	202.10	225.96	236.99	136.71	167.44	180.86	193.34	216.17	226.72
THR	55	185.74	227.49	245.72	262.68	293.69	308.02	181.89	222.76	240.61	257.22	287.59	301.62	173.99	213.09	230.17	246.06	275.10	288.53
THR	68	225.53	276.22	298.35	318.95	356.60	374.00	220.90	270.54	292.22	312.39	349.27	366.31	211.30	258.79	279.53	298.83	334.10	350.41
TMR	68	265.32	324.95	350.99	375.22	419.51	439.99	259.87	318.28	343.78	367.51	410.89	430.95	248.58	304.45	328.84	351.54	393.04	412.22

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69

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.

# TXV extended capacity tables

## R-134a balanced ported valves (kW)– B, HF, TFE, TRAE and T Series

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
BA/BN	1/2	1.03	1.26	1.36	1.45	1.62	1.70	0.78	0.84	0.90	1.01	1.05	1.10	0.46	0.50	0.53	0.59	0.62	0.65
BA/BN	3/4	1.95	2.38	2.58	2.75	3.08	3.23	1.45	1.57	1.68	1.87	1.97	2.05	0.89	0.96	1.02	1.14	1.20	1.25
BA/BN	1	3.04	3.73	4.03	4.31	4.81	5.05	2.27	2.45	2.62	2.92	3.07	3.20	1.38	1.49	1.59	1.78	1.87	1.95
BA/BN	1-1/2	4.04	4.94	5.34	5.71	6.38	6.69	3.01	3.25	3.47	3.88	4.07	4.26	1.84	1.99	2.13	2.38	2.49	2.60
BA/BN	2	5.10	6.24	6.74	7.21	8.06	8.45	3.82	4.13	4.41	4.94	5.18	5.41	2.34	2.52	2.70	3.02	3.16	3.30
BA/BN	2-1/4	6.20	7.59	8.20	8.76	9.80	10.27	4.64	5.01	5.35	5.99	6.28	6.56	2.83	3.06	3.27	3.66	3.83	4.01
BA/BN	3	8.04	9.84	10.63	11.36	12.71	13.33	5.98	6.46	6.91	7.72	8.10	8.46	3.68	3.98	4.25	4.75	4.98	5.21
BA/BN	3-1/2	10.16	12.44	13.44	14.37	16.06	16.85	7.58	8.18	8.75	9.78	10.26	10.71	4.64	5.01	5.35	5.99	6.28	6.56
BA/BN	4-1/4	12.64	15.48	16.72	17.87	19.98	20.96	9.42	10.17	10.87	12.16	12.75	13.32	5.77	6.23	6.66	7.45	7.81	8.16
HF/HN	1/4	0.57	0.69	0.75	0.80	0.90	0.94	0.42	0.46	0.49	0.55	0.58	0.60	0.25	0.27	0.29	0.32	0.34	0.35
HF/HN	1/2	1.10	1.34	1.45	1.55	1.74	1.82	0.81	0.88	0.94	1.05	1.10	1.15	0.50	0.54	0.57	0.64	0.67	0.70
HF/HN	3/4	1.95	2.38	2.58	2.75	3.08	3.23	1.45	1.57	1.68	1.87	1.97	2.05	0.89	0.96	1.02	1.14	1.20	1.25
HF/HN	1	2.97	3.64	3.93	4.21	4.70	4.93	2.23	2.41	2.58	2.88	3.02	3.15	1.35	1.45	1.55	1.74	1.82	1.90
HF/HN	1-1/2	4.00	4.90	5.29	5.66	6.32	6.63	2.97	3.21	3.43	3.84	4.03	4.21	1.84	1.99	2.13	2.38	2.49	2.60
HF/HN	1-3/4	5.10	6.24	6.74	7.21	8.06	8.45	3.82	4.13	4.41	4.94	5.18	5.41	2.34	2.52	2.70	3.02	3.16	3.30
HF/HN	2-1/2	6.76	8.28	8.94	9.56	10.69	11.21	5.03	5.43	5.80	6.49	6.81	7.11	3.08	3.33	3.56	3.98	4.17	4.36
HF/HN	4	12.00	14.70	15.88	16.97	18.97	19.90	8.96	9.67	10.34	11.56	12.13	12.67	5.49	5.93	6.34	7.08	7.43	7.76
HF/HN	6	16.71	20.46	22.10	23.63	26.42	27.71	12.46	13.46	14.39	16.09	16.87	17.62	7.65	8.26	8.83	9.87	10.35	10.81
HF/HN	7-1/2	21.17	25.93	28.00	29.94	33.47	35.11	15.79	17.05	18.23	20.38	21.38	22.33	9.70	10.48	11.20	12.52	13.13	13.72
HF/HN	11	31.40	38.46	41.54	44.41	49.65	52.07	23.43	25.31	27.06	30.25	31.73	33.14	14.37	15.52	16.60	18.55	19.46	20.33
HF/HN	14	41.31	50.60	54.65	58.42	65.32	68.51	30.83	33.30	35.60	39.81	41.75	43.61	18.90	20.42	21.83	24.40	25.60	26.73
TFE	6	16.43	20.12	21.73	23.23	25.97	27.24	12.25	13.23	14.14	15.81	16.58	17.32	7.50	8.11	8.67	9.69	10.16	10.61
TFE	8	22.48	27.53	29.74	31.79	35.54	37.28	16.78	18.12	19.38	21.66	22.72	23.73	10.30	11.13	11.90	13.30	13.95	14.57
TFE	10	27.90	34.16	36.90	39.45	44.11	46.26	20.82	22.48	24.04	26.87	28.18	29.44	12.78	13.80	14.76	16.50	17.30	18.07
TFE	15	42.59	52.16	56.34	60.23	67.33	70.62	31.75	34.30	36.67	40.99	42.99	44.91	19.51	21.07	22.52	25.18	26.41	27.58
TRAE+	9	24.14	29.57	31.94	34.14	38.17	40.04	18.02	19.46	20.81	23.26	24.40	25.48	11.04	11.93	12.75	14.26	14.95	15.62
TRAE+	13	35.19	43.10	46.55	49.76	55.64	58.35	26.27	28.37	30.33	33.91	35.57	37.15	16.11	17.40	18.60	20.79	21.81	22.78
TRAE+	14	39.29	48.13	51.98	55.57	62.13	65.16	29.31	31.66	33.85	37.84	39.69	41.45	17.98	19.42	20.77	23.22	24.35	25.43
TRAE+	22	59.54	72.92	78.77	84.21	94.15	98.74	44.43	47.99	51.30	57.36	60.15	62.83	27.26	29.44	31.47	35.19	36.91	38.55
TRAE+	30	81.84	100.24	108.27	115.75	129.41	135.72	61.07	65.96	70.51	78.83	82.68	86.36	37.49	40.49	43.29	48.40	50.76	53.02
TRAE	40	110.48	135.31	146.16	156.25	174.69	183.22	82.45	89.05	95.20	106.44	111.63	116.60	50.59	54.64	58.41	65.31	68.49	71.54
TRAE	45	120.50	147.58	159.41	170.41	190.53	199.83	89.92	97.12	103.83	116.08	121.75	127.16	55.19	59.61	63.73	71.25	74.73	78.05
TRAE	50	143.44	175.68	189.75	202.86	226.80	237.87	107.01	115.59	123.57	138.15	144.90	151.34	65.67	70.93	75.83	84.78	88.91	92.87
TJR	11	30.09	36.85	39.81	42.55	47.58	49.90	22.44	24.24	25.92	28.97	30.39	31.74	13.77	14.87	15.90	17.78	18.65	19.47
TJR	13	36.00	44.09	47.63	50.91	56.92	59.70	26.87	29.02	31.03	34.69	36.38	38.00	16.50	17.82	19.05	21.30	22.34	23.33
TER	16	45.03	55.15	59.57	63.68	71.20	74.67	33.59	36.29	38.79	43.37	45.49	47.51	20.60	22.25	23.79	26.60	27.90	29.14
TER	19	53.21	65.16	70.39	75.24	84.13	88.23	39.68	42.86	45.82	51.23	53.73	56.12	24.36	26.31	28.12	31.44	32.98	34.44
TER	25	71.61	87.71	94.74	101.28	113.23	118.76	53.42	57.70	61.68	68.96	72.33	75.55	32.78	35.41	37.85	42.32	44.38	46.36
TER	31	92.08	112.77	121.80	130.21	145.58	152.69	68.71	74.22	79.34	88.71	93.04	97.17	42.16	45.54	48.68	54.43	57.09	59.63
TIR	45	112.54	137.83	148.87	159.15	177.94	186.62	83.97	90.70	96.96	108.40	113.69	118.75	51.54	55.67	59.52	66.54	69.79	72.89
THR	55	143.23	175.42	189.47	202.56	226.46	237.52	106.87	115.44	123.41	137.97	144.71	151.14	65.60	70.85	75.74	84.68	88.82	92.77
THR	68	173.92	213.01	230.07	245.96	274.99	288.41	129.78	140.17	149.85	167.54	175.72	183.53	79.65	86.03	91.97	102.83	107.85	112.64

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69

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.

# TXV extended capacity tables

## R-450A/R-513A balance ported valves (kW) - B Series and HF Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
BA/BN	1/4	1.05	1.21	1.35	1.51	1.65	1.79	1.02	1.18	1.32	1.47	1.61	1.74	0.97	1.12	1.25	1.40	1.53	1.66
BA/BN	1/2	1.98	2.28	2.55	2.86	3.13	3.38	1.93	2.23	2.49	2.79	3.05	3.30	1.83	2.12	2.37	2.65	2.90	3.13
BA/BN	3/4	3.08	3.56	3.98	4.45	4.87	5.26	3.01	3.47	3.88	4.34	4.75	5.14	2.86	3.30	3.69	4.12	4.52	4.88
BA/BN	1	4.10	4.73	5.29	5.91	6.48	7.00	4.00	4.62	5.16	5.77	6.32	6.83	3.80	4.39	4.91	5.49	6.01	6.49
BA/BN	1-1/2	5.20	6.00	6.71	7.51	8.22	8.88	5.08	5.86	6.55	7.33	8.03	8.67	4.82	5.57	6.23	6.96	7.62	8.24
BA/BN	1-3/4	6.27	7.24	8.10	9.06	9.92	10.71	6.12	7.07	7.91	8.84	9.68	10.46	5.82	6.72	7.51	8.40	9.20	9.94
BA/BN	2-1/4	8.14	9.40	10.51	11.75	12.87	13.90	7.95	9.17	10.26	11.47	12.56	13.57	7.55	8.72	9.74	10.89	11.93	12.89
BA/BN	3	10.29	11.88	13.28	14.85	16.26	17.57	10.04	11.60	12.96	14.49	15.88	17.15	9.54	11.02	12.32	13.77	15.08	16.29
BA/BN	3-1/2	12.80	14.78	16.53	18.48	20.24	21.86	12.50	14.43	16.13	18.04	19.76	21.34	11.87	13.71	15.33	17.14	18.77	20.28
HF	1/5	0.59	0.69	0.77	0.86	0.94	1.01	0.58	0.67	0.75	0.84	0.92	0.99	0.55	0.64	0.71	0.79	0.87	0.94
HF	1/4	1.10	1.27	1.42	1.59	1.74	1.88	1.08	1.24	1.39	1.55	1.70	1.84	1.02	1.18	1.32	1.48	1.62	1.75
HF	1/2	1.98	2.28	2.55	2.86	3.13	3.38	1.93	2.23	2.49	2.79	3.05	3.30	1.83	2.12	2.37	2.65	2.90	3.13
HF	3/4	3.00	3.46	3.87	4.32	4.74	5.12	2.92	3.38	3.78	4.22	4.62	4.99	2.78	3.21	3.59	4.01	4.39	4.74
HF	1	4.04	4.67	5.22	5.83	6.39	6.90	3.94	4.56	5.09	5.69	6.24	6.74	3.75	4.33	4.84	5.41	5.93	6.40
HF	1-1/2	5.20	6.00	6.71	7.51	8.22	8.88	5.08	5.86	6.55	7.33	8.03	8.67	4.82	5.57	6.23	6.96	7.62	8.24
HF	2	6.84	7.90	8.83	9.87	10.81	11.68	6.68	7.71	8.62	9.64	10.56	11.40	6.34	7.32	8.19	9.15	10.03	10.83
HF	3-1/2	12.18	14.06	15.72	17.58	19.26	20.80	11.89	13.73	15.35	17.16	18.80	20.31	11.30	13.04	14.58	16.30	17.86	19.29
HF	4-1/2	16.96	19.58	21.89	24.47	26.81	28.96	16.55	19.11	21.37	23.89	26.17	28.27	15.73	18.16	20.30	22.70	24.86	26.86
HF	6	21.45	24.77	27.69	30.96	33.91	36.63	20.94	24.18	27.03	30.22	33.11	35.76	19.89	22.97	25.68	28.71	31.45	33.97
HF	9	31.82	36.74	41.08	45.93	50.31	54.34	31.06	35.87	40.10	44.84	49.11	53.05	29.51	34.08	38.10	42.60	46.66	50.40
HF	11-1/2	41.88	48.36	54.07	60.45	66.22	71.53	40.88	47.21	52.78	59.01	64.64	69.82	38.84	44.85	50.14	56.06	61.41	66.33

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
BA/BN	1/4	0.70	0.81	0.91	1.02	1.11	1.20	0.53	0.60	0.67	0.73	0.79	0.84	0.30	0.34	0.38	0.42	0.45	0.48
BA/BN	1/2	1.33	1.54	1.72	1.92	2.11	2.27	1.01	1.13	1.26	1.38	1.49	1.60	0.58	0.64	0.72	0.79	0.85	0.91
BA/BN	3/4	2.07	2.39	2.68	2.99	3.28	3.54	1.57	1.76	1.96	2.15	2.32	2.49	0.90	1.00	1.12	1.23	1.33	1.42
BA/BN	1	2.76	3.19	3.56	3.98	4.36	4.71	2.09	2.34	2.61	2.86	3.09	3.31	1.19	1.33	1.49	1.63	1.76	1.89
BA/BN	1-1/2	3.50	4.04	4.52	5.05	5.53	5.98	2.65	2.97	3.32	3.63	3.92	4.20	1.51	1.69	1.89	2.07	2.24	2.39
BA/BN	1-3/4	4.22	4.88	5.45	6.10	6.68	7.21	3.20	3.58	4.00	4.38	4.73	5.06	1.83	2.04	2.28	2.50	2.70	2.89
BA/BN	2-1/4	5.48	6.33	7.07	7.91	8.66	9.36	4.15	4.64	5.19	5.69	6.14	6.57	2.37	2.65	2.96	3.25	3.51	3.75
BA/BN	3	6.92	8.00	8.94	10.00	10.95	11.83	5.25	5.87	6.56	7.19	7.76	8.30	3.00	3.35	3.74	4.10	4.43	4.74
BA/BN	3-1/2	8.62	9.95	11.13	12.44	13.63	14.72	6.53	7.30	8.16	8.94	9.66	10.33	3.73	4.17	4.66	5.10	5.51	5.89
HF	1/5	0.40	0.46	0.52	0.58	0.63	0.68	0.30	0.34	0.38	0.41	0.45	0.48	0.17	0.19	0.22	0.24	0.26	0.27
HF	1/4	0.74	0.86	0.96	1.07	1.17	1.27	0.56	0.63	0.70	0.77	0.83	0.89	0.32	0.36	0.40	0.44	0.47	0.51
HF	1/2	1.33	1.54	1.72	1.92	2.11	2.27	1.01	1.13	1.26	1.38	1.49	1.60	0.58	0.64	0.72	0.79	0.85	0.91
HF	3/4	2.02	2.33	2.60	2.91	3.19	3.44	1.53	1.71	1.91	2.09	2.26	2.42	0.87	0.98	1.09	1.19	1.29	1.38
HF	1	2.72	3.14	3.51	3.93	4.30	4.65	2.06	2.31	2.58	2.82	3.05	3.26	1.18	1.32	1.47	1.61	1.74	1.86
HF	1-1/2	3.50	4.04	4.52	5.05	5.53	5.98	2.65	2.97	3.32	3.63	3.92	4.20	1.51	1.69	1.89	2.07	2.24	2.39
HF	2	4.60	5.32	5.94	6.65	7.28	7.86	3.49	3.90	4.36	4.78	5.16	5.52	1.99	2.23	2.49	2.73	2.95	3.15
HF	3-1/2	8.20	9.47	10.59	11.83	12.96	14.00	6.21	6.95	7.77	8.51	9.19	9.83	3.55	3.97	4.43	4.86	5.25	5.61
HF	4-1/2	11.41	13.18	14.74	16.48	18.05	19.49	8.65	9.67	10.81	11.85	12.80	13.68	4.94	5.52	6.17	6.76	7.30	7.81
HF	6	14.44	16.67	18.64	20.84	22.83	24.66	10.94	12.24	13.68	14.99	16.19	17.30	6.25	6.98	7.81	8.55	9.24	9.88
HF	9	21.42	24.73	27.65	30.92	33.87	36.58	16.24	18.15	20.30	22.23	24.01	25.67	9.27	10.36	11.58	12.69	13.71	14.65
HF	11-1/2	28.19	32.56	36.40	40.69	44.58	48.15	21.37	23.89	26.71	29.26	31.61	33.79	12.20	13.64	15.25	16.70	18.04	19.28

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.10	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-404A/R-507 balanced ported valves (kW)– B, HF, TFE, TRAE and T Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
BA/BN	1/2	1.03	1.26	1.36	1.45	1.62	1.70	0.99	1.21	1.31	1.40	1.57	1.64	0.96	1.17	1.26	1.35	1.51	1.59
BA/BN	3/4	1.95	2.38	2.58	2.75	3.08	3.23	1.88	2.30	2.48	2.65	2.97	3.11	1.81	2.21	2.39	2.55	2.85	2.99
BA/BN	1	3.01	3.69	3.98	4.26	4.76	4.99	2.94	3.60	3.89	4.16	4.65	4.87	2.80	3.43	3.70	3.95	4.42	4.64
BA/BN	1-1/2	4.04	4.94	5.34	5.71	6.38	6.69	3.93	4.81	5.20	5.56	6.21	6.52	3.75	4.60	4.96	5.31	5.93	6.22
BA/BN	2	5.10	6.24	6.74	7.21	8.06	8.45	4.99	6.11	6.60	7.06	7.89	8.28	4.74	5.81	6.28	6.71	7.50	7.87
BA/BN	2-1/4	6.16	7.54	8.15	8.71	9.74	10.21	6.02	7.37	7.96	8.51	9.52	9.98	5.73	7.02	7.59	8.11	9.07	9.51
BA/BN	3	8.00	9.80	10.58	11.31	12.65	13.27	7.79	9.54	10.30	11.01	12.31	12.91	7.40	9.06	9.79	10.46	11.70	12.27
BA/BN	3-1/2	10.09	12.36	13.35	14.27	15.95	16.73	9.88	12.10	13.07	13.97	15.62	16.38	9.38	11.49	12.41	13.27	14.83	15.56
BA/BN	4-1/4	12.57	15.39	16.62	17.77	19.87	20.84	12.28	15.04	16.25	17.37	19.42	20.37	11.65	14.26	15.41	16.47	18.41	19.31
HF/HN	1/4	0.57	0.69	0.75	0.80	0.90	0.94	0.57	0.69	0.75	0.80	0.90	0.94	0.53	0.65	0.70	0.75	0.84	0.88
HF/HN	1/2	1.10	1.34	1.45	1.55	1.74	1.82	1.06	1.30	1.40	1.50	1.68	1.76	0.99	1.21	1.31	1.40	1.57	1.64
HF/HN	3/4	1.95	2.38	2.58	2.75	3.08	3.23	1.88	2.30	2.48	2.65	2.97	3.11	1.81	2.21	2.39	2.55	2.85	2.99
HF/HN	1	2.94	3.60	3.89	4.16	4.65	4.87	2.90	3.56	3.84	4.11	4.59	4.81	2.73	3.34	3.61	3.85	4.31	4.52
HF/HN	1-1/2	3.96	4.86	5.24	5.61	6.27	6.57	3.89	4.77	5.15	5.51	6.16	6.46	3.68	4.51	4.87	5.21	5.82	6.11
HF/HN	1-3/4	5.10	6.24	6.74	7.21	8.06	8.45	4.99	6.11	6.60	7.06	7.89	8.28	4.74	5.81	6.28	6.71	7.50	7.87
HF/HN	2-1/2	6.73	8.24	8.90	9.51	10.63	11.15	6.58	8.06	8.71	9.31	10.41	10.92	6.23	7.63	8.24	8.81	9.85	10.33
HF/HN	4	11.97	14.65	15.83	16.92	18.92	19.84	11.68	14.31	15.45	16.52	18.47	19.37	11.08	13.57	14.66	15.67	17.52	18.37
HF/HN	6	16.64	20.38	22.01	23.53	26.31	27.59	16.25	19.90	21.49	22.98	25.69	26.95	15.43	18.90	20.42	21.83	24.40	25.60
HF/HN	7-1/2	21.06	25.80	27.86	29.79	33.30	34.93	20.57	25.19	27.21	29.09	32.52	34.11	19.54	23.93	25.85	27.63	30.90	32.40
HF/HN	11	31.26	38.28	41.35	44.21	49.42	51.84	30.51	37.37	40.37	43.15	48.25	50.60	28.99	35.51	38.35	41.00	45.84	48.08
HF/HN	14	41.13	50.38	54.42	58.17	65.04	68.21	40.18	49.21	53.15	56.82	63.53	66.63	38.16	46.74	50.48	53.97	60.34	63.28
TFE	6	16.35	20.03	21.64	23.13	25.86	27.12	15.97	19.55	21.12	22.58	25.24	26.48	15.15	18.56	20.04	21.43	23.96	25.13
TFE	8	22.37	27.40	29.60	31.64	35.37	37.10	21.84	26.75	28.89	30.89	34.53	36.22	20.74	25.41	27.44	29.34	32.80	34.40
TFE	10	27.75	33.99	36.71	39.25	43.88	46.02	27.12	33.21	35.87	38.35	42.87	44.97	25.77	31.56	34.09	36.45	40.75	42.74
TFE	15	42.41	51.94	56.10	59.98	67.05	70.33	41.42	50.73	54.79	58.57	65.49	68.68	39.33	48.17	52.03	55.62	62.19	65.22
TRAE+	9	24.04	29.44	31.80	33.99	38.01	39.86	23.47	28.75	31.05	33.19	37.11	38.92	22.30	27.31	29.50	31.54	35.26	36.98
TRAE+	13	35.05	42.92	46.36	49.56	55.41	58.12	34.23	41.93	45.28	48.41	54.13	56.77	32.53	39.84	43.04	46.01	51.44	53.95
TRAE+	14	39.12	47.91	51.75	55.32	61.85	64.87	38.20	46.78	50.53	54.02	60.39	63.34	36.29	44.44	48.00	51.31	57.37	60.17
TRAE+	22	59.30	72.62	78.44	83.86	93.75	98.33	57.91	70.93	76.61	81.90	91.57	96.04	55.01	67.38	72.77	77.80	86.98	91.23
TRAE+	30	81.49	99.81	107.80	115.25	128.85	135.14	79.61	97.51	105.32	112.59	125.88	132.03	75.61	92.61	100.03	106.93	119.56	125.39
TRAE	40	110.02	134.75	145.55	155.60	173.96	182.45	107.47	131.63	142.18	151.99	169.93	178.23	102.09	125.04	135.06	144.38	161.42	169.30
TRAE	45	120.01	146.98	158.75	169.71	189.75	199.01	117.21	143.55	155.05	165.76	185.32	194.37	111.33	136.35	147.28	157.45	176.03	184.62
TRAE	50	142.80	174.90	188.91	201.95	225.79	236.81	139.51	170.87	184.56	197.30	220.59	231.35	132.54	162.32	175.33	187.44	209.56	219.79
TJR	11	29.95	36.68	39.62	42.35	47.35	49.66	29.24	35.81	38.68	41.35	46.23	48.49	27.79	34.03	36.76	39.30	43.94	46.08
TJR	13	35.86	43.92	47.44	50.71	56.70	59.47	35.01	42.88	46.31	49.51	55.36	58.06	33.28	40.75	44.02	47.06	52.61	55.18
TER	16	44.82	54.89	59.29	63.38	70.86	74.32	43.79	53.63	57.93	61.93	69.24	72.62	41.60	50.94	55.03	58.82	65.77	68.98
TER	19	52.96	64.86	70.06	74.89	83.73	87.82	51.75	63.39	68.47	73.19	81.83	85.83	49.14	60.18	65.00	69.49	77.69	81.48
TER	25	71.30	87.32	94.32	100.83	112.73	118.23	69.67	85.32	92.16	98.52	110.15	115.53	66.16	81.03	87.52	93.57	104.61	109.72
TER	31	91.69	112.29	121.29	129.66	144.97	152.04	89.56	109.69	118.48	126.66	141.61	148.52	85.07	104.18	112.53	120.30	134.50	141.07
TIR	45	112.04	137.22	148.22	158.45	177.15	185.80	109.46	134.06	144.80	154.80	173.07	181.51	103.97	127.34	137.54	147.04	164.39	172.41
THR	55	142.63	174.68	188.68	201.70	225.51	236.52	139.30	170.61	184.28	197.00	220.25	231.00	132.33	162.06	175.05	187.14	209.22	219.44
THR	68	173.18	212.10	229.09	244.91	273.82	287.18	169.14	207.15	223.75	239.20	267.44	280.49	160.68	196.79	212.56	227.24	254.06	266.46
TMR	68	203.73	249.51	269.51	288.11	322.12	337.84	199.02	243.75	263.28	281.46	314.68	330.04	189.04	231.52	250.07	267.34	298.89	313.48

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.



# TXV extended capacity tables

## R-404A/R-507 balanced ported valves (kW)– B, HF, TFE, TRAE and T Series (cont.)

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
BA/BN	1/2	0.85	0.98	1.10	1.23	1.34	1.45	0.67	0.73	0.78	0.87	0.91	0.95	0.42	0.46	0.49	0.55	0.58	0.60
BA/BN	3/4	1.59	1.84	2.06	2.30	2.52	2.72	1.27	1.38	1.47	1.65	1.73	1.80	0.81	0.88	0.94	1.05	1.10	1.15
BA/BN	1	2.51	2.90	3.24	3.63	3.97	4.29	1.95	2.10	2.25	2.51	2.64	2.75	1.27	1.38	1.47	1.65	1.73	1.80
BA/BN	1-1/2	3.33	3.84	4.30	4.80	5.26	5.68	2.62	2.83	3.02	3.38	3.55	3.70	1.70	1.84	1.96	2.19	2.30	2.40
BA/BN	2	4.21	4.86	5.44	6.08	6.66	7.19	3.29	3.56	3.80	4.25	4.46	4.66	2.16	2.33	2.49	2.79	2.92	3.05
BA/BN	2-1/4	5.10	5.89	6.58	7.36	8.06	8.71	4.00	4.32	4.62	5.16	5.42	5.66	2.62	2.83	3.02	3.38	3.55	3.70
BA/BN	3	6.62	7.64	8.55	9.55	10.47	11.31	5.20	5.62	6.01	6.72	7.05	7.36	3.40	3.67	3.92	4.39	4.60	4.81
BA/BN	3-1/2	8.35	9.65	10.79	12.06	13.21	14.27	6.55	7.07	7.56	8.45	8.87	9.26	4.28	4.63	4.95	5.53	5.80	6.06
BA/BN	4-1/4	10.41	12.02	13.44	15.02	16.46	17.77	8.18	8.83	9.44	10.56	11.07	11.56	5.35	5.77	6.17	6.90	7.24	7.56
HF/HN	1/4	0.46	0.53	0.59	0.66	0.73	0.79	0.35	0.38	0.41	0.46	0.48	0.50	0.25	0.27	0.29	0.32	0.34	0.35
HF/HN	1/2	0.89	1.02	1.14	1.28	1.40	1.51	0.71	0.76	0.82	0.91	0.96	1.00	0.46	0.50	0.53	0.59	0.62	0.65
HF/HN	3/4	1.59	1.84	2.06	2.30	2.52	2.72	1.27	1.38	1.47	1.65	1.73	1.80	0.81	0.88	0.94	1.05	1.10	1.15
HF/HN	1	2.44	2.82	3.15	3.53	3.86	4.17	1.91	2.06	2.21	2.47	2.59	2.70	1.24	1.34	1.43	1.60	1.68	1.75
HF/HN	1-1/2	3.29	3.80	4.25	4.75	5.21	5.62	2.58	2.79	2.98	3.34	3.50	3.65	1.70	1.84	1.96	2.19	2.30	2.40
HF/HN	1-3/4	4.21	4.86	5.44	6.08	6.66	7.19	3.29	3.56	3.80	4.25	4.46	4.66	2.16	2.33	2.49	2.79	2.92	3.05
HF/HN	2-1/2	5.56	6.42	7.18	8.02	8.79	9.49	4.35	4.70	5.03	5.62	5.90	6.16	2.87	3.10	3.31	3.70	3.88	4.06
HF/HN	4	9.91	11.45	12.80	14.31	15.67	16.93	7.75	8.37	8.95	10.01	10.50	10.96	5.06	5.47	5.85	6.54	6.85	7.16
HF/HN	6	13.77	15.90	17.78	19.88	21.77	23.52	10.80	11.66	12.47	13.94	14.62	15.27	7.08	7.65	8.18	9.14	9.59	10.01
HF/HN	7-1/2	17.45	20.15	22.53	25.19	27.59	29.81	13.70	14.80	15.82	17.69	18.55	19.37	8.96	9.67	10.34	11.56	12.13	12.67
HF/HN	11	25.88	29.88	33.41	37.35	40.92	44.19	20.28	21.91	23.42	26.19	27.46	28.69	13.28	14.34	15.33	17.14	17.97	18.77
HF/HN	14	34.05	39.32	43.96	49.15	53.85	58.16	26.73	28.87	30.86	34.50	36.19	37.80	17.45	18.85	20.15	22.53	23.63	24.68
TFE	6	13.52	15.61	17.46	19.52	21.38	23.09	10.62	11.47	12.26	13.71	14.38	15.02	6.94	7.49	8.01	8.96	9.39	9.81
TFE	8	18.51	21.38	23.90	26.72	29.27	31.62	14.51	15.68	16.76	18.74	19.65	20.53	9.49	10.25	10.95	12.25	12.85	13.42
TFE	10	23.01	26.57	29.71	33.21	36.38	39.30	18.05	19.50	20.85	23.31	24.45	25.53	11.79	12.73	13.61	15.22	15.96	16.67
TFE	15	35.12	40.55	45.34	50.69	55.52	59.97	27.54	29.75	31.80	35.56	37.29	38.95	17.98	19.42	20.77	23.22	24.35	25.43
TRAE+	9	19.89	22.97	25.68	28.72	31.46	33.98	15.61	16.86	18.03	20.15	21.14	22.08	10.20	11.01	11.77	13.16	13.80	14.42
TRAE+	13	29.03	33.52	37.47	41.90	45.90	49.57	22.76	24.59	26.28	29.39	30.82	32.19	14.87	16.06	17.17	19.19	20.13	21.03
TRAE+	14	32.39	37.40	41.82	46.75	51.21	55.32	25.42	27.45	29.35	32.81	34.42	35.95	16.60	17.93	19.17	21.43	22.48	23.48
TRAE+	22	49.10	56.70	63.39	70.87	77.63	83.85	38.52	41.60	44.47	49.72	52.15	54.47	25.17	27.19	29.06	32.49	34.08	35.59
TRAE+	30	67.47	77.91	87.11	97.39	106.68	115.23	52.92	57.16	61.11	68.32	71.66	74.84	34.59	37.36	39.94	44.65	46.83	48.91
TRAE	40	91.08	105.17	117.59	131.47	144.02	155.56	71.47	77.20	82.53	92.27	96.77	101.08	46.69	50.43	53.92	60.28	63.22	66.03
TRAE	45	99.37	114.74	128.28	143.43	157.11	169.70	77.95	84.20	90.01	100.63	105.55	110.24	50.94	55.02	58.82	65.76	68.97	72.04
TRAE	50	118.27	136.57	152.69	170.71	187.00	201.99	92.75	100.18	107.10	119.74	125.58	131.17	60.64	65.50	70.02	78.29	82.11	85.76
TJR	11	24.82	28.65	32.04	35.82	39.24	42.38	19.47	21.03	22.48	25.14	26.36	27.53	12.71	13.73	14.67	16.41	17.21	17.97
TJR	13	29.70	34.30	38.34	42.87	46.96	50.72	23.29	25.16	26.90	30.07	31.54	32.94	15.22	16.44	17.58	19.65	20.61	21.53
TER	16	37.10	42.84	47.89	53.55	58.66	63.36	29.10	31.43	33.60	37.57	39.40	41.15	18.76	20.27	21.66	24.22	25.40	26.53
TER	19	43.86	50.65	56.62	63.31	69.35	74.91	34.41	37.17	39.73	44.42	46.59	48.66	22.48	24.28	25.96	29.02	30.44	31.79
TER	25	59.05	68.18	76.23	85.23	93.36	100.84	46.30	50.01	53.47	59.78	62.69	65.48	30.27	32.69	34.95	39.07	40.98	42.80
TER	31	75.93	87.68	98.03	109.60	120.06	129.68	59.54	64.31	68.75	76.87	80.62	84.21	38.94	42.06	44.96	50.27	52.73	55.07
TIR	45	94.20	108.77	121.61	135.97	148.94	160.88	72.78	78.61	84.04	93.96	98.55	102.93	47.58	51.39	54.94	61.42	64.42	67.28
THR	55	118.09	136.36	152.46	170.45	186.72	201.68	92.64	100.06	106.97	119.60	125.44	131.02	60.53	65.38	69.90	78.15	81.96	85.61
THR	68	143.41	165.59	185.14	206.99	226.74	244.91	112.47	121.48	129.86	145.19	152.28	159.05	73.53	79.42	84.90	94.92	99.55	103.98
TMR	68	168.72	194.82	217.81	243.52	266.76	288.14	132.33	142.93	152.80	170.83	179.17	187.14	86.48	93.41	99.86	111.65	117.10	122.30

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69

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.

# TXV extended capacity tables

## R-448A/R-449A (kW) balance ported valves - B Series and H Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C					0°C					-10°C							
		Pressure drop across valve (kPa)					Pressure drop across valve (kPa)					Pressure drop across valve (kPa)							
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
BA/BN	1/2	1.41	1.63	1.83	2.04	2.24	2.41	1.40	1.62	1.81	2.02	2.21	2.39	1.37	1.58	1.76	1.97	2.16	2.33
BA/BN	1	2.69	3.10	3.47	3.88	4.25	4.59	2.66	3.07	3.43	3.84	4.20	4.54	2.59	3.00	3.35	3.75	4.10	4.43
BA/BN	1-1/2	4.18	4.83	5.40	6.04	6.62	7.15	4.14	4.78	5.35	5.98	6.55	7.07	4.04	4.67	5.22	5.83	6.39	6.90
BA/BN	2	5.60	6.46	7.23	8.08	8.85	9.56	5.54	6.40	7.15	8.00	8.76	9.46	5.41	6.24	6.98	7.81	8.55	9.24
BA/BN	2-1/2	7.07	8.16	9.13	10.20	11.18	12.07	7.00	8.08	9.03	10.10	11.06	11.95	6.83	7.88	8.82	9.86	10.80	11.66
BA/BN	3	8.57	9.89	11.06	12.37	13.55	14.63	8.48	9.79	10.95	12.24	13.40	14.48	8.28	9.56	10.68	11.95	13.09	14.13
BA/BN	4	11.08	12.80	14.31	16.00	17.52	18.93	10.97	12.66	14.16	15.83	17.34	18.73	10.71	12.36	13.82	15.45	16.93	18.29
BA/BN	5	14.05	16.23	18.14	20.28	22.22	24.00	13.91	16.06	17.95	20.07	21.99	23.75	13.57	15.67	17.53	19.59	21.46	23.18
BA/BN	6	17.45	20.14	22.52	25.18	27.58	29.79	17.26	19.93	22.29	24.92	27.30	29.48	16.85	19.46	21.76	24.32	26.65	28.78
HF	1/4	0.79	0.91	1.02	1.14	1.25	1.35	0.78	0.90	1.01	1.13	1.24	1.34	0.76	0.88	0.99	1.10	1.21	1.31
HF	1/2	1.50	1.73	1.93	2.16	2.37	2.56	1.48	1.71	1.91	2.14	2.34	2.53	1.45	1.67	1.87	2.09	2.29	2.47
HF	1	2.69	3.10	3.47	3.88	4.25	4.59	2.66	3.07	3.43	3.84	4.20	4.54	2.59	3.00	3.35	3.75	4.10	4.43
HF	1-1/2	4.10	4.73	5.29	5.92	6.48	7.00	4.06	4.68	5.24	5.86	6.41	6.93	3.96	4.57	5.11	5.72	6.26	6.76
HF	2	5.54	6.40	7.15	8.00	8.76	9.46	5.48	6.33	7.08	7.92	8.67	9.37	5.35	6.18	6.91	7.73	8.46	9.14
HF	2-1/2	7.10	8.19	9.16	10.24	11.22	12.12	7.02	8.11	9.07	10.14	11.10	11.99	6.86	7.92	8.85	9.90	10.84	11.71
HF	3-1/2	9.36	10.81	12.08	13.51	14.80	15.98	9.26	10.69	11.96	13.37	14.64	15.82	9.04	10.44	11.67	13.05	14.29	15.44
HF	6	16.65	19.23	21.50	24.04	26.33	28.44	16.48	19.03	21.28	23.79	26.06	28.15	16.09	18.58	20.77	23.22	25.44	27.48
HF	8-1/2	23.16	26.74	29.89	33.42	36.61	39.55	22.92	26.46	29.58	33.08	36.23	39.14	22.37	25.83	28.88	32.29	35.37	38.20
HF	10-1/2	29.40	33.95	37.96	42.44	46.49	50.22	29.10	33.60	37.57	42.00	46.01	49.70	28.41	32.80	36.67	41.00	44.91	48.51
HF	16	43.54	50.28	56.21	62.85	68.85	74.36	43.09	49.76	55.63	62.19	68.13	73.59	42.06	48.57	54.30	60.71	66.51	71.84
HF	10	57.11	65.95	73.73	82.44	90.30	97.54	56.52	65.26	72.97	81.58	89.37	96.53	55.17	63.71	71.23	79.64	87.24	94.23

Valve type	Nominal rating	Evaporator temperature																	
		-20°C					-30°C					-40°C							
		Pressure drop across valve (kPa)					Pressure drop across valve (kPa)					Pressure drop across valve (kPa)							
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
BA/BN	1/2	1.33	1.53	1.72	1.92	2.10	2.27	1.21	1.36	1.52	1.66	1.79	1.92	0.82	0.92	1.02	1.12	1.21	1.29
BA/BN	1	2.52	2.91	3.26	3.64	3.99	4.31	2.30	2.58	2.88	3.16	3.41	3.64	1.56	1.74	1.95	2.13	2.30	2.46
BA/BN	1-1/2	3.93	4.54	5.08	5.68	6.22	6.72	3.59	4.01	4.49	4.92	5.31	5.68	2.42	2.71	3.03	3.32	3.59	3.83
BA/BN	2	5.26	6.07	6.79	7.59	8.32	8.98	4.80	5.37	6.00	6.58	7.10	7.59	3.24	3.63	4.05	4.44	4.80	5.13
BA/BN	2-1/2	6.64	7.67	8.58	9.59	10.50	11.34	6.06	6.78	7.58	8.30	8.97	9.59	4.10	4.58	5.12	5.61	6.06	6.47
BA/BN	3	8.05	9.30	10.39	11.62	12.73	13.75	7.35	8.22	9.19	10.07	10.87	11.62	4.96	5.55	6.20	6.80	7.34	7.85
BA/BN	4	10.41	12.03	13.45	15.03	16.47	17.79	9.51	10.63	11.89	13.02	14.06	15.04	6.42	7.18	8.03	8.79	9.50	10.15
BA/BN	5	13.20	15.25	17.05	19.06	20.88	22.55	12.06	13.48	15.07	16.51	17.83	19.06	8.14	9.10	10.18	11.15	12.04	12.87
BA/BN	6	16.39	18.93	21.16	23.66	25.92	28.00	14.97	16.73	18.71	20.50	22.14	23.67	10.11	11.30	12.63	13.84	14.95	15.98
HF	1/4	0.74	0.86	0.96	1.07	1.18	1.27	0.68	0.76	0.85	0.93	1.00	1.07	0.46	0.51	0.57	0.63	0.68	0.73
HF	1/2	1.41	1.63	1.82	2.03	2.23	2.40	1.29	1.44	1.61	1.76	1.90	2.03	0.87	0.97	1.09	1.19	1.28	1.37
HF	1	2.52	2.91	3.26	3.64	3.99	4.31	2.30	2.58	2.88	3.16	3.41	3.64	1.56	1.74	1.95	2.13	2.30	2.46
HF	1-1/2	3.85	4.45	4.97	5.56	6.09	6.58	3.52	3.93	4.40	4.82	5.20	5.56	2.38	2.66	2.97	3.25	3.51	3.76
HF	2	5.21	6.01	6.72	7.52	8.23	8.89	4.75	5.32	5.94	6.51	7.03	7.52	3.21	3.59	4.01	4.40	4.75	5.08
HF	2-1/2	6.67	7.70	8.61	9.63	10.54	11.39	6.09	6.81	7.61	8.34	9.01	9.63	4.11	4.60	5.14	5.63	6.08	6.50
HF	3-1/2	8.79	10.15	11.35	12.69	13.90	15.02	8.03	8.98	10.04	11.00	11.88	12.70	5.42	6.06	6.78	7.42	8.02	8.57
HF	6	15.65	18.07	20.20	22.59	24.74	26.73	14.29	15.98	17.86	19.57	21.13	22.59	9.65	10.79	12.06	13.21	14.27	15.26
HF	8-1/2	21.76	25.13	28.09	31.41	34.41	37.16	19.87	22.21	24.84	27.21	29.39	31.41	13.42	15.00	16.77	18.37	19.84	21.21
HF	10-1/2	27.63	31.91	35.67	39.88	43.69	47.19	25.23	28.21	31.54	34.55	37.31	39.89	17.04	19.05	21.29	23.33	25.20	26.94
HF	16	40.92	47.25	52.82	59.06	64.69	69.88	37.36	41.77	46.70	51.16	55.25	59.07	25.23	28.20	31.53	34.54	37.31	39.89
HF	10	53.67	61.97	69.29	77.46	84.86	91.66	49.00	54.79	61.25	67.10	72.48	77.48	33.09	36.99	41.36	45.31	48.94	52.32

## Refrigerant liquid temperature correction factors

	Refrigerant liquid temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69

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.



# TXV extended capacity tables

## R-407C balanced ported valves (kW)– B, HF, TFE, TRAE and T Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
BA/BN	1/2	1.35	1.65	1.78	1.90	2.13	2.23	1.31	1.60	1.73	1.85	2.07	2.17	1.27	1.56	1.69	1.80	2.02	2.11
BA/BN	3/4	2.55	3.12	3.37	3.60	4.03	4.23	2.48	3.03	3.28	3.50	3.92	4.11	2.41	2.95	3.18	3.40	3.81	3.99
BA/BN	1	3.96	4.86	5.24	5.61	6.27	6.57	3.89	4.77	5.15	5.51	6.16	6.46	3.72	4.55	4.92	5.26	5.88	6.16
BA/BN	1-1/2	5.27	6.46	6.98	7.46	8.34	8.75	5.20	6.37	6.88	7.36	8.23	8.63	4.99	6.11	6.60	7.06	7.89	8.28
BA/BN	2	6.66	8.15	8.80	9.41	10.52	11.04	6.55	8.02	8.66	9.26	10.35	10.86	6.30	7.72	8.34	8.91	9.96	10.45
BA/BN	2-1/4	8.07	9.89	10.68	11.41	12.76	13.38	7.93	9.71	10.49	11.21	12.54	13.15	7.61	9.32	10.07	10.76	12.03	12.62
BA/BN	3	10.48	12.83	13.86	14.82	16.57	17.38	10.27	12.57	13.58	14.52	16.23	17.02	9.88	12.10	13.07	13.97	15.62	16.38
BA/BN	3-1/2	13.24	16.22	17.51	18.72	20.93	21.96	12.99	15.91	17.19	18.37	20.54	21.54	12.46	15.26	16.48	17.62	19.70	20.66
BA/BN	4-1/4	16.46	20.16	21.78	23.28	26.03	27.30	16.18	19.81	21.40	22.88	25.58	26.83	15.51	18.99	20.51	21.93	24.52	25.71
HF/HN	1/4	0.74	0.91	0.98	1.05	1.18	1.23	0.74	0.91	0.98	1.05	1.18	1.23	0.71	0.87	0.94	1.00	1.12	1.17
HF/HN	1/2	1.42	1.73	1.87	2.00	2.24	2.35	1.38	1.69	1.83	1.95	2.18	2.29	1.35	1.65	1.78	1.90	2.13	2.23
HF/HN	3/4	2.55	3.12	3.37	3.60	4.03	4.23	2.48	3.03	3.28	3.50	3.92	4.11	2.41	2.95	3.18	3.40	3.81	3.99
HF/HN	1	3.86	4.73	5.10	5.46	6.10	6.40	3.79	4.64	5.01	5.36	5.99	6.28	3.65	4.47	4.82	5.16	5.77	6.05
HF/HN	1-1/2	5.20	6.37	6.88	7.36	8.23	8.63	5.10	6.24	6.74	7.21	8.06	8.45	4.92	6.03	6.51	6.96	7.78	8.16
HF/HN	1-3/4	6.66	8.15	8.80	9.41	10.52	11.04	6.55	8.02	8.66	9.26	10.35	10.86	6.30	7.72	8.34	8.91	9.96	10.45
HF/HN	2-1/2	8.81	10.80	11.66	12.47	13.94	14.62	8.64	10.58	11.43	12.22	13.66	14.32	8.32	10.19	11.01	11.76	13.15	13.80
HF/HN	4	15.68	19.21	20.75	22.18	24.80	26.01	15.36	18.82	20.32	21.73	24.29	25.48	14.76	18.08	19.53	20.88	23.34	24.48
HF/HN	6	21.81	26.71	28.85	30.84	34.48	36.16	21.42	26.23	28.33	30.29	33.86	35.52	20.57	25.19	27.21	29.09	32.52	34.11
HF/HN	7-1/2	27.61	33.82	36.53	39.05	43.66	45.79	27.08	33.17	35.82	38.30	42.82	44.91	26.02	31.87	34.42	36.80	41.14	43.15
HF/HN	11	40.96	50.16	54.18	57.92	64.76	67.92	40.18	49.21	53.15	56.82	63.53	66.63	38.59	47.26	51.04	54.57	61.01	63.99
HF/HN	14	53.88	65.99	71.27	76.20	85.19	89.35	52.89	64.77	69.96	74.79	83.62	87.70	50.80	62.22	67.20	71.84	80.32	84.24
TFE	6	21.42	26.23	28.33	30.29	33.86	35.52	21.03	25.75	27.82	29.74	33.25	34.87	20.18	24.71	26.69	28.54	31.90	33.46
TFE	8	29.31	35.90	38.78	41.45	46.35	48.61	28.78	35.25	38.07	40.70	45.51	47.73	27.61	33.82	36.53	39.05	43.66	45.79
TFE	10	36.39	44.57	48.14	51.46	57.54	60.35	35.72	43.75	47.25	50.51	56.48	59.23	34.30	42.01	45.38	48.51	54.24	56.88
TFE	15	55.54	68.03	73.48	78.55	87.82	92.11	54.52	66.77	72.12	77.10	86.20	90.40	52.36	64.12	69.26	74.04	82.78	86.82
TRAE+	9	31.51	38.59	41.68	44.56	49.82	52.25	30.90	37.85	40.88	43.71	48.86	51.25	29.70	36.38	39.29	42.00	46.96	49.25
TRAE+	13	45.91	56.23	60.74	64.93	72.60	76.14	45.06	55.19	59.61	63.73	71.25	74.73	43.26	52.98	57.23	61.18	68.40	71.74
TRAE+	14	51.26	62.78	67.81	72.49	81.05	85.00	50.30	61.61	66.55	71.14	79.54	83.42	48.29	59.14	63.88	68.29	76.35	80.07
TRAE+	22	77.67	95.12	102.74	109.84	122.80	128.80	75.93	93.00	100.45	107.39	120.06	125.92	73.21	89.66	96.84	103.53	115.75	121.40
TRAE+	30	106.77	130.76	141.24	150.99	168.81	177.05	104.78	128.33	138.62	148.19	165.68	173.76	100.64	123.26	133.14	142.33	159.13	166.90
TRAE	40	144.11	176.50	190.64	203.81	227.86	238.99	141.49	173.29	187.18	200.10	223.72	234.64	135.83	166.36	179.69	192.09	214.77	225.25
TRAE	45	157.21	192.54	207.97	222.33	248.57	260.71	154.31	188.99	204.13	218.23	243.98	255.89	148.18	181.49	196.03	209.56	234.30	245.74
TRAE	50	187.09	229.14	247.50	264.58	295.81	310.25	183.66	224.93	242.95	259.73	290.38	304.56	176.36	216.00	233.31	249.41	278.85	292.46
TJR	11	39.22	48.04	51.89	55.47	62.02	65.04	38.52	47.17	50.95	54.47	60.90	63.87	36.99	45.31	48.94	52.32	58.49	61.35
TJR	13	46.13	56.49	61.02	65.23	72.93	76.49	46.13	56.49	61.02	65.23	72.93	76.49	44.29	54.24	58.58	62.63	70.02	73.44
TER	16	58.73	71.93	77.69	83.05	92.86	97.39	57.63	70.58	76.24	81.50	91.12	95.57	55.33	67.77	73.19	78.25	87.48	91.75
TER	19	69.38	84.98	91.79	98.12	109.71	115.06	68.11	83.42	90.10	96.32	107.69	112.95	65.42	80.12	86.54	92.52	103.44	108.49
TER	25	93.42	114.42	123.58	132.12	147.71	154.92	91.69	112.29	121.29	129.66	144.97	152.04	88.04	107.83	116.47	124.51	139.20	146.00
TER	31	120.11	147.11	158.89	169.86	189.91	199.18	117.88	144.38	155.94	166.71	186.39	195.49	113.21	138.65	149.76	160.10	179.00	187.74
TIR	45	146.80	179.80	194.20	207.61	232.12	243.45	144.11	176.50	190.64	203.81	227.86	238.99	138.34	169.44	183.01	195.65	218.74	229.42
THR	55	186.84	228.83	247.17	264.23	295.42	309.84	183.41	224.63	242.63	259.38	289.99	304.15	176.08	215.65	232.93	249.01	278.41	291.99
THR	68	226.84	277.83	300.09	320.80	358.67	376.18	222.70	272.75	294.61	314.95	352.12	369.31	213.82	261.87	282.85	302.38	338.07	354.57
TMR	68	266.88	326.86	353.05	377.43	421.98	442.57	262.00	320.88	346.59	370.52	414.25	434.47	251.55	308.09	332.77	355.75	397.74	417.15

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-407C balanced ported valves (kW)– B, HF, TFE, TRAE and T Series (cont.)

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
BA/BN	1/2	1.06	1.30	1.40	1.50	1.68	1.76	0.81	0.88	0.94	1.05	1.10	1.15	0.50	0.54	0.57	0.64	0.67	0.70
BA/BN	3/4	2.02	2.47	2.67	2.85	3.19	3.35	1.52	1.64	1.76	1.97	2.06	2.15	0.96	1.03	1.10	1.23	1.29	1.35
BA/BN	1	3.15	3.86	4.17	4.46	4.98	5.22	2.41	2.60	2.78	3.11	3.26	3.40	1.52	1.64	1.76	1.97	2.06	2.15
BA/BN	1-1/2	4.21	5.16	5.57	5.96	6.66	6.99	3.19	3.44	3.68	4.11	4.31	4.51	2.02	2.18	2.33	2.60	2.73	2.8
BA/BN	2	5.31	6.50	7.02	7.51	8.40	8.81	4.04	4.36	4.66	5.21	5.46	5.71	2.55	2.75	2.94	3.29	3.45	3.60
BA/BN	2-1/4	6.44	7.89	8.52	9.11	10.19	10.68	4.89	5.28	5.64	6.31	6.61	6.91	3.08	3.33	3.56	3.98	4.17	4.36
BA/BN	3	8.32	10.19	11.01	11.76	13.15	13.80	6.34	6.84	7.32	8.18	8.58	8.96	4.00	4.32	4.62	5.16	5.42	5.66
BA/BN	3-1/2	10.55	12.92	13.96	14.92	16.68	17.49	8.04	8.68	9.28	10.37	10.88	11.36	5.06	5.47	5.85	6.54	6.85	7.16
BA/BN	4-1/4	13.10	16.04	17.33	18.52	20.71	21.72	9.98	10.78	11.53	12.89	13.52	14.12	6.27	6.77	7.24	8.09	8.48	8.86
HF/HN	1/4	0.60	0.74	0.80	0.85	0.95	1.00	0.46	0.50	0.53	0.59	0.62	0.65	0.28	0.31	0.33	0.37	0.38	0.40
HF/HN	1/2	1.13	1.39	1.50	1.60	1.79	1.88	0.85	0.92	0.98	1.10	1.15	1.20	0.53	0.57	0.61	0.69	0.72	0.75
HF/HN	3/4	2.02	2.47	2.67	2.85	3.19	3.35	1.52	1.64	1.76	1.97	2.06	2.15	0.96	1.03	1.10	1.23	1.29	1.35
HF/HN	1	3.08	3.77	4.07	4.36	4.87	5.11	2.34	2.52	2.70	3.02	3.16	3.30	1.49	1.61	1.72	1.92	2.01	2.10
HF/HN	1-1/2	4.14	5.07	5.48	5.86	6.55	6.87	3.15	3.40	3.64	4.07	4.27	4.46	1.98	2.14	2.29	2.56	2.68	2.80
HF/HN	1-3/4	5.31	6.50	7.02	7.51	8.40	8.81	4.04	4.36	4.66	5.21	5.46	5.71	2.55	2.75	2.94	3.29	3.45	3.60
HF/HN	2-1/2	7.01	8.58	9.27	9.91	11.08	11.62	5.35	5.77	6.17	6.90	7.24	7.56	3.36	3.63	3.88	4.34	4.55	4.76
HF/HN	4	12.46	15.26	16.48	17.62	19.70	20.66	9.49	10.25	10.95	12.25	12.85	13.42	5.98	6.46	6.91	7.72	8.10	8.46
HF/HN	6	17.35	21.24	22.95	24.53	27.43	28.77	13.20	14.26	15.25	17.05	17.88	18.67	8.32	8.99	9.61	10.74	11.26	11.76
HF/HN	7-1/2	21.95	26.88	29.03	31.04	34.70	36.40	16.71	18.05	19.29	21.57	22.62	23.63	10.51	11.36	12.14	13.57	14.24	14.87
HF/HN	11	32.57	39.89	43.08	46.06	51.49	54.01	24.82	26.80	28.65	32.04	33.60	35.09	15.61	16.86	18.03	20.15	21.14	22.08
HF/HN	14	42.87	52.50	56.71	60.63	67.78	71.09	32.64	35.25	37.69	42.14	44.19	46.16	20.57	22.22	23.75	26.55	27.85	29.09
TFE	6	17.03	20.85	22.53	24.08	26.92	28.24	12.96	13.99	14.96	16.73	17.54	18.32	8.18	8.83	9.44	10.56	11.07	11.56
TFE	8	23.33	28.57	30.86	32.99	36.89	38.69	17.77	19.19	20.52	22.94	24.06	25.13	11.19	12.08	12.92	14.44	15.15	15.82
TFE	10	28.96	35.47	38.31	40.95	45.79	48.02	22.05	23.82	25.47	28.47	29.86	31.19	13.88	14.99	16.02	17.91	18.79	19.62
TFE	15	44.21	54.15	58.49	62.53	69.91	73.32	33.67	36.36	38.87	43.46	45.58	47.61	21.17	22.87	24.44	27.33	28.66	29.94
TRAE+	9	25.06	30.70	33.16	35.44	39.63	41.56	19.08	20.61	22.03	24.63	25.84	26.98	12.00	12.96	13.86	15.49	16.25	16.97
TRAE+	13	36.53	44.74	48.33	51.67	57.76	60.58	27.82	30.05	32.13	35.92	37.67	39.35	17.52	18.93	20.23	22.62	23.73	24.78
TRAE+	14	40.78	49.95	53.95	57.67	64.48	67.63	31.05	33.53	35.85	40.08	42.04	43.91	19.54	21.11	22.56	25.23	26.46	27.63
TRAE+	22	61.81	75.70	81.76	87.41	97.73	102.50	47.08	50.85	54.37	60.78	63.75	66.58	29.63	32.00	34.21	38.25	40.12	41.90
TRAE+	30	84.96	104.05	112.39	120.15	134.33	140.89	64.71	69.90	74.72	83.54	87.62	91.52	40.71	43.97	47.01	52.56	55.12	57.57
TRAE	40	114.70	140.47	151.73	162.20	181.35	190.20	87.33	94.33	100.84	112.74	118.25	123.51	54.98	59.38	63.48	70.97	74.44	77.75
TRAE	45	125.10	153.22	165.50	176.92	197.81	207.46	95.26	102.89	110.00	122.98	128.98	134.72	59.97	64.77	69.24	77.42	81.20	84.81
TRAE	50	148.89	182.36	196.97	210.57	235.42	246.91	113.39	122.47	130.93	146.38	153.53	160.35	71.37	77.08	82.41	92.13	96.63	100.93
TJR	11	31.22	38.24	41.30	44.16	49.37	51.78	23.79	25.69	27.47	30.71	32.21	33.64	14.97	16.17	17.29	19.33	20.28	21.18
TJR	13	37.38	45.78	49.45	52.87	59.11	61.99	28.46	30.74	32.86	36.74	38.54	40.25	17.91	19.35	20.68	23.12	24.25	25.33
TER	16	46.73	57.23	61.82	66.08	73.88	77.49	35.58	38.43	41.08	45.93	48.17	50.31	22.41	24.20	25.87	28.93	30.34	31.69
TER	19	55.22	67.64	73.05	78.10	87.32	91.58	42.06	45.42	48.56	54.29	56.94	59.48	26.48	28.60	30.58	34.18	35.85	37.45
TER	25	74.34	91.05	98.34	105.13	117.54	123.28	56.60	61.14	65.36	73.08	76.64	80.05	35.61	38.47	41.12	45.98	48.22	50.36
TER	31	95.58	117.06	126.44	135.17	151.13	158.50	72.78	78.61	84.04	93.96	98.55	102.93	45.81	49.48	52.89	59.14	62.02	64.78
TIR	45	116.82	143.07	154.54	165.21	184.71	193.72	88.96	96.09	102.72	114.85	120.45	125.81	56.00	60.49	64.67	72.30	75.83	79.20
THR	55	148.68	182.10	196.69	210.27	235.08	246.56	113.21	122.28	130.72	146.15	153.29	160.10	71.26	76.97	82.28	92.00	96.49	100.78
THR	68	180.54	221.12	238.83	255.32	285.46	299.39	137.49	148.51	158.76	177.50	186.17	194.45	86.52	93.45	99.90	111.69	117.15	122.35
TMR	68	212.40	260.14	280.98	300.38	335.83	352.23	161.74	174.70	186.76	208.81	219.00	228.74	101.81	109.97	117.56	131.44	137.85	143.98

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

# TXV extended capacity tables

## R-410A balanced ported valves (kW)– B Series

Valve type	Nominal rating	Evaporator temperature																							
		10 °C								4 °C								-7 °C							
		Pressure drop across valve (kPa)								Pressure drop across valve (kPa)								Pressure drop across valve (kPa)							
	500	800	1000	1100	1400	1700	2000	500	800	1000	1100	1400	1700	2000	500	800	1000	1100	1400	1700	2000				
BA/BN	1	2.8	3.4	3.8	4.1	4.7	5.0	5.5	2.8	3.4	3.8	4.1	4.7	5.0	5.4	2.7	3.3	3.7	4.0	4.6	4.9	5.3			
	1-1/2	4.5	5.5	6.2	6.6	7.6	8.0	8.6	4.5	5.4	6.1	6.6	7.5	8.0	8.8	4.4	5.3	6.0	6.4	7.4	7.9	8.6			
	2	6.3	7.7	8.6	9.2	10.6	11.3	12.3	6.3	7.6	8.6	9.2	10.5	11.2	12.2	6.1	7.4	8.4	9.0	10.3	11.0	12.0			
	3	8.0	9.7	11.0	11.8	13.5	14.4	15.7	8.0	9.7	10.9	11.7	13.4	14.3	15.6	7.8	9.5	10.7	11.4	13.1	14.0	15.2			
	3-1/2	10.4	12.6	14.2	15.2	17.4	18.6	20.3	10.3	12.5	14.1	15.1	17.3	18.4	20.1	10.1	12.2	13.8	14.7	16.9	18.0	19.7			
	4-1/2	14.5	17.6	19.8	21.2	24.3	25.9	28.3	14.4	17.4	19.6	21.0	24.0	25.7	28.0	14.1	17.0	19.2	20.5	23.5	25.2	27.4			
	6	17.7	21.5	24.2	25.9	29.7	31.7	34.6	17.6	21.3	24.0	25.7	29.4	31.5	34.3	17.2	20.8	23.5	25.1	28.8	30.8	33.6			
7	21.8	26.4	29.8	31.9	36.5	39.0	42.5	21.6	26.2	29.5	31.6	36.2	38.7	42.2	21.2	25.6	28.9	30.9	35.4	37.9	41.3				

Valve type	Nominal rating	Evaporator temperature																							
		-18 °C								-29 °C								-40 °C							
		Pressure drop across valve (kPa)								Pressure drop across valve (kPa)								Pressure drop across valve (kPa)							
	500	800	1000	1100	1400	1700	2000	500	800	1000	1100	1400	1700	2000	500	800	1000	1100	1400	1700	2000				
BA/BN	1	2.7	3.2	3.6	3.9	4.4	4.8	5.2	2.6	3.1	3.5	3.8	4.3	4.6	5.0	2.5	3.0	3.4	3.6	4.2	4.4	4.8			
	1-1/2	4.3	5.2	5.8	6.3	7.2	7.7	8.3	4.1	5.0	5.7	6.1	6.9	7.4	8.1	4.0	4.8	5.5	5.8	6.7	7.2	7.8			
	2	6.0	7.2	8.2	8.7	10.0	10.7	11.6	5.8	7.0	7.9	8.5	9.7	10.4	11.3	5.6	6.8	7.6	8.2	9.3	10.0	10.9			
	3	7.6	9.2	10.4	11.1	12.7	13.6	14.8	7.4	8.9	10.1	10.8	12.3	13.2	14.4	7.1	8.6	9.7	10.4	11.9	12.7	13.9			
	3-1/2	9.8	11.9	13.4	14.3	16.4	17.6	19.1	9.5	11.5	13.0	13.9	15.9	17.0	18.5	9.2	11.1	12.5	13.4	15.4	16.4	17.9			
	4-1/2	13.7	16.6	18.7	20.0	22.9	24.5	26.7	13.3	16.1	18.1	19.4	22.2	23.7	25.9	12.8	15.5	17.5	18.7	21.4	22.9	24.9			
	6	16.8	20.3	22.9	24.5	28.0	30.0	32.7	16.2	19.7	22.2	23.7	27.2	29.0	31.7	15.7	19.0	21.4	22.9	26.2	28.0	30.5			
7	20.6	25.0	28.1	30.1	34.5	36.9	40.2	20.0	24.2	27.3	29.2	33.4	35.7	38.9	19.3	23.3	26.3	28.1	32.2	34.5	37.5				

Note: 1. These ratings assume vapor free liquid entering the thermal expansion valve.  
 2. Standard capacity is rated at 38°C liquid inlet and 4.4°C evap temperture, with 11 bar pressure drop across TXV.

## R-410A balanced ported valves (kW) – NXT Series

Valve type	Nominal rating Tons	Evaporator temperature																							
		10 °C								4 °C								-7 °C							
		Pressure drop across valve (kPa)								Pressure drop across valve (kPa)								Pressure drop across valve (kPa)							
	500	750	1000	1100	1450	1700	2000	500	750	1000	1100	1450	1700	2000	500	750	1000	1100	1450	1700	2000				
NXT-Series	1/2	1.4	1.6	1.9	2.0	2.3	2.4	2.6	1.3	1.6	1.8	2.0	2.3	2.4	2.6	1.3	1.6	1.8	1.9	2.2	2.4	2.6			
	1	2.4	2.9	3.3	3.5	4.1	4.3	4.7	2.4	2.9	3.3	3.5	4.0	4.3	4.7	2.4	2.8	3.2	3.4	3.9	4.2	4.6			
	1-1/2	3.6	4.4	5.0	5.3	6.1	6.5	7.1	3.6	4.4	4.9	5.3	6.0	6.4	7.0	3.5	4.3	4.8	5.2	5.9	6.3	6.9			
	2	4.8	5.9	6.6	7.1	8.1	8.7	9.4	4.8	5.8	6.6	7.0	8.0	8.6	9.4	4.7	5.7	6.4	6.9	7.9	8.4	9.2			
	3	7.3	8.8	9.9	10.6	12.2	13.0	14.2	7.2	8.7	9.8	10.5	12.1	12.9	14.1	7.1	8.5	9.6	10.3	11.8	12.6	13.8			
	4	9.7	11.7	13.2	14.2	16.2	17.3	18.9	9.6	11.6	13.1	14.0	16.1	17.2	18.7	9.4	11.4	12.9	13.7	15.7	16.8	18.3			
	5	12.1	14.7	16.6	17.7	20.3	21.7	23.6	12.0	14.6	16.4	17.6	20.1	21.5	23.4	11.8	14.2	16.1	17.2	19.7	21.0	22.9			
	6	14.5	17.6	19.9	21.2	24.3	26.0	28.3	14.4	17.5	19.7	21.1	24.1	25.8	28.1	14.1	17.1	19.3	20.6	23.6	25.2	27.5			
	7	17.0	20.5	23.2	24.8	28.4	30.3	33.1	16.8	20.4	23.0	24.6	28.1	30.1	32.8	16.5	19.9	22.5	24.0	27.5	29.4	32.1			
	8	20.3	24.5	27.8	29.7	34.0	36.4	39.6	20.2	24.4	27.5	29.4	33.7	36.1	39.9	19.7	23.9	27.0	28.8	33.0	35.3	38.5			
	10	25.0	30.3	34.1	36.5	41.8	44.7	48.7	24.8	30.0	33.9	36.2	41.5	44.3	48.3	24.2	29.4	33.1	35.4	40.6	43.4	47.3			
	12	30.6	37.1	41.8	44.7	51.2	54.8	59.7	30.4	36.8	41.5	44.3	50.8	54.3	59.2	29.7	36.0	40.6	43.4	49.7	53.1	57.9			
	15	35.8	43.4	49.0	52.4	60.0	64.1	69.9	35.5	43.0	48.6	51.9	59.5	63.6	69.3	34.8	42.1	47.5	50.8	58.2	62.2	67.8			

Valve type	Nominal rating Tons	Evaporator temperature																							
		-18 °C								-29 °C								-40 °C							
		Pressure drop across valve (kPa)								Pressure drop across valve (kPa)								Pressure drop across valve (kPa)							
	500	750	1000	1100	1450	1700	2000	500	750	1000	1100	1450	1700	2000	500	750	1000	1100	1450	1700	2000				
NXT-Series	1/2	1.3	1.6	1.8	1.9	2.1	2.3	2.5	1.2	1.5	1.7	1.8	2.1	2.2	2.4	1.2	1.5	1.6	1.8	2.0	2.1	2.3			
	1	2.3	2.9	3.1	3.3	3.8	4.1	4.5	2.2	2.7	3.0	3.2	3.7	4.0	4.3	2.1	2.6	2.9	3.1	3.6	3.8	4.2			
	1-1/2	3.4	4.2	4.7	5.0	5.7	6.1	6.7	3.3	4.0	4.5	4.9	5.6	6.0	6.5	3.2	3.9	4.4	4.7	5.4	5.7	6.3			
	2	4.6	5.5	6.3	6.7	7.7	8.2	8.9	4.4	5.4	6.1	6.5	7.4	7.9	8.6	4.3	5.2	5.8	6.3	7.2	7.7	8.3			
	3	6.9	8.3	9.4	10.0	11.5	12.3	13.4	6.7	8.1	9.1	9.7	11.1	11.9	13.0	6.4	7.8	8.8	9.4	10.7	11.5	12.5			
	4	9.2	11.1	12.5	13.4	15.3	16.4	17.9	8.9	10.7	12.1	13.0	14.8	15.9	17.3	8.6	10.4	11.7	12.5	14.3	15.3	16.7			
	5	11.4	13.9	15.6	16.7	19.2	20.5	22.3	11.1	13.4	15.2	16.2	18.6	19.8	21.6	10.7	13.0	14.6	15.6	17.9	19.1	20.9			
	6	13.7	16.6	18.8	20.1	23.0	24.6	26.8	13.3	16.1	18.2	19.4	22.3	23.8	25.9	12.8	15.6	17.5	18.8	21.5	23.0	25.0			
	7	17.0	20.5	23.2	23.4	28.4	30.3	33.1	15.5	18.8	21.2	22.7	26.0	27.8	30.3	15.0	18.1	20.5	21.9	25.1	26.8	29.2			
	8	19.3	23.3	26.2	28.1	32.1	34.4	37.4	18.6	22.5	25.4	27.2	31.1	33.3	36.3	18.0	21.7	24.5	26.2	30.0	32.1	35.0			
	10	23.6	28.6	32.2	34.5	39.5	42.2	46.0	22.9	27.7	31.2	33.4	38.3	40.9	44.6	22.1	26.7	30.1	32.2	36.9	39.5	43.0			
	12	28.9	35.0	39.5	42.2	48.4	51.7	56.4	28.0	33.9	38.3	40.9	46.9	50.1	54.6	27.0	32.7	36.9	39.5	45.2	48.4	52.7			
	15	33.9	41.0	46.3	49.5	56.7	60.6	66.0	32.8	39.7	44.8	47.9	54.9	58.7	64.0	31.7	38.3	43.2	46.2	53.0	56.6	67.8			

Note: 1. These ratings assume vapor free liquid entering the thermal expansion valve.  
 2. Standard capacity is rated at 38°C liquid inlet and 4.4°C evap temperture, with 11 bar pressure drop across TXV.

## Refrigerant liquid temperature correction factors

	Refrigerant liquid temperature °C									
	10	16	21	27	32	38	43	49	54	60
R-410A correction factor	1.37	1.30	1.23	1.15	1.08	1.00	0.92	0.84	0.75	0.65

These factors include corrections for liquid refrigerant density and net refrigeration effect, and are based on an average evaporator temperature of 4.4°C with a maximum 14°C Change in Superheat. However, they may be used for other evaporator temperatures.

# TXV extended capacity tables

## R-502 balanced ported valves (kW)– B, HF, TFE, TRAE and T Series

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
BA/BN	1/2	0.92	1.13	1.22	1.30	1.46	1.53	0.89	1.08	1.17	1.25	1.40	1.47	0.85	1.04	1.12	1.20	1.34	1.41
BA/BN	3/4	1.73	2.12	2.29	2.45	2.74	2.88	1.70	2.08	2.25	2.40	2.69	2.82	1.63	1.99	2.15	2.30	2.57	2.70
BA/BN	1	2.69	3.30	3.56	3.80	4.25	4.46	2.62	3.21	3.47	3.70	4.14	4.34	2.51	3.08	3.32	3.55	3.97	4.17
BA/BN	1-1/2	3.61	4.42	4.78	5.11	5.71	5.99	3.50	4.29	4.64	4.96	5.54	5.81	3.36	4.12	4.45	4.76	5.32	5.58
BA/BN	2	4.53	5.55	5.99	6.41	7.16	7.51	4.46	5.46	5.90	6.31	7.05	7.40	4.25	5.20	5.62	6.01	6.72	7.04
BA/BN	2-1/4	5.49	6.72	7.26	7.76	8.68	9.10	5.38	6.59	7.12	7.61	8.51	8.92	5.13	6.29	6.79	7.26	8.12	8.51
BA/BN	3	7.12	8.71	9.41	10.06	11.25	11.80	6.97	8.54	9.23	9.86	11.03	11.56	6.66	8.15	8.80	9.41	10.52	11.04
BA/BN	3-1/2	8.99	11.01	11.89	12.72	14.22	14.91	8.81	10.80	11.66	12.47	13.94	14.62	8.43	10.32	11.15	11.92	13.32	13.97
BA/BN	4-1/4	11.22	13.74	14.85	15.87	17.74	18.61	10.97	13.44	14.52	15.52	17.35	18.20	10.48	12.83	13.86	14.82	16.57	17.38
HF/HN	1/4	0.50	0.61	0.66	0.70	0.78	0.82	0.50	0.61	0.66	0.70	0.78	0.82	0.46	0.56	0.61	0.65	0.73	0.76
HF/HN	1/2	0.96	1.17	1.26	1.35	1.51	1.59	0.96	1.17	1.26	1.35	1.51	1.59	0.89	1.08	1.17	1.25	1.40	1.47
HF/HN	3/4	1.73	2.12	2.29	2.45	2.74	2.88	1.70	2.08	2.25	2.40	2.69	2.82	1.63	1.99	2.15	2.30	2.57	2.70
HF/HN	1	2.62	3.21	3.47	3.70	4.14	4.34	2.58	3.16	3.42	3.65	4.09	4.29	2.48	3.03	3.28	3.50	3.92	4.11
HF/HN	1-1/2	3.54	4.34	4.68	5.01	5.60	5.87	3.47	4.25	4.59	4.91	5.49	5.75	3.29	4.03	4.36	4.66	5.21	5.46
HF/HN	1-3/4	4.53	5.55	5.99	6.41	7.16	7.51	4.46	5.46	5.90	6.31	7.05	7.40	4.25	5.20	5.62	6.01	6.72	7.04
HF/HN	2-1/2	5.98	7.33	7.91	8.46	9.46	9.92	5.88	7.20	7.77	8.31	9.29	9.74	5.59	6.85	7.40	7.91	8.84	9.28
HF/HN	4	10.66	13.05	14.10	15.07	16.85	17.67	10.44	12.79	13.81	14.77	16.51	17.32	9.95	12.18	13.16	14.07	15.73	16.50
HF/HN	6	14.83	18.17	19.62	20.98	23.45	24.60	14.51	17.78	19.20	20.53	22.95	24.07	13.88	17.00	18.36	19.62	21.94	23.01
HF/HN	7-1/2	18.76	22.98	24.82	26.53	29.67	31.11	18.37	22.50	24.30	25.98	29.05	30.47	17.56	21.50	23.23	24.83	27.76	29.12
HF/HN	11	27.86	34.12	36.86	39.40	44.05	46.20	27.26	33.38	36.06	38.55	43.10	45.20	26.02	31.87	34.42	36.80	41.14	43.15
HF/HN	14	36.67	44.92	48.52	51.87	57.99	60.82	35.90	43.96	47.49	50.76	56.76	59.53	34.27	41.97	45.33	48.46	54.18	56.83
TFE	6	14.55	17.82	19.25	20.58	23.00	24.13	14.27	17.47	18.87	20.18	22.56	23.66	13.59	16.65	17.98	19.22	21.49	22.54
TFE	8	19.93	24.41	26.37	28.19	31.51	33.05	19.51	23.89	25.80	27.58	30.84	32.35	18.62	22.81	24.63	26.33	29.44	30.88
TFE	10	24.74	30.31	32.73	34.99	39.12	41.03	24.25	29.70	32.08	34.29	38.34	40.21	23.12	28.31	30.58	32.69	36.55	38.33
TFE	15	37.81	46.30	50.01	53.47	59.78	62.70	36.99	45.31	48.94	52.32	58.49	61.35	35.29	43.23	46.69	49.91	55.80	58.53
TRAE+	9	21.42	26.23	28.33	30.29	33.86	35.52	20.99	25.71	27.77	29.69	33.19	34.81	20.04	24.54	26.51	28.34	31.68	33.23
TRAE+	13	31.22	38.24	41.30	44.16	49.37	51.78	30.59	37.46	40.46	43.25	48.36	50.72	29.17	35.73	38.59	41.25	46.12	48.37
TRAE+	14	34.87	42.71	46.13	49.31	55.13	57.82	34.13	41.80	45.14	48.26	53.96	56.59	32.57	39.89	43.08	46.06	51.49	54.01
TRAE+	22	52.85	64.73	69.92	74.74	83.57	87.65	51.72	63.34	68.42	73.14	81.78	85.77	49.38	60.48	65.33	69.84	78.08	81.89
TRAE+	30	72.64	88.97	96.09	102.73	114.86	120.46	71.12	87.10	94.08	100.58	112.45	117.94	67.86	83.11	89.77	95.97	107.30	112.54
TRAE	40	98.06	120.10	129.72	138.67	155.04	162.61	96.00	117.58	127.00	135.77	151.80	159.21	91.62	112.21	121.20	129.56	144.86	151.93
TRAE	45	106.98	131.02	141.52	151.29	169.15	177.40	104.71	128.25	138.52	148.09	165.57	173.65	99.93	122.39	132.20	141.33	158.01	165.72
TRAE	50	127.30	155.91	168.40	180.03	201.28	211.10	124.64	152.66	164.89	176.27	197.08	206.70	124.64	152.66	164.89	176.27	197.08	206.70
TJR	11	26.69	32.69	35.31	37.75	42.20	44.26	26.13	32.00	34.56	36.95	41.31	43.32	11.54	14.13	15.27	16.32	18.25	19.14
TJR	13	31.97	39.15	42.29	45.21	50.54	53.01	31.29	38.33	41.40	44.26	49.48	51.89	13.81	16.91	18.26	19.52	21.83	22.89
TER	16	39.97	48.95	52.87	56.52	63.19	66.28	39.12	47.91	51.75	55.32	61.85	64.87	17.28	21.16	22.85	24.43	27.31	28.65
TER	19	47.22	57.84	62.47	66.78	74.67	78.31	46.23	56.62	61.16	65.38	73.10	76.67	20.39	24.97	26.97	28.84	32.24	33.81
TER	25	63.58	77.87	84.11	89.91	100.53	105.43	62.23	76.22	82.33	88.01	98.40	103.20	27.47	33.64	36.34	38.85	43.43	45.55
TER	31	81.74	100.11	108.13	115.60	129.24	135.55	80.00	97.98	105.84	113.14	126.50	132.67	35.29	43.23	46.69	49.91	55.80	58.53
TIR	45	99.90	122.35	132.15	141.28	157.95	165.66	97.77	119.75	129.34	138.27	154.60	162.14	43.15	52.85	57.09	61.03	68.23	71.56
THR	55	127.12	155.69	168.17	179.78	201.00	210.81	124.43	152.40	164.61	175.97	196.74	206.35	54.94	67.29	72.68	77.70	86.87	91.11
THR	68	154.38	189.08	204.22	218.33	244.10	256.01	151.12	185.09	199.92	213.72	238.95	250.61	66.69	81.68	88.23	94.32	105.45	110.60
TMR	60	181.60	222.42	240.24	256.82	287.14	301.15	177.78	217.73	235.18	251.42	281.09	294.81	78.48	96.12	103.82	110.99	124.09	130.15

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69

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.

# TXV extended capacity tables

## R-502 balanced ported valves (kW)– B, HF, TFE, TRAE and T Series (cont.)

Valve type	Nominal rating	Evaporator temperature																	
		-20°C					-30°C					-40°C							
		Pressure drop across valve (kPa)					Pressure drop across valve (kPa)					Pressure drop across valve (kPa)							
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
BA/BN	1/2	0.78	0.95	1.03	1.10	1.23	1.29	0.60	0.65	0.69	0.78	0.81	0.85	0.39	0.42	0.45	0.50	0.53	0.55
BA/BN	3/4	1.49	1.82	1.97	2.10	2.35	2.47	1.17	1.26	1.35	1.51	1.58	1.65	0.74	0.80	0.86	0.96	1.01	1.05
BA/BN	1	2.30	2.82	3.04	3.25	3.64	3.82	1.84	1.99	2.13	2.38	2.49	2.60	1.17	1.26	1.35	1.51	1.58	1.65
BA/BN	1-1/2	3.08	3.77	4.07	4.36	4.87	5.11	2.44	2.64	2.82	3.15	3.31	3.45	1.56	1.68	1.80	2.01	2.11	2.20
BA/BN	2	3.89	4.77	5.15	5.51	6.16	6.46	3.08	3.33	3.56	3.98	4.17	4.36	1.95	2.10	2.25	2.51	2.64	2.75
BA/BN	2-1/4	4.74	5.81	6.28	6.71	7.50	7.87	3.72	4.01	4.29	4.80	5.03	5.26	2.37	2.56	2.74	3.06	3.21	3.35
BA/BN	3	6.12	7.50	8.10	8.66	9.68	10.16	4.81	5.20	5.56	6.22	6.52	6.81	3.08	3.33	3.56	3.98	4.17	4.36
BA/BN	3-1/2	7.75	9.49	10.26	10.96	12.26	12.86	6.12	6.61	7.07	7.91	8.29	8.66	3.89	4.21	4.50	5.03	5.27	5.51
BA/BN	4-1/4	9.63	11.79	12.74	13.62	15.22	15.97	7.61	8.22	8.79	9.83	10.31	10.76	4.85	5.24	5.60	6.26	6.57	6.86
HF/HN	1/4	0.42	0.52	0.56	0.60	0.67	0.70	0.35	0.38	0.41	0.46	0.48	0.50	0.21	0.23	0.25	0.27	0.29	0.30
HF/HN	1/2	0.81	1.00	1.08	1.15	1.29	1.35	0.64	0.69	0.74	0.82	0.86	0.90	0.42	0.46	0.49	0.55	0.58	0.60
HF/HN	3/4	1.49	1.82	1.97	2.10	2.35	2.47	1.17	1.26	1.35	1.51	1.58	1.65	0.74	0.80	0.86	0.96	1.01	1.05
HF/HN	1	2.27	2.77	3.00	3.20	3.58	3.76	1.77	1.91	2.04	2.29	2.40	2.50	1.13	1.22	1.31	1.46	1.53	1.60
HF/HN	1-1/2	3.04	3.73	4.03	4.31	4.81	5.05	2.41	2.60	2.78	3.11	3.26	3.40	1.52	1.64	1.76	1.97	2.06	2.15
HF/HN	1-3/4	3.89	4.77	5.15	5.51	6.16	6.46	3.08	3.33	3.56	3.98	4.17	4.36	1.95	2.10	2.25	2.51	2.64	2.75
HF/HN	2-1/2	5.17	6.33	6.84	7.31	8.17	8.57	4.07	4.40	4.70	5.26	5.51	5.76	2.58	2.79	2.98	3.34	3.50	3.65
HF/HN	4	9.17	11.23	12.13	12.97	14.50	15.20	5.84	6.31	6.74	7.54	7.91	8.26	4.60	4.97	5.31	5.94	6.23	6.51
HF/HN	6	12.74	15.61	16.86	18.02	20.15	21.13	10.05	10.86	11.61	12.98	13.61	14.22	6.41	6.92	7.40	8.27	8.68	9.06
HF/HN	7-1/2	16.14	19.77	21.35	22.83	25.52	26.77	12.74	13.77	14.72	16.45	17.26	18.02	8.11	8.76	9.36	10.47	10.98	11.46
HF/HN	11	23.93	29.31	31.66	33.84	37.84	39.68	18.90	20.42	21.83	24.40	25.60	26.73	12.04	13.00	13.90	15.54	16.30	17.02
HF/HN	14	31.51	38.59	41.68	44.56	49.82	52.25	24.89	26.88	28.74	32.13	33.70	35.19	15.86	17.13	18.31	20.47	21.47	22.43
TFE	6	12.53	15.35	16.58	17.72	19.81	20.78	9.88	10.67	11.40	12.75	13.37	13.97	6.30	6.81	7.28	8.13	8.53	8.91
TFE	8	17.13	20.98	22.67	24.23	27.09	28.41	13.52	14.61	15.61	17.46	18.31	19.12	8.60	9.29	9.93	11.11	11.65	12.17
TFE	10	21.28	26.06	28.14	30.09	33.64	35.28	16.82	18.16	19.42	21.71	22.77	23.78	10.69	11.55	12.34	13.80	14.48	15.12
TFE	15	32.50	39.80	42.99	45.96	51.38	53.89	25.67	27.72	29.64	33.13	34.75	36.30	16.32	17.63	18.84	21.07	22.10	23.08
TRAE+	9	18.41	22.55	24.35	26.03	29.11	30.53	14.55	15.72	16.80	18.78	19.70	20.58	9.27	10.02	10.71	11.97	12.56	13.12
TRAE+	13	26.83	32.86	35.50	37.95	42.43	44.50	21.20	22.90	24.48	27.38	28.71	29.99	13.49	14.57	15.57	17.41	18.26	19.07
TRAE+	14	29.98	36.72	39.66	42.40	47.41	49.72	23.68	25.58	27.35	30.57	32.07	33.49	15.08	16.29	17.41	19.47	20.42	21.33
TRAE+	22	45.42	55.63	60.08	64.23	71.81	75.32	35.86	38.73	41.41	46.30	48.55	50.71	22.83	24.66	26.37	29.48	30.92	32.29
TRAE+	30	62.45	76.48	82.61	88.31	98.74	103.55	49.31	53.26	56.94	63.66	66.77	69.74	31.40	33.92	36.26	40.54	42.52	44.41
TRAE	40	84.29	103.23	111.50	119.20	133.27	139.77	66.55	71.88	76.85	85.92	90.11	94.12	42.37	45.77	48.93	54.70	57.37	59.93
TRAE	45	91.93	112.60	121.62	130.01	145.36	152.45	72.61	78.42	83.84	93.73	98.31	102.68	46.23	49.94	53.38	59.69	62.60	65.38
TRAE	50	109.42	134.01	144.75	154.75	173.01	181.45	86.41	93.33	99.78	111.56	117.00	122.20	55.01	59.42	63.52	71.02	74.49	77.80
TJR	11	22.94	28.09	30.35	32.44	36.27	38.04	18.12	19.58	20.93	23.40	24.54	25.63	11.54	12.47	13.33	14.90	15.63	16.32
TJR	13	27.47	33.64	36.34	38.85	43.43	45.55	21.70	23.44	25.06	28.01	29.38	30.69	13.81	14.91	15.94	17.82	18.69	19.52
TER	16	34.34	42.06	45.42	48.56	54.29	56.94	27.12	29.29	31.31	35.01	36.72	38.35	17.28	18.66	19.95	22.30	23.39	24.43
TER	19	40.60	49.73	53.71	57.42	64.20	67.33	32.04	34.60	36.99	41.36	43.38	45.31	20.39	22.02	23.54	26.32	27.61	28.84
TER	25	54.62	66.90	72.26	77.25	86.37	90.58	43.15	46.61	49.83	55.71	58.43	61.03	27.47	29.67	31.72	35.46	37.20	38.85
TER	31	70.23	86.02	92.91	99.33	111.05	116.47	55.47	59.92	64.05	71.61	75.11	78.45	35.29	38.12	40.75	45.56	47.79	49.91
TIR	45	85.85	105.14	113.56	121.40	135.73	142.36	67.79	73.22	78.28	87.52	91.79	95.87	43.15	46.61	49.83	55.71	58.43	61.03
THR	55	109.28	133.84	144.56	154.54	172.79	181.22	86.27	93.18	99.62	111.37	116.81	122.00	54.94	59.34	63.44	70.93	74.39	77.70
THR	68	132.68	162.50	175.52	187.64	209.78	220.02	104.78	113.18	120.99	135.28	141.88	148.19	66.69	72.04	77.01	86.10	90.30	94.32
TMR	60	156.11	191.20	206.52	220.78	246.84	258.89	123.26	133.14	142.33	159.13	166.90	174.32	78.48	84.77	90.62	101.32	106.26	110.99

## Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69

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.

## TXV extended capacity tables

### R-410A balanced ported valves (kW) - TFE Series

Valve Type	Nominal Rating	Evaporator Temperature																				
		10 °C							4 °C							-7 °C						
		Pressure Drop Across Valve (kPa)							Pressure Drop Across Valve (kPa)							Pressure Drop Across Valve (kPa)						
		500	800	1000	1100	1400	1700	2000	500	800	1000	1100	1400	1700	2000	500	800	1000	1100	1400	1700	2000
TFES	42	28.6	34.6	39.1	41.8	47.9	51.2	55.8	28.4	34.3	38.7	41.4	47.5	50.7	55.3	27.7	33.6	37.9	40.5	46.4	49.6	54.1
	56	43.4	52.5	59.3	63.4	72.6	77.6	84.6	43.0	52.1	58.8	62.8	72.0	76.9	83.9	42.1	51.0	57.5	61.5	70.4	75.3	82.1
	70	46.8	56.6	63.9	68.3	78.3	83.7	91.2	46.4	56.2	63.4	67.7	77.6	83.0	90.4	45.4	55.0	62.0	66.3	75.9	81.2	88.5
Valve Type	Nominal Rating	Evaporator Temperature																				
		-18 °C							-29 °C							-40 °C						
		Pressure Drop Across Valve (kPa)							Pressure Drop Across Valve (kPa)							Pressure Drop Across Valve (kPa)						
		500	800	1000	1100	1400	1700	2000	500	800	1000	1100	1400	1700	2000	500	800	1000	1100	1400	1700	2000
TFES	42	27.0	32.7	36.9	39.5	45.2	48.3	52.7	26.2	31.7	35.8	38.2	43.8	46.8	51.0	25.3	30.6	34.5	36.9	42.3	45.2	49.2
	56	41.0	49.6	56.0	59.9	68.6	73.3	79.9	39.7	48.1	54.2	58.0	66.4	71.0	77.4	38.3	46.4	52.3	56.0	64.1	68.5	74.7
	70	44.2	53.5	60.4	64.5	73.9	79.0	86.1	42.8	51.8	58.5	62.5	71.6	76.6	83.5	41.3	50.0	56.4	60.3	69.1	73.9	80.5

Note: 1. These ratings assume vapor free liquid entering the thermal expansion valve.  
 2. Standard capacity is rated at 38 °C liquid inlet and 4.4 °C evap temperature; with 11 bar pressure drop across TXV per ARI 750-2001.

### Refrigerant liquid temperature valve capacity multiplier correction factors

	Refrigerant liquid temperature °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	
R-12 correction factor	1.60	1.54	1.48	1.42	1.36	1.30	1.24	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-134a correction factor	1.70	1.63	1.56	1.49	1.42	1.36	1.29	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.71	
R-22 correction factor	1.56	1.51	1.45	1.40	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76	
R-404A/R-507 correction factor	2.00	1.90	1.80	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00	0.90	0.80	0.70	0.50	
R-450A/R-513A correction factor	1.73	1.65	1.58	1.51	1.44	1.36	1.29	1.22	1.15	1.07	1.00	0.93	0.85	0.78	0.70	
R-448A/R-449A correction factor	1.71	1.64	1.57	1.50	1.43	1.36	1.29	1.22	1.15	1.07	1.00	0.92	0.85	0.77	0.69	

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.

## Selection guide for expansion valves (Europe made)

Series	Selection criteria			
	Capacity range R448A (kW)	Evaporating temp. range (°C)	Main application	Features
TI	0.5...19.4	+20...-45	Refrig./Air cond. Heat pumps	Exchangeable orifices
TX3	0.8...15.0	+20...-45	Refrig./Air cond. Heat pumps	Hermetic, superheat adjustable, Optional with check valve
TX7	32...183 (R401A)	+20...-45	Air-cond. Heat pumps	Hermetic, superheat adjustable
T	1.9.. 301	+30...-45	Refrig./Air cond. Heat pumps	Exchangeable orifices, Power-assembly and flange
ZZ	1.7...24.7	-45...-120	Low temperature application	Exchangeable orifices, Power-assembly and flange
L	1.9...222	+30...-50	Liquid injection superheat control	Exchangeable orifices, Power-assembly and flange
935	5.2...59.8	+30...-45	Liquid injection temperature control	Exchangeable orifices, Power-assembly and flange



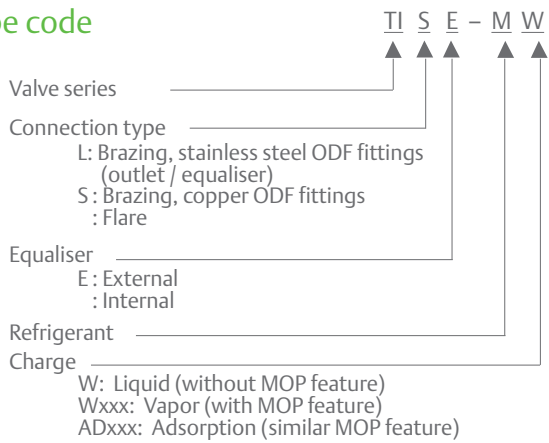
# TI Series Thermo™ - expansion valves

## Exchangeable orifices

### Features

- Laser-welded diaphragm / power element with large diameter for high reliability and maximum lifetime
- Constant superheat across wide application ranges
- Easy and precise superheat setting by internal fine threads
- Three styles of connections:
  - TILE: Stainless steel brazed fittings eliminate the need of wet rags during brazing
  - TIS(E): Copper brazed fittings (valve requires wet rag during brazing)
  - TI(E): Flare
- With capacities between 0.5 kW and 19.4 kW (R448A) ideally suited for service work
- Internal or external equaliser
- Cleanable / exchangeable inlet strainer in orifice assembly
- Inlet brazing adapter
- Capillary tube length 1.5 m
- Max. working pressure PS: 45 bar
- Temperature range TS: -45...+75°C
- PS: 45 bar. TS: -45 ... +75°C
- CE Marking acc. PED not required

### Type code



TILE



TIE

### Selection table for orifice assembly with strainer for inlet connection

Type	Nominal capacity* (kW)							
	TIO-00X	TIO-000	TIO-001	TIO-002	TIO-003	TIO-004	TIO-005	TIO-006
Part No.	800 532	800 533	800 534	800 535	800 536	800 537	800 538	800 539
R134a	0.3	0.8	1.9	3.1	5.0	8.3	10.1	11.7
R22	0.5	1.3	3.2	5.3	8.5	13.9	16.9	19.5
R404A / R507	0.4	1.0	2.3	3.9	6.2	10.1	12.3	14.2
R407C	0.5	1.4	3.5	5.7	9.2	15.0	18.3	21.1
R410A	0.6	1.5	3.7	6.2	9.9	16.2	19.7	22.8
R407A	0.5	1.3	3.2	5.2	8.4	13.7	16.6	19.2
R407F	0.6	1.5	3.6	5.9	9.5	15.5	18.9	21.8
R448A	0.5	1.3	3.19	5.28	8.48	13.86	16.85	19.44
R449A	0.49	1.27	3.12	5.16	8.28	13.54	16.46	19
R450A	0.2	0.55	1.3	2.11	3.41	5.66	6.89	7.98
R513A	0.21	0.56	1.33	2.16	3.49	5.79	7.05	8.17
R1234ze	0.23	0.63	1.49	2.42	3.91	6.49	7.9	9.15
R452A	0.4	1.0	2.4	4.0	6.4	10.5	12.8	14.8

### Brazing adapter for TILE and TIS(E)

Type	Part no.	Connection, ODF	
		(mm)	(inch)
TIA-M06	802 500	6.0	-
TIA-M10	802 501	10.0	-
TIA-014	802 502	-	1/4"
TIA-038	802 503	-	3/8"
Gasket Set	803 780	100 pieces	



\*Nominal capacity is based on the following conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Sub-cooling
R407C, R407F	+4°C +4°C dew point	+38°C bubble p. +42.9°C dew point	1K
R513A, R1234ze		+38°C bubble/ +38°C dew point	
R22, R134a, R404A, R410A, R507		+38°C bubble/ +38°C dew point	
R450A		+38°C bubble/ +38.6°C dew point	
R448A, R449A		+38°C bubble/ +42.6°C dew point	
R452A		+38°C bubble / +41.6°C dew point	

These effects have been integrated in selection program "Controls Navigator".



## TI valve bodies without orifice and nut

Refrigerant	Outlet/equalizer connection	Type	Part no.	Type	Part no.	Mop (°C)	Evaporating temperature range (°C)
		External equalizer		Internal equalizer			
R404A / R507	Brazing stainless steel fittings *	TILE-SW (12mm)	802465			-	-45 ... +20
		TILE-SW (1/2")	802466			-	-45 ... +20
	Brazing copper fittings **	TISE-SW (12mm)	802462	TIS-SW (12mm)	802461	-	-45 ... +20
		TISE-SW (1/2")	802464	TIS-SW (1/2")	802463	-	-45 ... +20
		TISE-SAD10 (1/2")	802479	TIS-SAD10 (1/2")	802478	+10	-45 ... 0
		TISE-SW75 (12mm)	802471			0	-45 ... -3
		TISE-SW75 (1/2")	802472			0	-45 ... -3
		TISE-SAD-20 (12mm)	802474			-20	-45 ... -27
		TISE-SAD-20 (1/2")	802475			-20	-45 ... -27
	Flare fittings	TIE-SW	802460	TI-SW	802459	-	-45 ... +20
		TIE-SAD10	802477	TI-SAD10	802476	+10	-45 ... 0
		TIE-SW75	802470	TI-SW75	802469	0	-45 ... -3
		TIE-SAD-20	802473			-20	-45 ... -27
	R134a	Brazing stainless steel fittings *	TILE-MW (12mm)	802451			-
TILE-MW (1/2")			802452			-	-45 ... +20
Brazing copper fittings **		TISE-MW (12 mm)	802448	TIS-MW (12 mm)	802447	-	-45 ... +20
		TISE-MW (1/2")	802450	TIS-MW (1/2")	802449	-	-45 ... +20
		TISE-MW55 (12mm)	802457			+14	-45 ... +11
Flare fittings		TISE-MW55 (1/2")	802458			+14	-45 ... +11
		TIE-MW	802446	TI-MW	802445	-	-45 ... +20
TIE-MW55	802456	TI-MW55	802455	+14	-45 ... +11		
R407C	Brazing stainless steel fittings *	TILE-NW (12mm)	802486			-	-45 ... +20
		TILE-NW (1/2")	802485			-	-45 ... +20
	Brazing copper fittings **	TISE-NW (12mm)	802438	TIS-NW (12mm)	802437	-	-45 ... +20
		TISE-NW (1/2")	802440	TIS-NW (1/2")	802439	-	-45 ... +20
	Flare fittings	TIE-NW	802436	TI-NW	802435	-	-45 ... +20
R407A/R407F	Brazing stainless steel fittings *	TILE-NW (12mm)	802486			-	-45 ... 0
		TILE-NW (1/2")	802485			-	-45 ... 0
	Brazing copper fittings **	TISE-NW (12mm)	802438	TIS-NW (12mm)	802437	-	-45 ... 0
		TISE-NW (1/2")	802440	TIS-NW (1/2")	802439	-	-45 ... 0
	Flare fittings	TIE-NW	802436	TI-NW	802435	-	-45 ... 0
	Brazing copper fittings **	TISE-SAD-20 (12mm)	802474			-20	-45 ... -27
		TISE-SAD-20 (1/2")	802475			-20	-45 ... -27
R22	Brazing stainless steel fittings *	TILE-HW (12mm)	802426			-	-45 ... +20
		TILE-HW (1/2")	802427			-	-45 ... +20
	Brazing copper fittings **	TISE-HW (12mm)	802423	TIS-HW (12mm)	802422	-	-45 ... +20
		TISE-HW (1/2")	802425	TIS-HW (1/2")	802424	-	-45 ... +20
		TISE-HW100 (12mm)	802431			+15	-45 ... +13
	Flare fittings	TISE-HW100 (1/2")	802432			+15	-45 ... +13
TIE-HW	802421	TI-HW	802420	-	-45 ... +20		
R410A	Brazing stainless steel fittings *	TILE-ZW (12mm)	802488			-	-35 ... +20
		TILE-ZW (1/2")	802489			-	-35 ... +20
		TILE-ZW175 (12mm)	802490			+16.4	-35 ... +15
		TILE-ZW175(1/2")	802491			+16.4	-35 ... +15

Note: \*) TILE brazing without wet rag \*\*) TISE Brazing with wet rag

## TI valve bodies without orifice and nuts in single packaging

Refrigerant	Connection	Valves with factory setting and/or new charges					Valve for field setting			
		Type	Ad part no.	Equalizer	Charge	Mop	Type	Part no.		
r448A/ R449A/ R452A	Braze stainless steel fittings *	TILE-BW (12mm)	802418	External	Liquid	No	TILE-SW (12 mm)	802 465		
		TILE-BW (1/2")	802419		Liquid	No	TILE-SW (1/2")	802 466		
	Braze copper fittings **	TISE-BW (12 mm)	802416		Liquid	No	TISE-SW (12 mm)	802 462		
		TISE-BW (1/2")	802417		Liquid	No	TISE-SW (1/2")	802 464		
		TISE-BW30 (1/2")	802495		Vapor	Yes		-		
		TISE-BW30 (12mm)	802494							
		TISE-BW70 (1/2")	-		Vapor	Yes	TISE-SW75 (1/2")	802 472		
		TIS-BW (12 mm)	802414		Internal	Liquid	No	TIS-SW (12 mm)	802 461	
	TIS-BW (1/2")	802415	Liquid			No	TIS-SW (1/2")	802 463		
	Flare fittings	TIE-BW	802413		External	Liquid	No	TIE-SW	802 460	
		TIE-BW70	-			Vapor	Yes	TIE-SW75	802 470	
		TI-BW	802412		Internal	Liquid	No	TI-SW	802 459	
R450A	Braze stainless steel fittings *	TILE-DW (12 mm)	-	External	Liquid	No	TILE-MW (12 mm)	802 451		
		TILE-DW (1/2")	-		Liquid	No	TILE-MW (1/2")	802 452		
	Braze copper fittings **	TISE-DW (12 mm)	-		Liquid	No	TISE-MW (12 mm)	802 448		
		TISE-DW (1/2")	-		Liquid	No	TISE-MW (1/2")	802 450		
		TISE-DW55 (12 mm)	-		Vapor	Yes	TISE-MW55 (12 mm)	802 457		
		TISE-DW55 (1/2")	-		Vapor	Yes	TISE-MW55 (1/2")	802 458		
		TIS-DW (12 mm)	-		Internal	Liquid	No	TIS-MW (12 mm)	802 447	
		TIS-DW (1/2")	-			Liquid	No	TIS-MW (1/2")	802 449	
	Flare fittings	TIE-DW	-		External	Liquid	No	TIE-MW	802 446	
		TI-DW	-		Internal	Liquid	No	TI-MW	802 445	
	R513A	Braze stainless steel fittings *	TILE-CW (12 mm)		-	External	Liquid	No	TILE-MW (12 mm)	802 451
			TILE-CW (1/2")		-		Liquid	No	TILE-MW (1/2")	802 452
Braze copper fittings **		TISE-CW (12 mm)	-	Liquid	No		TISE-MW (12 mm)	802 448		
		TISE-CW (1/2")	-	Liquid	No		TISE-MW (1/2")	802 450		
		TISE-CW55 (12 mm)	-	Vapor	Yes		TISE-MW55 (12 mm)	802 457		
		TISE-CW55 (1/2")	-	Vapor	Yes		TISE-MW55 (1/2")	802 458		
		TIS-CW (12 mm)	-	Internal	Liquid		No	TIS-MW (12 mm)	802 447	
		TIS-CW (1/2")	-		Liquid		No	TIS-MW (1/2")	802 449	
Flare fittings		TIE-CW	-	External	Liquid		No	TIE-MW	802 446	
		TI-CW	-	Internal	Liquid		No	TI-MW	802 445	
R1234ze		Braze copper fittings **	TISE-EW (12 mm)	-	External		Liquid	No	TISE-MW (12 mm)	802 448
			TISE-EW (1/2")	-			Liquid	No	TISE-MW (1/2")	802 450
	TISE-EW55 (12 mm)		-	Vapor		Yes	TISE-MW55 (12 mm)	802 457		
	TISE-EW55 (1/2")		-	Vapor		Yes	TISE-MW55 (1/2")	802 458		
	TIS-EW (12 mm)		-	Liquid		No	TIS-MW (12 mm)	802 447		
	TIS-EW (1/2")		-	Liquid		No	TIS-MW (1/2")	802 449		
	Flare fittings		TIE-EW	-		Internal	Liquid	No	TIE-MW	802 446
		TI-EW	-	Liquid	No		TI-MW	802 445		

Note: \*) TILE Braze without wet rag \*\*) TISE Braze with wet rag

## Connections

Body	Inlet connection		Outlet	External equalizer*
	Braze with adapter	Flare		
TI(E) Flare connections	-	5/8"-18UNF Flare suitable for 6 mm, 8 mm, 10 mm, 1/4", 5/16", 3/8" tubes	3/4" - 16UNF Flare: for 12 mm, 1/2" tubes	7/16" - 20UNF Flare: for 6 mm, 1/4" tubes
TIS(E) / TILE Braze connections	TIA - M06 (6 mm ODF) TIA - M10 (10 mm ODF)		12 mm ODF	6 mm ODF
	TIA - 014 (1/4" ODF) TIA - 038 (3/8" ODF)		1/2 ODF	1/4" ODF

Note: \*) TI and TIS with internal equalizer

# TX3 Series Thermo™ - expansion valves

## For OEM use, hermetic design

### Features

- Hermetic design with brazing and straight through configuration
- Internal or external equalizer
- External superheat adjustment
- Large diaphragm eliminates disturbances to the valve and provides smoother valve control
- Very compact size
- Version with internal check valve eliminates external check valve for heat pump applications
- Capillary tube length 1.5m
- Max. Working Pressure PS: 45 bar  
Medium Temperature Range TS: -45 ... +120°C
- Packaging units with 24 pieces, no single packs



### MOP

MOP (bar)	Upper limit of evaporating temperature range		
	R134a	R407C	R410A
3.3	+11°C		
6.4		+14.5°C	
12.9			+17°C

Note: Pressures are given in gauge pressure.

### Selection tables

#### R134a

Nominal capacity (kW)	Less MOP		With standard-MOP		Equalizer	Inlet x outlet / ODF
	Type	Part no.	Type	Part no.		
1.8	TX3-M02	801766M	TX3-M12	801778M	internal	1/4" x 3/8"
2.8	TX3-M03	801767M			internal	1/4" x 3/8"
4.0	TX3-M04	801768M			internal	3/8" x 1/2"
2.8	TX3-M023	801770M	TX3-M33	801782M	Ext. 1/4"	1/4" x 3/8"
4.0	TX3-M024	801771M	TX3-M34	801783M	Ext. 1/4"	3/8" x 1/2"
6.1	TX3-M025	801772M	TX3-M35	801784M	Ext. 1/4"	3/8" x 1/2"
8.3	TX3-M026	801773M	TX3-M36	801785M	Ext. 1/4"	3/8" x 1/2"
10.2	TX3-M027	801774M	TX3-M37	801786M	Ext. 1/4"	1/2" x 5/8"
12.1	TX3-M028	801775M	TX3-M38	801787M	Ext. 1/4"	1/2" x 5/8"
16.5	TX3-M029	801776M	TX3-M39	801788M	Ext. 1/4"	1/2" x 5/8"

#### R410A

Nominal capacity (kW)	Less MOP		With standard-MOP		Equalizer	Inlet x outlet / ODF
	Type	Part no.	Type	Part no.		
6.3			TX3-Z34	801944M	Ext. 1/4"	3/8" x 1/2"
9.4			TX3-Z35	801945M	Ext. 1/4"	3/8" x 1/2"
12.9			TX3-Z36	801946M	Ext. 1/4"	3/8" x 1/2"
15.8			TX3-Z37	801947M	Ext. 1/4"	1/2" x 5/8"
18.8			TX3-Z38	801948M	Ext. 1/4"	1/2" x 5/8"

## R407C

Nominal capacity (kW)	Less MOP		With standard-MOP		Equalizer	Inlet x outlet / ODF
	Type	Part no.	Type	Part no.		
0.9	TX3-N01	801813M			internal	1/4" x 3/8"
3.9			TX3-N13	801828M	internal	1/4" x 3/8"
2.5	TX3-N22	801818M			Ext. 1/4"	1/4" x 3/8"
3.9	TX3-N23	801819M	TX3-M33	801832M	Ext. 1/4"	1/4" x 3/8"
5.6	TX3-N24	801820M	TX3-M34	801833M	Ext. 1/4"	3/8" x 1/2"
8.4	TX3-N25	801821M	TX3-M35	801834M	Ext. 1/4"	3/8" x 1/2"
11.6	TX3-N26	801822M	TX3-M36	801835M	Ext. 1/4"	3/8" x 1/2"
14.2	TX3-N27	801823M	TX3-M37	801836M	Ext. 1/4"	1/2" x 5/8"
16.9	TX3-N28	801824M	TX3-M38	801837M	Ext. 1/4"	1/2" x 5/8"
23.0			TX3-M39	801838M	Ext. 1/4"	1/2" x 5/8"

## R407C for heat pump applications

Nominal capacity (kW)	Less MOP		With standard-MOP		Equalizer	Inlet x outlet / ODF
	Type	Part no.	Type	Part no.		
3.9	TX3-N63	806801M	Adjustable with internal check valve and special liquid charge for heat pump applications		Ext. 1/4"	1/4" x 3/8"
8.4	TX3-N65	806803M			Ext. 1/4"	3/8" x 1/2"
11.6	TX3-N66	806804M			Ext. 1/4"	3/8" x 1/2"
14.2	TX3-N67	806805M			Ext. 1/4"	1/2" x 5/8"
16.9	TX3-N68	806806M			Ext. 1/4"	1/2" x 5/8"
23	TX3-N69	806807M			Ext. 1/4"	1/2" x 5/8"

Nominal capacity (Qn) is based on the following conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Subcooling
R407C	+4°C dew point	+38°C bubble p.	1K
8.4	+4°C		1K

## TX7 Series Thermo™ - expansion valves

TX7 series of Thermo™-Expansion Valves are designed predominantly for AC, heat pumps, close control and industrial process cooling applications. The TX7 is ideal for those applications requiring hermetic / compact size combined with stable and accurate control over wide load and evaporating temperature ranges.

### Features

- Monoblock, hermetic valve with brazing connections
- 7 sizes up to 180 kW (R410A)
- Maximum working pressure: PS 46 bar
- Factory test pressure: PT 50.6 bar
- Bi-Flow application
  - Balanced port in normal and reverse flow directions eliminates disturbance forces resulting from condensing pressure
  - Optimum static superheat in normal and reverse flow
  - Capacities performance in normal and reverse flow correlates to capacity of heat pumps in cooling and heating mode
- Power element with 65 mm diameter enables low partial load (20-25%) performance at stable superheat
- Applicable in systems with digital scroll, step less screw compressors and variable speed compressors
- Floating superheat in reverse flow (heating mode) supports evaporator efficiency during low ambient operating conditions in air cooled reversible chillers
- Laser welded stainless steel power element with a special diaphragm profile provides life expectancy against high pressure during reversed flow via external equalizer.
- Single diaphragm with negligible hysteresis withstands against higher pressure
- Fine tuning by external superheat adjusting mechanism
- Special factory setting upon request. Minimum order quantity 60 pieces



TX7-Z13

### R410A / R32 selection table

Capacity, R410A (kW)		Capacity, R32 (kW)		With MOP		Connection	
Normal flow	Reverse flow	Normal flow	Reverse flow	Type	Part No.	Inlet x Outlet	Equalizer
32.1	31.7	47.7	46.9	TX7-Z13 m	806 811	12 mm x 16 mm	6 mm
32.1	31.7	47.7	46.9	TX7-Z13	806 810	1/2" x 5/8"	1/4"
39.9	39.1	59.3	57.8	TX7-Z14 m	806 813	16 mm x 22 mm	6 mm
39.9	39.1	59.3	57.8	TX7-Z14	806 812	5/8" x 7/8"	1/4"
48.9	47.4	72.7	70.1	TX7-Z15 m	806 815	16 mm x 22 mm	6 mm
48.9	47.4	72.7	70.1	TX7-Z15	806 814	5/8" x 7/8"	1/4"
80.7	67.7	120	100.2	TX7-Z16 m	806 817	22 mm x 28 mm	6 mm
80.7	67.7	120	100.2	TX7-Z16	806 816	7/8" x 1-1/8"	1/4"
99.4	81.5	147.9	120.5	TX7-Z17 m	806 819	22 mm x 28 mm	6 mm
99.4	81.5	147.9	120.5	TX7-Z17	806 818	7/8" x 1-1/8"	1/4"
130.9	113.9	194.7	168.4	TX7-Z18 m	806 821	22 mm x 28 mm	6 mm
130.9	113.9	194.7	168.4	TX7-Z18	806 820	7/8" x 1-1/8"	1/4"
183.4	165.1	272.9	244.1	TX7-Z19 m	806 823	22 mm x 28 mm	6 mm
183.4	165.1	272.9	244.1	TX7-Z19	806 822	7/8" x 1-1/8"	1/4"

## R134a selection table

Capacity, R134a (kW)		With MOP		Without MOP		Connection	
Normal flow	Reverse flow	Type	Part no.	Type	Part no.	Inlet x Outlet	Equalizer
18.1	17.9	TX7-M13 m	806 839	TX7-M03 m	806 825	12 mm x 16 mm	6 mm
18.1	17.9	TX7-M13	806 838	TX7-M03	806 824	1/2" x 5/8"	1/4"
22.5	22	TX7-M14 m	806 841	TX7-M04 m	806 827	16 mm x 22 mm	6 mm
22.5	22	TX7-M14	806 840	TX7-M04	806 826	5/8" x 7/8"	1/4"
27.5	26.7	TX7-M15 m	806 843	TX7-M05 m	806 829	16 mm x 22 mm	6 mm
27.5	26.7	TX7-M15	806842	TX7-M05	806 828	5/8" x 7/8"	1/4"
45.4	38.2	TX7-M16 m	806 845	TX7-M06 m	806 831	22 mm x 28 mm	6 mm
45.4	38.2	TX7-M16	806844	TX7-M06	806 830	7/8" x 1-1/8"	1/4"
56.0	45.9	TX7-M17 m	806 847	TX7-M07 m	806 833	22 mm x 28 mm	6 mm
56.0	45.9	TX7-M17	806846	TX7-M07	806 832	7/8" x 1-1/8"	1/4"
73.7	64.1	TX7-M18 m	806 849	TX7-M08 m	806 835	22 mm x 28 mm	6 mm
73.7	64.1	TX7-M18	806848	TX7-M08	806 834	7/8" x 1-1/8"	1/4"
103.3	93	TX7-M19 m	806 851	TX7-M09 m	806 837	22 mm x 28 mm	6 mm
103.3	93	TX7-M19	806850	TX7-M09	806 836	7/8" x 1-1/8"	1/4"

## R407C selection table

Capacity, R407C (kW)		With MOP		Without MOP		Connection	
Normal Flow	Reverse Flow	Type	Part No.	Type	Part No.	Inlet x Outlet	Equalizer
28.9	28.6	TX7-N13 m	806 868	TX7-N03 m	806 853	12 mm x 16 mm	6 mm
28.9	28.6	TX7-N13	806 867	TX7-N03	806 852	1/2" x 5/8"	1/4"
36.0	35.2	TX7-N14 m	806 870	TX7-N04 m	806 855	16 mm x 22 mm	6 mm
36.0	35.2	TX7-N14	806 869	TX7-N04	806 854	5/8" x 7/8"	1/4"
44.1	42.7	TX7-N15 m	806 872	TX7-N05 m	806 857	16 mm x 22 mm	6 mm
44.1	42.7	TX7-N15	806 871	TX7-N05	806 856	5/8" x 7/8"	1/4"
72.7	61.1	TX7-N16 m	806 874	TX7-N06 m	806 859	22 mm x 28 mm	6 mm
72.7	61.1	TX7-N16	806 873	TX7-N06	806 858	7/8" x 1-1/8"	1/4"
89.7	73.5	TX7-N17 m	806 876	TX7-N07 m	806 861	22 mm x 28 mm	6 mm
89.7	73.5	TX7-N17	806 875	TX7-N07	806 860	7/8" x 1-1/8"	1/4"
118.1	102.7	TX7-N18 m	806 878	TX7-N08 m	806 863	22 mm x 28 mm	6 mm
118.1	102.7	TX7-N18	806 877	TX7-N08	806 862	7/8" x 1-1/8"	1/4"
165.4	148.9	TX7-N19 m	806 880	TX7-N09 m	806 865	22 mm x 28 mm	6 mm
165.4	148.9	TX7-N19	806 879	TX7-N09	806 864	7/8" x 1-1/8"	1/4"

## R450A / R513A selection table

Capacity, R450A (kW)	Capacity, R513A (kW)	With MOP		Without MOP		Connection	
		Type	Part no.	Type	Part no.	Inlet x Outlet	Equalizer
15.9	16.3	TX7-M13 m	806 839	TX7-M03 m	806 825	12 mm x 16 mm	6 mm
15.9	16.3	TX7-M13	806 840	TX7-M03	806 824	1/2" x 5/8"	1/4"
19.8	20.3	TX7-M14 m	806 841	TX7-M04 m	806 827	16 mm x 22 mm	6 mm
19.8	20.3	TX7-M14	806 842	TX7-M04	806 826	5/8" x 7/8"	1/4"
24.3	24.8	TX7-M15 m	806 843	TX7-M05 m	806 829	16 mm x 22 mm	6 mm
24.3	24.8	TX7-M15	806 844	TX7-M05	806 828	5/8" x 7/8"	1/4"
40.1	41.0	TX7-M16 m	806 845	TX7-M06 m	806 831	22 mm x 28 mm	6 mm
40.1	41.0	TX7-M16	806 846	TX7-M06	806 830	7/8" x 1-1/8"	1/4"
49.4	50.6	TX7-M17 m	806 847	TX7-M07 m	806 833	22 mm x 28 mm	6 mm
49.4	50.6	TX7-M17	806 848	TX7-M07	806 832	7/8" x 1-1/8"	1/4"
65.0	66.6	TX7-M18 m	806 849	TX7-M08 m	806 835	22 mm x 28 mm	6 mm
65.0	66.6	TX7-M18	806 850	TX7-M08	806 834	7/8" x 1-1/8"	1/4"
91.1	93.3	TX7-M19 m	806 851	TX7-M09 m	806 837	22 mm x 28 mm	6 mm
91.1	93.3	TX7-M19	806 852	TX7-M09	806 836	7/8" x 1-1/8"	1/4"

The TX7-xxx with standard charges can be used with systems having R450A, R513a, and R32 considering the readjustment of factory setting. The readjusting depends to designed evaporating temperature. For more details see operating instructions.

The nominal capacity ( $Q_n$ ) is based on the following conditions:

Refrigerant	Evaporating temperature (°C)	Condensing temperature (°C)	Subcooling
R134A, R22	+4 °C	+38°C	1K
R407C,	+4 °C	+38°C bubble point/ +43 °C dew point	1K
R440A, R513A	+4 °C	+38°C	1K
R410A, R32	+4 °C	+38°C	1K

Charge	Refrigerant	Recommended evaporating temperature range (°C)	Maximum bulbtemperature (°C)
M0	R134a	-25...+30	88
N0	R407C	-25...+20	71
M1 MOP 3.8 Bar	R134a	-25...+10	120
N1 MOP 6.9 Bar	R407C	-25...+14	120
Z1 MOP 12.1 Bar	R410A/ R32	-25...+14	120

# 935 series liquid injection valves

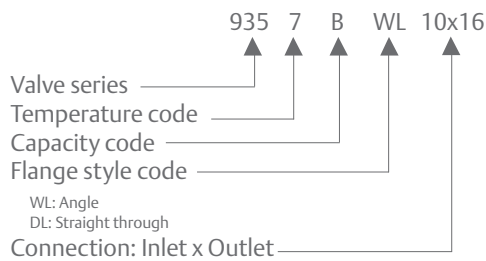
## Exchangeable power assemblies and orifices

### Features

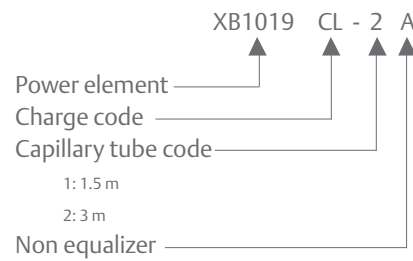
- Modular design for economical logistics and easy assembly and servicing
- Very good stability is attained because of the large forces generated by the large diaphragm diameter
- High-quality materials and processes for high reliability and long lifetime
- Combinations of different charges with various orifice springs cover a very large application range
- Max. working pressure PS:
  - 46 bar with XB power assembly
  - 31 bar with XC power assembly.
- Medium temperature range TS: -45...+65°C



### Type code valve



### Type code power assembly



### Nominal capacities for cages

Valve series	Capacity code <sup>*</sup>	Nominal capacity Q <sub>n</sub> (kW)									Orifice type	Power element type
		R134a (kW)	R404A/R507 (kW)	R407C	R407F	R407A	R448A/R449A	R450A	R513A	R1234ze		
935- *-	A	4.0	3.8	5.6	5.8	5.1	5.2	3.5	3.6	3.1	X10-**01	XB1019 - *** - 2A
	B	7.8	7.4	10.9	11.3	9.9	10.1	6.9	7.1	6.1	X10-**02	
	C	11.1	10.3	15.4	15.9	14.0	14.2	9.7	9.9	8.6	X10-**03	
	D	16.3	15.6	22.8	23.6	20.7	21.0	14.4	14.7	12.8	X10-**04	
	E	22.5	21.0	31.2	32.3	28.4	28.8	19.7	20.2	17.5	X10-**05	
	G	32.0	29.9	44.5	46.1	40.5	41.1	28.1	28.8	24.9	X10-**06	
	X	46.6	43.5	64.9	67.1	58.9	59.8	40.9	41.9	36.3	X10-**07	
* ) Temperature code		Temperature range °C									** ) Spring code	*** ) Charge code
3		-1 ... +17									B	UL
6		+14 ... +38									C	KL
105		+44 ... +70									C	YL
106		+66 ... +94									C	JL
100		+94 ... +121									C	LL



The nominal capacity is based on the following conditions:

Refrigerant	Evaporating temperature (°C)	Condensing temperature (°C)	Subcooling
R134a, R513A, R404A, R507, R1234ze,	+4°C dew Point	+38°C bubble/ +38°C dew point	1K
R448A, R449A		+38°C bubble/ +42.6°C dew point	
R450A		+38°C bubble / +38.6°C dew point	
R407C		+38°C bubble/ +42.9°C dew point	
R407F, R407A		+38°C bubble/ +42.4°C dew point	

For selection of other operating conditions, please use „Controls Navigator“ selection program.

## Selection table power assembly and recommended flanges

Valve series	Orifice type	Connection standard Flange, angle style		Connection (inlet x outlet)		Power Element Type
		Type	Type	Metric	Imperial	
935	X 10-*01/ *02/ *03	C501-5 mm		10 X 16 mm ODF		XB1019-***-2A
			C501-5		3/8" X 5/8 ODF	
	X 10-*04/ *05	C501-7 mm		12x16 mm ODF		
			C501-7		1/2"x5/8" ODF -	
	X 10-*06/ *07	A 576 mm		16x22 mm ODF 22x28 mm ODM		
			A 576		5/8"x7/8" ODF 7/8"x1-1/8" ODM	

## Accessories and spare parts

Description	Type	Part no.
Service tool for T, ZZ, L and 935 Series valves	X 99999	800005
Gasket sets for T, ZZ, L and 935 Series valves	X 13455-1	027579
Steel screws for flange types: C500, C501, 9761, X6346, X6669, A576	Screw ST 32	803573
Bulb clamp for XB1019	XA 1728-4	803260

Note: See "Controls Navigator" for more information on selection and adjustment guidelines.



# Electrical control valves

## Electrical control valves

### Electrical control valve technology

Thermostatic expansion valves and mechanical regulator valves have been used in the refrigeration and air conditioning industry to control superheat and refrigerant mass flow since its very beginning. As today's systems require improved energy efficiency, tighter temperature control, a wider range of operating conditions and incorporate new features like remote monitoring and diagnostics, the application of electronically operated valves becomes mandatory. Only these offer the controls performance necessary to meet these needs. Electrical control valves are actuators only. For operation in a system they need sensors, valve drivers and controllers, see next chapter.

The EXM/EXL/EXN BiFlow valves for oem use are equipped with an unipolar stepper motor drive. They are mainly used for heat pumps, air conditioning and close control.

The EX2 is designed for pulse width modulation. It is applicable to common refrigerants and is used mainly for refrigeration applications such as display cases. The EX2 valve is a slide type solenoid valve with an orifice for expansion. It is either completely open or completely closed. One common valve body can be combined with 6 interchangeable orifices to cover 7 capacity ranges. The CX2 features the same technology and advantages as the EX2, however it is applicable to high-pressure CO<sub>2</sub> applications.

The EX4-8 consist of two main internal assemblies, the valve and the stepper motor. The stepper motor is located next to the electrical plug and connected directly to the slide and cage assembly of the valve. Similar to the technology used in compressors, the motor

is exposed to refrigerant and lubricant and the materials used are identical to the ones in compressor motors. The housing of the motor and valve assembly is made from stainless steel and fully hermetic, utilising exclusively brazing and welding technologies and eliminating all gaskets. This design offers several technical advantages such as proportional linear mass flow and a wide capacity range. A common feature of all EX2, EX4-8 electrical control valves is the positive shut-off function, which eliminates the need for additional solenoid valves.

### Valve selection

For the EX2, the published table quotes capacities at 100% duty cycle, i.e. Valve open continuously. However, it is recommended to operate the valve at partial load (50-80%) to allow for system load fluctuations. For EX4-8, EX5-9 and EXM/EXL/EXN valves, all published capacities are maximum and there are no reserve capacities. Each valve should be selected for the highest possible capacity of the system. A wide range regulation (10 ... 100%) with one slide orifice for each valve is achievable. To facilitate valve dimensioning for other than the standard conditions, Emerson offers the program "Controls Navigator". This can be downloaded from [www.Climate.Emerson.com/en-gb/tools-resources](http://www.Climate.Emerson.com/en-gb/tools-resources)



## Selection table for electrical control valves and applicable controllers

Valve type	Function	Capacity (kW) R407C	Feature	Main application	Applicable controller
EXM EXL	Expansion valve	5 .. 20.7	Uni polar stepper motor driven	Heat pumps, Air conditioning, Close control	EXD-HP1/2 Superheat controller (Modbus)
EX2	Expansion valve	1.0 .. 18.7	PWM	Refrigeration (display cases)	EC2
EX4-8	Expansion valve, Hot gas bypass, Condensing pressure and liquid regulator, Head pressure control, Suction/crankcase pressure regulator, Heat reclaim	2 .. 925 (Capacity data as expansion valve)	Bi polar stepper Motor driven	Refrigeration, air conditioning, Water chillers, Heat pumps	EXD-U01 Driver module EXD-SH1/2 Superheat controller (Modbus) EC3-X Superheat controller (TCP-IP) EC3-3 Coldroom controller
EXN	Expansion valve	30 .. 38	Uni polar stepper motor driven	Heat pumps, air conditioning, close control	EXD-HP1/2 Superheat controller (Modbus)
DX3	Expansion valve	29.9 ~ 93.5	Uni polar stepper motor driven	Heat pumps, air conditioning, refrigeration	XEV22D Superheat controller
RX1S	Expansion valve	(R407F) 1.34 ~ 21.17	Uni polar stepper motor driven	Supermarket cases and Walk-ins.	XM678 and XEV22 Case controller

## Selection table for electrical control valves and applicable controllers for CO<sub>2</sub> applications

Valve type	Function	Capacity (kW) R744	Feature	Main application	Applicable controller
CX2	Expansion valve	1.5 .. 28.2	PWM	Refrigeration (display cases)	EC2

## CX2 Series electronic expansion valves

Pulse width modulated with exchangeable orifices for high-pressure CO<sub>2</sub> applications can be used with EC2 display case controllers

### Features

- Pulse width modulated
- Shut-off function eliminates the necessity of a separate solenoid valve
- Dampened plunger reduces noise effects of water hammer
- One valve body can be combined with 6 orifices to make 7 capacity ranges up to 28.2 kW
- Long lifetime, high reliability
- Max. working pressure PS: 90 bar
- MOPD: 65 bar



### Selection table

Type	Part no.	Description	Nominal capacity (kW) at 100% continuous open R 744
CX2-I00	801095	Valve: 3/8" x1/2" ODF	28.2
EXO-004	801089	Orifice 4	17.9
EXO-003	801088	Orifice 3	11.8
EXO-002	801087	Orifice 2	7.0
EXO-001	801086	Orifice 1	5.2
EXO-000	801085	Orifice 0	2.6
EXO-00X	801084	Orifice X	1.5

Note:  
 1) Nominal capacity at -10°C evaporating temperature, +10°C liquid temperature (45 bar) and 1K subcooling. For other operating conditions, please see quick selection table or Control Navigator selection software (Feb. 2015)  
 2) The table quotes capacities at 100% duty cycle, i.e. valve is open continuously. However, it is recommended to operate the valve at partial loaded (50-80%) to allow for system load fluctuations. When used with an EC2 case controller, the valve operates with a 6 second pulse width cycle.  
 3) CX2 is released as expansion valve and during operation of valve CO<sub>2</sub> must be feed in liquid phase to inlet of the valve.

### Accessories

Type	Part no.	Part no. (Multipack*)	Description	
ESC 24V	801033	-	Coil 24 VAC / 50 Hz**	
ESC 230V	801031	-	Coil 230 VAC / 50 Hz**	
ASC-N15	804570	804570M	Connector cable assembly	
ASC-N30	804571	804571M		1.5 m cable length
ASC-N60	804572	-		3.0 m cable length
Plug PG9	801012	-	Plug with cable guide	
Plug PG11	801013	-		
Clip Holder	801295	-	Blue clip	

Note: \*) Multipack = 20 pcs      \*\*) 50Hz coils have lower MOPD with 60Hz frequency.

MOPD levels depending on supply voltage to coil

MOPD	Supply voltage to coil	Supply voltage to coil
65 bar	24 VAC nominal voltage	230 VAC nominal voltage
60 bar	24 at -5% = 22.8 VAC	230 at -5% = 218.5 VAC
50 bar	24 at -10% = 21.6 VAC	230 at -10% = 207 VAC
45 bar	24 at -15% = 20.4 VAC	230 at -15% = 195.5 VAC

Note: MOPD values are valid only for 50 Hz supply voltage operation.

## DX3 Stepper motor driven electronic expansion valve

The Emerson DX3 is an electronically operated expansion device that provides precise control of refrigerant flow and system superheat. The DX3 employs a high-resolution linear stepper motor actuator with a “Dry” stator which provides excellent field serviceability, flexibility and high reliability. The patented bi-flow design contributes DX3 achieving completely equal high MOPD performance in both flow directions. In addition, the DX3 also employs the take-apart body and IP65/IP67 protected stators.

The unique features and capacity range of the DX3 make it be an appropriate solution for heat pump, electric bus air-conditioning, light commercial air-conditioning, precision cooling, process chiller, cold-room and test chamber.



### Features

- Compatible with R22, R410A, R407C, R134a and R32
- Broad capacity displacement: 8/10/12.5/15/20/25 Tons @ R22 application
- 12VDC Uni-polar stepper motor driven, 500 steps
- Bi-flow, same capacity and MOPD in both normal & reverse directions
- Long lifetime, high reliability: 250k full cycles' reliability test

### Specifications

- IP65 / IP67 protection
- CE certification

### Nominal capacity and valve body selection:

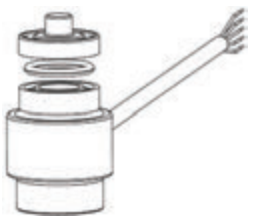

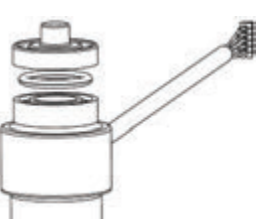
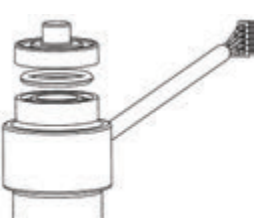
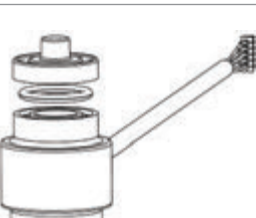
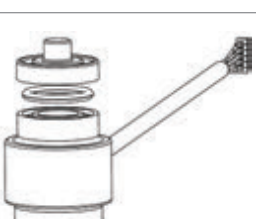
Model	PCN	Nominal capacity (kW)*											Connection	
		R22	R410A	R407C	R134a	R32	R404A	R448A	R449A	R450A	R507A	R513A	Inlet	Outlet
DX3-008	98301	28.1	33	29.9	22	48.7	19.8	27.6	27	19.4	19.4	18.3	5/8 × 5/8 ODF	
DX3-010	98302	35.2	41.3	37.4	27.5	60.9	24.7	34.6	33.9	24.3	24.2	22.9	5/8 × 5/8 ODF	
DX3-012	98303	44	51.6	46.8	34.3	76.1	30.9	43.2	42.3	30.3	30.3	28.6	5/8 × 5/8 ODF	
DX3-015	98304	52.8	62	56.1	41.2	91.4	37.1	51.8	50.8	36.4	36.4	34.3	5/8 × 5/8 ODF	
DX3-020	98305	70.3	82.6	74.8	54.9	121.8	49.4	69	67.6	48.4	48.5	45.7	5/8 × 5/8 ODF	
DX3-025	98306	87.9	103.3	93.5	68.7	152.3	61.8	86.3	84.6	60.6	60.6	57.1	5/8 × 5/8 ODF	

\*The nominal capacity is based upon the following standard AHRI conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Sub-cooling (K)
R404A, R134a, R22, R32, R507A, R448A, R449A, R450A, R513A, R410A	+4°C	+38°C	1
R407C	+4°C dew point	+38°C bubble / +43°C dew point	1



## Stator kit selection:

Model	PCN	Description	3D Sketch
DX3-SU205	98307	DX3 stator IP65 kit <ul style="list-style-type: none"> <li>• 12VDC coil with 2m cable</li> <li>• 1 O-ring</li> <li>• screw cap</li> </ul>	
DX3-SU207	98308	DX3 stator IP67 kit <ul style="list-style-type: none"> <li>• 12VDC coil with 2m cable</li> <li>• 2 O-rings</li> <li>• screw cap</li> </ul>	
DX3-SU305J	98315	DX3 stator IP65 kit <ul style="list-style-type: none"> <li>• 12VDC coil with 3m cable and JST XHP-5</li> <li>• 1 O-ring</li> <li>• screw cap</li> </ul>	
DX3-SU307J	98316	DX3 stator IP67 kit <ul style="list-style-type: none"> <li>• 12VDC coil with 3m cable and JST XHP-5</li> <li>• 2 O-rings</li> <li>• screw cap</li> </ul>	
DX3-SU605J	98323	DX3 stator IP65 kit <ul style="list-style-type: none"> <li>• 12VDC coil with 6m cable and JST XHP-5</li> <li>• 1 O-ring</li> <li>• screw cap</li> </ul>	
DX3-SU607J	98324	DX3 stator IP67 kit <ul style="list-style-type: none"> <li>• 12VDC coil with 6m cable and JST XHP-5</li> <li>• 2 O-rings</li> <li>• screw cap</li> </ul>	

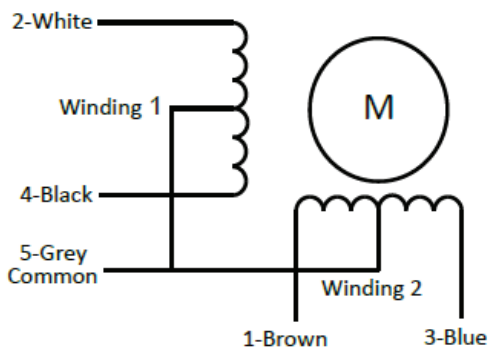
## Valve technical data:

Flow direction	Bi-flow
Flow characteristic	Linear (50~500 Steps)
MWP	680 psig (46.9 bar)
MOPD	Normal direction: 500 psig (34.5 bar)
Burst	3400 psig (234.5 bar)
Seat leakage	150 ml/min
External leakage	2.83 g/year
Vibration	≤ 4.5 g
Inlet refrigerant temp	-30~70°C
Ambient temp	-40~70°C
Protection index	IP65/IP67
Compatible lubricants	Mineral oil & POE
Weight	250 g

## Stepper motor technical data:

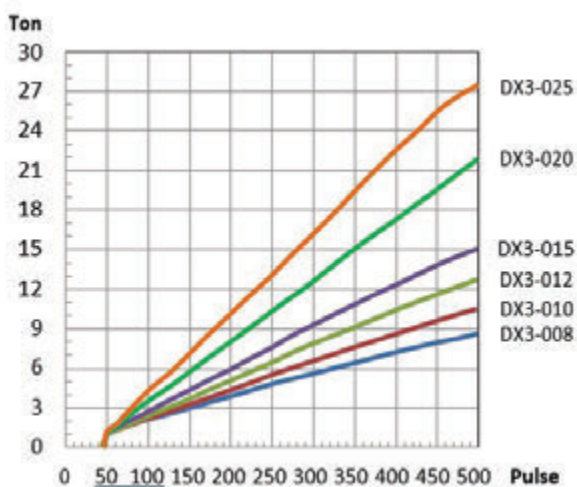
Type	5 wires uni-polar stepper motor
Operation frequency/ Step rate (Hz)	30~90 Hz, 50 Hz recommended (1 Hz = 1 pulse per second)
Total pulses	500 pulses (Note: do not apply for more than 550 pulses)
Start to open at	6~52 pulses
Supply voltage	12 VDC (+/- 10%)
Nominal opening current @ 12 VDC	300 mA/phase
Resistance	40 Ω/phase (+/- 10%)
Insulation class	F
Cable length	2m/3m/6m, integrated with stator

## Stepper motor wiring and valve movement:



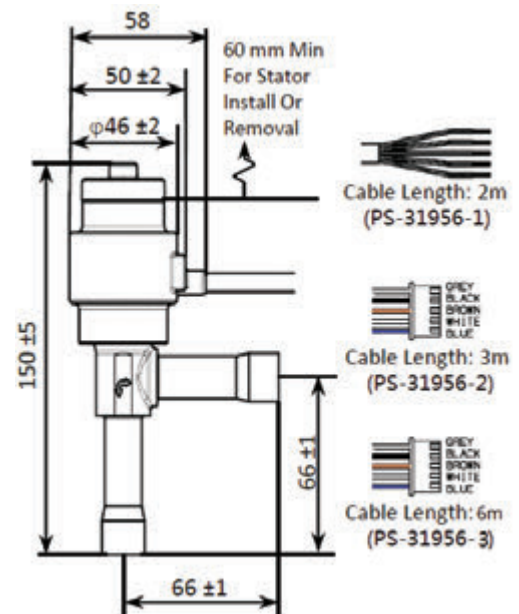
Wires	Valve movement (Pulses switching mode)							
	Open: → Close: ←							
2: White	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
4: Black	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
1: Brown	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
3: Blue	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
5: Gray	ON	ON	ON	ON	ON	ON	ON	ON

## Flow characteristic (Reference for both normal and reverse directions):



Conditions: R22, condensing temperature 38°C, evaporating temperature 4°C, sub-cooling 1K.

## Overall dimension (mm):



## Extended capacities as expansion valves:

The following tables provide the capacity of valves at different conditions considering 1.5 bar pressure drop through liquid line:

Condensing temperature (°C)	R22		Extended capacity (kW)										Valve type
			Evaporating temperature (°C)										
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
65	28.8	29.3	29.6	29.8	29.9	29.9	29.7	29.5	29.2	28.8	28.4	28.0	DX3-008
	36.0	36.6	37.0	37.3	37.4	37.3	37.1	36.9	36.5	36.1	35.5	34.9	DX3-010
	45.0	45.8	46.3	46.6	46.7	46.6	46.4	46.1	45.6	45.1	44.4	43.7	DX3-012
	54.0	54.9	55.6	55.9	56.0	56.0	55.7	55.3	54.8	54.1	53.3	52.4	DX3-015
	72.0	73.2	74.1	74.6	74.7	74.6	74.3	73.7	73.0	72.1	71.1	69.9	DX3-020
	90.0	91.6	92.6	93.2	93.4	93.3	92.9	92.2	91.3	90.1	88.8	87.4	DX3-025
60	28.5	29.1	29.6	29.9	30.1	30.2	30.1	30.0	29.8	29.5	29.1	28.7	DX3-008
	35.6	36.4	37.0	37.4	37.7	37.7	37.7	37.5	37.2	36.8	36.4	35.9	DX3-010
	44.5	45.5	46.3	46.8	47.1	47.2	47.1	46.9	46.5	46.0	45.5	44.8	DX3-012
	53.4	54.6	55.5	56.1	56.5	56.6	56.5	56.2	55.8	55.3	54.6	53.8	DX3-015
	71.2	72.9	74.1	74.9	75.3	75.5	75.3	75.0	74.4	73.7	72.8	71.7	DX3-020
	89.0	91.1	92.6	93.6	94.1	94.3	94.2	93.7	93.0	92.1	91.0	89.7	DX3-025
55	27.7	28.6	29.2	29.7	30.0	30.2	30.2	30.2	30.0	29.8	29.5	29.1	DX3-008
	34.7	35.7	36.5	37.1	37.5	37.7	37.8	37.7	37.5	37.2	36.9	36.4	DX3-010
	43.3	44.7	45.7	46.4	46.9	47.2	47.2	47.1	46.9	46.5	46.1	45.5	DX3-012
	52.0	53.6	54.8	55.7	56.3	56.6	56.7	56.6	56.3	55.8	55.3	54.6	DX3-015
	69.3	71.5	73.1	74.3	75.0	75.4	75.6	75.4	75.0	74.5	73.7	72.8	DX3-020
	86.7	89.4	91.4	92.8	93.8	94.3	94.4	94.3	93.8	93.1	92.1	91.0	DX3-025
50	26.6	27.7	28.5	29.1	29.6	29.9	30.0	30.0	30.0	29.8	29.6	29.3	DX3-008
	33.2	34.6	35.6	36.4	37.0	37.3	37.5	37.6	37.5	37.3	37.0	36.6	DX3-010
	41.5	43.2	44.5	45.5	46.2	46.7	46.9	46.9	46.8	46.6	46.2	45.8	DX3-012
	49.8	51.9	53.4	54.6	55.4	56.0	56.3	56.3	56.2	55.9	55.5	54.9	DX3-015
	66.4	69.1	71.2	72.8	73.9	74.7	75.0	75.1	74.9	74.6	74.0	73.2	DX3-020
	83.0	86.4	89.1	91.0	92.4	93.3	93.8	93.9	93.7	93.2	92.5	91.5	DX3-025
45	24.9	26.3	27.4	28.2	28.8	29.2	29.5	29.7	29.7	29.6	29.4	29.2	DX3-008
	31.2	32.9	34.2	35.3	36.0	36.6	36.9	37.1	37.1	37.0	36.8	36.5	DX3-010
	39.0	41.1	42.8	44.1	45.0	45.7	46.1	46.3	46.4	46.2	46.0	45.6	DX3-012
	46.8	49.4	51.4	52.9	54.0	54.8	55.3	55.6	55.6	55.5	55.2	54.7	DX3-015
	62.4	65.8	68.5	70.5	72.0	73.1	73.8	74.1	74.2	74.0	73.6	73.0	DX3-020
	77.9	82.3	85.6	88.2	90.1	91.4	92.2	92.7	92.7	92.5	92.0	91.2	DX3-025
40	22.8	24.6	25.9	27.0	27.8	28.3	28.7	29.0	29.1	29.1	29.0	28.9	DX3-008
	28.5	30.7	32.4	33.7	34.7	35.4	35.9	36.2	36.4	36.4	36.3	36.1	DX3-010
	35.6	38.4	40.5	42.1	43.4	44.3	44.9	45.3	45.5	45.5	45.4	45.1	DX3-012
	42.8	46.0	48.6	50.5	52.0	53.1	53.9	54.4	54.6	54.6	54.4	54.1	DX3-015
	57.0	61.4	64.8	67.4	69.4	70.8	71.8	72.5	72.8	72.8	72.6	72.2	DX3-020
	71.3	76.7	81.0	84.2	86.7	88.5	89.8	90.6	91.0	91.0	90.7	90.2	DX3-025



Condensing temperature (°C)	R22			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
35	20.0	22.3	24.0	25.3	26.4	27.1	27.7	28.1	28.3	28.4	28.4	28.3	DX3-008
	25.1	27.9	30.0	31.7	33.0	33.9	34.6	35.1	35.4	35.5	35.5	35.4	DX3-010
	31.3	34.8	37.5	39.6	41.2	42.4	43.3	43.9	44.2	44.4	44.4	44.2	DX3-012
	37.6	41.8	45.0	47.5	49.4	50.9	51.9	52.6	53.1	53.3	53.3	53.1	DX3-015
	50.1	55.7	60.0	63.4	65.9	67.8	69.2	70.2	70.8	71.0	71.0	70.8	DX3-020
	62.6	69.7	75.0	79.2	82.4	84.8	86.5	87.7	88.4	88.8	88.8	88.5	DX3-025
30	16.4	19.4	21.6	23.3	24.6	25.6	26.4	26.9	27.2	27.5	27.5	27.5	DX3-008
	20.5	24.2	27.0	29.2	30.8	32.0	32.9	33.6	34.1	34.3	34.4	34.4	DX3-010
	25.6	30.3	33.8	36.4	38.5	40.0	41.2	42.0	42.6	42.9	43.0	43.0	DX3-012
	30.7	36.4	40.5	43.7	46.2	48.0	49.4	50.4	51.1	51.5	51.6	51.6	DX3-015
	40.9	48.5	54.1	58.3	61.6	64.0	65.9	67.2	68.1	68.6	68.9	68.8	DX3-020
	51.2	60.6	67.6	72.9	76.9	80.0	82.3	84.0	85.1	85.8	86.1	86.0	DX3-025
25	11.0	15.6	18.6	20.8	22.5	23.8	24.7	25.4	25.9	26.3	26.5	26.5	DX3-008
	13.8	19.5	23.3	26.0	28.1	29.7	30.9	31.8	32.4	32.8	33.1	33.2	DX3-010
	17.2	24.3	29.1	32.5	35.1	37.1	38.6	39.7	40.5	41.1	41.4	41.5	DX3-012
	20.7	29.2	34.9	39.0	42.2	44.6	46.4	47.7	48.6	49.3	49.6	49.8	DX3-015
	27.5	38.9	46.5	52.1	56.2	59.4	61.8	63.6	64.8	65.7	66.2	66.4	DX3-020
	34.4	48.7	58.2	65.1	70.3	74.3	77.3	79.5	81.1	82.1	82.7	82.9	DX3-025
20		12.4	18.3	22.1	24.9	26.9	28.5	29.6	30.5	31.1	31.5	31.7	DX3-010
		15.5	22.9	27.6	31.1	33.6	35.6	37.0	38.1	38.8	39.3	39.6	DX3-012
		18.6	27.4	33.2	37.3	40.4	42.7	44.4	45.7	46.6	47.2	47.5	DX3-015
		24.8	36.6	44.2	49.7	53.8	56.9	59.2	60.9	62.1	62.9	63.3	DX3-020
		31.0	45.7	55.3	62.1	67.3	71.1	74.0	76.2	77.7	78.6	79.2	DX3-025
15			8.2	13.0	15.9	18.0	19.6	20.7	21.6	22.2	22.6	22.9	DX3-008
			10.2	16.2	19.9	22.5	24.5	25.9	27.0	27.8	28.3	28.7	DX3-010
			12.8	20.3	24.9	28.2	30.6	32.4	33.7	34.7	35.4	35.8	DX3-012
			15.3	24.3	29.9	33.8	36.7	38.9	40.5	41.7	42.5	43.0	DX3-015
			20.5	32.4	39.8	45.1	48.9	51.8	54.0	55.5	56.6	57.3	DX3-020
			25.6	40.5	49.8	56.3	61.2	64.8	67.5	69.4	70.8	71.7	DX3-025
10				6.8	12.2	15.4	17.6	19.2	20.4	21.2	21.9	22.3	DX3-008
				8.5	15.3	19.2	22.0	24.0	25.4	26.5	27.3	27.9	DX3-010
				10.6	19.1	24.1	27.5	30.0	31.8	33.2	34.1	34.8	DX3-012
				12.7	23.0	28.9	33.0	36.0	38.2	39.8	41.0	41.8	DX3-015
				17.0	30.6	38.5	44.0	47.9	50.9	53.1	54.6	55.7	DX3-020
				21.2	38.3	48.1	54.9	59.9	63.6	66.3	68.3	69.6	DX3-025

Condensing temperature (°C)	R410A			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
65	26.1	26.6	26.9	27.1	27.1	27.0	26.9	26.6	26.2	25.7	25.2	24.7	DX3-008
	32.6	33.2	33.6	33.9	33.9	33.8	33.6	33.2	32.7	32.2	31.5	30.8	DX3-010
	40.8	41.5	42.1	42.3	42.4	42.3	42.0	41.5	40.9	40.2	39.4	38.5	DX3-012
	48.9	49.9	50.5	50.8	50.9	50.7	50.3	49.8	49.1	48.3	47.3	46.2	DX3-015
	65.2	66.5	67.3	67.7	67.8	67.6	67.1	66.4	65.5	64.4	63.1	61.6	DX3-020
	81.6	83.1	84.1	84.6	84.8	84.5	83.9	83.0	81.9	80.5	78.8	77.0	DX3-025
60	28.5	29.2	29.8	30.1	30.3	30.3	30.2	30.0	29.8	29.4	28.9	28.4	DX3-008
	35.6	36.5	37.2	37.6	37.8	37.9	37.8	37.6	37.2	36.7	36.2	35.5	DX3-010
	44.6	45.7	46.5	47.0	47.3	47.4	47.2	46.9	46.5	45.9	45.2	44.4	DX3-012
	53.5	54.8	55.8	56.4	56.8	56.8	56.7	56.3	55.8	55.1	54.2	53.2	DX3-015
	71.3	73.1	74.4	75.2	75.7	75.8	75.6	75.1	74.4	73.4	72.3	71.0	DX3-020
	89.1	91.4	93.0	94.0	94.6	94.7	94.5	93.9	93.0	91.8	90.4	88.7	DX3-025
55	29.6	30.5	31.3	31.8	32.1	32.3	32.3	32.2	32.0	31.7	31.4	30.9	DX3-008
	37.0	38.2	39.1	39.7	40.1	40.4	40.4	40.3	40.1	39.7	39.2	38.6	DX3-010
	46.2	47.7	48.8	49.7	50.2	50.5	50.5	50.4	50.1	49.6	49.0	48.3	DX3-012
	55.4	57.2	58.6	59.6	60.2	60.6	60.6	60.5	60.1	59.5	58.8	57.9	DX3-015
	73.9	76.3	78.1	79.5	80.3	80.7	80.8	80.6	80.1	79.4	78.4	77.2	DX3-020
	92.4	95.4	97.7	99.3	100.4	100.9	101.0	100.8	100.1	99.2	98.0	96.6	DX3-025
50	29.7	30.9	31.9	32.6	33.1	33.5	33.6	33.6	33.5	33.3	33.0	32.6	DX3-008
	37.1	38.6	39.9	40.8	41.4	41.8	42.0	42.1	41.9	41.7	41.3	40.8	DX3-010
	46.4	48.3	49.8	51.0	51.8	52.3	52.5	52.6	52.4	52.1	51.6	51.0	DX3-012
	55.6	58.0	59.8	61.1	62.1	62.7	63.0	63.1	62.9	62.5	61.9	61.2	DX3-015
	74.2	77.3	79.7	81.5	82.8	83.6	84.0	84.1	83.9	83.3	82.6	81.6	DX3-020
	92.7	96.6	99.6	101.9	103.5	104.5	105.1	105.1	104.8	104.2	103.2	102.0	DX3-025
45	29.0	30.6	31.8	32.8	33.5	34.0	34.3	34.4	34.4	34.3	34.1	33.8	DX3-008
	36.2	38.2	39.7	40.9	41.8	42.4	42.8	43.0	43.0	42.9	42.6	42.2	DX3-010
	45.3	47.7	49.7	51.2	52.3	53.1	53.6	53.8	53.8	53.6	53.3	52.8	DX3-012
	54.3	57.3	59.6	61.4	62.7	63.7	64.3	64.5	64.6	64.4	63.9	63.3	DX3-015
	72.4	76.4	79.5	81.9	83.6	84.9	85.7	86.1	86.1	85.8	85.3	84.5	DX3-020
	90.5	95.5	99.4	102.3	104.6	106.1	107.1	107.6	107.6	107.3	106.6	105.6	DX3-025
40	27.5	29.5	31.1	32.3	33.2	33.9	34.4	34.7	34.8	34.8	34.7	34.5	DX3-008
	34.3	36.8	38.8	40.4	41.5	42.4	43.0	43.4	43.5	43.5	43.4	43.1	DX3-010
	42.9	46.1	48.5	50.4	51.9	53.0	53.7	54.2	54.4	54.4	54.2	53.8	DX3-012
	51.5	55.3	58.2	60.5	62.3	63.6	64.5	65.0	65.3	65.3	65.0	64.6	DX3-015
	68.7	73.7	77.6	80.7	83.0	84.8	86.0	86.7	87.0	87.0	86.7	86.1	DX3-020
	85.9	92.1	97.0	100.9	103.8	106.0	107.5	108.4	108.8	108.8	108.4	107.7	DX3-025

Condensing temperature (°C)	R410A			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
35	25.1	27.7	29.7	31.2	32.4	33.3	34.0	34.5	34.7	34.9	34.8	34.7	DX3-008
	31.4	34.6	37.1	39.0	40.5	41.7	42.5	43.1	43.4	43.6	43.5	43.4	DX3-010
	39.2	43.2	46.4	48.8	50.7	52.1	53.1	53.9	54.3	54.5	54.4	54.2	DX3-012
	47.1	51.9	55.6	58.6	60.8	62.5	63.8	64.6	65.1	65.4	65.3	65.0	DX3-015
	62.8	69.2	74.2	78.1	81.1	83.4	85.0	86.2	86.9	87.1	87.1	86.7	DX3-020
	78.5	86.5	92.7	97.6	101.4	104.2	106.3	107.7	108.6	108.9	108.9	108.4	DX3-025
30	21.7	25.0	27.6	29.6	31.1	32.3	33.2	33.8	34.2	34.5	34.6	34.5	DX3-008
	27.1	31.3	34.5	37.0	38.9	40.4	41.5	42.3	42.8	43.1	43.2	43.2	DX3-010
	33.9	39.1	43.1	46.2	48.6	50.5	51.8	52.8	53.5	53.9	54.0	54.0	DX3-012
	40.7	47.0	51.8	55.5	58.3	60.6	62.2	63.4	64.2	64.7	64.9	64.8	DX3-015
	54.2	62.6	69.0	73.9	77.8	80.7	83.0	84.5	85.6	86.2	86.5	86.4	DX3-020
	67.8	78.3	86.3	92.4	97.2	100.9	103.7	105.7	107.0	107.8	108.1	108.0	DX3-025
25	16.6	21.4	24.7	27.3	29.2	30.7	31.9	32.7	33.3	33.7	34.0	34.0	DX3-008
	20.8	26.7	30.9	34.1	36.5	38.4	39.9	40.9	41.7	42.2	42.5	42.6	DX3-010
	26.0	33.4	38.7	42.6	45.7	48.0	49.8	51.2	52.1	52.7	53.1	53.2	DX3-012
	31.2	40.1	46.4	51.2	54.8	57.6	59.8	61.4	62.5	63.3	63.7	63.8	DX3-015
	41.6	53.4	61.9	68.2	73.1	76.9	79.7	81.9	83.4	84.4	84.9	85.1	DX3-020
	52.0	66.8	77.3	85.3	91.4	96.1	99.7	102.3	104.2	105.5	106.2	106.4	DX3-025
20	7.3	16.0	20.8	24.2	26.7	28.7	30.1	31.2	32.1	32.6	33.0	33.2	DX3-008
	9.1	20.0	26.1	30.3	33.4	35.8	37.7	39.1	40.1	40.8	41.3	41.5	DX3-010
	11.4	25.0	32.6	37.8	41.8	44.8	47.1	48.8	50.1	51.0	51.6	51.9	DX3-012
	13.6	30.1	39.1	45.4	50.1	53.7	56.5	58.6	60.1	61.2	61.9	62.2	DX3-015
	18.2	40.1	52.1	60.6	66.9	71.7	75.3	78.1	80.2	81.6	82.5	83.0	DX3-020
	22.7	50.1	65.1	75.7	83.6	89.6	94.2	97.6	100.2	102.0	103.1	103.7	DX3-025
15		5.6	15.2	20.1	23.5	26.0	27.9	29.3	30.4	31.1	31.7	32.0	DX3-008
		7.0	19.0	25.1	29.4	32.5	34.8	36.6	38.0	38.9	39.6	40.0	DX3-010
		8.8	23.8	31.4	36.7	40.6	43.6	45.8	47.5	48.7	49.5	50.0	DX3-012
		10.5	28.6	37.7	44.1	48.7	52.3	54.9	56.9	58.4	59.4	60.0	DX3-015
		14.1	38.1	50.3	58.7	65.0	69.7	73.3	75.9	77.9	79.2	80.1	DX3-020
		17.6	47.6	62.9	73.4	81.2	87.1	91.6	94.9	97.3	99.0	100.1	DX3-025
10			2.8	14.2	19.2	22.6	25.0	26.9	28.3	29.3	30.0	30.5	DX3-008
			3.5	17.8	24.0	28.2	31.3	33.6	35.3	36.6	37.5	38.2	DX3-010
			4.3	22.2	30.0	35.3	39.1	42.0	44.2	45.8	46.9	47.7	DX3-012
			5.2	26.6	36.0	42.3	46.9	50.4	53.0	54.9	56.3	57.3	DX3-015
			6.9	35.5	48.0	56.4	62.6	67.2	70.7	73.2	75.1	76.3	DX3-020
			8.6	44.4	60.0	70.5	78.2	84.0	88.3	91.5	93.8	95.4	DX3-025

Condensing temperature (°C)	R407C			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
Dew Point 68.6 Bubble Point 65	27.3	27.5	27.5	27.3	27.1	26.8	26.3	25.8	25.3	24.6	24.0	23.2	DX3-008
	34.1	34.3	34.3	34.2	33.9	33.4	32.9	32.3	31.6	30.8	30.0	29.1	DX3-010
	42.7	42.9	42.9	42.7	42.3	41.8	41.1	40.4	39.5	38.5	37.4	36.3	DX3-012
	51.2	51.5	51.5	51.3	50.8	50.2	49.4	48.4	47.4	46.2	44.9	43.6	DX3-015
	68.3	68.6	68.7	68.3	67.7	66.9	65.8	64.6	63.2	61.6	59.9	58.1	DX3-020
	85.3	85.8	85.8	85.4	84.7	83.6	82.3	80.7	78.9	77.0	74.9	72.7	DX3-025
Dew Point 63.9 Bubble Point 60	28.0	28.3	28.5	28.4	28.3	28.1	27.7	27.3	26.8	26.2	25.6	25.0	DX3-008
	35.0	35.4	35.6	35.6	35.4	35.1	34.7	34.1	33.5	32.8	32.0	31.2	DX3-010
	43.7	44.2	44.5	44.5	44.2	43.9	43.3	42.7	41.9	41.0	40.0	39.0	DX3-012
	52.5	53.1	53.3	53.3	53.1	52.6	52.0	51.2	50.3	49.2	48.0	46.8	DX3-015
	70.0	70.8	71.1	71.1	70.8	70.2	69.3	68.3	67.0	65.6	64.1	62.4	DX3-020
	87.5	88.5	88.9	88.9	88.5	87.7	86.7	85.3	83.8	82.0	80.1	78.0	DX3-025
Dew Point 59.2 Bubble Point 55	28.2	28.7	29.0	29.1	29.1	28.9	28.7	28.4	27.9	27.4	26.9	26.3	DX3-008
	35.2	35.8	36.2	36.4	36.4	36.2	35.9	35.4	34.9	34.3	33.6	32.8	DX3-010
	44.0	44.8	45.3	45.5	45.4	45.2	44.8	44.3	43.6	42.9	42.0	41.0	DX3-012
	52.8	53.7	54.3	54.6	54.5	54.3	53.8	53.2	52.4	51.4	50.4	49.3	DX3-015
	70.4	71.7	72.4	72.7	72.7	72.4	71.7	70.9	69.8	68.6	67.2	65.7	DX3-020
	88.0	89.6	90.5	90.9	90.9	90.5	89.7	88.6	87.3	85.7	84.0	82.1	DX3-025
Dew Point 54.5 Bubble Point 50	27.8	28.5	29.0	29.3	29.4	29.4	29.3	29.0	28.7	28.2	27.8	27.2	DX3-008
	34.8	35.7	36.3	36.6	36.8	36.8	36.6	36.3	35.8	35.3	34.7	34.0	DX3-010
	43.5	44.6	45.4	45.8	46.0	46.0	45.7	45.3	44.8	44.1	43.4	42.5	DX3-012
	52.2	53.5	54.4	55.0	55.2	55.1	54.9	54.4	53.8	53.0	52.0	51.0	DX3-015
	69.6	71.4	72.6	73.3	73.6	73.5	73.2	72.5	71.7	70.6	69.4	68.0	DX3-020
	87.0	89.2	90.7	91.6	92.0	91.9	91.5	90.7	89.6	88.3	86.7	85.0	DX3-025
Dew Point 49.7 Bubble Point 45	27.0	28.0	28.7	29.1	29.4	29.5	29.5	29.3	29.1	28.7	28.3	27.8	DX3-008
	33.8	35.0	35.8	36.4	36.7	36.9	36.8	36.6	36.3	35.9	35.4	34.8	DX3-010
	42.2	43.7	44.8	45.5	45.9	46.1	46.0	45.8	45.4	44.9	44.2	43.5	DX3-012
	50.7	52.5	53.7	54.6	55.1	55.3	55.3	55.0	54.5	53.9	53.1	52.2	DX3-015
	67.5	69.9	71.7	72.8	73.5	73.8	73.7	73.3	72.7	71.8	70.7	69.5	DX3-020
	84.4	87.4	89.6	91.0	91.9	92.2	92.1	91.6	90.8	89.8	88.4	86.9	DX3-025
Dew Point 44.9 Bubble Point 40	25.7	26.9	27.9	28.5	29.0	29.2	29.3	29.3	29.1	28.9	28.5	28.1	DX3-008
	32.1	33.7	34.8	35.7	36.2	36.5	36.7	36.6	36.4	36.1	35.7	35.1	DX3-010
	40.1	42.1	43.6	44.6	45.3	45.7	45.8	45.8	45.5	45.1	44.6	43.9	DX3-012
	48.2	50.5	52.3	53.5	54.3	54.8	55.0	54.9	54.6	54.1	53.5	52.7	DX3-015
	64.2	67.4	69.7	71.4	72.5	73.1	73.3	73.2	72.8	72.2	71.3	70.3	DX3-020
	80.3	84.2	87.1	89.2	90.6	91.4	91.7	91.5	91.0	90.2	89.2	87.9	DX3-025

Condensing temperature (°C)	R407C			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
Dew Point 40.1 Bubble Point 35	23.8	25.4	26.7	27.6	28.2	28.6	28.9	28.9	28.9	28.7	28.5	28.1	DX3-008
	29.7	31.8	33.3	34.5	35.3	35.8	36.1	36.2	36.1	35.9	35.6	35.2	DX3-010
	37.2	39.7	41.7	43.1	44.1	44.7	45.1	45.2	45.1	44.9	44.5	43.9	DX3-012
	44.6	47.7	50.0	51.7	52.9	53.7	54.1	54.3	54.2	53.9	53.4	52.7	DX3-015
	59.5	63.6	66.6	68.9	70.5	71.6	72.2	72.4	72.2	71.8	71.2	70.3	DX3-020
	74.3	79.5	83.3	86.1	88.1	89.5	90.2	90.4	90.3	89.8	88.9	87.9	DX3-025
Dew Point 35.3 Bubble Point 30	21.2	23.4	25.0	26.2	27.1	27.7	28.1	28.3	28.4	28.3	28.1	27.9	DX3-008
	26.5	29.2	31.2	32.7	33.8	34.6	35.1	35.4	35.4	35.4	35.1	34.8	DX3-010
	33.2	36.5	39.0	40.9	42.3	43.2	43.9	44.2	44.3	44.2	43.9	43.5	DX3-012
	39.8	43.8	46.8	49.1	50.7	51.9	52.6	53.0	53.2	53.0	52.7	52.2	DX3-015
	53.0	58.4	62.5	65.5	67.6	69.2	70.2	70.7	70.9	70.7	70.3	69.6	DX3-020
	66.3	73.0	78.1	81.8	84.6	86.5	87.7	88.4	88.6	88.4	87.9	87.1	DX3-025
Dew Point 30.4 Bubble Point 25	17.7	20.7	22.8	24.4	25.5	26.4	27.0	27.3	27.5	27.6	27.5	27.3	DX3-008
	22.2	25.8	28.5	30.4	31.9	33.0	33.7	34.2	34.4	34.5	34.4	34.2	DX3-010
	27.7	32.3	35.6	38.1	39.9	41.2	42.1	42.7	43.0	43.1	43.0	42.7	DX3-012
	33.3	38.7	42.7	45.7	47.9	49.4	50.5	51.2	51.6	51.7	51.6	51.2	DX3-015
	44.3	51.6	57.0	60.9	63.8	65.9	67.4	68.3	68.8	68.9	68.8	68.3	DX3-020
	55.4	64.6	71.2	76.1	79.8	82.4	84.2	85.4	86.0	86.2	85.9	85.4	DX3-025
Dew Point 25.6 Bubble Point 20	12.7	17.0	19.9	22.0	23.6	24.7	25.5	26.1	26.4	26.6	26.6	26.5	DX3-008
	15.9	21.3	24.9	27.5	29.5	30.9	31.9	32.6	33.0	33.2	33.3	33.2	DX3-010
	19.9	26.6	31.1	34.4	36.8	38.6	39.9	40.7	41.3	41.6	41.6	41.5	DX3-012
	23.8	31.9	37.4	41.3	44.2	46.3	47.8	48.9	49.5	49.9	49.9	49.8	DX3-015
	31.8	42.6	49.8	55.1	58.9	61.7	63.8	65.2	66.0	66.5	66.6	66.4	DX3-020
	39.7	53.2	62.3	68.8	73.6	77.2	79.7	81.4	82.5	83.1	83.2	83.0	DX3-025
Dew Point 20.7 Bubble Point 15		11.8	16.2	19.0	21.1	22.6	23.7	24.5	25.0	25.3	25.5	25.5	DX3-008
		14.7	20.2	23.8	26.4	28.3	29.6	30.6	31.3	31.7	31.9	31.9	DX3-010
		18.4	25.2	29.8	33.0	35.3	37.0	38.2	39.1	39.6	39.8	39.9	DX3-012
		22.1	30.3	35.7	39.6	42.4	44.4	45.9	46.9	47.5	47.8	47.9	DX3-015
		29.4	40.4	47.6	52.8	56.5	59.2	61.2	62.5	63.3	63.7	63.8	DX3-020
		36.8	50.5	59.5	65.9	70.6	74.1	76.5	78.1	79.2	79.7	79.8	DX3-025
Dew Point 15.9 Bubble Point 10			10.6	15.1	18.0	20.0	21.5	22.5	23.3	23.8	24.1	24.2	DX3-008
			13.2	18.9	22.5	25.0	26.9	28.2	29.1	29.7	30.1	30.3	DX3-010
			16.5	23.6	28.1	31.3	33.6	35.2	36.4	37.2	37.6	37.9	DX3-012
			19.9	28.3	33.7	37.5	40.3	42.3	43.7	44.6	45.2	45.5	DX3-015
			26.5	37.8	45.0	50.0	53.7	56.4	58.2	59.5	60.2	60.6	DX3-020
			33.1	47.2	56.2	62.5	67.1	70.4	72.8	74.3	75.3	75.8	DX3-025

Condensing temperature (°C)	R134a			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
65	21.9	22.0	21.9	21.7	21.5	21.1	20.7	20.2	19.7	19.1	18.5	17.9	DX3-008
	27.4	27.5	27.4	27.2	26.8	26.4	25.9	25.3	24.6	23.9	23.1	22.3	DX3-010
	34.2	34.3	34.2	34.0	33.6	33.0	32.4	31.6	30.8	29.9	28.9	27.9	DX3-012
	41.0	41.2	41.1	40.8	40.3	39.6	38.8	37.9	36.9	35.8	34.7	33.5	DX3-015
	54.7	54.9	54.8	54.3	53.7	52.8	51.8	50.6	49.2	47.8	46.3	44.7	DX3-020
	68.4	68.6	68.5	67.9	67.1	66.0	64.7	63.2	61.5	59.7	57.8	55.8	DX3-025
60	21.7	22.0	22.1	22.0	21.9	21.6	21.3	20.9	20.4	19.9	19.3	18.7	DX3-008
	27.2	27.5	27.6	27.5	27.3	27.0	26.6	26.1	25.5	24.9	24.2	23.4	DX3-010
	34.0	34.4	34.5	34.4	34.2	33.8	33.2	32.6	31.9	31.1	30.2	29.3	DX3-012
	40.8	41.2	41.4	41.3	41.0	40.5	39.9	39.1	38.2	37.3	36.2	35.1	DX3-015
	54.4	55.0	55.2	55.0	54.6	54.0	53.2	52.1	51.0	49.7	48.3	46.8	DX3-020
	68.0	68.7	69.0	68.8	68.3	67.5	66.5	65.2	63.7	62.1	60.4	58.6	DX3-025
55	21.2	21.7	21.9	22.0	21.9	21.8	21.5	21.2	20.8	20.4	19.9	19.3	DX3-008
	26.5	27.1	27.4	27.5	27.4	27.2	26.9	26.5	26.0	25.5	24.9	24.2	DX3-010
	33.2	33.8	34.2	34.3	34.3	34.0	33.7	33.1	32.5	31.8	31.1	30.2	DX3-012
	39.8	40.6	41.1	41.2	41.1	40.8	40.4	39.8	39.0	38.2	37.3	36.3	DX3-015
	53.1	54.1	54.7	55.0	54.8	54.5	53.8	53.0	52.1	50.9	49.7	48.4	DX3-020
	66.4	67.7	68.4	68.7	68.6	68.1	67.3	66.3	65.1	63.7	62.1	60.5	DX3-025
50	20.3	21.0	21.4	21.6	21.7	21.7	21.5	21.3	21.0	20.6	20.2	19.7	DX3-008
	25.4	26.2	26.8	27.1	27.2	27.1	26.9	26.6	26.2	25.8	25.2	24.6	DX3-010
	31.8	32.8	33.4	33.8	34.0	33.9	33.7	33.3	32.8	32.2	31.5	30.8	DX3-012
	38.1	39.3	40.1	40.6	40.7	40.7	40.4	39.9	39.4	38.6	37.8	37.0	DX3-015
	50.9	52.5	53.5	54.1	54.3	54.2	53.9	53.3	52.5	51.5	50.5	49.3	DX3-020
	63.6	65.6	66.9	67.6	67.9	67.8	67.3	66.6	65.6	64.4	63.1	61.6	DX3-025
45	19.0	19.9	20.6	21.0	21.2	21.3	21.3	21.1	20.9	20.6	20.2	19.8	DX3-008
	23.8	24.9	25.7	26.2	26.5	26.6	26.6	26.4	26.1	25.8	25.3	24.8	DX3-010
	29.7	31.1	32.1	32.8	33.2	33.3	33.2	33.0	32.7	32.2	31.6	31.0	DX3-012
	35.7	37.4	38.6	39.4	39.8	40.0	39.9	39.6	39.2	38.6	38.0	37.2	DX3-015
	47.6	49.8	51.4	52.5	53.1	53.3	53.2	52.8	52.3	51.5	50.6	49.6	DX3-020
	59.5	62.3	64.3	65.6	66.3	66.6	66.5	66.0	65.3	64.4	63.3	62.0	DX3-025
40	17.2	18.5	19.4	20.0	20.4	20.7	20.7	20.7	20.6	20.4	20.1	19.7	DX3-008
	21.5	23.1	24.2	25.0	25.5	25.8	25.9	25.9	25.7	25.5	25.1	24.7	DX3-010
	26.9	28.9	30.3	31.3	31.9	32.3	32.4	32.4	32.2	31.8	31.4	30.8	DX3-012
	32.3	34.6	36.3	37.5	38.3	38.7	38.9	38.8	38.6	38.2	37.6	37.0	DX3-015
	43.0	46.2	48.5	50.0	51.1	51.7	51.9	51.8	51.5	50.9	50.2	49.3	DX3-020
	53.8	57.7	60.6	62.5	63.8	64.6	64.8	64.7	64.3	63.6	62.7	61.7	DX3-025

Condensing temperature (°C)	R134a			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
35	14.8	16.5	17.8	18.7	19.3	19.7	20.0	20.0	20.0	19.9	19.7	19.4	DX3-008
	18.5	20.7	22.2	23.4	24.1	24.7	24.9	25.1	25.0	24.9	24.6	24.3	DX3-010
	23.1	25.8	27.8	29.2	30.2	30.8	31.2	31.3	31.3	31.1	30.8	30.3	DX3-012
	27.7	31.0	33.4	35.0	36.2	37.0	37.4	37.6	37.5	37.3	36.9	36.4	DX3-015
	36.9	41.3	44.5	46.7	48.3	49.3	49.9	50.1	50.0	49.7	49.2	48.5	DX3-020
	46.2	51.7	55.6	58.4	60.4	61.6	62.4	62.6	62.6	62.2	61.5	60.6	DX3-025
30	11.4	13.9	15.7	17.0	17.9	18.5	18.9	19.1	19.2	19.2	19.1	18.9	DX3-008
	14.2	17.4	19.6	21.2	22.3	23.1	23.6	23.9	24.0	24.0	23.8	23.6	DX3-010
	17.7	21.8	24.6	26.5	27.9	28.9	29.5	29.9	30.0	30.0	29.8	29.5	DX3-012
	21.3	26.1	29.5	31.8	33.5	34.7	35.4	35.9	36.0	36.0	35.7	35.4	DX3-015
	28.4	34.9	39.3	42.4	44.7	46.2	47.2	47.8	48.0	48.0	47.7	47.2	DX3-020
	35.5	43.6	49.1	53.0	55.8	57.8	59.0	59.8	60.0	60.0	59.6	59.0	DX3-025
25	5.4	10.3	13.0	14.8	16.0	16.9	17.5	17.9	18.2	18.2	18.2	18.1	DX3-008
	6.8	12.8	16.2	18.4	20.0	21.1	21.9	22.4	22.7	22.8	22.8	22.6	DX3-010
	8.4	16.1	20.2	23.1	25.0	26.4	27.4	28.0	28.4	28.5	28.5	28.3	DX3-012
	10.1	19.3	24.3	27.7	30.0	31.7	32.9	33.6	34.0	34.2	34.2	34.0	DX3-015
	13.5	25.7	32.4	36.9	40.0	42.3	43.8	44.8	45.4	45.6	45.6	45.3	DX3-020
	16.9	32.1	40.5	46.1	50.1	52.8	54.8	56.0	56.7	57.0	56.9	56.6	DX3-025
20		2.9	9.0	11.8	13.6	14.9	15.8	16.4	16.8	17.1	17.1	17.1	DX3-008
		3.6	11.2	14.8	17.1	18.7	19.8	20.5	21.0	21.3	21.4	21.4	DX3-010
		4.5	14.0	18.4	21.3	23.3	24.7	25.7	26.3	26.6	26.8	26.8	DX3-012
		5.4	16.8	22.1	25.6	28.0	29.7	30.8	31.5	32.0	32.1	32.1	DX3-015
		7.2	22.4	29.5	34.1	37.3	39.5	41.1	42.1	42.6	42.9	42.8	DX3-020
		9.0	28.0	36.9	42.6	46.6	49.4	51.3	52.6	53.3	53.6	53.5	DX3-025
15				7.4	10.5	12.4	13.7	14.6	15.2	15.6	15.8	15.9	DX3-008
				9.2	13.1	15.5	17.1	18.2	19.0	19.5	19.8	19.9	DX3-010
				11.5	16.3	19.3	21.4	22.8	23.7	24.4	24.7	24.9	DX3-012
				13.8	19.6	23.2	25.6	27.3	28.5	29.2	29.7	29.8	DX3-015
				18.4	26.1	30.9	34.2	36.4	38.0	39.0	39.5	39.8	DX3-020
				23.0	32.7	38.6	42.7	45.5	47.5	48.7	49.4	49.7	DX3-025
10					5.2	8.8	10.9	12.2	13.2	13.8	14.2	14.4	DX3-008
					6.5	11.0	13.6	15.3	16.5	17.2	17.8	18.1	DX3-010
					8.1	13.8	17.0	19.1	20.6	21.6	22.2	22.6	DX3-012
					9.7	16.6	20.4	23.0	24.7	25.9	26.6	27.1	DX3-015
					12.9	22.1	27.2	30.6	32.9	34.5	35.5	36.1	DX3-020
					16.2	27.6	34.0	38.3	41.1	43.1	44.4	45.1	DX3-025



Condensing temperature (°C)	R32			Extended capacity (kW)									Valve type	
				Evaporating temperature (°C)										
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40		
65	46.2	47.5	48.5	49.3	49.9	50.3	50.5	50.6	50.5	50.4	50.1	49.7	DX3-008	
	57.8	59.4	60.6	61.6	62.3	62.9	63.1	63.2	63.2	63.0	62.6	62.1	DX3-010	
	72.2	74.2	75.8	77.0	77.9	78.6	78.9	79.1	79.0	78.7	78.3	77.7	DX3-012	
	86.7	89.0	90.9	92.4	93.5	94.3	94.7	94.9	94.8	94.4	93.9	93.2	DX3-015	
	115.5	118.7	121.3	123.2	124.7	125.7	126.3	126.3	126.5	126.4	125.9	125.2	124.3	DX3-020
	144.4	148.4	151.6	154.0	155.9	157.1	157.9	158.1	158.0	157.4	156.5	155.3	DX3-025	
60	47.1	48.6	49.9	50.8	51.6	52.2	52.5	52.7	52.8	52.7	52.5	52.2	DX3-008	
	58.8	60.8	62.3	63.6	64.5	65.2	65.7	65.9	66.0	65.9	65.6	65.2	DX3-010	
	73.5	75.9	77.9	79.5	80.6	81.5	82.1	82.4	82.5	82.3	82.0	81.5	DX3-012	
	88.3	91.1	93.5	95.3	96.8	97.8	98.5	98.9	99.0	98.8	98.4	97.8	DX3-015	
	117.7	121.5	124.6	127.1	129.0	130.4	131.3	131.8	131.9	131.7	131.2	130.4	DX3-020	
	147.1	151.9	155.8	158.9	161.3	163.0	164.2	164.8	164.9	164.7	164.0	163.1	DX3-025	
55	46.8	48.7	50.2	51.4	52.3	53.1	53.6	53.9	54.1	54.1	54.0	53.7	DX3-008	
	58.5	60.8	62.7	64.2	65.4	66.3	67.0	67.4	67.6	67.6	67.4	67.1	DX3-010	
	73.2	76.0	78.4	80.3	81.8	82.9	83.7	84.2	84.5	84.5	84.3	83.9	DX3-012	
	87.8	91.2	94.1	96.3	98.1	99.5	100.4	101.1	101.4	101.4	101.2	100.7	DX3-015	
	117.0	121.7	125.4	128.5	130.8	132.6	133.9	134.7	135.1	135.2	134.9	134.3	DX3-020	
	146.3	152.1	156.8	160.6	163.6	165.8	167.4	168.4	168.9	169.0	168.6	167.9	DX3-025	
50	45.6	47.8	49.6	51.1	52.3	53.2	53.8	54.3	54.6	54.7	54.7	54.5	DX3-008	
	57.0	59.8	62.0	63.9	65.3	66.5	67.3	67.9	68.2	68.4	68.4	68.2	DX3-010	
	71.3	74.7	77.5	79.8	81.7	83.1	84.1	84.9	85.3	85.5	85.4	85.2	DX3-012	
	85.5	89.7	93.1	95.8	98.0	99.7	101.0	101.8	102.4	102.6	102.5	102.3	DX3-015	
	114.0	119.6	124.1	127.7	130.7	132.9	134.6	135.8	136.5	136.8	136.7	136.3	DX3-020	
	142.6	149.4	155.1	159.7	163.3	166.2	168.3	169.7	170.6	171.0	170.9	170.4	DX3-025	
45	43.5	46.2	48.3	50.1	51.5	52.6	53.5	54.1	54.5	54.7	54.8	54.8	DX3-008	
	54.4	57.7	60.4	62.6	64.4	65.8	66.8	67.6	68.1	68.4	68.5	68.4	DX3-010	
	68.0	72.1	75.5	78.2	80.5	82.2	83.5	84.5	85.1	85.5	85.6	85.5	DX3-012	
	81.6	86.5	90.6	93.9	96.5	98.6	100.2	101.4	102.2	102.6	102.8	102.7	DX3-015	
	108.8	115.4	120.8	125.2	128.7	131.5	133.6	135.2	136.2	136.8	137.0	136.9	DX3-020	
	136.0	144.2	151.0	156.5	160.9	164.4	167.1	169.0	170.3	171.0	171.3	171.1	DX3-025	
40	40.5	43.7	46.3	48.4	50.1	51.4	52.5	53.3	53.9	54.2	54.4	54.4	DX3-008	
	50.6	54.6	57.8	60.5	62.6	64.3	65.6	66.6	67.3	67.8	68.0	68.1	DX3-010	
	63.3	68.3	72.3	75.6	78.2	80.4	82.0	83.3	84.1	84.7	85.0	85.1	DX3-012	
	75.9	81.9	86.8	90.7	93.9	96.4	98.4	99.9	101.0	101.7	102.0	102.1	DX3-015	
	101.2	109.2	115.7	120.9	125.2	128.6	131.2	133.2	134.6	135.5	136.0	136.1	DX3-020	
	126.6	136.5	144.6	151.2	156.5	160.7	164.0	166.5	168.3	169.4	170.0	170.1	DX3-025	

Condensing temperature (°C)	R32			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
35	36.4	40.3	43.5	46.0	48.1	49.7	51.0	52.0	52.7	53.2	53.5	53.7	DX3-008
	45.5	50.4	54.3	57.5	60.1	62.1	63.7	65.0	65.9	66.5	66.9	67.1	DX3-010
	56.9	63.0	67.9	71.9	75.1	77.6	79.6	81.2	82.4	83.1	83.6	83.9	DX3-012
	68.3	75.6	81.5	86.3	90.1	93.2	95.6	97.4	98.8	99.8	100.4	100.6	DX3-015
	91.1	100.9	108.7	115.0	120.1	124.2	127.4	129.9	131.8	133.0	133.8	134.2	DX3-020
	113.8	126.1	135.9	143.8	150.2	155.3	159.3	162.4	164.7	166.3	167.3	167.7	DX3-025
30	31.0	36.0	39.9	42.9	45.4	47.4	48.9	50.2	51.1	51.8	52.2	52.5	DX3-008
	38.8	45.0	49.8	53.7	56.8	59.2	61.2	62.7	63.9	64.7	65.3	65.6	DX3-010
	48.5	56.2	62.3	67.1	70.9	74.0	76.5	78.4	79.8	80.9	81.6	82.0	DX3-012
	58.1	67.5	74.7	80.5	85.1	88.8	91.8	94.1	95.8	97.1	97.9	98.4	DX3-015
	77.5	90.0	99.7	107.4	113.5	118.4	122.4	125.4	127.7	129.4	130.5	131.2	DX3-020
	96.9	112.5	124.6	134.2	141.9	148.1	152.9	156.8	159.7	161.8	163.2	164.0	DX3-025
25	23.5	30.3	35.3	39.1	42.1	44.5	46.4	47.9	49.0	49.9	50.5	50.9	DX3-008
	29.3	37.9	44.1	48.9	52.6	55.6	58.0	59.9	61.3	62.4	63.1	63.6	DX3-010
	36.7	47.4	55.1	61.1	65.8	69.5	72.5	74.8	76.6	78.0	78.9	79.5	DX3-012
	44.0	56.9	66.2	73.3	79.0	83.4	87.0	89.8	91.9	93.5	94.7	95.4	DX3-015
	58.7	75.8	88.2	97.8	105.3	111.2	116.0	119.7	122.6	124.7	126.3	127.3	DX3-020
	73.4	94.8	110.3	122.2	131.6	139.1	145.0	149.6	153.2	155.9	157.8	159.1	DX3-025
20	10.1	22.5	29.4	34.3	38.1	41.0	43.3	45.1	46.5	47.6	48.4	49.0	DX3-008
	12.6	28.1	36.7	42.9	47.6	51.2	54.1	56.4	58.2	59.5	60.5	61.2	DX3-010
	15.8	35.2	45.9	53.6	59.5	64.1	67.7	70.5	72.7	74.4	75.6	76.5	DX3-012
	18.9	42.2	55.1	64.4	71.4	76.9	81.2	84.6	87.3	89.3	90.8	91.8	DX3-015
	25.2	56.3	73.5	85.8	95.2	102.5	108.3	112.8	116.3	119.0	121.0	122.4	DX3-020
	31.6	70.3	91.9	107.3	119.0	128.1	135.3	141.0	145.4	148.8	151.3	153.0	DX3-025
15			21.3	28.2	33.1	36.8	39.6	41.9	43.6	44.9	45.9	46.6	DX3-008
			26.6	35.3	41.4	46.0	49.5	52.3	54.5	56.1	57.4	58.3	DX3-010
			33.2	44.1	51.7	57.5	61.9	65.4	68.1	70.2	71.7	72.9	DX3-012
			39.9	52.9	62.1	69.0	74.3	78.5	81.7	84.2	86.1	87.5	DX3-015
			53.2	70.6	82.8	92.0	99.1	104.6	109.0	112.3	114.8	116.6	DX3-020
			66.5	88.2	103.5	114.9	123.8	130.8	136.2	140.4	143.5	145.8	DX3-025
10				19.8	26.8	31.7	35.3	38.0	40.1	41.8	43.0	44.0	DX3-008
				24.7	33.5	39.6	44.1	47.5	50.2	52.2	53.8	55.0	DX3-010
				30.9	41.9	49.5	55.1	59.4	62.7	65.3	67.3	68.7	DX3-012
				37.1	50.3	59.3	66.1	71.3	75.3	78.4	80.7	82.5	DX3-015
				49.4	67.0	79.1	88.1	95.0	100.4	104.5	107.6	109.9	DX3-020
				61.8	83.8	98.9	110.2	118.8	125.5	130.6	134.5	137.4	DX3-025

Condensing temperature (°C)	R404A			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
60	15.6	15.7	15.6	15.4	15.2	14.8	14.4	13.9	13.4	12.8	12.2	11.5	DX3-008
	19.5	19.6	19.5	19.3	19.0	18.6	18.1	17.4	16.8	16.0	15.3	14.4	DX3-010
	23.4	23.5	23.5	23.2	22.8	22.3	21.7	20.9	20.1	19.2	18.3	17.3	DX3-012
	29.3	29.4	29.3	29.0	28.5	27.9	27.0	26.1	25.1	24.0	22.9	21.6	DX3-015
	39.0	39.3	39.1	38.7	38.0	37.2	36.1	34.9	33.5	32.1	30.5	28.9	DX3-020
	48.8	49.0	48.9	48.4	47.5	46.4	45.1	43.6	41.9	40.1	38.1	36.0	DX3-025
55	16.6	16.9	17.0	17.0	16.8	16.6	16.2	15.8	15.3	14.8	14.3	13.6	DX3-008
	20.8	21.2	21.3	21.2	21.0	20.7	20.3	19.8	19.2	18.6	17.9	17.1	DX3-010
	25.0	25.4	25.5	25.4	25.2	24.9	24.4	23.8	23.0	22.3	21.4	20.5	DX3-012
	31.2	31.7	31.9	31.8	31.5	31.1	30.5	29.7	28.8	27.8	26.7	25.6	DX3-015
	41.6	42.3	42.5	42.5	42.1	41.5	40.6	39.6	38.4	37.1	35.7	34.2	DX3-020
	52.0	52.9	53.2	53.1	52.6	51.8	50.8	49.5	48.0	46.4	44.6	42.7	DX3-025
50	18.0	18.4	18.6	18.7	18.6	18.5	18.2	17.8	17.4	16.9	16.4	15.8	DX3-008
	22.6	23.0	23.3	23.4	23.3	23.1	22.8	22.3	21.8	21.2	20.5	19.8	DX3-010
	27.0	27.6	28.0	28.1	28.0	27.7	27.3	26.8	26.1	25.4	24.6	23.8	DX3-012
	33.8	34.6	35.0	35.1	35.0	34.7	34.2	33.5	32.7	31.8	30.8	29.7	DX3-015
	45.1	46.1	46.7	46.8	46.7	46.3	45.6	44.7	43.6	42.4	41.1	39.6	DX3-020
	56.4	57.6	58.3	58.5	58.3	57.8	57.0	55.9	54.5	53.0	51.3	49.5	DX3-025
45	16.9	17.7	18.2	18.4	18.6	18.5	18.4	18.2	17.9	17.5	17.1	16.6	DX3-008
	21.2	22.1	22.7	23.1	23.3	23.2	23.1	22.8	22.4	21.9	21.4	20.8	DX3-010
	25.4	26.5	27.2	27.7	27.9	27.9	27.7	27.3	26.9	26.3	25.7	24.9	DX3-012
	31.8	33.1	34.0	34.6	34.8	34.8	34.6	34.2	33.6	32.9	32.1	31.1	DX3-015
	42.4	44.2	45.4	46.1	46.5	46.4	46.1	45.6	44.8	43.9	42.8	41.6	DX3-020
	53.0	55.2	56.7	57.7	58.1	58.1	57.7	57.0	56.0	54.8	53.5	51.9	DX3-025
40	16.2	17.2	18.0	18.5	18.8	19.0	19.0	18.8	18.6	18.3	18.0	17.6	DX3-008
	20.3	21.6	22.6	23.2	23.5	23.7	23.7	23.6	23.3	23.0	22.5	22.0	DX3-010
	24.4	25.9	27.0	27.8	28.2	28.4	28.4	28.3	28.0	27.5	27.0	26.4	DX3-012
	30.5	32.4	33.8	34.7	35.3	35.6	35.6	35.4	35.0	34.4	33.7	33.0	DX3-015
	40.7	43.3	45.1	46.3	47.1	47.4	47.4	47.2	46.7	45.9	45.0	43.9	DX3-020
	50.8	54.1	56.4	57.9	58.9	59.3	59.3	59.0	58.3	57.4	56.3	54.9	DX3-025
35	14.9	16.3	17.4	18.2	18.6	19.0	19.1	19.1	19.0	18.8	18.5	18.2	DX3-008
	18.7	20.5	21.8	22.7	23.4	23.7	24.0	24.0	23.8	23.6	23.2	22.8	DX3-010
	22.4	24.6	26.1	27.3	28.0	28.5	28.7	28.7	28.6	28.3	27.9	27.3	DX3-012
	28.0	30.7	32.7	34.1	35.0	35.6	35.9	35.9	35.7	35.3	34.8	34.2	DX3-015
	37.3	40.9	43.6	45.5	46.7	47.5	47.9	47.9	47.7	47.2	46.4	45.6	DX3-020
	46.7	51.2	54.5	56.8	58.4	59.4	59.8	59.9	59.6	58.9	58.1	57.0	DX3-025

Condensing temperature (°C)	R404A		Extended capacity (kW)										Valve type
			Evaporating temperature (°C)										
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
30	12.8	14.8	16.3	17.4	18.1	18.6	19.0	19.1	19.1	19.0	18.8	18.6	DX3-008
	16.0	18.6	20.4	21.7	22.7	23.3	23.7	23.9	24.0	23.8	23.6	23.3	DX3-010
	19.2	22.3	24.5	26.1	27.2	28.0	28.4	28.7	28.7	28.6	28.3	27.9	DX3-012
	24.0	27.8	30.6	32.6	34.0	35.0	35.5	35.8	35.9	35.7	35.4	34.9	DX3-015
	32.0	37.1	40.8	43.5	45.4	46.7	47.4	47.8	47.9	47.6	47.2	46.5	DX3-020
	40.0	46.4	51.0	54.3	56.7	58.3	59.3	59.8	59.8	59.5	58.9	58.1	DX3-025
25	9.3	12.5	14.6	16.1	17.1	17.9	18.4	18.7	18.9	18.9	18.8	18.6	DX3-008
	11.7	15.6	18.3	20.1	21.5	22.4	23.1	23.5	23.7	23.7	23.6	23.4	DX3-010
	14.0	18.7	21.9	24.2	25.8	26.9	27.7	28.1	28.4	28.4	28.3	28.0	DX3-012
	17.5	23.5	27.4	30.2	32.2	33.6	34.6	35.2	35.5	35.5	35.4	35.0	DX3-015
	23.4	31.3	36.5	40.3	42.9	44.8	46.1	46.9	47.3	47.4	47.2	46.7	DX3-020
	29.2	39.1	45.7	50.4	53.7	56.1	57.7	58.7	59.1	59.2	59.0	58.4	DX3-025
20		8.8	12.1	14.2	15.7	16.8	17.6	18.0	18.4	18.5	18.6	18.5	DX3-008
		11.0	15.1	17.8	19.7	21.0	22.0	22.6	23.0	23.2	23.3	23.2	DX3-010
		13.2	18.1	21.3	23.6	25.2	26.4	27.1	27.6	27.9	27.9	27.8	DX3-012
		16.5	22.7	26.7	29.5	31.5	33.0	33.9	34.5	34.8	34.9	34.7	DX3-015
		22.0	30.2	35.6	39.4	42.1	43.9	45.2	46.0	46.4	46.5	46.3	DX3-020
		27.5	37.8	44.5	49.2	52.6	54.9	56.5	57.6	58.1	58.1	57.9	DX3-025
15			8.1	11.5	13.7	15.2	16.3	17.0	17.6	17.9	18.0	18.0	DX3-008
			10.1	14.4	17.2	19.0	20.4	21.4	22.0	22.4	22.6	22.6	DX3-010
			12.1	17.3	20.6	22.8	24.5	25.6	26.4	26.9	27.1	27.1	DX3-012
			15.1	21.6	25.7	28.6	30.6	32.0	33.0	33.6	33.9	33.9	DX3-015
			20.2	28.8	34.3	38.1	40.8	42.7	44.0	44.8	45.2	45.2	DX3-020
			25.3	36.0	42.9	47.6	51.0	53.4	55.0	56.0	56.5	56.6	DX3-025
10				7.2	10.8	13.0	14.6	15.6	16.4	16.9	17.2	17.4	DX3-008
				8.9	13.5	16.3	18.2	19.6	20.5	21.2	21.6	21.8	DX3-010
				10.7	16.2	19.6	21.9	23.5	24.6	25.4	25.9	26.1	DX3-012
				13.4	20.3	24.5	27.3	29.4	30.8	31.7	32.4	32.7	DX3-015
				17.9	27.0	32.6	36.5	39.2	41.1	42.4	43.2	43.5	DX3-020
				22.4	33.8	40.8	45.6	49.0	51.3	52.9	53.9	54.5	DX3-025

Condensing temperature (°C)	R507A			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
60	15.0	15.1	15.0	14.8	14.5	14.2	13.8	13.2	12.7	12.1	11.5	10.8	DX3-008
	18.7	18.8	18.7	18.5	18.2	17.7	17.2	16.6	15.9	15.2	14.4	13.6	DX3-010
	22.5	22.6	22.5	22.2	21.8	21.3	20.6	19.9	19.1	18.2	17.3	16.3	DX3-012
	28.1	28.2	28.1	27.7	27.2	26.6	25.8	24.9	23.8	22.7	21.5	20.3	DX3-015
	37.4	37.6	37.4	37.0	36.3	35.4	34.4	33.1	31.8	30.3	28.7	27.1	DX3-020
	46.8	47.0	46.8	46.3	45.4	44.3	42.9	41.4	39.7	37.9	35.9	33.9	DX3-025
55	16.1	16.4	16.5	16.4	16.3	16.0	15.7	15.3	14.8	14.3	13.7	13.1	DX3-008
	20.2	20.5	20.6	20.5	20.3	20.0	19.6	19.1	18.5	17.8	17.1	16.3	DX3-010
	24.2	24.6	24.7	24.7	24.4	24.0	23.5	22.9	22.2	21.4	20.5	19.6	DX3-012
	30.2	30.7	30.9	30.8	30.5	30.0	29.4	28.6	27.7	26.7	25.7	24.5	DX3-015
	40.3	40.9	41.1	41.0	40.6	40.0	39.2	38.1	37.0	35.6	34.2	32.7	DX3-020
	50.4	51.2	51.4	51.3	50.8	50.0	49.0	47.7	46.2	44.6	42.8	40.9	DX3-025
50	16.7	17.1	17.3	17.5	17.5	17.3	17.1	16.8	16.3	15.9	15.4	14.8	DX3-008
	20.8	21.4	21.7	21.9	21.8	21.7	21.4	21.0	20.5	19.9	19.2	18.6	DX3-010
	25.0	25.7	26.1	26.2	26.2	26.0	25.6	25.1	24.5	23.9	23.1	22.2	DX3-012
	31.2	32.1	32.6	32.8	32.7	32.4	32.0	31.4	30.6	29.8	28.8	27.8	DX3-015
	41.6	42.8	43.4	43.7	43.6	43.3	42.6	41.9	40.8	39.7	38.4	37.1	DX3-020
	52.0	53.5	54.3	54.6	54.5	54.1	53.3	52.3	51.1	49.6	48.1	46.3	DX3-025
45	16.6	17.3	17.8	18.0	18.2	18.2	18.0	17.8	17.5	17.1	16.7	16.2	DX3-008
	20.8	21.7	22.2	22.6	22.7	22.7	22.6	22.3	21.9	21.4	20.9	20.3	DX3-010
	24.9	26.0	26.7	27.1	27.3	27.3	27.1	26.7	26.2	25.7	25.0	24.3	DX3-012
	31.1	32.4	33.3	33.9	34.1	34.0	33.8	33.4	32.8	32.1	31.3	30.3	DX3-015
	41.5	43.3	44.4	45.1	45.4	45.4	45.1	44.5	43.7	42.8	41.7	40.4	DX3-020
	51.9	54.1	55.5	56.4	56.8	56.7	56.3	55.6	54.7	53.5	52.1	50.6	DX3-025
40	16.0	17.0	17.7	18.2	18.5	18.6	18.6	18.5	18.3	18.0	17.6	17.2	DX3-008
	20.0	21.2	22.2	22.8	23.1	23.3	23.3	23.1	22.9	22.5	22.0	21.5	DX3-010
	24.0	25.5	26.6	27.3	27.7	27.9	27.9	27.7	27.4	27.0	26.4	25.8	DX3-012
	29.9	31.8	33.2	34.1	34.6	34.9	34.9	34.7	34.3	33.7	33.0	32.2	DX3-015
	39.9	42.5	44.2	45.5	46.2	46.5	46.5	46.2	45.7	45.0	44.0	43.0	DX3-020
	49.9	53.1	55.3	56.8	57.8	58.2	58.1	57.8	57.1	56.2	55.0	53.7	DX3-025
35	14.7	16.1	17.2	17.9	18.4	18.7	18.8	18.8	18.7	18.5	18.3	17.9	DX3-008
	18.4	20.2	21.5	22.4	23.0	23.4	23.6	23.6	23.4	23.2	22.8	22.4	DX3-010
	22.1	24.2	25.8	26.9	27.6	28.0	28.3	28.3	28.1	27.8	27.4	26.9	DX3-012
	27.6	30.2	32.2	33.6	34.5	35.0	35.3	35.3	35.1	34.7	34.2	33.5	DX3-015
	36.8	40.3	42.9	44.7	46.0	46.7	47.0	47.1	46.8	46.3	45.6	44.7	DX3-020
	46.0	50.4	53.6	55.9	57.5	58.4	58.8	58.8	58.5	57.9	57.0	55.9	DX3-025

Condensing temperature (°C)	R507A			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
30	12.7	14.7	16.1	17.2	17.9	18.4	18.7	18.8	18.8	18.8	18.6	18.3	DX3-008
	15.9	18.4	20.2	21.5	22.4	23.0	23.4	23.6	23.6	23.5	23.2	22.9	DX3-010
	19.0	22.0	24.2	25.8	26.9	27.6	28.1	28.3	28.3	28.2	27.9	27.5	DX3-012
	23.7	27.5	30.2	32.2	33.6	34.5	35.1	35.3	35.4	35.2	34.8	34.3	DX3-015
	31.6	36.7	40.3	42.9	44.7	46.0	46.8	47.1	47.1	46.9	46.4	45.7	DX3-020
	39.6	45.9	50.4	53.6	55.9	57.5	58.5	58.9	59.0	58.6	58.0	57.2	DX3-025
25	9.3	12.4	14.5	16.0	17.0	17.7	18.3	18.5	18.7	18.7	18.6	18.4	DX3-008
	11.7	15.5	18.1	19.9	21.2	22.2	22.8	23.2	23.4	23.4	23.3	23.1	DX3-010
	14.0	18.6	21.7	23.9	25.5	26.6	27.4	27.8	28.0	28.1	28.0	27.7	DX3-012
	17.5	23.3	27.1	29.9	31.8	33.3	34.2	34.8	35.0	35.1	34.9	34.5	DX3-015
	23.3	31.0	36.2	39.8	42.5	44.3	45.6	46.4	46.7	46.8	46.5	46.1	DX3-020
	29.1	38.8	45.2	49.8	53.1	55.4	57.0	57.9	58.4	58.5	58.2	57.6	DX3-025
20		8.8	12.0	14.1	15.6	16.7	17.4	17.9	18.2	18.4	18.4	18.3	DX3-008
		11.0	15.0	17.7	19.5	20.8	21.8	22.4	22.8	23.0	23.0	22.9	DX3-010
		13.2	18.1	21.2	23.4	25.0	26.1	26.9	27.3	27.6	27.6	27.5	DX3-012
		16.5	22.5	26.5	29.3	31.2	32.6	33.6	34.2	34.4	34.5	34.3	DX3-015
		22.0	30.0	35.3	39.0	41.6	43.5	44.8	45.5	45.9	46.0	45.7	DX3-020
		27.5	37.6	44.1	48.8	52.1	54.4	56.0	56.9	57.4	57.5	57.2	DX3-025
15			8.1	11.5	13.7	15.2	16.2	16.9	17.5	17.8	17.9	17.9	DX3-008
			10.2	14.4	17.0	18.9	20.3	21.2	21.8	22.2	22.4	22.4	DX3-010
			12.2	17.3	20.5	22.7	24.3	25.4	26.2	26.6	26.9	26.9	DX3-012
			15.2	21.5	25.6	28.3	30.4	31.8	32.7	33.3	33.6	33.6	DX3-015
			20.3	28.7	34.1	37.8	40.4	42.3	43.6	44.3	44.7	44.8	DX3-020
			25.4	35.9	42.6	47.3	50.6	52.9	54.5	55.5	55.9	56.0	DX3-025
10				7.3	10.8	13.0	14.5	15.6	16.3	16.8	17.1	17.3	DX3-008
				9.1	13.5	16.3	18.2	19.5	20.4	21.0	21.4	21.6	DX3-010
				10.9	16.3	19.5	21.8	23.4	24.5	25.2	25.7	25.9	DX3-012
				13.6	20.3	24.4	27.2	29.2	30.6	31.5	32.1	32.4	DX3-015
				18.2	27.1	32.5	36.3	38.9	40.8	42.0	42.8	43.2	DX3-020
				22.7	33.8	40.7	45.4	48.7	51.0	52.6	53.5	54.0	DX3-025

Condensing temperature (°C)	R449A			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
60	24.3	24.5	24.6	24.6	24.4	24.2	23.8	23.4	22.9	22.3	21.7	21.0	DX3-008
	30.3	30.6	30.8	30.7	30.5	30.2	29.7	29.2	28.6	27.8	27.1	26.2	DX3-010
	36.4	36.8	36.9	36.9	36.7	36.2	35.7	35.1	34.3	33.4	32.5	31.5	DX3-012
	45.5	46.0	46.2	46.1	45.8	45.3	44.6	43.8	42.9	41.8	40.6	39.4	DX3-015
	60.6	61.3	61.6	61.5	61.1	60.4	59.5	58.5	57.2	55.7	54.2	52.5	DX3-020
	75.8	76.6	76.9	76.8	76.3	75.5	74.4	73.0	71.4	69.6	67.7	65.6	DX3-025
55	24.9	25.3	25.6	25.7	25.7	25.5	25.3	24.9	24.5	23.9	23.4	22.8	DX3-008
	31.0	31.6	31.9	32.1	32.1	31.9	31.5	31.1	30.5	29.9	29.2	28.4	DX3-010
	37.3	38.0	38.4	38.5	38.5	38.2	37.8	37.3	36.7	35.9	35.1	34.1	DX3-012
	46.6	47.5	48.0	48.2	48.1	47.8	47.3	46.6	45.8	44.9	43.8	42.7	DX3-015
	62.2	63.3	64.0	64.2	64.1	63.7	63.1	62.2	61.1	59.8	58.4	56.9	DX3-020
	77.7	79.1	79.9	80.2	80.1	79.7	78.8	77.7	76.4	74.8	73.0	71.1	DX3-025
50	24.9	25.6	26.0	26.3	26.4	26.4	26.2	25.9	25.6	25.2	24.6	24.1	DX3-008
	31.1	31.9	32.5	32.8	33.0	32.9	32.7	32.4	31.9	31.4	30.8	30.1	DX3-010
	37.4	38.4	39.1	39.4	39.6	39.5	39.3	38.9	38.4	37.7	37.0	36.1	DX3-012
	46.7	47.9	48.8	49.3	49.5	49.4	49.1	48.6	47.9	47.1	46.2	45.2	DX3-015
	62.3	63.9	65.1	65.7	66.0	65.9	65.5	64.8	63.9	62.8	61.6	60.2	DX3-020
	77.8	79.9	81.3	82.1	82.4	82.3	81.8	81.0	79.9	78.5	77.0	75.3	DX3-025
45	24.4	25.3	26.0	26.4	26.7	26.8	26.7	26.6	26.3	25.9	25.5	25.0	DX3-008
	30.5	31.7	32.5	33.0	33.3	33.4	33.4	33.2	32.9	32.4	31.9	31.3	DX3-010
	36.6	38.0	39.0	39.7	40.0	40.2	40.1	39.9	39.4	38.9	38.3	37.5	DX3-012
	45.8	47.5	48.7	49.6	50.0	50.2	50.1	49.8	49.3	48.7	47.9	46.9	DX3-015
	61.0	63.3	65.0	66.1	66.7	66.9	66.8	66.4	65.8	64.9	63.8	62.6	DX3-020
	76.3	79.2	81.2	82.6	83.3	83.7	83.5	83.0	82.2	81.1	79.8	78.2	DX3-025
40	23.4	24.6	25.5	26.2	26.6	26.8	26.9	26.8	26.7	26.4	26.0	25.6	DX3-008
	29.2	30.7	31.9	32.7	33.2	33.5	33.6	33.5	33.3	33.0	32.6	32.0	DX3-010
	35.0	36.9	38.2	39.2	39.9	40.2	40.4	40.3	40.0	39.6	39.1	38.5	DX3-012
	43.8	46.1	47.8	49.0	49.8	50.3	50.4	50.3	50.0	49.5	48.9	48.1	DX3-015
	58.4	61.5	63.7	65.4	66.4	67.0	67.3	67.1	66.7	66.0	65.2	64.1	DX3-020
	73.0	76.8	79.7	81.7	83.0	83.8	84.0	83.9	83.3	82.5	81.5	80.1	DX3-025
35	21.7	23.3	24.5	25.4	26.0	26.5	26.7	26.8	26.7	26.6	26.3	25.9	DX3-008
	27.1	29.1	30.6	31.8	32.6	33.1	33.4	33.4	33.4	33.2	32.8	32.4	DX3-010
	32.6	35.0	36.8	38.2	39.1	39.7	40.1	40.2	40.1	39.8	39.4	38.9	DX3-012
	40.7	43.7	46.0	47.7	48.9	49.6	50.1	50.2	50.1	49.8	49.3	48.6	DX3-015
	54.3	58.3	61.3	63.6	65.2	66.2	66.8	67.0	66.8	66.4	65.7	64.9	DX3-020
	67.8	72.9	76.7	79.5	81.4	82.7	83.4	83.7	83.5	83.0	82.2	81.1	DX3-025



Condensing temperature (°C)	R449A		Extended capacity (kW)										Valve type
			Evaporating temperature (°C)										
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
30	19.4	21.5	23.1	24.3	25.2	25.8	26.2	26.4	26.5	26.4	26.2	25.9	DX3-008
	24.1	26.9	28.9	30.4	31.4	32.2	32.7	33.0	33.0	33.0	32.8	32.4	DX3-010
	29.0	32.2	34.6	36.4	37.8	38.7	39.3	39.6	39.7	39.6	39.3	38.9	DX3-012
	36.3	40.3	43.3	45.5	47.2	48.3	49.0	49.5	49.6	49.5	49.1	48.7	DX3-015
	48.3	53.7	57.7	60.7	62.9	64.4	65.4	66.0	66.1	66.0	65.5	64.9	DX3-020
	60.4	67.1	72.2	75.9	78.6	80.5	81.8	82.4	82.6	82.4	81.9	81.1	DX3-025
25	16.0	18.9	21.1	22.7	23.8	24.7	25.3	25.7	25.9	25.9	25.8	25.7	DX3-008
	20.0	23.7	26.3	28.3	29.8	30.8	31.6	32.1	32.3	32.4	32.3	32.1	DX3-010
	24.0	28.4	31.7	34.0	35.8	37.1	37.9	38.5	38.8	38.9	38.8	38.5	DX3-012
	29.9	35.5	39.6	42.5	44.7	46.3	47.4	48.1	48.5	48.6	48.5	48.2	DX3-015
	39.9	47.4	52.7	56.7	59.6	61.7	63.2	64.2	64.7	64.8	64.7	64.2	DX3-020
	49.9	59.2	65.9	70.8	74.5	77.2	79.0	80.2	80.8	81.0	80.8	80.2	DX3-025
20	10.9	15.5	18.4	20.5	22.1	23.3	24.0	24.6	25.0	25.2	25.2	25.2	DX3-008
	13.5	19.3	23.0	25.6	27.6	29.0	30.0	30.8	31.2	31.5	31.5	31.4	DX3-010
	16.3	23.1	27.6	30.8	33.1	34.9	36.1	36.9	37.5	37.8	37.8	37.7	DX3-012
	20.3	28.9	34.5	38.5	41.4	43.5	45.1	46.2	46.8	47.2	47.3	47.1	DX3-015
	27.1	38.5	46.0	51.3	55.2	58.1	60.1	61.6	62.5	62.9	63.0	62.9	DX3-020
	33.9	48.2	57.5	64.1	69.0	72.6	75.2	76.9	78.1	78.7	78.8	78.6	DX3-025
15		10.0	14.7	17.7	19.8	21.3	22.5	23.3	23.8	24.2	24.3	24.4	DX3-008
		12.5	18.4	22.1	24.7	26.7	28.0	29.1	29.7	30.2	30.4	30.4	DX3-010
		15.0	22.1	26.5	29.7	32.0	33.7	34.9	35.7	36.2	36.5	36.5	DX3-012
		18.7	27.6	33.2	37.1	40.0	42.1	43.6	44.6	45.2	45.6	45.6	DX3-015
		25.0	36.8	44.2	49.5	53.3	56.1	58.1	59.5	60.3	60.8	60.9	DX3-020
		31.2	45.9	55.2	61.8	66.6	70.1	72.6	74.4	75.4	76.0	76.1	DX3-025
10			8.9	13.8	16.8	18.9	20.4	21.5	22.3	22.8	23.1	23.3	DX3-008
			11.1	17.2	21.0	23.6	25.5	26.9	27.8	28.5	28.9	29.1	DX3-010
			13.4	20.7	25.2	28.4	30.6	32.3	33.4	34.2	34.7	34.9	DX3-012
			16.7	25.9	31.5	35.4	38.3	40.3	41.8	42.7	43.4	43.7	DX3-015
			22.3	34.5	42.0	47.2	51.0	53.8	55.7	57.0	57.8	58.2	DX3-020
			27.8	43.1	52.5	59.0	63.8	67.2	69.6	71.2	72.3	72.7	DX3-025

Condensing temperature (°C)	R448A			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
60	24.8	25.1	25.2	25.2	25.0	24.8	24.4	24.0	23.4	22.9	22.3	21.6	DX3-008
	30.9	31.3	31.4	31.4	31.2	30.9	30.5	29.9	29.3	28.6	27.8	26.9	DX3-010
	37.1	37.6	37.7	37.7	37.5	37.1	36.5	35.9	35.1	34.3	33.4	32.3	DX3-012
	46.5	47.0	47.2	47.1	46.9	46.4	45.7	44.9	43.9	42.9	41.7	40.4	DX3-015
	61.9	62.6	62.9	62.8	62.4	61.8	60.9	59.8	58.6	57.1	55.6	53.9	DX3-020
	77.4	78.3	78.6	78.6	78.1	77.3	76.2	74.8	73.2	71.4	69.5	67.4	DX3-025
55	25.4	25.9	26.2	26.3	26.2	26.1	25.9	25.5	25.1	24.5	24.0	23.4	DX3-008
	31.7	32.3	32.6	32.8	32.8	32.6	32.2	31.8	31.3	30.6	29.9	29.2	DX3-010
	38.1	38.8	39.2	39.4	39.3	39.1	38.7	38.2	37.5	36.8	35.9	35.0	DX3-012
	47.6	48.5	49.0	49.2	49.1	48.9	48.4	47.7	46.9	46.0	44.9	43.8	DX3-015
	63.4	64.6	65.3	65.6	65.5	65.1	64.5	63.6	62.5	61.3	59.9	58.3	DX3-020
	79.4	80.8	81.6	82.0	81.9	81.4	80.6	79.5	78.2	76.6	74.8	72.9	DX3-025
50	25.4	26.1	26.6	26.9	27.0	27.0	26.8	26.5	26.2	25.7	25.3	24.7	DX3-008
	31.8	32.6	33.2	33.5	33.7	33.6	33.4	33.1	32.7	32.1	31.5	30.8	DX3-010
	38.1	39.2	39.8	40.2	40.4	40.4	40.1	39.7	39.2	38.6	37.8	37.0	DX3-012
	47.7	49.0	49.8	50.3	50.5	50.5	50.2	49.7	49.0	48.2	47.3	46.3	DX3-015
	63.5	65.2	66.4	67.1	67.3	67.3	66.9	66.2	65.4	64.3	63.1	61.7	DX3-020
	79.5	81.6	83.0	83.9	84.2	84.1	83.6	82.8	81.7	80.4	78.8	77.1	DX3-025
45	25.0	25.9	26.5	27.0	27.3	27.4	27.3	27.2	26.9	26.5	26.1	25.6	DX3-008
	31.1	32.3	33.1	33.7	34.0	34.1	34.1	33.9	33.6	33.2	32.6	32.0	DX3-010
	37.4	38.8	39.8	40.4	40.8	41.0	40.9	40.7	40.3	39.8	39.2	38.4	DX3-012
	46.7	48.5	49.7	50.6	51.1	51.3	51.2	50.9	50.4	49.8	49.0	48.0	DX3-015
	62.3	64.6	66.3	67.4	68.1	68.3	68.2	67.8	67.2	66.3	65.2	64.0	DX3-020
	77.9	80.8	82.9	84.3	85.1	85.4	85.3	84.8	84.0	82.9	81.6	80.0	DX3-025
40	23.9	25.1	26.1	26.7	27.2	27.4	27.5	27.4	27.3	27.0	26.7	26.3	DX3-008
	29.8	31.3	32.5	33.3	33.9	34.2	34.3	34.3	34.1	33.7	33.3	32.8	DX3-010
	35.8	37.7	39.0	40.0	40.7	41.0	41.2	41.1	40.9	40.5	40.0	39.3	DX3-012
	44.7	47.1	48.8	50.0	50.9	51.3	51.5	51.4	51.1	50.6	50.0	49.2	DX3-015
	59.6	62.7	65.0	66.7	67.8	68.4	68.7	68.5	68.1	67.4	66.6	65.5	DX3-020
	74.6	78.4	81.3	83.4	84.8	85.5	85.8	85.7	85.2	84.3	83.3	82.0	DX3-025
35	22.2	23.9	25.1	26.0	26.6	27.1	27.3	27.4	27.3	27.2	26.9	26.5	DX3-008
	27.7	29.8	31.3	32.4	33.2	33.8	34.1	34.1	34.1	33.9	33.6	33.1	DX3-010
	33.3	35.7	37.6	38.9	39.9	40.5	40.9	41.0	40.9	40.7	40.3	39.8	DX3-012
	41.6	44.7	47.0	48.7	49.9	50.7	51.1	51.3	51.2	50.9	50.4	49.7	DX3-015
	55.5	59.5	62.6	64.9	66.5	67.6	68.1	68.3	68.2	67.8	67.1	66.3	DX3-020
	69.4	74.5	78.3	81.1	83.1	84.5	85.2	85.4	85.3	84.8	83.9	82.9	DX3-025

Condensing temperature (°C)	R448A		Extended capacity (kW)										Valve type
			Evaporating temperature (°C)										
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
30	19.8	22.0	23.6	24.9	25.7	26.3	26.7	27.0	27.0	27.0	26.8	26.5	DX3-008
	24.8	27.5	29.5	31.0	32.1	32.9	33.4	33.7	33.7	33.7	33.4	33.1	DX3-010
	29.7	33.0	35.4	37.2	38.5	39.5	40.1	40.4	40.5	40.4	40.1	39.8	DX3-012
	37.1	41.2	44.3	46.5	48.2	49.3	50.1	50.5	50.6	50.5	50.2	49.7	DX3-015
	49.5	54.9	59.0	62.0	64.2	65.7	66.8	67.3	67.5	67.3	66.9	66.2	DX3-020
	61.9	68.7	73.7	77.5	80.3	82.2	83.5	84.2	84.4	84.2	83.7	82.9	DX3-025
25	16.4	19.4	21.6	23.2	24.4	25.2	25.9	26.2	26.4	26.5	26.4	26.3	DX3-008
	20.5	24.3	26.9	29.0	30.4	31.5	32.2	32.7	33.0	33.0	33.0	32.8	DX3-010
	24.7	29.1	32.4	34.7	36.5	37.8	38.7	39.3	39.6	39.7	39.6	39.3	DX3-012
	30.8	36.4	40.5	43.5	45.7	47.3	48.4	49.1	49.5	49.6	49.5	49.2	DX3-015
	41.1	48.6	53.9	57.9	60.9	63.0	64.5	65.5	66.0	66.1	66.0	65.5	DX3-020
	51.4	60.7	67.4	72.4	76.1	78.8	80.7	81.9	82.5	82.7	82.5	82.0	DX3-025
20	11.4	15.9	18.9	21.0	22.6	23.8	24.6	25.2	25.5	25.7	25.7	25.7	DX3-008
	14.2	19.9	23.6	26.2	28.2	29.6	30.7	31.4	31.9	32.1	32.2	32.1	DX3-010
	17.0	23.8	28.3	31.5	33.8	35.6	36.8	37.7	38.2	38.5	38.6	38.5	DX3-012
	21.3	29.8	35.4	39.4	42.3	44.5	46.1	47.1	47.8	48.2	48.3	48.1	DX3-015
	28.4	39.7	47.2	52.5	56.4	59.3	61.4	62.8	63.7	64.2	64.3	64.1	DX3-020
	35.5	49.7	58.9	65.6	70.5	74.1	76.7	78.6	79.7	80.3	80.4	80.2	DX3-025
15		10.6	15.2	18.2	20.3	21.8	23.0	23.8	24.3	24.6	24.9	24.9	DX3-008
		13.1	19.0	22.7	25.3	27.2	28.6	29.6	30.3	30.8	31.0	31.0	DX3-010
		15.8	22.8	27.2	30.4	32.7	34.4	35.6	36.4	36.9	37.2	37.3	DX3-012
		19.8	28.4	34.0	38.0	40.9	43.0	44.5	45.5	46.2	46.5	46.6	DX3-015
		26.3	37.9	45.4	50.6	54.5	57.3	59.3	60.7	61.6	62.0	62.1	DX3-020
		32.9	47.4	56.7	63.3	68.1	71.6	74.2	75.9	77.0	77.5	77.7	DX3-025
10			9.5	14.3	17.3	19.4	20.9	22.0	22.8	23.3	23.6	23.8	DX3-008
			11.8	17.8	21.6	24.2	26.1	27.5	28.4	29.1	29.5	29.7	DX3-010
			14.2	21.4	25.9	29.0	31.3	32.9	34.1	34.9	35.4	35.6	DX3-012
			17.7	26.8	32.4	36.3	39.1	41.2	42.7	43.6	44.3	44.6	DX3-015
			23.7	35.7	43.1	48.4	52.2	54.9	56.8	58.2	59.0	59.4	DX3-020
			29.6	44.6	54.0	60.5	65.2	68.7	71.1	72.7	73.8	74.3	DX3-025

Condensing temperature (°C)	R450A			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
60	19.0	19.1	19.1	19.0	18.8	18.4	18.0	17.6	17.1	16.5	15.9	15.4	DX3-008
	23.7	23.9	23.9	23.7	23.4	23.0	22.5	21.9	21.3	20.6	19.9	19.1	DX3-010
	28.5	28.7	28.6	28.4	28.1	27.6	27.0	26.3	25.6	24.7	23.9	22.9	DX3-012
	35.7	35.9	35.8	35.5	35.1	34.5	33.7	32.9	32.0	30.9	29.8	28.7	DX3-015
	47.5	47.8	47.8	47.4	46.8	46.0	45.0	43.9	42.6	41.2	39.8	38.3	DX3-020
	59.5	59.8	59.7	59.3	58.5	57.5	56.3	54.8	53.3	51.5	49.7	47.8	DX3-025
55	18.7	19.0	19.1	19.1	18.9	18.7	18.4	18.0	17.6	17.1	16.6	16.0	DX3-008
	23.3	23.7	23.8	23.8	23.6	23.3	23.0	22.5	21.9	21.3	20.7	20.0	DX3-010
	28.0	28.4	28.6	28.6	28.4	28.0	27.6	27.0	26.3	25.6	24.8	24.0	DX3-012
	35.0	35.5	35.7	35.7	35.5	35.0	34.4	33.7	32.9	32.0	31.0	30.0	DX3-015
	46.7	47.4	47.7	47.6	47.3	46.7	46.0	45.0	43.9	42.7	41.4	40.0	DX3-020
	58.4	59.3	59.6	59.6	59.2	58.4	57.4	56.3	54.9	53.4	51.8	50.0	DX3-025
50	18.0	18.5	18.8	18.9	18.9	18.8	18.5	18.2	17.9	17.5	17.0	16.5	DX3-008
	22.4	23.0	23.4	23.5	23.5	23.4	23.1	22.7	22.3	21.8	21.2	20.6	DX3-010
	26.9	27.7	28.1	28.3	28.3	28.1	27.7	27.3	26.8	26.1	25.4	24.7	DX3-012
	33.7	34.6	35.1	35.3	35.3	35.1	34.7	34.1	33.5	32.7	31.8	30.9	DX3-015
	44.9	46.1	46.8	47.1	47.1	46.8	46.3	45.5	44.6	43.6	42.4	41.2	DX3-020
	56.2	57.7	58.6	58.9	58.9	58.5	57.8	56.9	55.8	54.5	53.0	51.5	DX3-025
45	16.9	17.6	18.1	18.4	18.5	18.5	18.4	18.2	17.9	17.6	17.2	16.7	DX3-008
	21.1	22.0	22.6	22.9	23.1	23.1	23.0	22.7	22.4	21.9	21.4	20.9	DX3-010
	25.3	26.4	27.1	27.5	27.7	27.7	27.6	27.2	26.8	26.3	25.7	25.1	DX3-012
	31.6	33.0	33.9	34.4	34.7	34.7	34.4	34.1	33.5	32.9	32.2	31.3	DX3-015
	42.2	44.0	45.2	45.9	46.2	46.2	46.0	45.4	44.7	43.9	42.9	41.8	DX3-020
	52.7	55.0	56.5	57.4	57.8	57.8	57.4	56.8	55.9	54.8	53.6	52.2	DX3-025
40	15.4	16.4	17.1	17.6	17.9	18.0	18.0	17.9	17.7	17.5	17.1	16.8	DX3-008
	19.1	20.4	21.3	22.0	22.3	22.5	22.5	22.4	22.1	21.8	21.4	20.9	DX3-010
	23.0	24.5	25.6	26.4	26.8	27.0	27.0	26.8	26.5	26.2	25.7	25.1	DX3-012
	28.7	30.7	32.0	33.0	33.5	33.8	33.8	33.6	33.2	32.7	32.1	31.4	DX3-015
	38.3	40.9	42.7	44.0	44.7	45.0	45.0	44.7	44.3	43.6	42.8	41.9	DX3-020
	47.9	51.2	53.4	55.0	55.9	56.3	56.3	56.0	55.4	54.5	53.5	52.3	DX3-025
35	13.2	14.7	15.8	16.5	17.0	17.3	17.4	17.4	17.4	17.1	16.9	16.6	DX3-008
	16.5	18.4	19.7	20.6	21.2	21.6	21.7	21.7	21.6	21.4	21.1	20.7	DX3-010
	19.8	22.0	23.6	24.7	25.4	25.9	26.1	26.1	25.9	25.7	25.3	24.8	DX3-012
	24.8	27.5	29.5	30.9	31.8	32.3	32.6	32.6	32.4	32.1	31.6	31.1	DX3-015
	33.0	36.7	39.4	41.2	42.4	43.1	43.5	43.5	43.3	42.8	42.2	41.4	DX3-020
	41.3	45.9	49.2	51.5	53.0	53.9	54.4	54.4	54.1	53.5	52.7	51.8	DX3-025

Condensing temperature (°C)	R450A			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
30	10.2	12.5	13.9	15.0	15.8	16.2	16.5	16.7	16.7	16.6	16.5	16.2	DX3-008
	12.7	15.5	17.4	18.7	19.7	20.3	20.6	20.8	20.8	20.7	20.5	20.2	DX3-010
	15.3	18.6	20.9	22.5	23.6	24.3	24.7	25.0	25.0	24.9	24.6	24.3	DX3-012
	19.1	23.3	26.1	28.1	29.5	30.4	31.0	31.2	31.2	31.1	30.8	30.3	DX3-015
	25.5	31.1	34.9	37.5	39.3	40.5	41.3	41.6	41.7	41.4	41.0	40.5	DX3-020
	31.9	38.8	43.6	46.9	49.2	50.7	51.6	52.0	52.1	51.8	51.3	50.6	DX3-025
25	4.9	9.2	11.5	13.1	14.1	14.9	15.4	15.7	15.8	15.8	15.8	15.6	DX3-008
	6.2	11.4	14.4	16.3	17.6	18.6	19.2	19.5	19.7	19.7	19.7	19.5	DX3-010
	7.4	13.8	17.3	19.6	21.2	22.3	23.0	23.5	23.7	23.7	23.6	23.4	DX3-012
	9.3	17.2	21.6	24.5	26.5	27.8	28.8	29.3	29.6	29.6	29.5	29.2	DX3-015
	12.3	22.9	28.8	32.6	35.3	37.2	38.4	39.1	39.5	39.5	39.4	39.0	DX3-020
	15.4	28.7	36.0	40.8	44.2	46.4	48.0	48.9	49.4	49.4	49.2	48.7	DX3-025
20		2.5	7.9	10.5	12.0	13.1	13.9	14.4	14.7	14.8	14.9	14.8	DX3-008
		3.2	9.9	13.0	15.0	16.4	17.3	17.9	18.3	18.5	18.6	18.5	DX3-010
		3.8	11.9	15.6	18.0	19.7	20.8	21.5	22.0	22.2	22.2	22.2	DX3-012
		4.8	14.9	19.5	22.5	24.6	26.0	26.9	27.5	27.8	27.8	27.7	DX3-015
		6.3	19.9	26.1	30.1	32.8	34.6	35.9	36.7	37.0	37.1	37.0	DX3-020
		7.9	24.9	32.6	37.6	41.0	43.3	44.9	45.8	46.3	46.4	46.2	DX3-025
15				6.4	9.1	10.8	12.0	12.7	13.3	13.6	13.7	13.8	DX3-008
				8.0	11.4	13.5	14.9	15.9	16.5	16.9	17.1	17.2	DX3-010
				9.6	13.7	16.2	17.9	19.1	19.8	20.3	20.6	20.6	DX3-012
				12.0	17.2	20.3	22.4	23.9	24.8	25.4	25.7	25.8	DX3-015
				16.0	22.9	27.1	29.9	31.8	33.1	33.9	34.3	34.4	DX3-020
				20.0	28.6	33.9	37.4	39.8	41.4	42.3	42.9	43.0	DX3-025
10					4.3	7.6	9.5	10.7	11.5	12.0	12.3	12.5	DX3-008
					5.3	9.5	11.8	13.3	14.3	14.9	15.4	15.6	DX3-010
					6.4	11.4	14.2	15.9	17.1	17.9	18.4	18.7	DX3-012
					8.0	14.3	17.7	19.9	21.4	22.4	23.0	23.4	DX3-015
					10.6	19.0	23.6	26.6	28.6	29.9	30.7	31.2	DX3-020
					13.3	23.8	29.5	33.3	35.8	37.4	38.4	39.0	DX3-025

Condensing temperature (°C)	R513A			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
60	17.1	17.2	17.1	16.9	16.6	16.3	15.9	15.4	14.9	14.3	13.7	13.0	DX3-008
	21.4	21.5	21.4	21.2	20.9	20.5	19.9	19.3	18.6	17.9	17.2	16.4	DX3-010
	25.7	25.8	25.7	25.4	25.0	24.5	23.9	23.1	22.3	21.5	20.6	19.6	DX3-012
	32.1	32.2	32.1	31.8	31.3	30.6	29.8	28.9	28.0	26.9	25.7	24.6	DX3-015
	42.8	43.0	42.8	42.4	41.7	40.8	39.8	38.6	37.3	35.8	34.3	32.8	DX3-020
	53.5	53.7	53.5	53.0	52.1	51.0	49.7	48.2	46.5	44.8	42.9	40.9	DX3-025
55	17.1	17.3	17.4	17.4	17.2	17.0	16.6	16.2	15.8	15.2	14.7	14.1	DX3-008
	21.4	21.8	21.8	21.8	21.6	21.3	20.8	20.3	19.8	19.1	18.4	17.7	DX3-010
	25.7	26.1	26.2	26.1	25.8	25.5	25.0	24.4	23.7	22.9	22.1	21.2	DX3-012
	32.1	32.6	32.7	32.6	32.3	31.9	31.2	30.5	29.6	28.7	27.6	26.5	DX3-015
	42.8	43.4	43.7	43.5	43.1	42.5	41.6	40.6	39.5	38.2	36.8	35.4	DX3-020
	53.5	54.3	54.5	54.4	53.9	53.1	52.0	50.8	49.3	47.8	46.0	44.2	DX3-025
50	16.7	17.2	17.4	17.5	17.4	17.3	17.1	16.8	16.4	15.9	15.4	14.9	DX3-008
	21.0	21.5	21.8	22.0	21.9	21.7	21.4	21.0	20.5	20.0	19.4	18.7	DX3-010
	25.1	25.8	26.1	26.3	26.2	26.0	25.7	25.2	24.6	24.0	23.2	22.4	DX3-012
	31.4	32.3	32.7	32.9	32.8	32.5	32.1	31.5	30.8	29.9	29.0	28.0	DX3-015
	41.9	43.0	43.6	43.9	43.8	43.4	42.8	42.0	41.0	39.9	38.7	37.4	DX3-020
	52.4	53.7	54.5	54.8	54.7	54.2	53.5	52.5	51.3	49.9	48.4	46.7	DX3-025
45	16.0	16.6	17.1	17.3	17.4	17.4	17.3	17.0	16.8	16.4	16.0	15.5	DX3-008
	20.0	20.9	21.4	21.8	21.9	21.8	21.7	21.4	21.0	20.5	20.0	19.4	DX3-010
	24.0	25.0	25.7	26.0	26.2	26.1	25.9	25.6	25.2	24.6	24.0	23.3	DX3-012
	30.0	31.2	32.1	32.6	32.8	32.7	32.5	32.0	31.5	30.8	30.0	29.1	DX3-015
	40.0	41.7	42.8	43.4	43.7	43.6	43.3	42.7	41.9	41.0	40.0	38.8	DX3-020
	49.9	52.1	53.4	54.3	54.6	54.5	54.1	53.4	52.4	51.3	49.9	48.5	DX3-025
40	14.7	15.7	16.4	16.9	17.1	17.2	17.2	17.1	16.9	16.5	16.2	15.8	DX3-008
	18.4	19.7	20.5	21.1	21.5	21.6	21.6	21.4	21.1	20.8	20.3	19.9	DX3-010
	22.1	23.6	24.6	25.3	25.7	25.9	25.8	25.6	25.3	24.9	24.4	23.8	DX3-012
	27.6	29.5	30.8	31.7	32.1	32.3	32.3	32.1	31.7	31.1	30.5	29.7	DX3-015
	36.9	39.4	41.1	42.2	42.9	43.2	43.1	42.8	42.3	41.5	40.7	39.7	DX3-020
	46.1	49.2	51.3	52.7	53.5	53.9	53.8	53.4	52.8	51.9	50.8	49.6	DX3-025
35	12.9	14.3	15.3	16.0	16.5	16.8	16.9	16.9	16.8	16.5	16.3	15.9	DX3-008
	16.2	18.0	19.2	20.1	20.7	21.0	21.1	21.1	21.0	20.7	20.4	20.0	DX3-010
	19.4	21.5	23.0	24.1	24.8	25.2	25.3	25.3	25.2	24.9	24.4	24.0	DX3-012
	24.3	26.9	28.8	30.1	31.0	31.5	31.7	31.7	31.5	31.1	30.6	29.9	DX3-015
	32.3	35.9	38.4	40.1	41.3	42.0	42.3	42.2	41.9	41.5	40.8	40.0	DX3-020
	40.4	44.8	48.0	50.1	51.6	52.4	52.8	52.7	52.4	51.8	50.9	49.9	DX3-025

Condensing temperature (°C)	R513A			Extended capacity (kW)									Valve type
				Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
30	10.3	12.4	13.8	14.8	15.5	16.0	16.3	16.4	16.4	16.3	16.1	15.8	DX3-008
	12.9	15.5	17.3	18.6	19.5	20.1	20.4	20.5	20.5	20.4	20.2	19.9	DX3-010
	15.4	18.6	20.8	22.3	23.3	24.0	24.4	24.6	24.6	24.5	24.2	23.8	DX3-012
	19.3	23.2	26.0	27.9	29.2	30.0	30.6	30.8	30.8	30.6	30.2	29.8	DX3-015
	25.7	31.0	34.6	37.2	38.9	40.1	40.7	41.1	41.1	40.8	40.3	39.7	DX3-020
	32.1	38.7	43.2	46.4	48.6	50.0	50.9	51.3	51.3	51.0	50.4	49.6	DX3-025
25	5.8	9.5	11.7	13.2	14.2	14.9	15.4	15.7	15.8	15.8	15.7	15.5	DX3-008
	7.3	12.0	14.7	16.5	17.8	18.7	19.3	19.6	19.8	19.8	19.7	19.5	DX3-010
	8.7	14.3	17.6	19.8	21.3	22.4	23.1	23.5	23.7	23.7	23.6	23.3	DX3-012
	10.9	17.9	22.0	24.8	26.7	28.0	28.9	29.4	29.6	29.7	29.5	29.2	DX3-015
	14.5	23.9	29.4	33.0	35.6	37.4	38.5	39.2	39.5	39.6	39.3	38.9	DX3-020
	18.1	29.9	36.7	41.3	44.5	46.7	48.1	49.0	49.4	49.4	49.1	48.6	DX3-025
20		4.4	8.6	10.9	12.4	13.5	14.2	14.7	14.9	15.1	15.1	15.0	DX3-008
		5.6	10.9	13.7	15.6	16.9	17.8	18.4	18.7	18.9	18.9	18.8	DX3-010
		6.7	13.0	16.4	18.7	20.2	21.3	22.0	22.4	22.6	22.7	22.5	DX3-012
		8.3	16.3	20.6	23.4	25.3	26.6	27.5	28.0	28.3	28.3	28.2	DX3-015
		11.1	21.7	27.4	31.2	33.8	35.5	36.7	37.4	37.7	37.8	37.6	DX3-020
		13.9	27.1	34.2	38.9	42.2	44.4	45.8	46.7	47.1	47.2	47.0	DX3-025
15			2.1	7.6	10.0	11.5	12.6	13.3	13.8	14.1	14.2	14.2	DX3-008
			2.7	9.5	12.5	14.5	15.8	16.7	17.3	17.7	17.8	17.9	DX3-010
			3.2	11.4	15.0	17.3	18.9	20.0	20.7	21.2	21.4	21.4	DX3-012
			4.0	14.2	18.8	21.7	23.7	25.0	25.9	26.4	26.7	26.8	DX3-015
			5.4	19.0	25.0	28.9	31.6	33.4	34.6	35.3	35.6	35.7	DX3-020
			6.7	23.7	31.3	36.1	39.4	41.7	43.2	44.1	44.5	44.6	DX3-025
10					6.2	8.9	10.5	11.6	12.3	12.8	13.1	13.2	DX3-008
					7.8	11.1	13.2	14.5	15.5	16.1	16.4	16.6	DX3-010
					9.4	13.4	15.8	17.4	18.5	19.2	19.7	19.9	DX3-012
					11.7	16.7	19.8	21.8	23.2	24.1	24.6	24.9	DX3-015
					15.6	22.3	26.3	29.0	30.9	32.1	32.8	33.2	DX3-020
					19.5	27.8	32.9	36.3	38.6	40.1	41.0	41.5	DX3-025



## DX3 + XEV22D Electric Expansion Valve Kit

The Emerson DX3 and XEV22D kit has bundled all necessary components for field installation of an electronic expansion valve solution. The kit has all the parts in one packaging which includes the Emerson DX3 series valve, XEV22D controller, temperature sensor, pressure sensor, stator, and the associated cables.

### Features

- Compatible with R22, R410A, R407C, R134a, R32, R404A, R507A, R448A, R449A, R450A and R513A
- Several kit offerings for a wide range of valves capacities
- XEV22D controller is pre-programmed for use with the included components.
- An RS485 link allows the XEV22D controller to connect (via Modbus®) to monitoring system.
- Optional external battery connection for XEC super-cap battery module which allows valve closure in case of power failure.
- Optional TF20D transformer
- All control components within the kit can be available as individual service part



DX3 Valve with stator and cable



XEV22D



PP11 Pressure sensor



NP4-67 Temp sensor

### Optional



XEC Battery module



TF20D Transformer

PCN	Product name	Description (Includes)	Note
098026	DX3 - 008 + XEV22D Bundle	<ul style="list-style-type: none"> <li>• DX3 valves (008, 010, 012, 015, 020, 025)</li> <li>• DX3-SU307 Stator Kit</li> <li>• XEV22D Superheat controller</li> <li>• NP4-67 Temperature sensor</li> <li>• PP11 Pressure sensor</li> </ul>	Standard bundle
098027	DX3 - 010 + XEV22D Bundle		
098028	DX3 - 012 + XEV22D Bundle		
098029	DX3 - 015 + XEV22D Bundle		
098030	DX3 - 020 + XEV22D Bundle		
098031	DX3 - 025 + XEV22D Bundle		
098023	DX3 - SU307 Stator kit	Stator IP67 Kit (12VDC coil with 3M cable, 2 O-ring, Screw cap)	Optional / After sales accessories
098025	XEV22D Controller	DIXELL SH Controller XEV-22D-1P1C0 V1.5G	
099306	NP4-67 Temp sensor	DIXELL Temperature sensor NP4-67 NTC 1.5M	
099307	PP11 Pressure sensor	DIXELL Pressure sensor PP11 4~20mA 2M	
067093	XEC Battery module	DIXELL Battery module XEC-00000	
067094	TF20D Transformer	DIXELL Transformer 20VA 230/24V	

*Parameter	Meaning	DX3 Feature	XEV22D Setting
tEu	Type of stepper motor (Bi-polar or Uni-polar)	Uni-Polar	UP
tEP	Pre-defined valve selection	Not in Pre-defined list	0
HFS	Kind of motor movement (half step or full step)	Half Step	HAF
LSt	Minimum number of steps	6 Steps	0
USt	Maximum number of steps	500 Steps	25
Est	Number of extra-steps of the valve	50 Steps	2
Sr	Step rate	50 Hz is recommended	50

\*These parameters should be adjusted as listed setting before connecting DX3 to XEV22D

# EXM/EXL Series electrical control valves

## For OEM use, stepper motor driven

### Features

- Unipolar stepper motor
- Bi-flow (same performance in both flow directions in term of capacity)
- High MOPD: 40 bar in normal flow direction
- Removable coils in two versions: 12VDC/24VDC
- Continuous modulation of mass flow, no stress (liquid hammering) in the refrigeration circuit
- Linear flow
- Resolution: 500 pulses (half steps) or 250 full steps
- Hermetic design
- Reliability: 225 millions pulses at continuous 40 bar differential pressure



EXM/EXL

Note: The valve is not released for refrigeration applications such as cold rooms and refrigeration display cabinets.

### Selection table

Valve series	Type	Description	Part no. *	Nominal capacity (kW)			Connections size / style
				R410A	R407C	R134a	
EXM	EXM-B0A	Valve less coil	800 399M	1.8	1.6	1.2	¼" ODF
	EXM-B0B	Valve less coil	800 400M	5.5	5.0	3.7	
	EXM-B0D	Valve less coil	800 401M	11.6	10.5	7.7	
	EXM-B0E	Valve less coil	800 402M	13.7	12.4	9.1	
	EXM-125	Coil 12VDC	800 403M	-	-	-	-
	EXM-24U	Coil 24VDC	800 415M	-	-	-	-
EXL	EXL-B1F	Valve less coil	800 405M	17.0	15.4	11.3	¼" ODF
	EXL-B1G	Valve less coil	800 406M	23.0	20.7	15.2	8 mm ODM
	EXL-125	Coil 12VDC	800 407M	-	-	-	-
	EXL-24U	Coil 24VDC	800 416M	-	-	-	-

Note: \*) Only Bulk packing in boxes of 10 identical pieces

The nominal capacity is based on the following conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Subcooling
R407C	+4°C (Dew Point)	+38°C Bubble Point / +43°C Dew Point	1K
R134a, R410A	+4°C	+38°C	1K

Note: For selection of other operating conditions, please use the "Controls Navigator" selection tool.

### Technical data

Max. allowable pressure PS	45 Bar	Full travel time	16.6 Seconds at 30 Pulse/Sec. 5.5 Seconds at 90 Pulse/Sec.
MOPD	40 Bar in normal flow direction	Reference position	Mechanical stop at fully close position
Temperature range TS	-30...+70°C (liquid refrigerant) -30...+60°C (ambient)	Total number of pulses	500 Half step (250 full step)
Stepper motor type	Uni-polar, constant voltage	Insulation class	EXM: A EXL: E
		Cable length	1m

# EXN Series electrical control valves

For OEM use, stepper motor driven

## Features

- Unipolar stepper motor
- Bi-flow with same capacity in normal and reverse flow direction
- MOPD: 36 bar in both flow directions
- Unipolar stepper motor with gear mechanism enabling Bi-flow performance at 36 bar differential pressure across the valve
- Removable coil: 12 VDC
- Continuous, linear modulation of mass flow
- High resolution: 2000 pulses (half steps) or 1000 full steps
- Hermetic design



EXN with Coil

## Selection table

Type	Description	Part no.	Nominal Capacity (kW)				Connections size / style
			R410A	R32	R134a	R407C	
EXN-B2K	Valve less coil	800421	34	50.6	22.2	30.7	1/2" ODF
EXN-B2L	Valve less coil	800422	42	62.5	28.8	37.9	1/2" ODF
EXN-125	Coil 12VDC	800420	-	-	-	-	-

The nominal capacity ( $Q_n$ ) is based on the following conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Subcooling
R410A, R134a, R32	+4°C	+38°C	1K
R407C	+4°C Dew point	+38°C Bubble / +43°C Sew Point	1K

Note: For selection of other operating conditions, please use the "Controls Navigator" selection tool.

## Technical data

MOPD (Maximum operating pressure differential)	36 Bar in normal flow 36 Bar in reverse flow
Max. Working pressure PS	45 Bar
Temperature range TS - liquid refrigerant - Ambient	-30...+70°C -30...+60°C
Stepper motor type	Uni-polar, constant voltage, 5 Wires
Supply voltage	12 VDC Coil: 12 V ± 10%

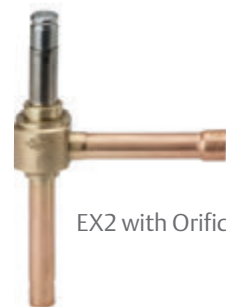
Total number of pulses	2000 half step (1000 Full Step)
Pulsing rate frequency (pulse/sec.)	100...200 Hz
Full travel time	20 seconds at 100 Hz 10 seconds at 200 Hz
Coil insulation class	A
Cable length	1 m
Electrical connection	JST XH connector, 5 pole Housing: XHP-5 Pin: SXH-001T-P0.6

## EX2 Series electronic expansion valves

Pulse width modulated with exchangeable orifices can be used with EC2 display case controllers

### Features

- Pulse width modulated
- Shut-off function eliminates the necessity of a separate solenoid valve
- Dampened plunger reduces noise effects of water hammer
- One valve body can be combined with 6 orifices to make 7 capacity ranges
- Long lifetime, high reliability
- Max. working pressure PS: 40 bar
- Medium temperature range TS: -40...+65°C



### Selection table

Type	Part no.	Description	Nominal capacity $Q_n$ at 100% open valve (kW)*								
			R134a	R22	R404A / R507	R407C	R448A	R449A	R450A	R513A	R1234ze
EX2-M00	801091	Valve less orifice 10 mm x 12 mm	13.3	17.2	12.1	18.7	17.2	16.8	11.7	12.0	10.4
EX2-I00	801090	Valve less orifice 3/8"x / 1/2"									
EXO-004	801089	Orifice 4	8.5	10.9	7.7	11.8	10.9	10.6	7.4	7.6	6.6
EXO-003	801088	Orifice 3	5.6	7.2	5.1	7.8	7.2	7.0	4.9	5.0	4.4
EXO-002	801087	Orifice 2	3.3	4.3	3.0	4.7	4.3	4.2	2.9	3.0	2.6
EXO-001	801086	Orifice 1	2.5	3.2	2.3	3.5	3.2	3.1	2.2	2.2	1.9
EXO-000	801085	Orifice 0	1.2	1.6	1.1	1.7	1.6	1.6	1.1	1.1	1.0
EXO-00X	801084	Orifice X	0.7	0.9	0.6	1.0	0.9	0.9	0.6	0.6	0.5

Note 1: \*) Orifice should be selected at maximum 80% of  $Q_n$  to allow covering the load fluctuation.

The nominal capacity ( $Q_n$ ) is based on the following conditions:

Refrigerant	Evaporating temperature (°C)	Condensing temperature (°C)	Subcooling
R407C, R448A, R449A	+4°C dew point	+38°C bubble / +43°C dew point	1K
R22, R134a, R404A, R507	+4°C	+38°C	
R744	-40°C	-10°C	
R450A	+4°C dew point	+38°C bubble / +38.6°C dew point	
R513A, R1234ze	+4°C dew point	+38°C bubble / +38°C dew point	

Note: For selection of other operating conditions, please use "Controls Navigator" selection program.

### Accessories

Type	Part no.	Part no. (Multipack*)	Description	
ESC 24V	801033	-	Coil 24 VAC / 50 Hz	
ESC 230V	801031	-	Coil 230 VAC / 50 Hz	
ASC-N15	804570	804570M	Connector cable assembly	
ASC-N30	804571	804571M		1.5 m cable length
ASC-N60	804572	-		3.0 m cable length
Plug PG9	801012	-	Plug with cable guide	
Plug PG11	801013	-		
Clip Holder	801295	-	Blue clip	

Note: \*) Multipack = 20 pcs

## EX4-8 Series electrical control valves

### Features

- Multifunction as expansion valve, hot gas bypass, suction gas throttling, head pressure, liquid level actuator etc.
- Fully hermetic design (no thread joints between valve body and motor compartment)
- Applicable to all common refrigerants and for subcritical CO<sub>2</sub> applications
- Stepper motor driven
- Short opening and closing time
- Very fast full-stroke time
- High resolution and excellent repeatability
- Positive shut-off function to eliminate the need for additional solenoid valve
- Bi-flow versions for heat pump applications
- High linear flow capacity
- Extremely wide capacity range (10 ... 100%)
- Continuous modulation of mass flow, no stress (liquid hammering) in the refrigeration circuit
- Direct coupling of motor and valve for high reliability (no gear mechanism)
- Ceramic slide and port for highly accurate flow and minimal wear
- Europe patent No. 0743476, USA patent No. 5735501, Japan patent No. 28225789
- Balanced force design
- Corrosion resistant stainless steel body and stainless steel connections



### Selection table (Capacities see following page)

Type	Part no.	Flow pattern	Capacity range	Inlet connection	Outlet connection	Electrical connection
EX4-I21	800 615	Uni-flow	10 ... 100%	3/8" ODF	5/8" ODF	M12 Plug
EX4-M21	800 616			10mm ODF	16mm ODF	
EX5-U21	800 618			5/8" (16mm) ODF	7/8" (22mm) ODF	
EX6-I21	800 620			7/8" ODF	1-1/8" ODF	
EX6-M21	800 621			22mm ODF	28 mm ODF	
EX7-I21	800 624			1-1/8" ODF	1-3/8" ODF	
EX7-M21	800 625			28mm ODF	35mm ODF	
EX8-M21	800 629			42mm ODF	42mm ODF	
EX8-U21	800 630			1-3/8" (35mm) ODF	1-3/8" (35mm) ODF	
EX8-I21	800 631			1-5/8" ODF	1-5/8" ODF	
EX4-U31	800 617	Bi-flow (Heat Pump)		5/8" (16mm) ODF	5/8" (16mm) ODF	
EX5-U31	800 619			7/8" (22mm) ODF	7/8" (22mm) ODF	
EX6-I31	800 622			1-1/8" ODF	1-1/8" ODF	
EX6-M31	800 623			28mm ODF	28mm ODF	
EX7-U31	800 626			1-3/8" (35mm) ODF	1-3/8" (35mm) ODF	

### Cable connector assemblies

Type	Part no.	Temperature range	Length	Connector type to valve	Connector type to driver or controller	Illustration
EXV-M15	804 663	-50 ... +80°C	1.5 m	M12, 4 Pins	Loose Wires	
EXV-M30	804 664		3.0 m			
EXV-M60	804 665		6.0 m			

## Capacity data

Nominal capacities...

...as expansion valves and liquid injection valves, (kW) (10%...100%)

Type	R410A	R134a	R22	R404A / R507	R407C	R407A	R407F	R1234ze	R448A	R449A	R450A	R513A	R744	R124	R23
EX4	19.3	12.8	16.5	11.5	17.4	16.2	18.4	10.0	16.5	16.1	11.3	11.5	27.0	9.4	17.8
EX5	58.1	39.0	50.0	35.0	53.0	49.0	56.0	30.2	49.9	48.7	34.1	34.9	82.0	28.7	54.0
EX6	140	93	120	84	126	118	134	72	120	117	82	84	197	69	130
EX7	385	255	330	230	347	325	369	199	329	321	225	230	540	-	-
EX8	1028	680	880	613	925	866	984	531	877	857	600	614	1440	-	-

Note 1: Bi-flow versions are not released for use with R124 and R23 refrigerants.

Note 2: Bi-flow versions have identical capacity in both flow directions.

...as hot gas bypass regulator, (kW)

Type	Kv [m <sub>3</sub> /h]	R410A	R134a	R22 / R407C	R404A / R507	R407A	R407F	R1234ze	R448A	R449A	R450A	R513A
EX4	0.21	7.3	3.4	4.9	4.7	5.6	6.2	2.6	5.7	5.6	3.0	3.3
EX5	0.68	23.7	11.1	15.9	15.2	18.1	20.1	8.3	18.6	18.3	9.7	10.8
EX6	1.57	55.0	25.8	36.9	35.4	42.1	46.7	19.3	43.2	42.5	22.6	25.2
EX7	5.58	196	92	131	126	150	166	69	154	151	80	89
EX8	16.95	594	278	399	382	454	504	209	466	459	244	272

Note: Bi-flow versions are not released for hot gas flow applications.

...as suction pressure regulator (evaporator or crankcase), (kW)

Type	Kv [m <sub>3</sub> /h]	R410A	R134a	R22	R404A	R507	R407C	R407A	R407F	R1234ze	R448A	R449A	R450A	R513A
EX6	1.57	5.0	3.1	4.1	3.5	3.5	3.9	3.8	4.2	2.5	3.9	3.8	2.8	3.0
EX7	5.58	17.9	11.1	14.7	12.5	12.5	13.7	13.5	14.8	9.0	13.8	13.6	9.9	10.6
EX8	16.95	54.5	33.6	44.5	38.1	37.9	41.8	41.1	45.1	27.4	42.0	41.4	30.1	32.2

Note: Bi-flow versions are not released for use below -40°C

...as condensing pressure regulator and liquid duty, (kW)

Type	Kv [m <sub>3</sub> /h]	R407C	R134a	R22	R404A	R507	R407A	R407F	R1234ze	R448A	R449A	R450A	R513A
EX4	0.21	5.7	5.6	6.0	4.0	3.8	5.3	5.8	5.1	5.3	5.2	5.3	5.0
EX5	0.68	18.5	18.3	19.6	12.9	12.5	17.1	18.8	16.5	17.1	16.8	17.0	16.3
EX6	1.57	43.0	42.4	45.5	29.9	29.0	39.7	43.8	38.3	39.9	39.1	39.6	37.8
EX7	5.58	153	151	162	106	103	141	156	136	142	139	141	134
EX8	16.95	464	458	491	323	313	428	473	413	430	422	428	408

...for hot gas flow such as heat reclaim application, (kW)

Type	Kv [m <sub>3</sub> /h]	R410A	R134a	R22 / R407C	R404A / R507	R407A	R407F	R1234ze	R448A	R449A	R450A	R513A
EX6	1.57	13.0	9.0	10.8	9.8	11.1	12.0	7.4	11.3	11.2	8.2	8.5
EX7	5.58	46	32	38	34	39	43	26	40	40	29	30
EX8	16.95	141	96	116	103	120	129	79	122	120	88	92

Note: Bi-flow versions are not released for hot gas flow applications.

The nominal capacity is based on the following conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Pressure drop (suction duty)	Pressure drop (liquid duty)	Pressure drop (hot gas flow duty)	Isentropic efficiency (for hot gas flow duty)
R124	+20°C	+80°C	0.15 bar	0.35 bar	0.5 bar	80%
R134a, R404A, R507, R22, R410A, R513A, R1234ze	+4°C dew point	+38°C bubble / +38°C dew point				
R407C	+4°C dew point	+38°C bubble / +42.9°C dew point				
R407F, R407A	+4°C	+38°C bubble / +42.4°C dew point				
R23	-60°C	-25°C				
R744	-10°C	+10°C				
R450A		+38°C bubble / +38.6°C dew point				
R448A, R449A		+38°C bubble / +42.6°C dew point				

Note: For selection of other operating conditions, please use "Controls Navigator" selection program.

## RX1S Stepper-Motor Driven Electronic Expansion Valve

The Emerson RX1S is an electronically operated expansion device that provides precise control of refrigerant flow and system superheat. The RX1S employs a high resolution, linear stepper motor in conjunction with a built-in solenoid to provide positive closure in the event of power interruption.

The unique features and capacity range of the RX1S make it an appropriate solution for commercial refrigeration such as supermarket cases and walk-in units. The take-apart construction provides full field serviceability and allows access to the internal strainer and pin and orifice assembly. The RX1S also employs an IP67 design, allowing operation in icy and wet environments.

The RX1S is designed to be compliant with Dixell case controllers and dedicated driver modules, such as the XM678 and XEV22, as well as compatible 3rd-party controllers.



### Features

- Stepper-motor driven (650steps)
- Positive shut off function eliminates the necessity of a separate solenoid valve, or any external energy storage device such as UPS, battery or super-capacitor additional board.
- Long lifetime, high reliability
- Full field serviceability:
  - Field exchangeable cooling capacity (8 ranges, up to 14.2 KW, on R404A)
  - Field exchangeable mesh screen (100 mesh)
- Three different voltage coils available(230VAC, 120VAC, 24VAC)
- Available with ODF connections (3/8" X 1/2")

### Specifications

- IP67 (with appropriate optional plugs)
- CE Certification

### Nominal Cooling Capacity: (kW)

	RX1S-2000	RX1S-3000	RX1S-4000	RX1S-5000	RX1S-6000	RX1S-7000	RX1S-8000	RX1S-9000
R404A	0.88	1.86	3.02	4.89	7.91	10.02	11.15	14.24
R134a	1.02	2.11	3.41	5.52	8.93	11.32	12.63	16.14
R22	1.41	2.95	4.71	7.67	12.42	15.72	17.51	22.37
R407F	1.34	2.78	4.47	7.25	11.75	14.88	16.57	21.17
R507	0.88	1.83	2.92	4.75	7.67	9.74	10.83	13.86
R449A	1.35	2.85	4.54	7.38	11.96	15.14	16.87	21.54
R448A	1.38	2.9	4.63	7.53	12.19	15.44	17.2	21.97
R450A	0.97	2.03	3.25	5.28	8.55	10.83	12.06	15.41
R513A	0.91	1.92	3.06	4.99	8.07	10.22	11.39	14.54

The nominal capacity is based upon the following standard AHRI conditions:

Refrigerant	Evaporating Temperature	Condensing Temperature	Sub-cooling (K)
R404A, R134a, R22, R507, R448A, R449A, R450A, R513A	+4°C	+38°C	1
R407F	+4°C dew point	+38°C bubble / +42.5°C dew point	1

## Valve Technical Data

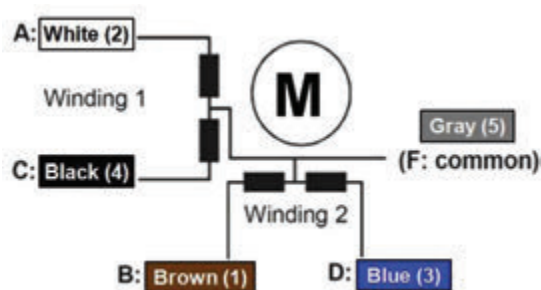
Flow Characteristic	Uni-flow, Linear
MWP	500 Psig (34.5bar)
MOPD	360 Psig (24.8bar)
Temperature Range	Refrigerant: -40 ~ +75°C Ambient: -40 ~ +60 °C
Seat Leakage	16 SCCM (140psid/9.7bar)
Vibration	≤4 g
Weight	770 grams (with solenoid coil and stepper motor)
Mesh Size	100 Mesh
Protection Index	IP67 (with properly mounted plugs, available from Emerson)
Compatible Lubricants	POE, Mineral Oil.
External Leakage	6.4*10 <sup>-6</sup> mbar*liter/sec @ 10 bar HELIUM

## Solenoid Coil

Insulation Class	F
Supply Voltage/ Frequency/ Consumption	24VAC (+10%, -15%); 50/60Hz; 6.5W (12.7VA) 110-120VAC (+10%, -15%); 50/60Hz; 7.4W (14.4VA) 220-230VAC (+10%, -15%); 50/60Hz; 8.0W (16.1VA)
Electrical Connection	3 Wires, DIN43650A Optional IP67 Connector Available from Emerson

## Stepper Motor

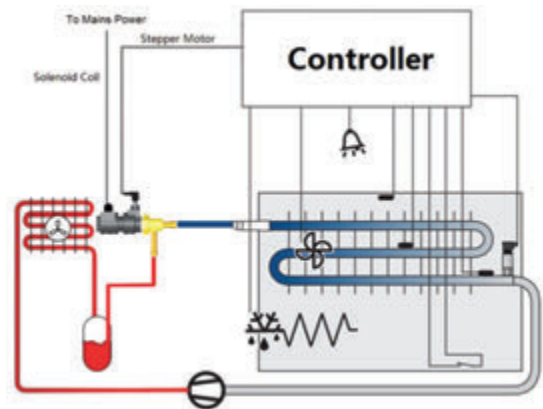
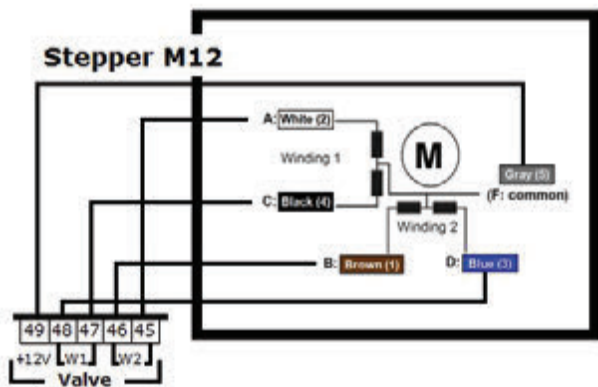
Type	5 wires Uni-polar Stepper Motor
Operation Frequency (Step rate)	30-90Hz, 50Hz recommended (1Hz=1 pulse per second)
Total number of steps (Maximum steps)	650 pulses
Minimum steps	40 pulses
Extra steps	50 pulses
Starts to open at	80±40 pulses
Supply Voltage	12VDC±10%
Nominal Operating Current at 12VDC	300mA/phase (12VDC/40Ω=300mA)
Resistance	40Ω/phase±10%
Electrical Connection	M12 plug with lead wires (available from Emerson)
Insulation Class	F



Wires	Valve Movement (Pulses Switching Mode)							
	Open: A-AB-B-BC-C-CD-D-DA Close: DA-D-CD-C-BC-B-AB-A							
A: White	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
C: Black	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
B: Brown	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
D: Blue	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
F: Gray	ON	ON	ON	ON	ON	ON	ON	ON

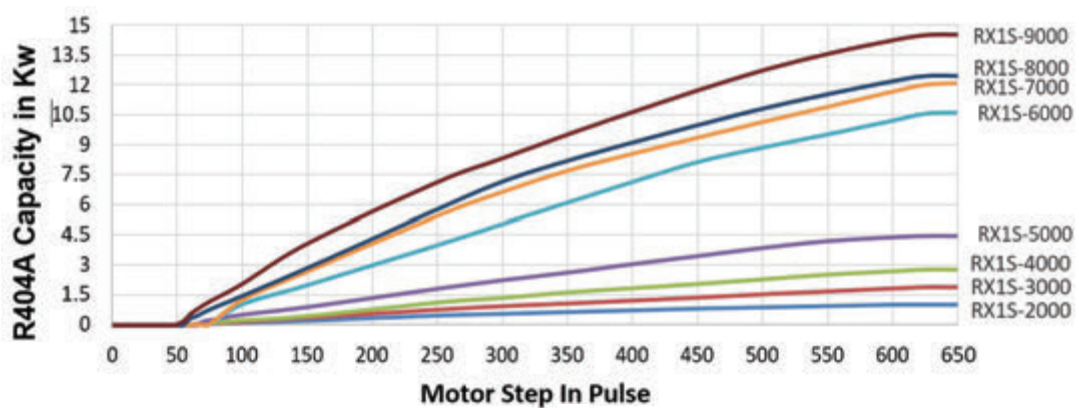


**Wiring Diagrams:** (More details are available in the manual of XM678 or XEV22 controllers)

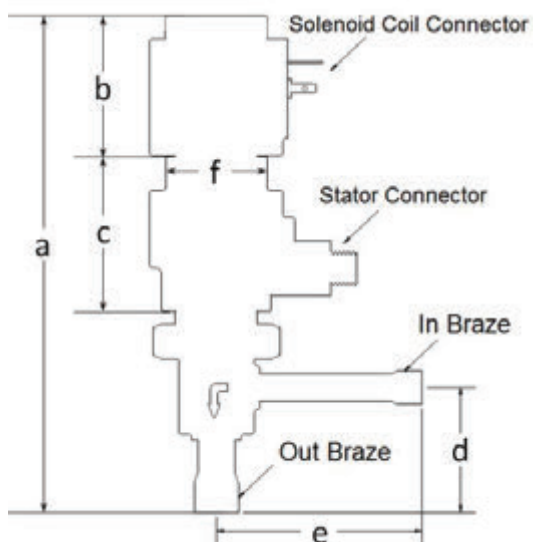


**Note:** Solenoid coil should be always connected to mains power but not any controller.

**Flow Characteristics:** (Evaporating Temp = 4.4°C, Condensing Temp = 38°C)



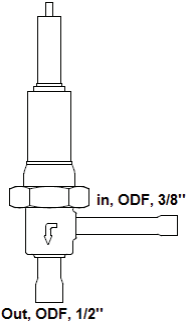
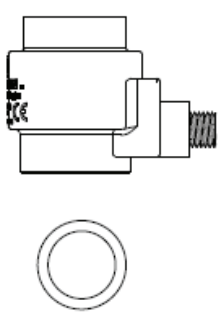
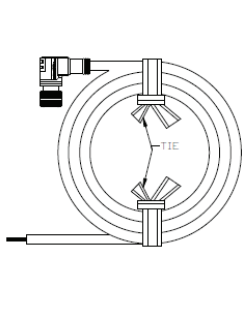
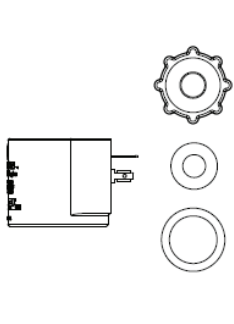
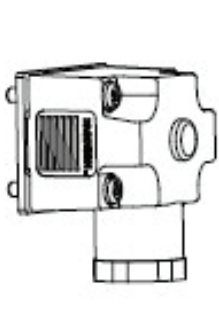
**Dimensions:**



Items	Value
a	170mm
b	48mm
c	53mm
d	43mm
e	71mm
f	35mm
Inlet Braze	3/8" ODF
Outlet Braze	1/2" ODF
Electrical Connection	M12 plug with lead wires (available from Emerson)
Insulation Class	F

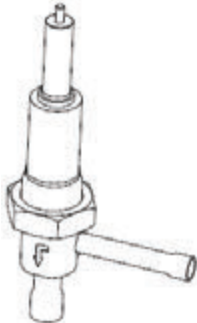
## Ordering Information:

RX1S offers different exchangeable components in order to maximize the flexibility to end users. Therefore, there are 5 steps recommended to decide the best combination:

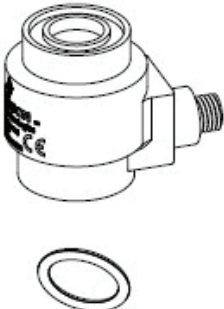
Step 1	Step 2	Step 3	Step 4	Step 5
<b>Sizing Valve Assembly</b> 	<b>Order Stator</b> 	<b>Select M12 Plug with Lead Wire</b> 	<b>Select Solenoid Coil</b> 	<b>Order Coil Connector</b> 
Valve assembly with different pin and orifice sizes. Options: RX1S-2000 ~ RX1S-5000 RX1S-6000 ~ RX1S-9000	Stator of stepper motor, with 1pcs O-ring. Options: RX1S-S012	M12 plug to stator with lead wires. Options: RX1S-M300: 3 meters RX1S-M600: 6 meters	Solenoid coil with 2pcs O-ring and 1pcs top screw. Options: RX1S-C230: 220-230VAC RX1S-C120: 110-120VAC RX1S-C024: 24VAC	Connector for reliable IP67 seal. Options: RX1S-PL67

### Step 1: Sizing the valve assembly

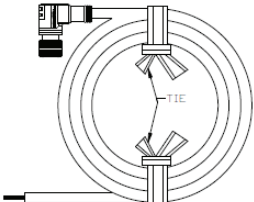
1. Select the valve per your application working conditions, by using the extended capacity table.
2. Decide the valve size you need.

PCN	Model	Description	Illustration
098327	RX1S-2000	Valve assembly with Pin #2, Orifice #1	
098328	RX1S-3000	Valve assembly with Pin #3, Orifice #1	
098329	RX1S-4000	Valve assembly with Pin #4, Orifice #1	
098330	RX1S-5000	Valve assembly with Pin #5, Orifice #1	
098331	RX1S-6000	Valve assembly with Pin #6, Orifice #2	
098332	RX1S-7000	Valve assembly with Pin #7, Orifice #2	
098333	RX1S-8000	Valve assembly with Pin #8, Orifice #2	
098334	RX1S-9000	Valve assembly with Pin #9, Orifice #2	

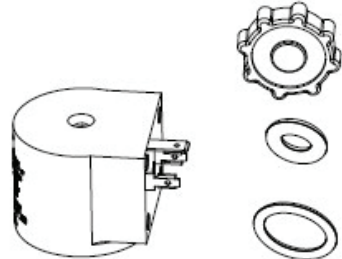
### Step 2: Choose a stator

PCN	Model	Description	Illustration
098338	RX1S-S012	1pcs Stepper motor stator 1pcs O-ring (Ø23.4mm)	

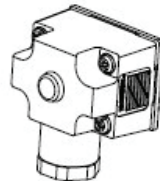
Step 3: Choose plug to stator

PCN	Model	Description	Illustration
098325	RX1S-M300	M12 plug to stator with 3.0 meters lead wires	
098326	RX1S-M600	M12 plug to stator with 6.0 meters lead wires	

Step 4: Choose solenoid coil

PCN	Model	Description	Illustration
098335	RX1S-C230	Solenoid Coil, 220-230Vac 50/60Hz, 1pcs Screw-cap, 1pcs O-ring (Ø10.5mm) 1pcs O-ring (Ø23.4mm)	
098336	RX1S-C120	Solenoid Coil, 110-120Vac 50/60Hz, 1pcs Screw-cap, 1pcs O-ring (Ø10.5mm) 1pcs O-ring (Ø23.4mm)	
098337	RX1S-C024	Solenoid Coil, 24Vac 50/60Hz, 1pcs Screw-cap, 1pcs O-ring (Ø10.5mm) 1pcs O-ring (Ø23.4mm)	




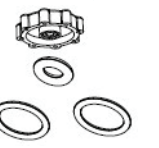
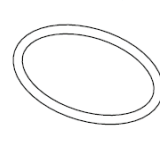
Step 5: Choose plug to solenoid coil

PCN	Model	Description	Illustration
098326	RX1S-M600	M12 plug to stator with 6.0 meters lead wires	

Note:

1. It is strongly recommended to use RX1S-PL67 for reliable IP67 class protection.
2. Please use wires UL2464 30AWG Minimum 3C OD=Φ7.0mm.

Spare parts:

Item	Strainer Kit		Pin Assembly Kit		Orifice (Port) Kit		Gasket Kit		Nut O-ring	
PCN(Description)	098339		098340(Pin#2) 098341(Pin#3) 098342(Pin#4) 098343(Pin#5) 098344(Pin#6) 098345(Pin#7) 098346(Pin#8) 098347(Pin#9)		098348(Orifice#1) 098349(Orifice#2)		098352		098350	
Illustrations										
Components	O-ring: Ø26.7mm	1pc	O-ring: Ø26.7mm	1pc	O-ring: Ø26.7mm	1pc	O-ring: Ø10.5mm	1pc	O-ring: Ø26.7mm	5pcs
	Strainer	1pc	Pin	1pc	Orifice	1pc	Screw cap	1pc	--	--
	Strainer Cover	1pc	Snap-ring	2pcs	--	--	O-ring: Ø23.4mm	2pcs	--	--

## Extended capacities as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering **1.5 bar pressure drop** through liquid line:

Condensing Temperature (°C)	R404A			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
60	0.70	0.70	0.70	0.69	0.68	0.66	0.64	0.62	0.60	0.57	0.54	0.51	0.48	RX1S-2000
	1.47	1.47	1.47	1.46	1.43	1.40	1.36	1.31	1.26	1.20	1.15	1.08	1.02	RX1S-3000
	2.38	2.40	2.39	2.36	2.32	2.27	2.20	2.13	2.05	1.96	1.86	1.76	1.66	RX1S-4000
	3.86	3.88	3.86	3.82	3.76	3.68	3.57	3.45	3.32	3.17	3.02	2.85	2.68	RX1S-5000
	6.25	6.28	6.25	6.19	6.08	5.94	5.77	5.58	5.36	5.12	4.88	4.61	4.34	RX1S-6000
	7.91	7.95	7.92	7.84	7.71	7.53	7.31	7.06	6.79	6.49	6.17	5.84	5.49	RX1S-7000
	8.80	8.85	8.81	8.72	8.57	8.37	8.14	7.86	7.55	7.23	6.87	6.50	6.11	RX1S-8000
	11.27	11.33	11.29	11.17	10.98	10.72	10.42	10.07	9.68	9.25	8.80	8.32	7.83	RX1S-9000
55	0.74	0.75	0.76	0.75	0.75	0.74	0.72	0.70	0.68	0.66	0.63	0.61	0.58	RX1S-2000
	1.57	1.59	1.60	1.59	1.59	1.56	1.53	1.49	1.45	1.40	1.34	1.29	1.22	RX1S-3000
	2.54	2.58	2.60	2.60	2.57	2.53	2.48	2.42	2.34	2.27	2.18	2.08	1.99	RX1S-4000
	4.12	4.18	4.21	4.20	4.16	4.10	4.02	3.91	3.80	3.67	3.53	3.37	3.22	RX1S-5000
	6.66	6.76	6.80	6.78	6.73	6.63	6.50	6.34	6.14	5.94	5.71	5.46	5.20	RX1S-6000
	8.43	8.56	8.62	8.60	8.52	8.40	8.23	8.02	7.78	7.52	7.23	6.92	6.59	RX1S-7000
	9.38	9.53	9.59	9.57	9.48	9.34	9.16	8.93	8.66	8.37	8.04	7.70	7.34	RX1S-8000
	12.02	12.21	12.28	12.26	12.15	11.97	11.73	11.43	11.09	10.71	10.30	9.86	9.40	RX1S-9000
50	0.80	0.82	0.83	0.83	0.83	0.82	0.81	0.79	0.78	0.75	0.73	0.70	0.68	RX1S-2000
	1.70	1.73	1.75	1.76	1.75	1.74	1.71	1.68	1.64	1.59	1.54	1.49	1.43	RX1S-3000
	2.75	2.82	2.85	2.86	2.85	2.82	2.78	2.73	2.66	2.59	2.51	2.42	2.33	RX1S-4000
	4.46	4.56	4.61	4.63	4.61	4.57	4.51	4.42	4.31	4.19	4.06	3.92	3.77	RX1S-5000
	7.21	7.37	7.46	7.49	7.46	7.40	7.29	7.14	6.97	6.78	6.56	6.34	6.09	RX1S-6000
	9.13	9.34	9.45	9.48	9.46	9.37	9.23	9.05	8.84	8.59	8.32	8.02	7.71	RX1S-7000
	10.17	10.39	10.52	10.56	10.52	10.43	10.27	10.08	9.83	9.55	9.25	8.93	8.59	RX1S-8000
	13.02	13.31	13.47	13.52	13.47	13.35	13.15	12.90	12.59	12.24	11.86	11.44	10.99	RX1S-9000
45	0.75	0.78	0.81	0.82	0.82	0.82	0.82	0.81	0.80	0.78	0.76	0.74	0.71	RX1S-2000
	1.59	1.66	1.71	1.74	1.75	1.75	1.74	1.71	1.68	1.65	1.61	1.56	1.51	RX1S-3000
	2.59	2.70	2.78	2.82	2.84	2.83	2.82	2.78	2.73	2.68	2.61	2.54	2.46	RX1S-4000
	4.19	4.37	4.49	4.56	4.60	4.59	4.56	4.51	4.43	4.34	4.23	4.11	3.98	RX1S-5000
	6.78	7.07	7.26	7.38	7.43	7.43	7.38	7.29	7.17	7.01	6.84	6.65	6.43	RX1S-6000
	8.59	8.95	9.20	9.34	9.41	9.41	9.34	9.24	9.08	8.89	8.67	8.42	8.15	RX1S-7000
	9.55	9.96	10.24	10.40	10.47	10.47	10.40	10.28	10.10	9.89	9.64	9.37	9.07	RX1S-8000
	12.24	12.75	13.10	13.32	13.42	13.41	13.33	13.16	12.94	12.66	12.35	12.00	11.61	RX1S-9000
40	0.72	0.77	0.80	0.82	0.84	0.84	0.85	0.84	0.83	0.82	0.80	0.78	0.76	RX1S-2000
	1.53	1.63	1.70	1.74	1.77	1.79	1.79	1.77	1.75	1.72	1.69	1.65	1.61	RX1S-3000
	2.48	2.64	2.75	2.83	2.87	2.90	2.90	2.88	2.85	2.80	2.75	2.69	2.61	RX1S-4000
	4.02	4.27	4.46	4.58	4.65	4.69	4.69	4.66	4.61	4.54	4.45	4.34	4.23	RX1S-5000
	6.50	6.92	7.21	7.40	7.53	7.58	7.58	7.54	7.46	7.34	7.20	7.03	6.84	RX1S-6000
	8.24	8.76	9.13	9.38	9.54	9.61	9.61	9.56	9.45	9.30	9.12	8.90	8.67	RX1S-7000
	9.16	9.75	10.17	10.44	10.61	10.69	10.69	10.63	10.52	10.35	10.14	9.90	9.64	RX1S-8000
	11.73	12.48	13.02	13.37	13.59	13.69	13.70	13.62	13.46	13.25	12.99	12.69	12.35	RX1S-9000
35	0.66	0.73	0.78	0.81	0.83	0.85	0.85	0.86	0.85	0.84	0.82	0.81	0.79	RX1S-2000
	1.41	1.54	1.64	1.71	1.75	1.79	1.80	1.80	1.80	1.77	1.75	1.71	1.67	RX1S-3000
	2.28	2.50	2.66	2.78	2.85	2.90	2.92	2.92	2.91	2.88	2.83	2.78	2.72	RX1S-4000
	3.69	4.05	4.31	4.49	4.62	4.69	4.74	4.74	4.71	4.66	4.59	4.51	4.41	RX1S-5000
	5.97	6.55	6.97	7.27	7.47	7.59	7.66	7.66	7.62	7.54	7.43	7.29	7.13	RX1S-6000
	7.56	8.29	8.83	9.21	9.47	9.62	9.69	9.70	9.65	9.55	9.41	9.23	9.03	RX1S-7000
	8.42	9.23	9.82	10.25	10.53	10.70	10.79	10.80	10.74	10.63	10.47	10.27	10.04	RX1S-8000
	10.78	11.82	12.58	13.12	13.49	13.71	13.81	13.83	13.76	13.61	13.41	13.15	12.87	RX1S-9000

To be continued on next page

Condensing Temperature (°C)	R404A			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
30	0.57	0.66	0.73	0.78	0.81	0.83	0.84	0.85	0.85	0.85	0.84	0.82	0.82	RX1S-2000
	1.20	1.40	1.54	1.63	1.71	1.75	1.79	1.80	1.80	1.79	1.77	1.75	1.71	RX1S-3000
	1.95	2.27	2.49	2.65	2.77	2.85	2.90	2.92	2.92	2.91	2.88	2.84	2.79	RX1S-4000
	3.16	3.67	4.03	4.30	4.48	4.61	4.69	4.73	4.74	4.71	4.66	4.60	4.52	RX1S-5000
	5.11	5.94	6.52	6.95	7.25	7.46	7.58	7.65	7.66	7.62	7.54	7.44	7.30	RX1S-6000
	6.48	7.52	8.27	8.81	9.19	9.45	9.60	9.69	9.69	9.65	9.56	9.42	9.25	RX1S-7000
	7.21	8.37	9.20	9.80	10.22	10.52	10.69	10.78	10.79	10.73	10.63	10.48	10.30	RX1S-8000
	9.23	10.72	11.78	12.55	13.10	13.46	13.69	13.81	13.81	13.75	13.61	13.42	13.18	RX1S-9000
25	0.42	0.56	0.65	0.72	0.77	0.80	0.82	0.83	0.84	0.84	0.84	0.83	0.82	RX1S-2000
	0.88	1.17	1.37	1.51	1.62	1.69	1.74	1.76	1.78	1.78	1.77	1.75	1.73	RX1S-3000
	1.43	1.91	2.23	2.46	2.62	2.73	2.82	2.86	2.89	2.89	2.88	2.85	2.82	RX1S-4000
	2.31	3.09	3.61	3.98	4.25	4.43	4.56	4.64	4.68	4.69	4.66	4.62	4.56	RX1S-5000
	3.73	5.00	5.85	6.44	6.87	7.17	7.38	7.50	7.57	7.58	7.54	7.47	7.37	RX1S-6000
	4.73	6.34	7.41	8.15	8.70	9.08	9.34	9.51	9.59	9.60	9.56	9.47	9.34	RX1S-7000
	5.27	7.05	8.24	9.07	9.68	10.11	10.40	10.58	10.67	10.68	10.63	10.53	10.38	RX1S-8000
	6.74	9.03	10.55	11.63	12.40	12.95	13.32	13.55	13.66	13.68	13.62	13.49	13.31	RX1S-9000
20		0.39	0.54	0.63	0.70	0.75	0.78	0.81	0.82	0.82	0.82	0.82	0.82	RX1S-2000
		0.82	1.14	1.33	1.48	1.59	1.65	1.70	1.73	1.75	1.75	1.74	1.72	RX1S-3000
		1.34	1.84	2.17	2.40	2.57	2.69	2.76	2.81	2.83	2.84	2.82	2.80	RX1S-4000
		2.18	2.99	3.52	3.89	4.16	4.34	4.47	4.55	4.59	4.60	4.58	4.54	RX1S-5000
		3.51	4.84	5.69	6.30	6.73	7.03	7.23	7.36	7.43	7.44	7.40	7.34	RX1S-6000
		4.46	6.13	7.21	7.98	8.52	8.90	9.16	9.33	9.41	9.42	9.38	9.29	RX1S-7000
		4.96	6.81	8.02	8.87	9.48	9.90	10.20	10.38	10.47	10.48	10.44	10.34	RX1S-8000
		6.35	8.73	10.27	11.36	12.14	12.69	13.06	13.29	13.41	13.42	13.37	13.24	RX1S-9000
15			0.36	0.51	0.61	0.68	0.73	0.76	0.78	0.80	0.80	0.81	0.80	RX1S-2000
			0.76	1.08	1.29	1.43	1.54	1.60	1.65	1.68	1.70	1.70	1.70	RX1S-3000
			1.23	1.76	2.10	2.33	2.49	2.60	2.69	2.73	2.76	2.76	2.75	RX1S-4000
			2.00	2.85	3.39	3.77	4.03	4.22	4.34	4.43	4.47	4.47	4.46	RX1S-5000
			3.23	4.61	5.48	6.09	6.52	6.83	7.03	7.16	7.23	7.23	7.21	RX1S-6000
			4.09	5.84	6.95	7.71	8.26	8.65	8.90	9.07	9.15	9.16	9.13	RX1S-7000
			4.56	6.49	7.73	8.59	9.20	9.62	9.91	10.09	10.18	10.20	10.16	RX1S-8000
			5.83	8.32	9.90	11.00	11.77	12.32	12.70	12.93	13.04	13.06	13.01	RX1S-9000
10				0.32	0.48	0.58	0.65	0.70	0.73	0.75	0.77	0.78	0.78	RX1S-2000
				0.67	1.02	1.23	1.37	1.47	1.54	1.59	1.63	1.63	1.64	RX1S-3000
				1.09	1.65	1.99	2.23	2.39	2.51	2.59	2.64	2.66	2.66	RX1S-4000
				1.77	2.67	3.23	3.60	3.87	4.06	4.19	4.26	4.30	4.31	RX1S-5000
				2.86	4.33	5.22	5.83	6.26	6.56	6.77	6.90	6.96	6.98	RX1S-6000
				3.63	5.48	6.61	7.39	7.93	8.32	8.58	8.74	8.82	8.84	RX1S-7000
				4.04	6.10	7.36	8.22	8.83	9.26	9.55	9.73	9.82	9.84	RX1S-8000
				5.17	7.81	9.42	10.53	11.31	11.86	12.22	12.45	12.57	12.60	RX1S-9000

## Extended capacities as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering **1.5 bar pressure drop** through liquid line:

Condensing Temperature (°C)	R134a			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
60	1.01	1.02	1.02	1.02	1.01	1.00	0.99	0.97	0.95	0.92	0.90	0.87	0.84	RX1S-2000
	2.09	2.11	2.12	2.12	2.10	2.08	2.04	2.00	1.96	1.91	1.86	1.80	1.74	RX1S-3000
	3.37	3.41	3.42	3.41	3.39	3.35	3.30	3.23	3.16	3.08	2.99	2.90	2.81	RX1S-4000
	5.45	5.51	5.53	5.52	5.48	5.41	5.33	5.23	5.11	4.98	4.84	4.70	4.54	RX1S-5000
	8.82	8.92	8.95	8.93	8.87	8.77	8.63	8.46	8.28	8.06	7.84	7.60	7.35	RX1S-6000
	11.19	11.31	11.35	11.33	11.25	11.12	10.94	10.73	10.50	10.23	9.94	9.64	9.33	RX1S-7000
	12.48	12.61	12.66	12.64	12.55	12.40	12.20	11.97	11.71	11.41	11.09	10.76	10.41	RX1S-8000
	15.94	16.12	16.18	16.14	16.03	15.84	15.59	15.30	14.95	14.58	14.17	13.74	13.29	RX1S-9000
55	0.99	1.00	1.01	1.02	1.02	1.01	1.00	0.99	0.96	0.95	0.92	0.90	0.87	RX1S-2000
	2.04	2.08	2.10	2.11	2.11	2.09	2.07	2.04	2.00	1.96	1.91	1.86	1.80	RX1S-3000
	3.30	3.36	3.39	3.41	3.40	3.38	3.34	3.29	3.23	3.16	3.08	3.00	2.91	RX1S-4000
	5.32	5.43	5.49	5.51	5.50	5.46	5.40	5.32	5.22	5.10	4.98	4.85	4.71	RX1S-5000
	8.62	8.79	8.88	8.92	8.91	8.84	8.74	8.60	8.45	8.27	8.06	7.85	7.62	RX1S-6000
	10.93	11.14	11.26	11.31	11.29	11.21	11.08	10.91	10.71	10.48	10.23	9.95	9.66	RX1S-7000
	12.19	12.43	12.56	12.61	12.59	12.50	12.36	12.17	11.95	11.69	11.41	11.10	10.78	RX1S-8000
	15.57	15.88	16.06	16.12	16.08	15.98	15.80	15.55	15.27	14.94	14.58	14.19	13.78	RX1S-9000
50	0.95	0.97	1.00	1.00	1.00	1.00	1.00	0.99	0.97	0.95	0.94	0.91	0.89	RX1S-2000
	1.96	2.01	2.05	2.08	2.09	2.09	2.07	2.04	2.01	1.98	1.94	1.89	1.84	RX1S-3000
	3.16	3.25	3.32	3.35	3.37	3.36	3.34	3.30	3.25	3.20	3.13	3.06	2.98	RX1S-4000
	5.10	5.26	5.37	5.42	5.45	5.44	5.40	5.34	5.26	5.17	5.06	4.94	4.81	RX1S-5000
	8.25	8.51	8.69	8.78	8.82	8.80	8.74	8.64	8.51	8.37	8.19	8.00	7.79	RX1S-6000
	10.46	10.80	11.01	11.13	11.18	11.16	11.08	10.96	10.80	10.60	10.38	10.14	9.88	RX1S-7000
	11.67	12.04	12.28	12.42	12.47	12.45	12.36	12.23	12.05	11.83	11.58	11.31	11.02	RX1S-8000
	14.91	15.39	15.69	15.87	15.94	15.90	15.80	15.62	15.39	15.12	14.80	14.45	14.08	RX1S-9000
45	0.88	0.92	0.95	0.97	0.99	0.99	0.99	0.98	0.97	0.95	0.94	0.92	0.90	RX1S-2000
	1.82	1.91	1.97	2.01	2.04	2.04	2.04	2.03	2.00	1.98	1.95	1.91	1.86	RX1S-3000
	2.95	3.09	3.19	3.25	3.29	3.30	3.30	3.28	3.24	3.20	3.14	3.07	3.01	RX1S-4000
	4.77	5.00	5.15	5.26	5.32	5.34	5.33	5.30	5.24	5.17	5.07	4.97	4.86	RX1S-5000
	7.72	8.09	8.35	8.51	8.61	8.64	8.64	8.58	8.48	8.36	8.21	8.05	7.86	RX1S-6000
	9.79	10.25	10.59	10.80	10.92	10.96	10.94	10.87	10.76	10.60	10.41	10.20	9.97	RX1S-7000
	10.92	11.44	11.80	12.04	12.18	12.23	12.21	12.13	12.00	11.83	11.62	11.38	11.13	RX1S-8000
	13.95	14.62	15.09	15.39	15.56	15.62	15.60	15.49	15.33	15.11	14.85	14.55	14.21	RX1S-9000
40	0.80	0.86	0.90	0.93	0.95	0.95	0.96	0.96	0.95	0.95	0.93	0.91	0.90	RX1S-2000
	1.65	1.78	1.86	1.92	1.96	1.99	2.00	1.99	1.98	1.96	1.93	1.90	1.86	RX1S-3000
	2.67	2.86	3.00	3.10	3.16	3.21	3.21	3.21	3.19	3.16	3.12	3.06	3.00	RX1S-4000
	4.31	4.63	4.86	5.01	5.12	5.18	5.20	5.19	5.16	5.10	5.03	4.95	4.85	RX1S-5000
	6.99	7.49	7.86	8.12	8.29	8.38	8.42	8.41	8.35	8.26	8.15	8.01	7.84	RX1S-6000
	8.86	9.51	9.97	10.29	10.50	10.63	10.68	10.66	10.59	10.47	10.32	10.15	9.95	RX1S-7000
	9.88	10.60	11.13	11.49	11.72	11.85	11.91	11.89	11.81	11.69	11.52	11.32	11.10	RX1S-8000
	12.62	13.55	14.21	14.68	14.98	15.15	15.22	15.19	15.09	14.93	14.72	14.46	14.18	RX1S-9000
35	0.68	0.77	0.82	0.86	0.90	0.91	0.93	0.93	0.93	0.92	0.91	0.90	0.89	RX1S-2000
	1.42	1.59	1.71	1.79	1.86	1.89	1.91	1.92	1.92	1.91	1.89	1.87	1.83	RX1S-3000
	2.29	2.56	2.76	2.89	2.99	3.06	3.09	3.11	3.11	3.08	3.05	3.01	2.96	RX1S-4000
	3.70	4.14	4.46	4.69	4.84	4.94	5.01	5.02	5.01	4.99	4.93	4.87	4.79	RX1S-5000
	6.00	6.71	7.22	7.58	7.84	8.00	8.10	8.13	8.12	8.07	7.98	7.88	7.74	RX1S-6000
	7.60	8.50	9.15	9.61	9.94	10.14	10.27	10.31	10.30	10.23	10.12	9.98	9.82	RX1S-7000
	8.48	9.49	10.21	10.73	11.08	11.32	11.45	11.50	11.49	11.41	11.30	11.13	10.95	RX1S-8000
	10.83	12.13	13.05	13.70	14.16	14.46	14.64	14.70	14.68	14.59	14.43	14.23	13.99	RX1S-9000

To be continued on next page

Condensing Temperature (°C)	R134a			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
30	0.53	0.65	0.73	0.79	0.83	0.86	0.87	0.89	0.89	0.89	0.88	0.87	0.86	RX1S-2000
	1.09	1.34	1.51	1.63	1.72	1.78	1.82	1.83	1.84	1.84	1.83	1.81	1.78	RX1S-3000
	1.76	2.16	2.44	2.63	2.77	2.87	2.93	2.97	2.98	2.98	2.95	2.93	2.89	RX1S-4000
	2.85	3.50	3.94	4.26	4.48	4.63	4.74	4.79	4.82	4.81	4.78	4.73	4.66	RX1S-5000
	4.60	5.66	6.38	6.89	7.25	7.50	7.66	7.75	7.80	7.79	7.74	7.66	7.55	RX1S-6000
	5.84	7.17	8.08	8.73	9.19	9.51	9.72	9.83	9.88	9.87	9.81	9.70	9.57	RX1S-7000
	6.52	8.00	9.02	9.74	10.26	10.61	10.84	10.97	11.03	11.01	10.94	10.83	10.68	RX1S-8000
	8.32	10.22	11.52	12.44	13.10	13.56	13.85	14.02	14.09	14.06	13.98	13.83	13.65	RX1S-9000
25	0.25	0.48	0.60	0.68	0.74	0.78	0.81	0.83	0.84	0.85	0.85	0.84	0.83	RX1S-2000
	0.52	0.99	1.25	1.42	1.54	1.62	1.69	1.72	1.74	1.75	1.75	1.74	1.72	RX1S-3000
	0.84	1.59	2.01	2.29	2.49	2.62	2.71	2.78	2.81	2.83	2.82	2.80	2.78	RX1S-4000
	1.35	2.58	3.25	3.70	4.01	4.24	4.39	4.49	4.55	4.57	4.57	4.54	4.49	RX1S-5000
	2.20	4.17	5.26	5.98	6.50	6.86	7.11	7.27	7.36	7.40	7.40	7.35	7.27	RX1S-6000
	2.78	5.29	6.67	7.59	8.24	8.70	9.02	9.22	9.34	9.39	9.37	9.31	9.22	RX1S-7000
	3.11	5.89	7.43	8.47	9.20	9.70	10.05	10.28	10.41	10.47	10.46	10.39	10.29	RX1S-8000
	3.97	7.53	9.50	10.82	11.74	12.40	12.85	13.14	13.31	13.38	13.36	13.28	13.15	RX1S-9000
20		0.13	0.42	0.55	0.63	0.69	0.73	0.77	0.78	0.79	0.80	0.80	0.79	RX1S-2000
		0.28	0.86	1.13	1.31	1.43	1.52	1.58	1.61	1.64	1.65	1.65	1.64	RX1S-3000
		0.44	1.39	1.83	2.12	2.31	2.45	2.54	2.61	2.64	2.66	2.66	2.64	RX1S-4000
		0.72	2.25	2.96	3.42	3.74	3.96	4.12	4.22	4.27	4.30	4.30	4.27	RX1S-5000
		1.17	3.64	4.79	5.53	6.06	6.42	6.66	6.82	6.92	6.95	6.95	6.91	RX1S-6000
		1.48	4.62	6.07	7.02	7.67	8.14	8.45	8.65	8.77	8.82	8.81	8.77	RX1S-7000
		1.64	5.15	6.78	7.83	8.56	9.07	9.43	9.65	9.79	9.84	9.83	9.78	RX1S-8000
		2.10	6.58	8.65	10.01	10.94	11.59	12.04	12.34	12.50	12.58	12.56	12.49	RX1S-9000
15				0.34	0.49	0.58	0.63	0.67	0.71	0.72	0.73	0.74	0.74	RX1S-2000
				0.71	1.00	1.19	1.31	1.40	1.46	1.50	1.52	1.53	1.53	RX1S-3000
				1.14	1.62	1.91	2.12	2.26	2.36	2.42	2.45	2.47	2.47	RX1S-4000
				1.84	2.62	3.10	3.42	3.65	3.81	3.91	3.96	3.99	3.99	RX1S-5000
				2.99	4.24	5.02	5.55	5.91	6.16	6.33	6.42	6.46	6.46	RX1S-6000
				3.79	5.38	6.36	7.04	7.49	7.81	8.01	8.14	8.19	8.19	RX1S-7000
				4.23	6.00	7.10	7.85	8.36	8.71	8.94	9.08	9.14	9.13	RX1S-8000
				5.40	7.66	9.07	10.02	10.69	11.14	11.43	11.60	11.68	11.67	RX1S-9000
10				0.24	0.41	0.50	0.57	0.61	0.64	0.66	0.67	0.67	0.67	RX1S-2000
				0.50	0.85	1.04	1.17	1.26	1.33	1.36	1.38	1.39	1.39	RX1S-3000
				0.80	1.37	1.68	1.90	2.04	2.14	2.20	2.24	2.24	2.26	RX1S-4000
				1.30	2.22	2.73	3.07	3.30	3.46	3.56	3.62	3.62	3.64	RX1S-5000
				2.10	3.58	4.42	4.96	5.34	5.60	5.76	5.86	5.90	5.90	RX1S-6000
				2.66	4.55	5.60	6.30	6.77	7.09	7.30	7.43	7.48	7.48	RX1S-7000
				2.98	5.07	6.25	7.02	7.55	7.91	8.15	8.29	8.35	8.35	RX1S-8000
				3.79	6.48	7.98	8.98	9.66	10.11	10.42	10.59	10.67	10.67	RX1S-9000



## Extended capacities as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering **1.5 bar pressure drop** through liquid line:

Condensing Temperature (°C)	R22			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
60	1.43	1.46	1.48	1.50	1.51	1.52	1.51	1.50	1.49	1.47	1.45	1.44	1.41	RX1S-2000
	2.98	3.05	3.10	3.14	3.15	3.16	3.15	3.14	3.12	3.08	3.05	3.00	2.95	RX1S-3000
	4.75	4.87	4.95	5.00	5.03	5.04	5.04	5.01	4.97	4.92	4.86	4.79	4.71	RX1S-4000
	7.75	7.93	8.06	8.15	8.19	8.21	8.20	8.16	8.09	8.01	7.92	7.80	7.68	RX1S-5000
	12.54	12.84	13.05	13.19	13.27	13.30	13.27	13.21	13.11	12.98	12.82	12.63	12.43	RX1S-6000
	15.88	16.25	16.51	16.70	16.80	16.83	16.81	16.73	16.59	16.43	16.23	15.99	15.74	RX1S-7000
	17.69	18.10	18.39	18.60	18.71	18.75	18.71	18.62	18.48	18.30	18.07	17.82	17.53	RX1S-8000
	22.60	23.12	23.50	23.76	23.91	23.95	23.91	23.80	23.61	23.39	23.09	22.77	22.40	RX1S-9000
55	1.39	1.44	1.46	1.49	1.51	1.51	1.52	1.51	1.51	1.49	1.48	1.46	1.44	RX1S-2000
	2.91	2.99	3.06	3.11	3.14	3.15	3.16	3.15	3.14	3.12	3.08	3.05	3.00	RX1S-3000
	4.63	4.77	4.89	4.96	5.01	5.04	5.04	5.04	5.01	4.97	4.92	4.86	4.80	RX1S-4000
	7.55	7.78	7.95	8.08	8.16	8.21	8.22	8.21	8.16	8.10	8.02	7.92	7.81	RX1S-5000
	12.22	12.60	12.88	13.08	13.22	13.29	13.31	13.29	13.22	13.12	12.99	12.83	12.64	RX1S-6000
	15.46	15.94	16.30	16.56	16.74	16.82	16.85	16.82	16.74	16.61	16.44	16.24	16.01	RX1S-7000
	17.22	17.76	18.15	18.45	18.64	18.74	18.77	18.74	18.64	18.50	18.31	18.08	17.83	RX1S-8000
	22.01	22.69	23.20	23.57	23.81	23.94	23.98	23.93	23.82	23.63	23.39	23.11	22.78	RX1S-9000
50	1.33	1.38	1.43	1.46	1.48	1.50	1.51	1.51	1.50	1.49	1.48	1.46	1.45	RX1S-2000
	2.78	2.90	2.99	3.05	3.09	3.13	3.14	3.14	3.14	3.12	3.09	3.07	3.03	RX1S-3000
	4.44	4.62	4.76	4.86	4.94	4.98	5.01	5.02	5.01	4.98	4.94	4.89	4.83	RX1S-4000
	7.23	7.52	7.75	7.93	8.04	8.12	8.16	8.17	8.16	8.11	8.05	7.96	7.86	RX1S-5000
	11.70	12.18	12.55	12.83	13.02	13.15	13.22	13.23	13.20	13.14	13.03	12.90	12.74	RX1S-6000
	14.81	15.42	15.89	16.24	16.49	16.65	16.74	16.75	16.72	16.63	16.50	16.33	16.13	RX1S-7000
	16.50	17.17	17.70	18.08	18.37	18.54	18.64	18.66	18.61	18.52	18.37	18.18	17.96	RX1S-8000
	21.08	21.95	22.61	23.11	23.46	23.69	23.81	23.84	23.78	23.66	23.47	23.24	22.95	RX1S-9000
45	1.25	1.32	1.37	1.41	1.45	1.46	1.48	1.49	1.49	1.48	1.47	1.46	1.45	RX1S-2000
	2.61	2.76	2.87	2.95	3.01	3.06	3.09	3.10	3.11	3.10	3.08	3.06	3.02	RX1S-3000
	4.17	4.39	4.58	4.71	4.82	4.89	4.93	4.95	4.96	4.94	4.91	4.88	4.82	RX1S-4000
	6.79	7.16	7.45	7.67	7.84	7.95	8.03	8.07	8.07	8.05	8.01	7.94	7.86	RX1S-5000
	10.99	11.59	12.07	12.43	12.69	12.88	12.99	13.06	13.07	13.03	12.96	12.85	12.72	RX1S-6000
	13.91	14.68	15.28	15.73	16.07	16.31	16.46	16.53	16.55	16.51	16.41	16.28	16.11	RX1S-7000
	15.49	16.35	17.02	17.52	17.90	18.16	18.33	18.41	18.43	18.37	18.28	18.13	17.94	RX1S-8000
	19.79	20.89	21.73	22.39	22.86	23.21	23.42	23.53	23.54	23.48	23.35	23.16	22.93	RX1S-9000
40	1.14	1.23	1.29	1.35	1.39	1.42	1.44	1.45	1.45	1.46	1.45	1.45	1.44	RX1S-2000
	2.38	2.57	2.71	2.82	2.91	2.97	3.00	3.03	3.05	3.05	3.04	3.02	2.99	RX1S-3000
	3.80	4.10	4.32	4.50	4.63	4.73	4.80	4.84	4.86	4.86	4.85	4.82	4.78	RX1S-4000
	6.20	6.68	7.04	7.33	7.55	7.71	7.82	7.88	7.92	7.92	7.90	7.85	7.78	RX1S-5000
	10.04	10.81	11.41	11.87	12.22	12.48	12.66	12.76	12.82	12.83	12.78	12.71	12.61	RX1S-6000
	12.72	13.69	14.45	15.03	15.47	15.80	16.02	16.16	16.23	16.24	16.19	16.09	15.96	RX1S-7000
	14.17	15.25	16.09	16.74	17.24	17.60	17.85	18.00	18.07	18.08	18.03	17.92	17.77	RX1S-8000
	18.10	19.48	20.56	21.39	22.02	22.48	22.80	23.01	23.09	23.10	23.03	22.90	22.71	RX1S-9000
35	1.00	1.12	1.21	1.27	1.32	1.36	1.38	1.41	1.42	1.42	1.42	1.42	1.41	RX1S-2000
	2.10	2.33	2.52	2.65	2.76	2.83	2.90	2.94	2.96	2.98	2.98	2.96	2.94	RX1S-3000
	3.35	3.73	4.01	4.24	4.40	4.53	4.62	4.68	4.73	4.75	4.75	4.73	4.70	RX1S-4000
	5.45	6.06	6.53	6.89	7.17	7.38	7.53	7.63	7.70	7.72	7.72	7.70	7.65	RX1S-5000
	8.83	9.81	10.57	11.16	11.61	11.95	12.19	12.36	12.46	12.51	12.51	12.46	12.38	RX1S-6000
	11.17	12.43	13.39	14.13	14.70	15.13	15.44	15.65	15.78	15.83	15.83	15.78	15.68	RX1S-7000
	12.44	13.84	14.92	15.74	16.37	16.85	17.19	17.43	17.57	17.64	17.63	17.58	17.47	RX1S-8000
	15.90	17.68	19.05	20.11	20.91	21.52	21.96	22.27	22.46	22.54	22.54	22.46	22.32	RX1S-9000



Condensing Temperature (°C)	R22			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
30	0.82	0.98	1.08	1.17	1.23	1.29	1.32	1.35	1.37	1.37	1.38	1.38	1.37	RX1S-2000
	1.71	2.03	2.26	2.44	2.58	2.68	2.76	2.82	2.85	2.87	2.88	2.88	2.87	RX1S-3000
	2.73	3.24	3.61	3.89	4.11	4.28	4.40	4.49	4.55	4.59	4.60	4.60	4.58	RX1S-4000
	4.46	5.28	5.88	6.35	6.70	6.96	7.17	7.31	7.41	7.47	7.49	7.48	7.46	RX1S-5000
	7.21	8.54	9.52	10.27	10.85	11.28	11.61	11.84	12.00	12.09	12.13	12.12	12.08	RX1S-6000
	9.13	10.81	12.06	13.00	13.73	14.28	14.70	14.99	15.19	15.31	15.36	15.35	15.30	RX1S-7000
	10.17	12.05	13.43	14.48	15.29	15.90	16.36	16.70	16.92	17.05	17.10	17.10	17.03	RX1S-8000
	12.99	15.39	17.16	18.50	19.54	20.32	20.90	21.33	21.62	21.79	21.86	21.84	21.76	RX1S-9000
25	0.55	0.78	0.93	1.05	1.13	1.19	1.24	1.28	1.30	1.31	1.33	1.33	1.33	RX1S-2000
	1.15	1.63	1.95	2.18	2.36	2.49	2.59	2.66	2.71	2.75	2.77	2.78	2.77	RX1S-3000
	1.84	2.60	3.11	3.48	3.75	3.97	4.13	4.24	4.33	4.38	4.42	4.43	4.43	RX1S-4000
	3.00	4.24	5.06	5.67	6.12	6.46	6.73	6.92	7.05	7.15	7.20	7.22	7.21	RX1S-5000
	4.85	6.86	8.19	9.17	9.90	10.47	10.89	11.20	11.42	11.57	11.66	11.69	11.68	RX1S-6000
	6.14	8.69	10.38	11.61	12.54	13.25	13.79	14.18	14.46	14.65	14.76	14.80	14.78	RX1S-7000
	6.84	9.67	11.55	12.93	13.97	14.76	15.35	15.79	16.11	16.32	16.43	16.48	16.47	RX1S-8000
	8.74	12.36	14.77	16.52	17.84	18.86	19.62	20.18	20.58	20.84	21.00	21.05	21.04	RX1S-9000
20		0.50	0.74	0.89	0.99	1.08	1.14	1.19	1.22	1.24	1.26	1.27	1.28	RX1S-2000
		1.04	1.53	1.85	2.08	2.25	2.38	2.48	2.55	2.60	2.63	2.65	2.66	RX1S-3000
		1.65	2.44	2.95	3.32	3.59	3.80	3.95	4.07	4.15	4.20	4.24	4.24	RX1S-4000
		2.69	3.98	4.81	5.41	5.85	6.19	6.44	6.63	6.76	6.84	6.89	6.91	RX1S-5000
		4.36	6.44	7.79	8.75	9.48	10.02	10.43	10.73	10.94	11.09	11.16	11.18	RX1S-6000
		5.53	8.16	9.86	11.09	12.00	12.69	13.21	13.59	13.86	14.03	14.13	14.17	RX1S-7000
		6.15	9.09	10.98	12.35	13.36	14.14	14.71	15.14	15.44	15.63	15.74	15.77	RX1S-8000
		7.86	11.61	14.03	15.78	17.07	18.06	18.79	19.33	19.72	19.97	20.11	20.15	RX1S-9000
15			0.43	0.67	0.83	0.94	1.02	1.08	1.13	1.16	1.19	1.20	1.21	RX1S-2000
			0.89	1.42	1.74	1.97	2.13	2.26	2.36	2.43	2.47	2.51	2.52	RX1S-3000
			1.42	2.26	2.78	3.14	3.41	3.61	3.76	3.87	3.95	4.00	4.02	RX1S-4000
			2.32	3.68	4.52	5.11	5.55	5.88	6.13	6.30	6.43	6.50	6.55	RX1S-5000
			3.76	5.96	7.32	8.28	8.99	9.52	9.92	10.21	10.40	10.54	10.61	RX1S-6000
			4.77	7.55	9.27	10.49	11.39	12.06	12.56	12.92	13.18	13.34	13.43	RX1S-7000
			5.30	8.40	10.32	11.68	12.68	13.43	13.99	14.39	14.68	14.85	14.96	RX1S-8000
			6.78	10.73	13.19	14.92	16.20	17.16	17.87	18.39	18.75	18.98	19.11	RX1S-9000
10				0.34	0.61	0.77	0.88	0.96	1.02	1.06	1.09	1.12	1.13	RX1S-2000
				0.71	1.28	1.61	1.84	2.01	2.13	2.22	2.29	2.33	2.36	RX1S-3000
				1.13	2.05	2.57	2.93	3.20	3.40	3.54	3.65	3.72	3.77	RX1S-4000
				1.85	3.33	4.18	4.78	5.22	5.53	5.77	5.94	6.06	6.13	RX1S-5000
				3.00	5.39	6.78	7.74	8.44	8.96	9.34	9.63	9.81	9.94	RX1S-6000
				3.79	6.83	8.59	9.81	10.69	11.35	11.84	12.18	12.43	12.58	RX1S-7000
				4.22	7.61	9.56	10.92	11.91	12.64	13.18	13.56	13.84	14.01	RX1S-8000
				5.39	9.72	12.22	13.95	15.22	16.16	16.84	17.34	17.68	17.89	RX1S-9000

## Extended capacities as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering **1.5 bar pressure drop** through liquid line:

Condensing Temperature (°C)		R407F			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
Dew Point (°C)	Bubble Point (°C)	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
63.5	60	1.25	1.26	1.28	1.28	1.28	1.27	1.26	1.24	1.22	1.20	1.17	1.14	1.11	RX1S-2000
		2.59	2.63	2.65	2.65	2.64	2.63	2.61	2.57	2.53	2.48	2.43	2.37	2.31	RX1S-3000
		4.17	4.23	4.26	4.27	4.26	4.23	4.19	4.13	4.06	3.99	3.91	3.81	3.71	RX1S-4000
		6.76	6.86	6.90	6.92	6.90	6.86	6.79	6.70	6.60	6.47	6.33	6.18	6.02	RX1S-5000
		10.96	11.11	11.19	11.22	11.19	11.13	11.01	10.86	10.69	10.49	10.26	10.02	9.76	RX1S-6000
		13.88	14.07	14.18	14.21	14.17	14.08	13.94	13.76	13.53	13.28	12.99	12.68	12.35	RX1S-7000
		15.46	15.67	15.79	15.83	15.79	15.68	15.52	15.32	15.07	14.79	14.47	14.13	13.76	RX1S-8000
		19.75	20.02	20.17	20.22	20.17	20.03	19.84	19.58	19.25	18.89	18.49	18.04	17.58	RX1S-9000
58.5	55	1.26	1.29	1.30	1.32	1.32	1.32	1.30	1.29	1.27	1.26	1.23	1.20	1.18	RX1S-2000
		2.62	2.67	2.70	2.73	2.73	2.73	2.70	2.68	2.64	2.61	2.55	2.50	2.45	RX1S-3000
		4.21	4.30	4.36	4.39	4.39	4.38	4.35	4.31	4.25	4.18	4.11	4.03	3.94	RX1S-4000
		6.84	6.97	7.06	7.11	7.12	7.11	7.06	6.99	6.90	6.79	6.66	6.53	6.38	RX1S-5000
		11.08	11.30	11.45	11.52	11.55	11.52	11.44	11.33	11.19	11.00	10.80	10.58	10.34	RX1S-6000
		14.03	14.32	14.50	14.59	14.62	14.59	14.49	14.35	14.16	13.94	13.68	13.40	13.10	RX1S-7000
		15.62	15.94	16.14	16.25	16.28	16.24	16.14	15.98	15.77	15.52	15.24	14.92	14.59	RX1S-8000
		19.96	20.37	20.63	20.77	20.81	20.75	20.62	20.41	20.15	19.83	19.46	19.07	18.63	RX1S-9000
54	50	1.25	1.29	1.31	1.32	1.34	1.34	1.33	1.32	1.31	1.29	1.28	1.26	1.23	RX1S-2000
		2.60	2.67	2.72	2.76	2.77	2.78	2.77	2.75	2.73	2.69	2.64	2.60	2.55	RX1S-3000
		4.18	4.30	4.38	4.43	4.46	4.46	4.45	4.42	4.38	4.33	4.26	4.18	4.09	RX1S-4000
		6.78	6.96	7.10	7.19	7.23	7.24	7.22	7.17	7.10	7.01	6.90	6.78	6.64	RX1S-5000
		10.98	11.29	11.51	11.65	11.73	11.74	11.70	11.63	11.51	11.37	11.19	10.99	10.77	RX1S-6000
		13.91	14.30	14.58	14.75	14.85	14.86	14.83	14.72	14.58	14.39	14.17	13.92	13.64	RX1S-7000
		15.49	15.92	16.23	16.43	16.53	16.55	16.51	16.40	16.23	16.03	15.78	15.49	15.19	RX1S-8000
		19.79	20.34	20.74	20.99	21.12	21.15	21.09	20.95	20.74	20.48	20.16	19.80	19.40	RX1S-9000
49	45	1.22	1.26	1.30	1.32	1.34	1.35	1.35	1.34	1.33	1.32	1.30	1.29	1.26	RX1S-2000
		2.53	2.62	2.70	2.74	2.78	2.80	2.80	2.79	2.76	2.74	2.70	2.66	2.61	RX1S-3000
		4.06	4.22	4.33	4.42	4.46	4.49	4.49	4.48	4.45	4.40	4.35	4.28	4.21	RX1S-4000
		6.60	6.84	7.03	7.16	7.24	7.28	7.29	7.27	7.21	7.14	7.05	6.94	6.82	RX1S-5000
		10.69	11.10	11.40	11.60	11.73	11.80	11.82	11.77	11.70	11.58	11.43	11.25	11.06	RX1S-6000
		13.53	14.05	14.43	14.69	14.86	14.95	14.96	14.91	14.81	14.66	14.47	14.26	14.00	RX1S-7000
		15.07	15.65	16.07	16.36	16.55	16.65	16.66	16.61	16.49	16.33	16.12	15.87	15.59	RX1S-8000
		19.25	19.99	20.53	20.91	21.15	21.27	21.28	21.22	21.07	20.86	20.59	20.28	19.92	RX1S-9000
44	40	1.16	1.22	1.26	1.30	1.32	1.34	1.34	1.35	1.34	1.33	1.32	1.30	1.28	RX1S-2000
		2.40	2.53	2.63	2.70	2.74	2.77	2.79	2.79	2.78	2.76	2.73	2.70	2.65	RX1S-3000
		3.87	4.07	4.22	4.33	4.41	4.45	4.49	4.49	4.47	4.43	4.39	4.33	4.27	RX1S-4000
		6.28	6.60	6.85	7.03	7.15	7.23	7.27	7.27	7.24	7.20	7.12	7.03	6.92	RX1S-5000
		10.18	10.70	11.10	11.40	11.59	11.72	11.78	11.79	11.74	11.66	11.54	11.39	11.22	RX1S-6000
		12.89	13.56	14.06	14.43	14.68	14.84	14.92	14.93	14.87	14.77	14.62	14.43	14.21	RX1S-7000
		14.35	15.10	15.65	16.07	16.35	16.52	16.62	16.62	16.56	16.44	16.28	16.07	15.82	RX1S-8000
		18.34	19.28	20.00	20.52	20.89	21.12	21.22	21.23	21.15	21.00	20.79	20.52	20.22	RX1S-9000
39.5	35	1.08	1.15	1.21	1.26	1.29	1.31	1.32	1.33	1.33	1.32	1.32	1.30	1.29	RX1S-2000
		2.23	2.40	2.52	2.61	2.67	2.72	2.75	2.76	2.76	2.75	2.73	2.70	2.67	RX1S-3000
		3.59	3.85	4.05	4.19	4.30	4.37	4.42	4.44	4.44	4.42	4.39	4.34	4.28	RX1S-4000
		5.82	6.24	6.56	6.80	6.97	7.09	7.17	7.20	7.20	7.17	7.11	7.04	6.95	RX1S-5000
		9.44	10.12	10.64	11.02	11.30	11.49	11.61	11.67	11.66	11.61	11.53	11.41	11.27	RX1S-6000
		11.95	12.81	13.47	13.96	14.32	14.56	14.71	14.77	14.77	14.71	14.60	14.45	14.26	RX1S-7000
		13.31	14.27	15.00	15.54	15.94	16.21	16.37	16.45	16.45	16.38	16.26	16.09	15.89	RX1S-8000
		17.01	18.23	19.16	19.85	20.37	20.71	20.92	21.01	21.01	20.93	20.77	20.56	20.30	RX1S-9000

Condensing Temperature (°C)		R407F			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
Dew Point (°C)	Bubble Point (°C)	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
34.5	30	0.96	1.06	1.14	1.20	1.24	1.27	1.29	1.30	1.31	1.31	1.30	1.29	1.28	RX1S-2000
		1.99	2.20	2.36	2.48	2.57	2.63	2.67	2.70	2.71	2.71	2.70	2.67	2.65	RX1S-3000
		3.21	3.55	3.79	3.99	4.13	4.23	4.30	4.34	4.36	4.36	4.34	4.30	4.26	RX1S-4000
		5.20	5.75	6.16	6.47	6.70	6.87	6.98	7.05	7.07	7.07	7.04	6.98	6.91	RX1S-5000
		8.42	9.31	9.98	10.49	10.86	11.13	11.31	11.42	11.46	11.46	11.40	11.32	11.20	RX1S-6000
		10.67	11.79	12.64	13.28	13.75	14.09	14.32	14.46	14.52	14.51	14.44	14.33	14.18	RX1S-7000
		11.88	13.13	14.07	14.79	15.31	15.69	15.95	16.10	16.16	16.16	16.08	15.96	15.80	RX1S-8000
15.18	16.78	17.98	18.89	19.56	20.05	20.37	20.57	20.65	20.64	20.55	20.39	20.18	RX1S-9000		
30	25	0.80	0.94	1.04	1.11	1.17	1.21	1.24	1.26	1.27	1.27	1.27	1.27	1.26	RX1S-2000
		1.67	1.95	2.16	2.31	2.43	2.51	2.57	2.61	2.64	2.64	2.64	2.63	2.61	RX1S-3000
		2.68	3.13	3.47	3.72	3.90	4.04	4.14	4.20	4.24	4.25	4.25	4.23	4.20	RX1S-4000
		4.35	5.09	5.63	6.03	6.33	6.55	6.71	6.81	6.87	6.90	6.90	6.86	6.81	RX1S-5000
		7.05	8.24	9.12	9.77	10.26	10.62	10.88	11.05	11.15	11.19	11.17	11.12	11.03	RX1S-6000
		8.92	10.44	11.54	12.37	12.99	13.45	13.77	13.99	14.11	14.17	14.15	14.08	13.97	RX1S-7000
		9.94	11.62	12.86	13.77	14.46	14.98	15.34	15.58	15.72	15.77	15.76	15.68	15.56	RX1S-8000
12.70	14.85	16.42	17.60	18.49	19.13	19.60	19.90	20.08	20.16	20.13	20.03	19.88	RX1S-9000		
25	20	0.58	0.77	0.91	1.01	1.08	1.14	1.17	1.20	1.22	1.23	1.23	1.23	1.23	RX1S-2000
		1.19	1.61	1.89	2.10	2.25	2.36	2.44	2.49	2.53	2.55	2.56	2.56	2.55	RX1S-3000
		1.92	2.59	3.04	3.37	3.61	3.79	3.92	4.01	4.07	4.11	4.12	4.12	4.09	RX1S-4000
		3.11	4.20	4.93	5.46	5.85	6.15	6.36	6.51	6.61	6.66	6.69	6.68	6.64	RX1S-5000
		5.04	6.80	7.99	8.85	9.49	9.97	10.31	10.55	10.71	10.80	10.83	10.82	10.76	RX1S-6000
		6.38	8.62	10.12	11.20	12.02	12.62	13.05	13.36	13.56	13.68	13.72	13.70	13.63	RX1S-7000
		7.11	9.59	11.27	12.48	13.38	14.05	14.54	14.89	15.11	15.23	15.28	15.25	15.18	RX1S-8000
9.08	12.26	14.40	15.95	17.10	17.95	18.58	19.01	19.31	19.46	19.52	19.49	19.39	RX1S-9000		
20	15			0.74	0.88	0.97	1.04	1.10	1.14	1.16	1.17	1.19	1.19	1.19	RX1S-2000
				1.53	1.82	2.01	2.16	2.27	2.35	2.40	2.44	2.46	2.46	2.46	RX1S-3000
				2.47	2.91	3.24	3.48	3.65	3.78	3.87	3.92	3.95	3.97	3.96	RX1S-4000
				4.00	4.73	5.25	5.64	5.92	6.13	6.27	6.36	6.42	6.43	6.42	RX1S-5000
				6.50	7.67	8.51	9.14	9.60	9.93	10.16	10.31	10.40	10.42	10.40	RX1S-6000
				8.23	9.71	10.78	11.57	12.16	12.58	12.87	13.06	13.16	13.20	13.17	RX1S-7000
				9.16	10.82	12.01	12.89	13.54	14.01	14.33	14.54	14.65	14.69	14.66	RX1S-8000
		11.70	13.82	15.34	16.46	17.29	17.89	18.31	18.58	18.73	18.77	18.73	RX1S-9000		
15.5	10				0.70	0.83	0.92	0.99	1.04	1.08	1.11	1.12	1.13	1.14	RX1S-2000
					1.45	1.72	1.92	2.07	2.17	2.25	2.30	2.33	2.34	2.35	RX1S-3000
					2.33	2.77	3.09	3.32	3.49	3.61	3.70	3.75	3.77	3.78	RX1S-4000
					3.77	4.50	5.01	5.39	5.66	5.85	5.99	6.08	6.12	6.13	RX1S-5000
					6.11	7.29	8.12	8.72	9.17	9.49	9.71	9.85	9.92	9.94	RX1S-6000
					7.74	9.23	10.29	11.05	11.62	12.02	12.29	12.47	12.56	12.59	RX1S-7000
					8.62	10.28	11.45	12.31	12.93	13.38	13.69	13.89	13.99	14.01	RX1S-8000
			11.01	13.13	14.63	15.73	16.52	17.10	17.49	17.74	17.87	17.91	RX1S-9000		

## Extended capacities as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering **1.5 bar pressure drop** through liquid line:

Condensing Temperature (°C)	R507			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
60	0.68	0.68	0.68	0.67	0.66	0.64	0.63	0.60	0.58	0.55	0.52	0.49	0.46	RX1S-2000
	1.41	1.42	1.41	1.39	1.37	1.34	1.30	1.25	1.20	1.14	1.09	1.02	0.96	RX1S-3000
	2.25	2.26	2.25	2.22	2.18	2.13	2.07	1.99	1.91	1.82	1.73	1.63	1.52	RX1S-4000
	3.66	3.68	3.66	3.62	3.55	3.47	3.37	3.24	3.11	2.97	2.81	2.66	2.49	RX1S-5000
	5.92	5.94	5.92	5.84	5.74	5.60	5.43	5.23	5.02	4.79	4.54	4.29	4.01	RX1S-6000
	7.51	7.54	7.51	7.42	7.28	7.11	6.89	6.65	6.38	6.08	5.76	5.44	5.10	RX1S-7000
	8.35	8.38	8.35	8.25	8.10	7.90	7.66	7.39	7.09	6.76	6.41	6.04	5.66	RX1S-8000
	10.68	10.73	10.68	10.56	10.37	10.11	9.80	9.46	9.07	8.65	8.20	7.73	7.25	RX1S-9000
55	0.73	0.74	0.75	0.74	0.74	0.73	0.71	0.69	0.67	0.64	0.62	0.59	0.56	RX1S-2000
	1.52	1.55	1.55	1.55	1.53	1.51	1.48	1.44	1.39	1.34	1.29	1.23	1.17	RX1S-3000
	2.42	2.46	2.48	2.47	2.45	2.41	2.36	2.29	2.22	2.14	2.05	1.97	1.87	RX1S-4000
	3.94	4.01	4.03	4.02	3.98	3.91	3.83	3.74	3.61	3.49	3.35	3.20	3.04	RX1S-5000
	6.38	6.46	6.50	6.49	6.42	6.32	6.19	6.03	5.84	5.63	5.40	5.17	4.91	RX1S-6000
	8.09	8.21	8.26	8.23	8.15	8.03	7.86	7.65	7.41	7.15	6.87	6.56	6.24	RX1S-7000
	8.99	9.13	9.17	9.15	9.06	8.93	8.73	8.51	8.24	7.95	7.63	7.29	6.93	RX1S-8000
	11.51	11.68	11.74	11.71	11.60	11.42	11.18	10.88	10.54	10.17	9.76	9.33	8.87	RX1S-9000
50	0.76	0.77	0.79	0.79	0.79	0.78	0.77	0.76	0.74	0.73	0.70	0.68	0.64	RX1S-2000
	1.57	1.61	1.64	1.65	1.64	1.64	1.61	1.58	1.54	1.50	1.45	1.40	1.34	RX1S-3000
	2.50	2.58	2.61	2.62	2.62	2.60	2.57	2.52	2.45	2.39	2.31	2.23	2.14	RX1S-4000
	4.07	4.19	4.25	4.28	4.27	4.23	4.18	4.10	4.00	3.89	3.76	3.63	3.49	RX1S-5000
	6.58	6.75	6.86	6.91	6.89	6.83	6.74	6.62	6.46	6.28	6.08	5.85	5.62	RX1S-6000
	8.36	8.58	8.71	8.77	8.75	8.68	8.56	8.40	8.19	7.97	7.71	7.44	7.14	RX1S-7000
	9.29	9.54	9.68	9.75	9.73	9.65	9.51	9.34	9.11	8.85	8.57	8.27	7.94	RX1S-8000
	11.88	12.20	12.39	12.47	12.44	12.35	12.18	11.94	11.66	11.33	10.97	10.58	10.16	RX1S-9000
45	0.76	0.78	0.81	0.82	0.82	0.82	0.81	0.81	0.79	0.77	0.76	0.73	0.71	RX1S-2000
	1.56	1.64	1.68	1.70	1.72	1.72	1.70	1.68	1.65	1.61	1.57	1.52	1.47	RX1S-3000
	2.49	2.60	2.67	2.71	2.74	2.73	2.71	2.68	2.63	2.58	2.50	2.43	2.35	RX1S-4000
	4.07	4.23	4.35	4.42	4.44	4.44	4.41	4.36	4.28	4.19	4.08	3.96	3.82	RX1S-5000
	6.56	6.83	7.02	7.13	7.18	7.17	7.12	7.03	6.91	6.76	6.58	6.39	6.18	RX1S-6000
	8.32	8.68	8.91	9.06	9.11	9.10	9.04	8.93	8.77	8.58	8.36	8.11	7.85	RX1S-7000
	9.26	9.65	9.91	10.07	10.13	10.12	10.05	9.92	9.75	9.54	9.30	9.02	8.73	RX1S-8000
	11.85	12.35	12.68	12.88	12.97	12.95	12.86	12.70	12.48	12.21	11.90	11.54	11.16	RX1S-9000
40	0.73	0.77	0.81	0.82	0.84	0.85	0.85	0.84	0.83	0.81	0.80	0.78	0.76	RX1S-2000
	1.51	1.60	1.67	1.72	1.74	1.76	1.76	1.74	1.72	1.69	1.66	1.62	1.58	RX1S-3000
	2.40	2.55	2.66	2.74	2.78	2.80	2.80	2.78	2.74	2.70	2.65	2.58	2.51	RX1S-4000
	3.91	4.15	4.33	4.45	4.52	4.56	4.55	4.52	4.47	4.40	4.31	4.20	4.09	RX1S-5000
	6.31	6.71	6.99	7.19	7.30	7.35	7.35	7.30	7.22	7.10	6.95	6.79	6.60	RX1S-6000
	8.01	8.52	8.88	9.12	9.27	9.33	9.33	9.27	9.17	9.02	8.83	8.62	8.38	RX1S-7000
	8.91	9.47	9.87	10.14	10.30	10.37	10.37	10.31	10.19	10.03	9.82	9.58	9.32	RX1S-8000
	11.40	12.12	12.63	12.97	13.18	13.28	13.27	13.19	13.04	12.83	12.56	12.27	11.93	RX1S-9000
35	0.67	0.73	0.78	0.81	0.83	0.85	0.86	0.86	0.85	0.84	0.83	0.81	0.79	RX1S-2000
	1.38	1.52	1.62	1.68	1.73	1.77	1.77	1.77	1.75	1.72	1.68	1.65	1.65	RX1S-3000
	2.21	2.42	2.58	2.69	2.77	2.81	2.83	2.83	2.82	2.78	2.74	2.69	2.63	RX1S-4000
	3.60	3.94	4.20	4.38	4.50	4.57	4.61	4.61	4.58	4.53	4.46	4.38	4.28	RX1S-5000
	5.81	6.38	6.78	7.07	7.26	7.38	7.44	7.44	7.40	7.32	7.20	7.07	6.91	RX1S-6000
	7.38	8.09	8.61	8.98	9.22	9.37	9.44	9.44	9.39	9.29	9.14	8.97	8.77	RX1S-7000
	8.20	9.00	9.57	9.98	10.25	10.42	10.49	10.50	10.44	10.32	10.17	9.97	9.75	RX1S-8000
	10.50	11.51	12.24	12.77	13.12	13.33	13.43	13.43	13.36	13.22	13.01	12.77	12.48	RX1S-9000

Condensing Temperature (°C)	R507			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
30	0.57	0.67	0.73	0.78	0.81	0.83	0.85	0.86	0.86	0.86	0.84	0.83	0.81	RX1S-2000
	1.19	1.38	1.52	1.62	1.69	1.73	1.77	1.78	1.78	1.77	1.75	1.72	1.69	RX1S-3000
	1.90	2.21	2.42	2.58	2.69	2.77	2.81	2.83	2.83	2.82	2.79	2.75	2.70	RX1S-4000
	3.10	3.59	3.94	4.19	4.38	4.50	4.57	4.61	4.61	4.59	4.54	4.48	4.40	RX1S-5000
	5.00	5.80	6.37	6.78	7.07	7.27	7.39	7.44	7.45	7.41	7.33	7.23	7.10	RX1S-6000
	6.34	7.36	8.08	8.61	8.98	9.22	9.38	9.45	9.46	9.41	9.31	9.18	9.01	RX1S-7000
	7.05	8.18	8.98	9.57	9.98	10.26	10.43	10.51	10.52	10.46	10.36	10.20	10.01	RX1S-8000
	9.03	10.47	11.50	12.24	12.77	13.13	13.34	13.45	13.46	13.39	13.25	13.06	12.81	RX1S-9000
25	0.42	0.56	0.66	0.73	0.77	0.81	0.83	0.84	0.85	0.85	0.85	0.84	0.82	RX1S-2000
	0.87	1.17	1.37	1.51	1.60	1.68	1.72	1.75	1.77	1.77	1.76	1.74	1.72	RX1S-3000
	1.40	1.87	2.17	2.40	2.55	2.66	2.74	2.78	2.81	2.82	2.80	2.77	2.74	RX1S-4000
	2.28	3.04	3.54	3.90	4.15	4.34	4.46	4.53	4.57	4.58	4.56	4.51	4.44	RX1S-5000
	3.67	4.90	5.72	6.30	6.71	7.00	7.20	7.32	7.38	7.39	7.36	7.28	7.18	RX1S-6000
	4.67	6.22	7.26	7.99	8.52	8.89	9.14	9.30	9.37	9.39	9.34	9.24	9.11	RX1S-7000
	5.19	6.92	8.07	8.89	9.47	9.88	10.16	10.34	10.42	10.43	10.38	10.28	10.13	RX1S-8000
	6.64	8.85	10.33	11.36	12.12	12.64	13.01	13.22	13.34	13.34	13.28	13.15	12.97	RX1S-9000
20	0.40	0.55	0.64	0.71	0.76	0.79	0.81	0.82	0.83	0.83	0.83	0.83	0.82	RX1S-2000
	0.83	1.13	1.34	1.47	1.57	1.64	1.69	1.72	1.73	1.73	1.73	1.72	1.71	RX1S-3000
	1.32	1.80	2.13	2.34	2.50	2.62	2.70	2.74	2.76	2.77	2.77	2.75	2.73	RX1S-4000
	2.15	2.94	3.45	3.82	4.07	4.26	4.38	4.46	4.49	4.50	4.48	4.44	4.44	RX1S-5000
	3.47	4.75	5.58	6.17	6.58	6.87	7.08	7.20	7.26	7.27	7.27	7.23	7.16	RX1S-6000
	4.41	6.03	7.08	7.82	8.36	8.73	8.98	9.14	9.21	9.22	9.18	9.10	9.10	RX1S-7000
	4.91	6.70	7.87	8.70	9.29	9.71	9.99	10.16	10.24	10.25	10.20	10.11	10.11	RX1S-8000
	6.28	8.58	10.08	11.13	11.89	12.42	12.77	13.00	13.10	13.12	13.06	12.93	12.93	RX1S-9000
15	0.37	0.52	0.62	0.68	0.73	0.77	0.79	0.81	0.81	0.81	0.81	0.81	0.81	RX1S-2000
	0.77	1.09	1.29	1.43	1.53	1.60	1.64	1.64	1.68	1.68	1.69	1.68	1.68	RX1S-3000
	1.22	1.72	2.05	2.28	2.43	2.54	2.62	2.62	2.67	2.69	2.70	2.68	2.68	RX1S-4000
	1.99	2.81	3.33	3.70	3.96	4.15	4.27	4.34	4.38	4.38	4.39	4.36	4.36	RX1S-5000
	3.21	4.54	5.39	5.97	6.39	6.69	6.89	7.01	7.07	7.07	7.08	7.05	7.05	RX1S-6000
	4.07	5.76	6.84	7.58	8.12	8.49	8.74	8.89	8.98	8.99	8.99	8.95	8.95	RX1S-7000
	4.53	6.41	7.60	8.44	9.02	9.44	9.72	9.89	9.98	9.99	9.99	9.95	9.95	RX1S-8000
	5.80	8.20	9.73	10.79	11.55	12.08	12.44	12.66	12.77	12.77	12.79	12.73	12.73	RX1S-9000
10	0.33	0.49	0.59	0.66	0.71	0.74	0.74	0.77	0.77	0.77	0.78	0.78	0.78	RX1S-2000
	0.69	1.02	1.23	1.37	1.47	1.54	1.59	1.62	1.62	1.63	1.63	1.64	1.64	RX1S-3000
	1.09	1.63	1.96	2.18	2.34	2.45	2.53	2.58	2.58	2.60	2.60	2.60	2.60	RX1S-4000
	1.78	2.65	3.18	3.55	3.81	3.99	4.11	4.19	4.19	4.23	4.23	4.23	4.23	RX1S-5000
	2.87	4.28	5.14	5.73	6.15	6.45	6.64	6.76	6.76	6.83	6.83	6.84	6.84	RX1S-6000
	3.64	5.43	6.52	7.28	7.81	8.19	8.44	8.59	8.67	8.67	8.67	8.69	8.69	RX1S-7000
	4.05	6.03	7.25	8.09	8.68	9.09	9.38	9.54	9.54	9.63	9.63	9.65	9.65	RX1S-8000
	5.18	7.72	9.28	10.36	11.12	11.65	12.00	12.22	12.22	12.33	12.33	12.35	12.35	RX1S-9000

## Extended capacities as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering **1.5 bar pressure drop** through liquid line:

Condensing Temperature (°C)	R449A			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
60	1.21	1.22	1.23	1.23	1.22	1.20	1.18	1.16	1.14	1.11	1.08	1.05	1.01	RX1S-2000
	2.56	2.58	2.59	2.58	2.57	2.55	2.50	2.46	2.40	2.34	2.28	2.21	2.14	RX1S-3000
	4.06	4.11	4.12	4.12	4.09	4.05	3.99	3.91	3.83	3.74	3.63	3.52	3.40	RX1S-4000
	6.61	6.68	6.71	6.70	6.65	6.58	6.49	6.36	6.23	6.07	5.90	5.71	5.53	RX1S-5000
	10.71	10.82	10.87	10.85	10.79	10.66	10.51	10.32	10.09	9.84	9.56	9.27	8.96	RX1S-6000
	13.55	13.70	13.76	13.74	13.65	13.50	13.30	13.06	12.77	12.45	12.11	11.73	11.34	RX1S-7000
	15.10	15.26	15.33	15.31	15.21	15.04	14.82	14.56	14.24	13.88	13.49	13.07	12.63	RX1S-8000
	19.28	19.49	19.57	19.54	19.42	19.21	18.92	18.58	18.17	17.72	17.22	16.69	16.13	RX1S-9000
55	1.24	1.26	1.27	1.28	1.28	1.27	1.25	1.24	1.22	1.19	1.16	1.13	1.10	RX1S-2000
	2.62	2.66	2.69	2.70	2.70	2.68	2.65	2.62	2.57	2.52	2.46	2.39	2.32	RX1S-3000
	4.17	4.24	4.28	4.30	4.30	4.28	4.23	4.17	4.10	4.01	3.91	3.82	3.70	RX1S-4000
	6.77	6.89	6.96	7.00	6.99	6.95	6.88	6.78	6.65	6.52	6.36	6.20	6.02	RX1S-5000
	10.97	11.18	11.29	11.34	11.32	11.25	11.13	10.98	10.79	10.56	10.32	10.04	9.76	RX1S-6000
	13.89	14.15	14.30	14.35	14.33	14.24	14.09	13.90	13.66	13.37	13.06	12.71	12.35	RX1S-7000
	15.48	15.76	15.93	15.99	15.97	15.87	15.71	15.49	15.21	14.90	14.55	14.16	13.76	RX1S-8000
	19.77	20.12	20.33	20.41	20.39	20.26	20.06	19.78	19.43	19.02	18.58	18.09	17.57	RX1S-9000
50	1.24	1.27	1.30	1.31	1.31	1.31	1.31	1.29	1.27	1.25	1.23	1.20	1.17	RX1S-2000
	2.62	2.69	2.73	2.76	2.78	2.77	2.75	2.72	2.69	2.64	2.59	2.54	2.47	RX1S-3000
	4.18	4.28	4.36	4.41	4.42	4.42	4.39	4.35	4.28	4.21	4.12	4.04	3.93	RX1S-4000
	6.79	6.96	7.09	7.16	7.19	7.18	7.13	7.06	6.96	6.85	6.71	6.56	6.40	RX1S-5000
	10.99	11.28	11.49	11.60	11.64	11.63	11.56	11.44	11.28	11.10	10.88	10.63	10.36	RX1S-6000
	13.92	14.29	14.54	14.69	14.74	14.71	14.63	14.48	14.29	14.04	13.77	13.45	13.12	RX1S-7000
	15.50	15.92	16.20	16.36	16.43	16.40	16.30	16.13	15.92	15.65	15.34	14.99	14.62	RX1S-8000
	19.80	20.33	20.69	20.89	20.97	20.94	20.81	20.60	20.33	19.98	19.58	19.15	18.67	RX1S-9000
45	1.22	1.26	1.30	1.31	1.33	1.33	1.33	1.32	1.31	1.30	1.27	1.24	1.22	RX1S-2000
	2.56	2.66	2.73	2.78	2.81	2.81	2.81	2.80	2.77	2.72	2.68	2.64	2.57	RX1S-3000
	4.09	4.24	4.35	4.43	4.47	4.49	4.48	4.45	4.41	4.35	4.28	4.20	4.11	RX1S-4000
	6.64	6.90	7.08	7.19	7.26	7.29	7.28	7.24	7.17	7.07	6.95	6.82	6.67	RX1S-5000
	10.78	11.18	11.47	11.67	11.77	11.82	11.80	11.73	11.60	11.45	11.27	11.04	10.80	RX1S-6000
	13.64	14.16	14.52	14.77	14.91	14.95	14.94	14.84	14.70	14.50	14.26	13.99	13.69	RX1S-7000
	15.19	15.77	16.18	16.45	16.61	16.67	16.64	16.54	16.37	16.15	15.89	15.58	15.25	RX1S-8000
	19.40	20.14	20.66	21.01	21.20	21.28	21.25	21.11	20.91	20.63	20.29	19.90	19.46	RX1S-9000
40	1.16	1.23	1.27	1.31	1.32	1.33	1.34	1.34	1.33	1.31	1.30	1.28	1.25	RX1S-2000
	2.46	2.58	2.68	2.75	2.80	2.82	2.83	2.82	2.81	2.78	2.74	2.70	2.64	RX1S-3000
	3.91	4.12	4.28	4.38	4.45	4.50	4.50	4.50	4.47	4.43	4.36	4.29	4.21	RX1S-4000
	6.36	6.70	6.95	7.12	7.24	7.30	7.33	7.31	7.26	7.19	7.10	6.98	6.86	RX1S-5000
	10.31	10.85	11.25	11.53	11.73	11.84	11.87	11.84	11.77	11.66	11.51	11.32	11.11	RX1S-6000
	13.05	13.74	14.24	14.61	14.85	14.98	15.02	15.00	14.91	14.76	14.56	14.33	14.06	RX1S-7000
	14.55	15.31	15.87	16.28	16.54	16.69	16.75	16.71	16.61	16.44	16.23	15.97	15.66	RX1S-8000
	18.57	19.54	20.26	20.78	21.11	21.31	21.38	21.34	21.20	21.00	20.72	20.39	20.01	RX1S-9000
35	1.09	1.16	1.23	1.27	1.30	1.31	1.33	1.33	1.33	1.32	1.31	1.29	1.27	RX1S-2000
	2.29	2.46	2.58	2.67	2.74	2.79	2.81	2.81	2.81	2.80	2.76	2.72	2.69	RX1S-3000
	3.64	3.90	4.11	4.26	4.36	4.43	4.48	4.49	4.48	4.45	4.41	4.35	4.28	RX1S-4000
	5.91	6.35	6.68	6.93	7.10	7.21	7.27	7.29	7.27	7.23	7.16	7.07	6.95	RX1S-5000
	9.58	10.30	10.83	11.22	11.51	11.68	11.78	11.82	11.79	11.72	11.60	11.45	11.27	RX1S-6000
	12.12	13.03	13.71	14.21	14.56	14.79	14.92	14.96	14.93	14.84	14.69	14.49	14.26	RX1S-7000
	13.51	14.52	15.27	15.83	16.22	16.48	16.62	16.67	16.64	16.53	16.36	16.15	15.89	RX1S-8000
	17.25	18.54	19.51	20.22	20.72	21.04	21.23	21.28	21.24	21.11	20.90	20.63	20.30	RX1S-9000

Condensing Temperature (°C)	R449A			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
30	0.96	1.07	1.15	1.21	1.25	1.29	1.31	1.31	1.31	1.31	1.31	1.30	1.28	RX1S-2000
	2.04	2.26	2.43	2.56	2.64	2.71	2.75	2.78	2.78	2.78	2.76	2.73	2.70	RX1S-3000
	3.24	3.60	3.87	4.07	4.21	4.32	4.38	4.42	4.43	4.43	4.39	4.35	4.29	RX1S-4000
	5.26	5.86	6.29	6.62	6.85	7.02	7.12	7.19	7.20	7.19	7.14	7.07	6.97	RX1S-5000
	8.53	9.48	10.19	10.72	11.11	11.37	11.55	11.65	11.68	11.65	11.57	11.45	11.30	RX1S-6000
	10.80	12.01	12.90	13.57	14.06	14.39	14.62	14.74	14.78	14.74	14.64	14.50	14.31	RX1S-7000
	12.04	13.38	14.38	15.12	15.66	16.05	16.29	16.43	16.47	16.43	16.32	16.16	15.95	RX1S-8000
	15.37	17.08	18.36	19.31	20.00	20.48	20.80	20.97	21.03	20.97	20.84	20.63	20.36	RX1S-9000
25	0.79	0.94	1.05	1.13	1.19	1.23	1.26	1.28	1.29	1.29	1.29	1.28	1.27	RX1S-2000
	1.68	1.99	2.22	2.39	2.51	2.60	2.66	2.70	2.72	2.72	2.72	2.70	2.67	RX1S-3000
	2.68	3.17	3.53	3.80	3.99	4.13	4.24	4.30	4.34	4.35	4.33	4.30	4.26	RX1S-4000
	4.35	5.16	5.74	6.18	6.49	6.72	6.88	6.99	7.04	7.06	7.04	6.99	6.92	RX1S-5000
	7.06	8.36	9.31	10.01	10.52	10.90	11.16	11.33	11.42	11.44	11.41	11.34	11.22	RX1S-6000
	8.92	10.59	11.79	12.67	13.32	13.80	14.13	14.34	14.46	14.48	14.45	14.35	14.20	RX1S-7000
	9.94	11.80	13.13	14.12	14.85	15.37	15.74	15.98	16.11	16.14	16.10	15.99	15.82	RX1S-8000
	12.70	15.06	16.76	18.02	18.96	19.63	20.10	20.40	20.56	20.61	20.56	20.41	20.21	RX1S-9000
20	0.54	0.77	0.92	1.02	1.10	1.16	1.20	1.23	1.24	1.25	1.25	1.25	1.24	RX1S-2000
	1.14	1.63	1.94	2.16	2.32	2.44	2.53	2.59	2.63	2.64	2.65	2.64	2.63	RX1S-3000
	1.82	2.59	3.08	3.44	3.70	3.90	4.03	4.12	4.19	4.22	4.22	4.21	4.19	RX1S-4000
	2.95	4.20	5.01	5.59	6.02	6.33	6.55	6.71	6.80	6.86	6.87	6.85	6.80	RX1S-5000
	4.78	6.81	8.12	9.05	9.75	10.25	10.62	10.87	11.03	11.11	11.13	11.10	11.02	RX1S-6000
	6.06	8.61	10.28	11.47	12.34	12.98	13.44	13.76	13.96	14.07	14.09	14.05	13.95	RX1S-7000
	6.75	9.60	11.45	12.77	13.75	14.46	14.97	15.33	15.56	15.67	15.70	15.65	15.55	RX1S-8000
	8.62	12.26	14.62	16.32	17.55	18.46	19.12	19.57	19.86	20.01	20.05	19.99	19.85	RX1S-9000
15	0.49	0.73	0.88	0.99	1.06	1.12	1.16	1.18	1.20	1.21	1.21	1.21	1.21	RX1S-2000
	1.05	1.55	1.86	2.08	2.24	2.36	2.45	2.50	2.54	2.56	2.56	2.56	2.56	RX1S-3000
	1.67	2.46	2.96	3.31	3.57	3.76	3.90	3.98	4.05	4.07	4.08	4.08	4.06	RX1S-4000
	2.72	4.00	4.82	5.39	5.81	6.11	6.33	6.48	6.57	6.62	6.63	6.63	6.61	RX1S-5000
	4.41	6.49	7.80	8.73	9.41	9.91	10.26	10.50	10.65	10.72	10.74	10.74	10.71	RX1S-6000
	5.58	8.21	9.88	11.06	11.91	12.54	12.98	13.30	13.48	13.58	13.60	13.60	13.55	RX1S-7000
	6.22	9.15	11.01	12.32	13.28	13.97	14.48	14.81	15.03	15.13	15.16	15.16	15.10	RX1S-8000
	7.94	11.68	14.06	15.73	16.96	17.84	18.48	18.92	19.18	19.32	19.35	19.35	19.29	RX1S-9000
10	0.44	0.69	0.84	0.94	1.01	1.07	1.11	1.14	1.16	1.16	1.16	1.16	1.16	RX1S-2000
	0.94	1.45	1.77	1.98	2.14	2.26	2.34	2.39	2.43	2.45	2.45	2.45	2.45	RX1S-3000
	1.49	2.31	2.82	3.16	3.42	3.60	3.73	3.82	3.88	3.90	3.90	3.90	3.90	RX1S-4000
	2.43	3.76	4.58	5.15	5.55	5.86	6.07	6.21	6.30	6.34	6.34	6.35	6.35	RX1S-5000
	3.93	6.09	7.42	8.34	9.01	9.49	9.83	10.06	10.21	10.27	10.27	10.29	10.29	RX1S-6000
	4.98	7.71	9.39	10.55	11.41	12.01	12.44	12.74	12.92	13.01	13.01	13.02	13.02	RX1S-7000
	5.54	8.59	10.47	11.76	12.70	13.38	13.86	14.19	14.40	14.49	14.49	14.51	14.51	RX1S-8000
	7.08	10.97	13.35	15.02	16.22	17.09	17.71	18.13	18.38	18.51	18.52	18.52	18.52	RX1S-9000

## Extended capacities as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering **1.5 bar pressure drop** through liquid line:

Condensing Temperature (°C)	R448A			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
60	1.24	1.26	1.26	1.26	1.25	1.24	1.22	1.19	1.17	1.14	1.11	1.08	1.04	RX1S-2000
	2.60	2.63	2.64	2.64	2.63	2.60	2.56	2.51	2.46	2.40	2.33	2.26	2.19	RX1S-3000
	4.15	4.20	4.22	4.22	4.19	4.15	4.08	4.01	3.93	3.84	3.73	3.62	3.49	RX1S-4000
	6.75	6.82	6.85	6.84	6.81	6.74	6.64	6.52	6.38	6.23	6.06	5.87	5.68	RX1S-5000
	10.93	11.05	11.10	11.09	11.02	10.91	10.75	10.56	10.34	10.09	9.81	9.51	9.20	RX1S-6000
	13.84	13.99	14.06	14.05	13.97	13.82	13.62	13.37	13.09	12.77	12.43	12.05	11.65	RX1S-7000
	15.42	15.59	15.66	15.65	15.55	15.39	15.17	14.90	14.58	14.23	13.84	13.42	12.98	RX1S-8000
	19.69	19.91	20.00	19.98	19.87	19.66	19.38	19.03	18.62	18.17	17.68	17.15	16.59	RX1S-9000
55	1.27	1.29	1.31	1.31	1.31	1.30	1.29	1.27	1.25	1.23	1.19	1.17	1.13	RX1S-2000
	2.66	2.71	2.74	2.76	2.75	2.73	2.70	2.67	2.63	2.57	2.52	2.45	2.38	RX1S-3000
	4.26	4.33	4.38	4.40	4.39	4.37	4.33	4.27	4.20	4.11	4.01	3.92	3.80	RX1S-4000
	6.91	7.04	7.12	7.15	7.14	7.10	7.03	6.93	6.82	6.67	6.52	6.36	6.17	RX1S-5000
	11.20	11.40	11.53	11.58	11.56	11.50	11.39	11.23	11.03	10.81	10.56	10.29	10.00	RX1S-6000
	14.19	14.44	14.60	14.66	14.65	14.57	14.42	14.22	13.98	13.70	13.38	13.04	12.67	RX1S-7000
	15.80	16.09	16.26	16.34	16.32	16.22	16.06	15.84	15.57	15.26	14.91	14.53	14.11	RX1S-8000
	20.19	20.55	20.77	20.87	20.84	20.72	20.51	20.23	19.89	19.49	19.04	18.55	18.02	RX1S-9000
50	1.27	1.31	1.33	1.34	1.34	1.34	1.34	1.33	1.31	1.28	1.27	1.23	1.20	RX1S-2000
	2.67	2.74	2.78	2.82	2.83	2.83	2.81	2.78	2.75	2.70	2.65	2.59	2.53	RX1S-3000
	4.26	4.37	4.45	4.50	4.52	4.52	4.49	4.45	4.38	4.31	4.23	4.14	4.03	RX1S-4000
	6.92	7.11	7.24	7.31	7.34	7.33	7.29	7.22	7.12	7.00	6.87	6.72	6.55	RX1S-5000
	11.22	11.52	11.72	11.84	11.89	11.87	11.80	11.69	11.54	11.34	11.13	10.88	10.62	RX1S-6000
	14.21	14.59	14.85	15.00	15.06	15.04	14.95	14.81	14.61	14.37	14.10	13.79	13.44	RX1S-7000
	15.82	16.25	16.54	16.71	16.77	16.75	16.65	16.49	16.27	16.01	15.70	15.36	14.98	RX1S-8000
	20.21	20.76	21.12	21.33	21.42	21.40	21.27	21.07	20.79	20.45	20.05	19.61	19.13	RX1S-9000
45	1.25	1.29	1.33	1.34	1.36	1.37	1.36	1.35	1.34	1.33	1.31	1.28	1.26	RX1S-2000
	2.62	2.71	2.78	2.83	2.86	2.87	2.86	2.85	2.82	2.78	2.74	2.69	2.63	RX1S-3000
	4.18	4.34	4.45	4.52	4.57	4.59	4.58	4.55	4.51	4.45	4.37	4.30	4.21	RX1S-4000
	6.79	7.05	7.22	7.34	7.42	7.44	7.43	7.39	7.32	7.23	7.11	6.97	6.82	RX1S-5000
	11.00	11.40	11.70	11.90	12.01	12.06	12.04	11.97	11.85	11.70	11.52	11.30	11.06	RX1S-6000
	13.93	14.45	14.82	15.08	15.22	15.28	15.25	15.17	15.03	14.83	14.59	14.32	14.01	RX1S-7000
	15.51	16.09	16.51	16.79	16.95	17.01	16.99	16.89	16.73	16.51	16.25	15.94	15.60	RX1S-8000
	19.82	20.56	21.09	21.45	21.65	21.73	21.71	21.58	21.37	21.10	20.75	20.36	19.93	RX1S-9000
40	1.19	1.26	1.30	1.34	1.35	1.37	1.37	1.37	1.36	1.35	1.34	1.31	1.28	RX1S-2000
	2.50	2.63	2.73	2.80	2.85	2.87	2.88	2.87	2.86	2.83	2.79	2.75	2.70	RX1S-3000
	4.01	4.21	4.37	4.47	4.55	4.59	4.60	4.59	4.57	4.52	4.47	4.40	4.31	RX1S-4000
	6.50	6.83	7.09	7.27	7.39	7.45	7.48	7.47	7.42	7.35	7.26	7.14	7.01	RX1S-5000
	10.53	11.08	11.48	11.77	11.96	12.08	12.11	12.09	12.02	11.91	11.76	11.57	11.36	RX1S-6000
	13.33	14.03	14.55	14.91	15.16	15.30	15.34	15.32	15.23	15.09	14.89	14.65	14.39	RX1S-7000
	14.85	15.62	16.19	16.61	16.88	17.03	17.09	17.06	16.96	16.79	16.58	16.32	16.02	RX1S-8000
	18.97	19.96	20.69	21.21	21.56	21.76	21.83	21.79	21.67	21.46	21.18	20.85	20.47	RX1S-9000
35	1.11	1.19	1.26	1.30	1.33	1.35	1.36	1.37	1.36	1.35	1.34	1.33	1.31	RX1S-2000
	2.33	2.50	2.63	2.72	2.79	2.84	2.86	2.87	2.86	2.85	2.82	2.78	2.74	RX1S-3000
	3.72	4.00	4.20	4.36	4.46	4.53	4.57	4.59	4.58	4.55	4.51	4.45	4.37	RX1S-4000
	6.04	6.49	6.82	7.07	7.25	7.36	7.42	7.44	7.43	7.39	7.32	7.22	7.11	RX1S-5000
	9.79	10.51	11.05	11.46	11.74	11.93	12.02	12.06	12.04	11.96	11.85	11.70	11.51	RX1S-6000
	12.40	13.31	14.00	14.50	14.87	15.10	15.24	15.28	15.25	15.16	15.01	14.81	14.58	RX1S-7000
	13.81	14.83	15.59	16.16	16.56	16.82	16.96	17.01	16.98	16.88	16.71	16.50	16.25	RX1S-8000
	17.64	18.94	19.92	20.64	21.15	21.48	21.67	21.73	21.70	21.56	21.35	21.08	20.75	RX1S-9000



Condensing Temperature (°C)	R448A			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
30	0.99	1.10	1.18	1.24	1.28	1.32	1.34	1.34	1.35	1.34	1.34	1.33	1.31	RX1S-2000
	2.08	2.31	2.47	2.61	2.70	2.76	2.80	2.83	2.84	2.83	2.81	2.78	2.75	RX1S-3000
	3.32	3.69	3.96	4.16	4.30	4.41	4.48	4.52	4.52	4.52	4.49	4.45	4.39	RX1S-4000
	5.40	5.99	6.43	6.75	6.99	7.17	7.27	7.34	7.35	7.34	7.29	7.22	7.12	RX1S-5000
	8.74	9.70	10.41	10.94	11.33	11.61	11.78	11.88	11.91	11.88	11.81	11.70	11.55	RX1S-6000
	11.07	12.28	13.19	13.86	14.35	14.70	14.93	15.05	15.09	15.05	14.96	14.81	14.63	RX1S-7000
	12.33	13.68	14.68	15.43	15.98	16.37	16.63	16.76	16.80	16.77	16.66	16.49	16.28	RX1S-8000
	15.75	17.47	18.76	19.72	20.43	20.91	21.24	21.41	21.47	21.42	21.28	21.08	20.80	RX1S-9000
25	0.82	0.97	1.08	1.16	1.22	1.26	1.29	1.31	1.32	1.33	1.32	1.31	1.30	RX1S-2000
	1.73	2.04	2.26	2.43	2.55	2.64	2.71	2.75	2.78	2.78	2.77	2.75	2.72	RX1S-3000
	2.76	3.26	3.62	3.88	4.08	4.23	4.33	4.39	4.43	4.44	4.43	4.40	4.36	RX1S-4000
	4.48	5.29	5.87	6.31	6.63	6.87	7.03	7.13	7.19	7.20	7.19	7.14	7.07	RX1S-5000
	7.26	8.57	9.52	10.22	10.74	11.12	11.39	11.55	11.65	11.67	11.64	11.57	11.45	RX1S-6000
	9.19	10.86	12.06	12.95	13.61	14.09	14.42	14.64	14.75	14.79	14.75	14.65	14.50	RX1S-7000
	10.24	12.09	13.43	14.42	15.15	15.69	16.06	16.30	16.43	16.47	16.42	16.32	16.16	RX1S-8000
	13.08	15.44	17.15	18.42	19.37	20.05	20.52	20.83	20.99	21.03	20.98	20.85	20.64	RX1S-9000
20	0.57	0.80	0.95	1.05	1.13	1.19	1.23	1.26	1.27	1.28	1.28	1.28	1.27	RX1S-2000
	1.19	1.67	1.98	2.21	2.37	2.49	2.58	2.63	2.68	2.70	2.70	2.70	2.68	RX1S-3000
	1.90	2.67	3.16	3.52	3.78	3.98	4.12	4.22	4.28	4.30	4.31	4.30	4.28	RX1S-4000
	3.09	4.33	5.14	5.72	6.15	6.46	6.69	6.84	6.95	7.00	7.01	6.99	6.94	RX1S-5000
	5.01	7.01	8.32	9.27	9.96	10.47	10.84	11.09	11.24	11.33	11.35	11.32	11.24	RX1S-6000
	6.35	8.88	10.54	11.73	12.62	13.26	13.73	14.05	14.25	14.35	14.38	14.35	14.25	RX1S-7000
	7.07	9.89	11.75	13.07	14.05	14.76	15.28	15.64	15.87	15.99	16.02	15.97	15.87	RX1S-8000
	9.03	12.63	15.00	16.70	17.94	18.86	19.52	19.98	20.28	20.43	20.46	20.41	20.27	RX1S-9000
15	0.53	0.76	0.91	1.02	1.09	1.15	1.19	1.21	1.23	1.24	1.24	1.24	1.24	RX1S-2000
	1.11	1.60	1.91	2.13	2.29	2.40	2.49	2.55	2.59	2.61	2.61	2.61	2.60	RX1S-3000
	1.77	2.54	3.05	3.40	3.65	3.85	3.98	4.08	4.13	4.16	4.16	4.16	4.15	RX1S-4000
	2.87	4.14	4.95	5.52	5.93	6.24	6.46	6.61	6.71	6.75	6.75	6.75	6.75	RX1S-5000
	4.65	6.70	8.00	8.94	9.62	10.11	10.47	10.71	10.87	10.94	10.96	10.96	10.93	RX1S-6000
	5.89	8.47	10.14	11.33	12.18	12.82	13.27	13.57	13.76	13.87	13.87	13.89	13.84	RX1S-7000
	6.56	9.44	11.30	12.61	13.57	14.27	14.77	15.12	15.33	15.44	15.46	15.46	15.41	RX1S-8000
	8.37	12.06	14.43	16.11	17.34	18.23	18.87	19.31	19.59	19.73	19.75	19.75	19.69	RX1S-9000
10	0.47	0.72	0.87	0.96	1.04	1.10	1.14	1.17	1.18	1.18	1.19	1.19	1.19	RX1S-2000
	0.99	1.50	1.81	2.03	2.19	2.31	2.39	2.44	2.47	2.47	2.49	2.50	2.50	RX1S-3000
	1.58	2.39	2.90	3.25	3.50	3.69	3.81	3.90	3.96	3.96	3.99	3.99	3.99	RX1S-4000
	2.57	3.89	4.70	5.27	5.69	5.99	6.20	6.34	6.43	6.43	6.47	6.48	6.48	RX1S-5000
	4.18	6.30	7.61	8.54	9.20	9.69	10.03	10.26	10.41	10.41	10.49	10.49	10.49	RX1S-6000
	5.29	7.97	9.65	10.81	11.66	12.28	12.71	13.00	13.19	13.19	13.28	13.28	13.29	RX1S-7000
	5.90	8.88	10.74	12.05	12.99	13.67	14.16	14.48	14.68	14.68	14.79	14.81	14.81	RX1S-8000
	7.53	11.34	13.73	15.39	16.59	17.47	18.09	18.50	18.77	18.77	18.89	18.92	18.92	RX1S-9000

## Extended capacities as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering **1.5 bar pressure drop** through liquid line:

Condensing Temperature (°C)	R450A			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
60	0.94	0.95	0.95	0.94	0.93	0.92	0.90	0.87	0.85	0.82	0.79	0.76	0.73	RX1S-2000
	1.99	2.00	2.00	1.99	1.97	1.93	1.89	1.84	1.79	1.73	1.67	1.60	1.54	RX1S-3000
	3.19	3.21	3.21	3.18	3.14	3.08	3.02	2.94	2.86	2.77	2.67	2.57	2.47	RX1S-4000
	5.17	5.21	5.20	5.17	5.09	5.01	4.90	4.78	4.64	4.49	4.33	4.17	3.99	RX1S-5000
	8.39	8.44	8.43	8.36	8.26	8.12	7.94	7.74	7.52	7.28	7.02	6.75	6.47	RX1S-6000
	10.63	10.69	10.67	10.59	10.46	10.27	10.05	9.81	9.52	9.21	8.89	8.55	8.20	RX1S-7000
	11.84	11.91	11.89	11.80	11.65	11.45	11.20	10.92	10.60	10.27	9.91	9.53	9.14	RX1S-8000
	15.13	15.22	15.19	15.08	14.89	14.63	14.31	13.95	13.56	13.11	12.65	12.17	11.67	RX1S-9000
55	0.93	0.94	0.95	0.95	0.94	0.93	0.92	0.90	0.87	0.86	0.83	0.79	0.77	RX1S-2000
	1.96	1.99	2.00	1.99	1.99	1.96	1.93	1.89	1.84	1.79	1.74	1.68	1.62	RX1S-3000
	3.14	3.18	3.20	3.20	3.17	3.14	3.08	3.02	2.95	2.86	2.77	2.69	2.59	RX1S-4000
	5.09	5.16	5.19	5.18	5.15	5.09	5.01	4.90	4.78	4.65	4.50	4.35	4.20	RX1S-5000
	8.23	8.36	8.41	8.40	8.35	8.24	8.11	7.94	7.75	7.53	7.30	7.06	6.80	RX1S-6000
	10.43	10.58	10.65	10.64	10.57	10.44	10.27	10.05	9.81	9.54	9.25	8.94	8.61	RX1S-7000
	11.62	11.80	11.87	11.86	11.78	11.64	11.44	11.20	10.93	10.63	10.31	9.96	9.61	RX1S-8000
	14.84	15.07	15.16	15.15	15.05	14.86	14.62	14.31	13.97	13.58	13.17	12.73	12.27	RX1S-9000
50	0.90	0.92	0.93	0.94	0.93	0.93	0.93	0.91	0.89	0.86	0.85	0.82	0.79	RX1S-2000
	1.89	1.93	1.97	1.98	1.98	1.97	1.94	1.91	1.87	1.83	1.78	1.73	1.68	RX1S-3000
	3.01	3.09	3.14	3.16	3.16	3.14	3.10	3.06	2.99	2.92	2.84	2.77	2.68	RX1S-4000
	4.89	5.02	5.09	5.13	5.13	5.09	5.03	4.95	4.86	4.74	4.62	4.49	4.34	RX1S-5000
	7.92	8.13	8.26	8.31	8.31	8.26	8.16	8.03	7.87	7.68	7.48	7.26	7.03	RX1S-6000
	10.04	10.30	10.46	10.53	10.53	10.46	10.34	10.17	9.97	9.74	9.48	9.21	8.91	RX1S-7000
	11.19	11.49	11.66	11.73	11.73	11.65	11.52	11.34	11.11	10.85	10.56	10.25	9.92	RX1S-8000
	14.29	14.67	14.90	14.99	14.99	14.89	14.71	14.48	14.19	13.86	13.49	13.10	12.68	RX1S-9000
45	0.84	0.87	0.90	0.92	0.93	0.92	0.92	0.91	0.89	0.87	0.86	0.83	0.81	RX1S-2000
	1.77	1.84	1.90	1.92	1.94	1.94	1.92	1.91	1.88	1.84	1.80	1.76	1.70	RX1S-3000
	2.83	2.95	3.03	3.08	3.10	3.10	3.08	3.05	3.00	2.94	2.88	2.80	2.72	RX1S-4000
	4.59	4.79	4.92	5.00	5.03	5.03	5.01	4.95	4.87	4.78	4.67	4.55	4.42	RX1S-5000
	7.44	7.76	7.98	8.10	8.15	8.15	8.11	8.01	7.89	7.74	7.56	7.38	7.16	RX1S-6000
	9.43	9.83	10.10	10.27	10.34	10.33	10.27	10.15	9.99	9.81	9.59	9.34	9.07	RX1S-7000
	10.50	10.96	11.26	11.43	11.51	11.51	11.44	11.31	11.14	10.92	10.67	10.41	10.11	RX1S-8000
	13.41	14.00	14.38	14.61	14.71	14.70	14.62	14.46	14.23	13.95	13.64	13.29	12.92	RX1S-9000
40	0.77	0.81	0.86	0.87	0.89	0.90	0.90	0.89	0.88	0.87	0.86	0.84	0.81	RX1S-2000
	1.60	1.72	1.79	1.84	1.87	1.89	1.89	1.88	1.86	1.83	1.80	1.76	1.71	RX1S-3000
	2.57	2.75	2.87	2.95	2.99	3.02	3.02	3.00	2.97	2.92	2.87	2.81	2.74	RX1S-4000
	4.17	4.45	4.65	4.79	4.87	4.90	4.90	4.87	4.82	4.75	4.66	4.56	4.44	RX1S-5000
	6.76	7.22	7.54	7.76	7.88	7.94	7.94	7.90	7.81	7.69	7.55	7.38	7.20	RX1S-6000
	8.56	9.14	9.55	9.82	9.98	10.06	10.06	10.00	9.89	9.74	9.56	9.36	9.13	RX1S-7000
	9.53	10.19	10.64	10.95	11.12	11.20	11.21	11.14	11.03	10.86	10.66	10.43	10.16	RX1S-8000
	12.19	13.02	13.59	13.98	14.21	14.31	14.32	14.24	14.09	13.87	13.62	13.32	12.99	RX1S-9000
35	0.66	0.73	0.78	0.82	0.85	0.86	0.86	0.86	0.86	0.86	0.84	0.83	0.81	RX1S-2000
	1.38	1.54	1.65	1.73	1.78	1.81	1.83	1.83	1.82	1.80	1.77	1.74	1.70	RX1S-3000
	2.21	2.47	2.64	2.77	2.84	2.90	2.92	2.92	2.91	2.87	2.83	2.78	2.72	RX1S-4000
	3.60	4.00	4.28	4.49	4.62	4.70	4.73	4.73	4.71	4.66	4.59	4.51	4.42	RX1S-5000
	5.82	6.48	6.94	7.27	7.48	7.60	7.67	7.68	7.63	7.55	7.44	7.30	7.15	RX1S-6000
	7.38	8.21	8.79	9.21	9.47	9.64	9.72	9.72	9.66	9.57	9.43	9.26	9.06	RX1S-7000
	8.22	9.15	9.80	10.25	10.56	10.74	10.82	10.83	10.77	10.66	10.51	10.31	10.09	RX1S-8000
	10.50	11.68	12.52	13.10	13.48	13.72	13.83	13.84	13.76	13.62	13.41	13.18	12.89	RX1S-9000

Condensing Temperature (°C)	R450A			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
30	0.51	0.62	0.70	0.75	0.78	0.81	0.82	0.83	0.83	0.83	0.82	0.80	0.79	RX1S-2000
	1.07	1.30	1.46	1.57	1.65	1.70	1.73	1.75	1.75	1.74	1.72	1.70	1.67	RX1S-3000
	1.71	2.09	2.33	2.52	2.64	2.72	2.77	2.79	2.79	2.78	2.76	2.71	2.67	RX1S-4000
	2.78	3.38	3.79	4.08	4.28	4.42	4.50	4.53	4.54	4.51	4.47	4.41	4.33	RX1S-5000
	4.50	5.48	6.15	6.62	6.93	7.15	7.28	7.34	7.35	7.31	7.24	7.14	7.01	RX1S-6000
	5.69	6.94	7.78	8.38	8.78	9.06	9.22	9.30	9.31	9.26	9.17	9.04	8.88	RX1S-7000
	6.34	7.73	8.68	9.33	9.79	10.09	10.28	10.36	10.37	10.32	10.21	10.07	9.90	RX1S-8000
	8.11	9.88	11.08	11.92	12.50	12.89	13.13	13.24	13.26	13.18	13.05	12.87	12.65	RX1S-9000
25	0.25	0.46	0.57	0.65	0.71	0.74	0.77	0.78	0.78	0.78	0.78	0.78	0.77	RX1S-2000
	0.51	0.97	1.21	1.37	1.48	1.56	1.61	1.64	1.66	1.66	1.65	1.64	1.61	RX1S-3000
	0.83	1.54	1.93	2.19	2.37	2.49	2.57	2.62	2.65	2.65	2.64	2.62	2.58	RX1S-4000
	1.35	2.49	3.13	3.55	3.84	4.05	4.18	4.26	4.30	4.30	4.28	4.25	4.19	RX1S-5000
	2.18	4.05	5.08	5.76	6.23	6.55	6.77	6.90	6.96	6.98	6.94	6.88	6.78	RX1S-6000
	2.76	5.13	6.43	7.29	7.89	8.30	8.57	8.74	8.83	8.84	8.79	8.71	8.59	RX1S-7000
	3.07	5.71	7.16	8.12	8.79	9.25	9.55	9.74	9.83	9.84	9.80	9.70	9.57	RX1S-8000
	3.93	7.29	9.15	10.38	11.23	11.82	12.20	12.44	12.56	12.58	12.52	12.40	12.23	RX1S-9000
20		0.12	0.40	0.52	0.60	0.65	0.69	0.71	0.73	0.74	0.74	0.74	0.73	RX1S-2000
		0.27	0.83	1.09	1.26	1.37	1.45	1.51	1.53	1.55	1.56	1.55	1.53	RX1S-3000
		0.42	1.33	1.75	2.02	2.20	2.33	2.40	2.46	2.48	2.49	2.48	2.46	RX1S-4000
		0.69	2.16	2.84	3.27	3.57	3.77	3.90	3.99	4.03	4.05	4.03	3.99	RX1S-5000
		1.12	3.51	4.60	5.30	5.79	6.11	6.33	6.47	6.54	6.54	6.52	6.47	RX1S-6000
		1.42	4.44	5.83	6.72	7.33	7.74	8.02	8.19	8.28	8.30	8.26	8.18	RX1S-7000
		1.58	4.94	6.49	7.49	8.17	8.63	8.93	9.13	9.22	9.24	9.21	9.12	RX1S-8000
		2.01	6.32	8.29	9.56	10.43	11.02	11.42	11.66	11.78	11.81	11.76	11.66	RX1S-9000
15				0.32	0.46	0.54	0.60	0.63	0.66	0.68	0.68	0.69	0.68	RX1S-2000
				0.67	0.96	1.13	1.26	1.34	1.39	1.42	1.44	1.44	1.44	RX1S-3000
				1.07	1.53	1.81	2.01	2.13	2.22	2.27	2.30	2.31	2.30	RX1S-4000
				1.75	2.49	2.95	3.25	3.46	3.61	3.68	3.73	3.75	3.73	RX1S-5000
				2.83	4.04	4.78	5.27	5.61	5.84	5.97	6.05	6.07	6.05	RX1S-6000
				3.57	5.12	6.05	6.68	7.11	7.40	7.56	7.66	7.69	7.66	RX1S-7000
				3.99	5.70	6.75	7.44	7.92	8.24	8.43	8.54	8.56	8.54	RX1S-8000
				5.10	7.29	8.62	9.51	10.12	10.53	10.77	10.91	10.94	10.91	RX1S-9000
10				0.21	0.38	0.47	0.53	0.57	0.60	0.61	0.62	0.63	0.63	RX1S-2000
				0.44	0.80	0.99	1.12	1.20	1.26	1.29	1.31	1.31	1.31	RX1S-3000
				0.71	1.28	1.59	1.79	1.92	2.01	2.06	2.10	2.11	2.11	RX1S-4000
				1.15	2.07	2.57	2.90	3.11	3.25	3.35	3.39	3.41	3.41	RX1S-5000
				1.87	3.36	4.17	4.69	5.04	5.27	5.42	5.50	5.53	5.53	RX1S-6000
				2.37	4.25	5.28	5.94	6.39	6.68	6.87	6.96	7.00	7.00	RX1S-7000
				2.65	4.74	5.88	6.62	7.12	7.44	7.65	7.76	7.80	7.80	RX1S-8000
				3.38	6.06	7.52	8.46	9.10	9.51	9.78	9.92	9.97	9.97	RX1S-9000

## Extended capacities as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering **1.5 bar pressure drop** through liquid line:

Condensing Temperature (°C)	R513A			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
60	0.86	0.86	0.86	0.85	0.83	0.81	0.80	0.77	0.74	0.72	0.69	0.65	0.62	RX1S-2000
	1.80	1.80	1.80	1.78	1.74	1.71	1.66	1.62	1.56	1.50	1.43	1.37	1.30	RX1S-3000
	2.86	2.88	2.86	2.83	2.79	2.73	2.66	2.58	2.49	2.39	2.30	2.18	2.08	RX1S-4000
	4.67	4.69	4.67	4.63	4.55	4.46	4.35	4.21	4.06	3.91	3.74	3.58	3.39	RX1S-5000
	7.55	7.58	7.55	7.48	7.35	7.20	7.02	6.81	6.57	6.32	6.06	5.77	5.48	RX1S-6000
	9.57	9.60	9.57	9.47	9.32	9.13	8.89	8.62	8.33	8.00	7.67	7.32	6.95	RX1S-7000
	10.66	10.70	10.67	10.56	10.39	10.17	9.91	9.61	9.28	8.93	8.55	8.16	7.74	RX1S-8000
	13.60	13.66	13.61	13.47	13.26	12.98	12.64	12.26	11.84	11.39	10.91	10.41	9.88	RX1S-9000
55	0.86	0.87	0.87	0.87	0.86	0.85	0.83	0.81	0.79	0.76	0.73	0.71	0.68	RX1S-2000
	1.80	1.82	1.83	1.82	1.80	1.78	1.74	1.70	1.65	1.60	1.54	1.49	1.42	RX1S-3000
	2.86	2.90	2.92	2.91	2.88	2.84	2.78	2.72	2.64	2.55	2.46	2.37	2.26	RX1S-4000
	4.67	4.74	4.76	4.75	4.71	4.64	4.54	4.43	4.31	4.17	4.02	3.86	3.70	RX1S-5000
	7.56	7.66	7.70	7.67	7.60	7.49	7.35	7.17	6.97	6.74	6.50	6.24	5.98	RX1S-6000
	9.58	9.71	9.75	9.73	9.64	9.50	9.30	9.08	8.83	8.54	8.23	7.91	7.57	RX1S-7000
	10.67	10.82	10.87	10.83	10.74	10.58	10.37	10.12	9.84	9.52	9.17	8.81	8.44	RX1S-8000
	13.61	13.81	13.87	13.83	13.70	13.50	13.23	12.92	12.55	12.15	11.71	11.25	10.76	RX1S-9000
50	0.84	0.86	0.87	0.87	0.87	0.87	0.86	0.84	0.82	0.80	0.78	0.75	0.72	RX1S-2000
	1.75	1.80	1.83	1.84	1.83	1.81	1.80	1.76	1.72	1.67	1.62	1.57	1.51	RX1S-3000
	2.80	2.88	2.91	2.93	2.92	2.90	2.86	2.81	2.74	2.67	2.59	2.50	2.41	RX1S-4000
	4.57	4.69	4.76	4.79	4.78	4.73	4.67	4.58	4.48	4.35	4.22	4.08	3.93	RX1S-5000
	7.39	7.58	7.69	7.73	7.72	7.66	7.55	7.41	7.24	7.05	6.83	6.60	6.36	RX1S-6000
	9.36	9.61	9.75	9.81	9.78	9.70	9.56	9.38	9.17	8.92	8.65	8.36	8.05	RX1S-7000
	10.44	10.71	10.86	10.92	10.90	10.81	10.66	10.46	10.22	9.94	9.64	9.32	8.97	RX1S-8000
	13.32	13.67	13.87	13.94	13.90	13.79	13.60	13.35	13.04	12.70	12.31	11.89	11.45	RX1S-9000
45	0.80	0.83	0.86	0.87	0.87	0.87	0.87	0.86	0.84	0.82	0.80	0.78	0.75	RX1S-2000
	1.67	1.74	1.80	1.82	1.83	1.82	1.81	1.79	1.76	1.72	1.67	1.63	1.57	RX1S-3000
	2.67	2.79	2.86	2.90	2.92	2.91	2.89	2.85	2.81	2.74	2.67	2.60	2.51	RX1S-4000
	4.36	4.55	4.67	4.74	4.77	4.76	4.73	4.66	4.57	4.48	4.36	4.24	4.10	RX1S-5000
	7.05	7.35	7.55	7.66	7.70	7.69	7.63	7.53	7.40	7.24	7.05	6.85	6.63	RX1S-6000
	8.93	9.31	9.56	9.71	9.76	9.74	9.67	9.54	9.37	9.17	8.93	8.68	8.39	RX1S-7000
	9.95	10.37	10.66	10.82	10.88	10.86	10.78	10.64	10.45	10.22	9.96	9.67	9.36	RX1S-8000
	12.70	13.24	13.60	13.81	13.89	13.86	13.75	13.58	13.33	13.04	12.70	12.34	11.95	RX1S-9000
40	0.73	0.79	0.82	0.84	0.86	0.87	0.86	0.86	0.84	0.83	0.81	0.80	0.77	RX1S-2000
	1.55	1.65	1.72	1.77	1.80	1.80	1.80	1.80	1.77	1.74	1.70	1.66	1.62	RX1S-3000
	2.46	2.63	2.74	2.82	2.87	2.88	2.88	2.86	2.82	2.77	2.72	2.65	2.58	RX1S-4000
	4.02	4.29	4.48	4.60	4.68	4.71	4.70	4.67	4.61	4.53	4.43	4.33	4.20	RX1S-5000
	6.50	6.94	7.24	7.44	7.56	7.61	7.60	7.54	7.45	7.32	7.17	6.99	6.80	RX1S-6000
	8.23	8.79	9.18	9.43	9.58	9.64	9.63	9.56	9.44	9.28	9.08	8.86	8.61	RX1S-7000
	9.18	9.80	10.22	10.51	10.67	10.75	10.73	10.66	10.52	10.34	10.13	9.88	9.61	RX1S-8000
	11.72	12.51	13.06	13.41	13.62	13.71	13.69	13.60	13.43	13.20	12.93	12.61	12.25	RX1S-9000
35	0.64	0.72	0.77	0.80	0.82	0.84	0.85	0.84	0.84	0.83	0.81	0.80	0.78	RX1S-2000
	1.35	1.50	1.61	1.68	1.73	1.76	1.77	1.77	1.76	1.73	1.71	1.67	1.64	RX1S-3000
	2.16	2.40	2.57	2.68	2.76	2.81	2.82	2.82	2.81	2.77	2.73	2.67	2.60	RX1S-4000
	3.53	3.92	4.20	4.38	4.50	4.57	4.61	4.61	4.57	4.52	4.45	4.35	4.26	RX1S-5000
	5.70	6.33	6.77	7.08	7.28	7.40	7.45	7.45	7.40	7.31	7.19	7.05	6.88	RX1S-6000
	7.23	8.02	8.59	8.98	9.23	9.38	9.44	9.43	9.37	9.26	9.11	8.92	8.71	RX1S-7000
	8.05	8.94	9.56	9.99	10.29	10.45	10.52	10.52	10.45	10.32	10.15	9.95	9.71	RX1S-8000
	10.28	11.41	12.21	12.76	13.13	13.34	13.43	13.42	13.33	13.17	12.96	12.70	12.40	RX1S-9000

Condensing Temperature (°C)	R513A			Extended Capacity (kW) Evaporating Temperature (°C)										Valve Type
	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
30	0.51	0.62	0.69	0.74	0.78	0.80	0.81	0.82	0.82	0.81	0.80	0.80	0.78	RX1S-2000
	1.08	1.30	1.45	1.56	1.63	1.68	1.71	1.72	1.72	1.71	1.69	1.66	1.63	RX1S-3000
	1.72	2.07	2.31	2.48	2.60	2.67	2.73	2.74	2.74	2.73	2.69	2.65	2.60	RX1S-4000
	2.81	3.38	3.78	4.05	4.25	4.37	4.44	4.48	4.48	4.45	4.40	4.33	4.25	RX1S-5000
	4.54	5.47	6.11	6.55	6.86	7.06	7.19	7.24	7.24	7.20	7.11	7.00	6.86	RX1S-6000
	5.75	6.93	7.74	8.30	8.69	8.95	9.11	9.18	9.17	9.12	9.01	8.87	8.69	RX1S-7000
	6.41	7.73	8.63	9.25	9.69	9.98	10.15	10.22	10.22	10.16	10.04	9.88	9.69	RX1S-8000
	8.18	9.86	11.00	11.81	12.37	12.73	12.95	13.05	13.05	12.97	12.82	12.62	12.37	RX1S-9000
25	0.29	0.48	0.58	0.66	0.71	0.74	0.77	0.79	0.79	0.79	0.79	0.78	0.77	RX1S-2000
	0.61	1.00	1.23	1.38	1.50	1.57	1.61	1.65	1.65	1.65	1.65	1.63	1.60	RX1S-3000
	0.97	1.60	1.96	2.21	2.38	2.50	2.58	2.62	2.64	2.64	2.63	2.60	2.56	RX1S-4000
	1.59	2.61	3.21	3.60	3.89	4.08	4.20	4.28	4.32	4.32	4.29	4.25	4.18	RX1S-5000
	2.56	4.22	5.18	5.83	6.28	6.59	6.80	6.92	6.98	6.98	6.94	6.86	6.75	RX1S-6000
	3.25	5.34	6.57	7.39	7.95	8.35	8.61	8.76	8.83	8.84	8.79	8.69	8.56	RX1S-7000
	3.62	5.95	7.31	8.23	8.86	9.31	9.60	9.77	9.84	9.85	9.79	9.69	9.54	RX1S-8000
	4.61	7.60	9.33	10.51	11.32	11.88	12.25	12.47	12.57	12.57	12.50	12.36	12.18	RX1S-9000
20		0.22	0.43	0.55	0.62	0.67	0.71	0.73	0.75	0.75	0.75	0.75	0.74	RX1S-2000
		0.47	0.91	1.15	1.30	1.42	1.49	1.54	1.57	1.58	1.58	1.57	1.56	RX1S-3000
		0.75	1.45	1.83	2.08	2.25	2.38	2.46	2.50	2.53	2.53	2.51	2.48	RX1S-4000
		1.21	2.37	2.99	3.40	3.68	3.88	4.00	4.08	4.12	4.12	4.10	4.05	RX1S-5000
		1.96	3.82	4.83	5.49	5.95	6.27	6.47	6.60	6.66	6.67	6.62	6.56	RX1S-6000
		2.48	4.85	6.12	6.96	7.54	7.93	8.20	8.36	8.43	8.44	8.39	8.30	RX1S-7000
		2.76	5.40	6.83	7.76	8.41	8.85	9.14	9.32	9.39	9.40	9.36	9.26	RX1S-8000
		3.53	6.90	8.71	9.90	10.73	11.29	11.66	11.88	11.99	12.01	11.95	11.81	RX1S-9000
15			0.11	0.38	0.50	0.57	0.63	0.66	0.69	0.71	0.72	0.72	0.71	RX1S-2000
			0.22	0.80	1.05	1.21	1.32	1.40	1.45	1.48	1.50	1.50	1.49	RX1S-3000
			0.36	1.27	1.67	1.93	2.11	2.23	2.31	2.36	2.38	2.38	2.38	RX1S-4000
			0.58	2.08	2.73	3.15	3.44	3.64	3.77	3.85	3.89	3.89	3.88	RX1S-5000
			0.94	3.35	4.41	5.10	5.56	5.88	6.09	6.22	6.29	6.30	6.26	RX1S-6000
			1.20	4.25	5.60	6.46	7.05	7.46	7.72	7.88	7.96	7.98	7.93	RX1S-7000
			1.34	4.73	6.23	7.20	7.86	8.31	8.61	8.79	8.87	8.89	8.85	RX1S-8000
			1.71	6.03	7.96	9.19	10.03	10.61	10.98	11.21	11.33	11.35	11.29	RX1S-9000
10					0.31	0.44	0.53	0.58	0.62	0.64	0.65	0.66	0.66	RX1S-2000
					0.65	0.93	1.11	1.21	1.29	1.34	1.37	1.39	1.40	RX1S-3000
					1.04	1.49	1.76	1.94	2.06	2.15	2.19	2.22	2.23	RX1S-4000
					1.70	2.43	2.87	3.17	3.37	3.51	3.59	3.62	3.64	RX1S-5000
					2.75	3.93	4.64	5.12	5.45	5.66	5.79	5.86	5.87	RX1S-6000
					3.49	4.98	5.89	6.49	6.90	7.18	7.34	7.42	7.44	RX1S-7000
					3.88	5.54	6.55	7.23	7.69	7.99	8.18	8.27	8.30	RX1S-8000
					4.96	7.08	8.36	9.23	9.82	10.20	10.44	10.56	10.59	RX1S-9000

R-12 extended capacities (Tons) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

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
EX2-00X	0.23	0.14	0.27	0.30	0.33	0.36	0.39	0.14	0.16	0.18	0.20	0.22	0.24	0.13	0.15	0.17	0.19	0.21	0.22
EX2-000	0.4	0.24	0.46	0.52	0.58	0.63	0.68	0.24	0.28	0.31	0.35	0.38	0.41	0.23	0.27	0.30	0.33	0.36	0.39
EX2-001	0.81	0.49	0.94	1.05	1.17	1.28	1.38	0.48	0.55	0.62	0.69	0.75	0.82	0.46	0.53	0.59	0.66	0.73	0.79
EX2-002	1.1	0.67	1.27	1.42	1.59	1.74	1.88	0.65	0.75	0.84	0.94	1.03	1.11	0.63	0.73	0.81	0.91	1.00	1.08
EX2-003	2.0	1.21	2.31	2.58	2.89	3.16	3.42	1.19	1.37	1.54	1.72	1.88	2.03	1.14	1.32	1.47	1.65	1.80	1.95
EX2-004	2.7	1.63	3.12	3.49	3.90	4.27	4.61	1.60	1.85	2.07	2.31	2.53	2.73	1.54	1.78	1.99	2.22	2.43	2.63
EX2-M00	4.3	2.60	4.97	5.55	6.21	6.80	7.34	2.55	2.94	3.29	3.68	4.03	4.35	2.45	2.83	3.16	3.54	3.87	4.18

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
EX2-00X	0.23	0.13	0.27	0.30	0.33	0.36	0.39	0.14	0.16	0.18	0.20	0.22	0.24	0.11	0.13	0.14	0.16	0.17	0.19
EX2-000	0.4	0.22	0.46	0.52	0.58	0.63	0.68	0.24	0.28	0.31	0.35	0.38	0.41	0.20	0.23	0.26	0.29	0.32	0.34
EX2-001	0.81	0.44	0.34	1.05	1.17	1.28	1.38	0.48	0.55	0.62	0.69	0.75	0.82	0.40	0.46	0.52	0.58	0.63	0.68
EX2-002	1.1	0.60	1.27	1.42	1.59	1.74	1.88	0.66	0.76	0.85	0.95	1.04	1.13	0.54	0.62	0.70	0.78	0.85	0.92
EX2-003	2.0	1.09	2.31	2.58	2.89	3.16	3.42	1.20	1.39	1.55	1.73	1.90	2.05	0.98	1.13	1.27	1.41	1.55	1.67
EX2-004	2.7	1.47	3.12	3.49	3.90	4.27	4.61	1.40	1.62	1.81	2.02	2.21	2.39	1.33	1.54	1.72	1.92	2.10	2.27
EX2-M00	4.3	2.34	4.97	5.55	6.21	6.80	7.34	2.57	2.97	3.32	3.71	4.06	4.39	2.12	2.45	2.74	3.08	3.35	3.62

R-22 extended capacities (Tons) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

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
EX2-00X	0.23	0.18	0.21	0.23	0.26	0.28	0.31	0.18	0.21	0.23	0.26	0.28	0.31	0.17	0.20	0.22	0.25	0.27	0.29
EX2-000	0.4	0.31	0.36	0.40	0.45	0.49	0.53	0.31	0.36	0.40	0.45	0.49	0.53	0.30	0.35	0.39	0.43	0.47	0.51
EX2-001	0.81	0.64	0.74	0.83	0.92	1.01	1.09	0.63	0.73	0.81	0.91	1.00	1.08	0.61	0.70	0.79	0.88	0.96	1.04
EX2-002	1.1	0.86	0.99	1.11	1.24	1.36	1.47	0.85	0.98	1.10	1.23	1.34	1.45	0.83	0.96	1.07	1.20	1.31	1.42
EX2-003	2.0	1.57	1.81	2.08	2.27	2.48	2.68	1.55	1.79	2.00	2.21	2.45	2.65	1.51	1.74	1.95	2.18	2.39	2.58
EX2-004	2.7	2.12	2.45	2.74	3.06	3.35	3.62	2.10	2.42	2.71	3.03	3.32	3.59	2.04	2.36	2.63	2.94	3.23	3.48
EX2-M00	4.3	3.38	3.90	4.36	4.88	5.34	5.77	3.34	3.86	4.31	4.82	5.28	5.70	3.25	3.75	4.20	4.69	5.14	5.55

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
EX2-00X	0.23	0.17	0.20	0.22	0.25	0.27	0.29	0.19	0.21	0.24	0.26	0.28	0.30	0.18	0.20	0.23	0.25	0.27	0.28
EX2-000	0.4	0.29	0.33	0.37	0.42	0.46	0.50	0.33	0.37	0.41	0.45	0.49	0.52	0.32	0.36	0.40	0.44	0.47	0.51
EX2-001	0.81	0.60	0.69	0.77	0.87	0.95	1.02	0.67	0.75	0.84	0.92	0.99	1.06	0.64	0.72	0.80	0.88	0.95	1.01
EX2-002	1.1	0.81	0.94	1.05	1.17	1.28	1.38	0.90	1.01	1.13	1.23	1.33	1.42	0.87	0.97	1.09	1.19	1.29	1.38
EX2-003	2.0	1.47	1.70	1.90	2.12	2.32	2.51	1.64	1.83	2.05	2.25	2.43	2.59	1.59	1.78	1.99	2.18	2.35	2.51
EX2-004	2.7	1.99	2.30	2.57	2.87	3.15	3.40	2.22	2.48	2.78	3.04	3.28	3.51	2.14	2.39	2.68	2.93	3.17	3.38
EX2-M00	4.3	3.16	3.65	4.08	4.56	5.00	5.40	3.54	3.96	4.43	4.85	5.24	5.60	3.42	3.82	4.28	4.68	5.06	5.41

R-134a extended capacities (Tons) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

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
EX2-00X	0.23	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
EX2-000	0.4	0.30	0.35	0.39	0.43	0.47	0.51	0.23	0.33	0.37	0.42	0.46	0.50	0.28	0.32	0.36	0.40	0.44	0.48
EX2-001	0.81	0.61	0.70	0.79	0.88	0.96	1.04	0.59	0.68	0.79	0.85	0.93	1.01	0.57	0.66	0.74	0.82	0.90	0.97
EX2-002	1.1	0.82	0.95	1.06	1.18	1.30	1.40	0.81	0.94	1.05	1.17	1.28	1.38	0.77	0.89	0.99	1.11	1.22	1.32
EX2-003	2.0	1.56	1.79	2.00	2.24	2.45	2.65	1.52	1.75	1.96	2.19	2.40	2.60	1.47	1.70	1.90	2.12	2.32	2.51
EX2-004	2.7	2.02	2.33	2.61	2.92	3.19	3.45	1.98	2.29	2.56	2.86	3.13	3.38	1.90	2.19	2.45	2.74	3.00	3.24
EX2-M00	4.3	3.22	3.72	4.16	4.65	5.09	5.50	3.16	3.65	4.08	4.56	5.00	5.40	3.02	3.49	3.90	4.36	4.78	5.16

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
EX2-00X	0.23	0.15	0.17	0.19	0.22	0.24	0.26	0.17	0.19	0.21	0.23	0.25	0.27	0.16	0.18	0.20	0.22	0.24	0.25
EX2-000	0.4	0.27	0.31	0.35	0.39	0.43	0.46	0.29	0.32	0.38	0.40	0.43	0.46	0.28	0.31	0.35	0.38	0.41	0.44
EX2-001	0.81	0.54	0.62	0.70	0.78	0.85	0.92	0.59	0.66	0.74	0.81	0.87	0.93	0.56	0.63	0.70	0.77	0.83	0.89
EX2-002	1.1	0.74	0.85	0.96	1.07	1.17	1.26	0.81	0.91	1.01	1.11	1.20	1.28	0.76	0.85	0.95	1.04	1.12	1.20
EX2-003	2.0	1.41	1.63	1.82	2.04	2.23	2.41	1.56	1.74	1.95	2.14	2.31	2.47	1.49	1.67	1.86	2.04	2.20	2.36
EX2-004	2.7	1.81	2.09	2.34	2.61	2.86	3.09	1.98	2.21	2.48	2.71	2.93	3.13	1.88	2.10	2.35	2.57	2.78	2.97
EX2-M00	4.3	2.88	3.33	3.72	4.16	4.55	4.92	3.16	3.53	3.95	4.33	4.67	5.00	2.99	3.34	3.74	4.09	4.42	4.73

R-404A/R-507 extended capacities (Tons) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

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
EX2-00X	0.23	0.13	0.15	0.17	0.19	0.21	0.22	0.13	0.15	0.17	0.19	0.21	0.22	0.12	0.14	0.15	0.17	0.19	0.20
EX2-000	0.4	0.23	0.27	0.30	0.33	0.36	0.39	0.22	0.25	0.28	0.32	0.35	0.38	0.21	0.24	0.27	0.30	0.33	0.36
EX2-001	0.81	0.47	0.54	0.61	0.68	0.74	0.80	0.46	0.53	0.59	0.66	0.73	0.79	0.43	0.50	0.56	0.62	0.68	0.73
EX2-002	1.1	0.63	0.73	0.81	0.91	1.00	1.08	0.52	0.72	0.80	0.89	0.98	1.06	0.59	0.68	0.76	0.85	0.93	1.01
EX2-003	2.0	1.15	1.33	1.48	1.66	1.82	1.96	1.12	1.29	1.45	1.62	1.77	1.91	1.07	1.24	1.38	1.54	1.69	1.83
EX2-004	2.7	1.55	1.79	2.00	2.24	2.45	2.65	1.52	1.76	1.96	2.19	2.40	2.60	1.44	1.66	1.86	2.08	2.28	2.46
EX2-M00	4.3	2.47	2.85	3.19	3.57	3.91	4.22	2.42	2.79	3.12	3.49	3.83	4.13	2.30	2.66	2.97	3.32	3.64	3.93

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
EX2-00X	0.23	0.12	0.14	0.15	0.17	0.19	0.20	0.13	0.35	0.16	0.18	0.19	0.21	0.12	0.13	0.15	0.16	0.18	0.19
EX2-000	0.4	0.20	0.23	0.26	0.29	0.32	0.34	0.22	0.25	0.28	0.30	0.33	0.35	0.20	0.22	0.25	0.27	0.30	0.32
EX2-001	0.81	0.41	0.47	0.53	0.59	0.65	0.70	0.44	0.49	0.55	0.60	0.65	0.70	0.41	0.46	0.51	0.56	0.61	0.65
EX2-002	1.1	0.55	0.64	0.71	0.79	0.87	0.94	0.60	0.67	0.75	0.82	0.89	0.95	0.56	0.63	0.70	0.77	0.83	0.89
EX2-003	2.0	1.01	1.17	1.30	1.46	1.60	1.72	1.09	1.22	1.36	1.49	1.61	1.72	1.02	1.14	1.28	1.40	1.51	1.61
EX2-004	2.7	1.38	1.57	1.76	1.96	2.15	2.32	1.48	1.65	1.85	2.03	2.19	2.34	1.38	1.54	1.73	1.89	2.04	2.18
EX2-M00	4.3	2.17	2.51	2.80	3.13	3.43	3.71	2.35	2.63	2.94	3.22	3.48	3.72	2.19	2.45	2.74	3.00	3.24	3.46

## R-407C extended capacities (Tons) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

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
EX2-00X	0.23	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
EX2-000	0.4	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
EX2-001	0.81	0.61	0.70	0.79	0.88	0.96	1.04	0.50	0.69	0.77	0.87	0.95	1.02	0.58	0.67	0.75	0.84	0.92	0.99
EX2-002	1.1	0.83	0.96	1.07	1.20	1.31	1.42	0.81	0.94	1.05	1.17	1.28	1.38	0.78	0.90	1.01	1.13	1.23	1.33
EX2-003	2.0	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
EX2-004	2.7	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	3.14	3.28
EX2-M00	4.3	3.24	3.74	4.18	4.68	5.12	5.53	3.18	3.67	4.11	4.59	5.03	5.43	3.06	3.53	3.95	4.42	4.84	5.23

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
EX2-00X	0.23	0.16	0.18	0.21	0.23	0.25	0.27	0.17	0.19	0.21	0.23	0.25	0.27	0.16	0.18	0.20	0.22	0.24	0.25
EX2-000	0.4	0.27	0.31	0.35	0.39	0.43	0.46	0.30	0.34	0.38	0.41	0.44	0.47	0.28	0.31	0.35	0.38	0.41	0.44
EX2-001	0.81	0.55	0.64	0.71	0.79	0.87	0.94	0.60	0.67	0.75	0.82	0.89	0.95	0.57	0.64	0.71	0.78	0.84	0.90
EX2-002	1.1	0.75	0.87	0.97	1.08	1.19	1.28	0.82	0.92	1.03	1.12	1.21	1.30	0.78	0.87	0.98	1.07	1.15	1.23
EX2-003	2.0	1.36	1.57	1.76	1.96	2.15	2.32	1.49	1.67	1.86	2.04	2.20	2.36	1.42	1.59	1.78	1.94	2.10	2.25
EX2-004	2.7	1.83	2.11	2.36	2.64	2.89	3.13	2.02	2.26	2.53	2.77	2.99	3.19	1.91	2.14	2.39	2.62	2.82	3.02
EX2-M00	4.3	2.92	3.37	3.77	4.21	4.82	4.99	3.21	3.59	4.01	4.40	4.75	5.08	3.05	3.41	3.81	4.18	4.51	4.82

## R-502 extended capacities (Tons) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

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
EX2-000	0.4	0.21	0.24	0.27	0.30	0.33	0.36	0.20	0.23	0.26	0.29	0.32	0.34	0.19	0.22	0.25	0.27	0.30	0.32
EX2-001	0.81	0.42	0.48	0.54	0.61	0.66	0.72	0.41	0.47	0.53	0.59	0.65	0.70	0.39	0.46	0.50	0.56	0.62	0.67
EX2-002	1.1	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	0.75	0.84	0.91
EX2-003	2.0	1.03	1.19	1.33	1.49	1.63	1.76	1.00	1.15	1.29	1.44	1.58	1.71	0.96	1.11	1.24	1.39	1.52	1.64
EX2-004	2.7	1.39	1.61	1.79	2.01	2.20	2.37	1.36	1.57	1.76	1.96	2.15	2.32	1.29	1.49	1.67	1.86	2.04	2.20
EX2-M00	4.3	2.21	2.55	2.85	3.19	3.49	3.77	2.16	2.49	2.79	3.12	3.42	3.69	2.06	2.38	2.66	2.97	3.28	3.52

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
EX2-000	0.4	0.18	0.21	0.23	0.26	0.28	0.31	0.20	0.22	0.25	0.27	0.30	0.32	0.19	0.21	0.24	0.26	0.28	0.30
EX2-001	0.81	0.37	0.43	0.48	0.53	0.59	0.63	0.40	0.45	0.50	0.55	0.59	0.63	0.38	0.42	0.48	0.52	0.56	0.60
EX2-002	1.1	0.50	0.58	0.65	0.72	0.79	0.85	0.55	0.61	0.69	0.75	0.81	0.87	0.51	0.57	0.64	0.70	0.75	0.81
EX2-003	2.0	0.91	1.05	1.17	1.31	1.44	1.55	0.99	1.11	1.24	1.36	1.46	1.57	0.93	1.04	1.16	1.27	1.38	1.47
EX2-004	2.7	1.23	1.42	1.59	1.78	1.94	2.10	1.34	1.50	1.66	1.83	1.98	2.12	1.26	1.41	1.58	1.73	1.86	1.99
EX2-M00	4.3	1.96	2.26	2.53	2.83	3.10	3.35	2.13	2.38	2.56	2.92	3.15	3.37	2.00	2.24	2.50	2.74	2.96	3.16



### R-12 extended capacities (kW) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
EX2-00X	0.23	0.50	0.61	0.66	0.70	0.70	0.82	0.50	0.61	0.66	0.70	0.78	0.82	0.46	0.56	0.61	0.65	0.73	0.76
EX2-000	0.4	0.85	1.04	1.12	1.20	1.34	1.41	0.85	1.04	1.12	1.20	1.34	1.41	0.81	1.00	1.08	1.15	1.29	1.35
EX2-001	0.81	1.73	2.12	2.29	2.45	2.74	2.88	1.70	2.08	2.25	2.40	2.69	2.82	1.63	1.99	2.15	2.30	2.57	2.70
EX2-002	1.1	2.37	2.90	3.14	3.35	3.75	3.93	2.30	2.82	3.04	3.25	3.64	3.82	2.23	2.73	2.95	3.15	3.53	3.70
EX2-003	2.0	4.28	5.25	5.67	6.06	6.77	7.10	4.21	5.16	5.57	5.96	6.66	6.99	4.04	4.94	5.34	5.71	6.38	6.69
EX2-004	2.7	5.77	7.07	7.63	8.16	9.12	9.57	5.66	6.34	7.49	8.01	8.96	9.39	5.45	6.68	7.21	7.71	8.62	9.04
EX2-M00	4.3	9.20	11.27	12.18	13.12	14.55	15.26	9.03	11.06	11.94	12.77	14.27	14.97	8.67	10.62	11.47	12.27	13.71	14.38

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
EX2-00X	0.23	0.46	0.56	0.61	0.65	0.73	0.76	0.50	0.81	0.66	0.70	0.78	0.82	0.39	0.48	0.52	0.55	0.62	0.65
EX2-000	0.4	0.78	0.95	1.03	1.10	1.23	1.29	0.85	1.04	1.12	1.20	1.34	1.41	0.71	0.87	0.94	1.00	1.12	1.17
EX2-001	0.81	1.58	1.91	2.06	2.20	2.46	2.58	1.70	2.08	2.25	2.40	2.69	2.82	1.42	1.73	1.87	2.00	2.24	2.35
EX2-002	1.1	2.12	2.60	2.81	3.00	3.36	3.52	2.34	2.86	3.09	3.30	3.69	3.87	1.91	2.34	2.53	2.70	3.02	3.17
EX2-003	2.0	3.86	4.73	5.10	5.46	6.10	6.40	4.25	5.20	5.62	6.01	6.72	7.04	3.47	4.25	4.59	4.91	5.49	5.75
EX2-004	2.7	5.20	6.37	6.88	7.36	8.23	8.63	4.96	6.07	6.56	7.01	7.84	8.22	4.71	5.77	6.23	6.66	7.44	7.81
EX2-M00	4.3	8.28	10.15	10.96	11.71	13.10	13.74	9.10	11.14	12.14	12.87	14.38	15.09	7.50	9.19	9.93	10.61	11.87	12.45

### R-22 extended capacities (kW) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
EX2-00X	0.23	0.64	0.78	0.84	0.90	1.01	1.06	0.64	0.78	0.84	0.90	1.01	1.06	0.60	0.74	0.80	0.85	0.95	1.00
EX2-000	0.4	1.10	1.34	1.45	1.55	1.74	1.82	1.10	1.34	1.45	1.55	1.74	1.82	1.06	1.30	1.40	1.50	1.68	1.76
EX2-001	0.81	2.27	2.77	3.00	3.20	3.58	3.76	2.23	2.73	2.95	3.15	3.53	3.70	2.16	2.64	2.86	3.05	3.41	3.58
EX2-002	1.1	3.04	3.73	4.03	4.31	4.81	5.05	3.01	3.69	3.98	4.26	4.76	4.99	2.94	3.60	3.89	4.16	4.65	4.87
EX2-003	2.0	5.56	6.81	7.35	7.86	8.79	9.22	5.49	6.72	7.26	7.76	8.68	9.10	5.35	6.55	7.07	7.56	8.45	8.86
EX2-004	2.7	7.50	9.19	9.93	10.81	11.87	12.45	7.43	9.10	9.83	10.51	11.75	12.33	7.22	8.84	9.55	10.21	11.42	11.38
EX2-M00	4.3	11.97	14.65	15.83	16.92	18.92	19.84	11.82	14.48	15.64	16.72	18.69	19.61	11.51	14.09	15.22	16.27	18.19	19.08

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
EX2-00X	0.23	0.60	0.74	0.80	0.85	0.95	1.00	0.67	0.73	0.78	0.91	0.91	0.95	0.64	0.69	0.74	0.82	0.86	0.90
EX2-000	0.4	1.03	1.26	1.36	1.45	1.62	1.70	1.17	1.26	1.35	1.58	1.58	1.65	1.13	1.22	1.31	1.46	1.53	1.60
EX2-001	0.81	2.12	2.60	2.81	3.00	3.36	3.52	2.37	2.56	2.74	3.21	3.21	3.35	2.27	2.45	2.62	2.92	3.07	3.20
EX2-002	1.1	2.87	3.51	3.79	4.06	4.53	4.76	3.19	3.44	3.68	4.31	4.31	4.51	3.08	3.33	3.56	3.98	4.17	4.36
EX2-003	2.0	5.20	6.37	6.88	7.36	8.23	8.63	5.81	6.27	6.70	7.86	7.86	8.21	5.63	6.08	6.50	7.27	7.62	7.96
EX2-004	2.7	7.04	8.63	9.32	9.96	11.14	11.68	7.86	8.49	9.07	10.64	10.64	11.11	7.58	8.18	8.75	9.78	10.26	10.71
EX2-M00	4.3	11.19	13.70	14.80	15.82	17.69	18.55	12.58	13.54	14.47	16.97	16.97	17.72	12.11	13.08	13.98	15.63	16.39	17.12

### R-134a extended capacities (kW) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
EX2-00X	0.23	0.60	0.74	0.80	0.85	0.95	1.00	0.60	0.74	0.80	0.85	0.95	1.00	0.57	0.69	0.75	0.80	0.90	0.94
EX2-000	0.4	1.06	1.30	1.40	1.50	1.68	1.76	1.03	1.26	1.36	1.45	1.62	1.70	0.99	1.21	1.31	1.40	1.57	1.64
EX2-001	0.81	2.06	2.64	2.86	3.05	3.41	3.58	2.09	2.56	2.76	2.95	3.30	3.46	2.02	2.47	2.67	2.85	3.19	3.35
EX2-002	1.1	2.90	3.56	3.84	4.11	4.59	4.81	2.87	3.51	3.79	4.06	4.53	4.76	2.73	3.34	3.61	3.85	4.31	4.52
EX2-003	2.0	5.49	6.72	7.26	7.76	8.68	9.10	5.38	6.59	7.12	7.61	8.51	8.92	5.20	6.37	6.88	7.36	8.23	8.63
EX2-004	2.7	7.15	8.76	9.46	10.11	11.31	11.86	7.01	8.58	9.27	9.91	11.08	11.62	5.73	8.24	8.90	9.51	10.63	11.15
EX2-M00	4.3	11.40	13.96	15.08	16.12	18.02	18.90	11.19	13.70	14.80	15.82	17.69	18.55	10.69	13.09	14.14	15.12	16.90	17.73

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
EX2-00X	0.23	0.53	0.65	0.70	0.75	0.84	0.88	0.60	0.65	0.69	0.78	0.81	0.85	0.57	0.61	0.65	0.73	0.77	0.80
EX2-000	0.4	0.96	1.17	1.26	1.35	1.51	1.59	1.03	1.11	1.19	1.33	1.39	1.45	0.99	1.07	1.14	1.28	1.34	1.40
EX2-001	0.81	1.91	2.34	2.53	2.70	3.02	3.17	2.09	2.26	2.41	2.70	2.83	2.95	1.98	2.14	2.29	2.56	2.68	2.80
EX2-002	1.1	2.62	3.21	3.47	3.70	4.14	4.34	2.87	3.10	3.31	3.70	3.88	4.06	2.69	2.91	3.11	3.47	3.64	3.80
EX2-003	2.0	4.39	6.11	6.60	7.06	7.89	8.28	5.52	5.96	6.38	7.13	7.48	7.81	5.27	5.70	6.09	6.81	7.14	7.46
EX2-004	2.7	6.41	7.85	8.48	9.06	10.13	10.63	7.01	7.57	8.09	9.05	9.49	9.91	6.66	7.19	7.68	8.59	9.01	9.41
EX2-M00	4.3	10.20	12.49	13.49	14.42	16.12	16.91	11.19	12.08	12.92	14.44	15.15	15.82	10.58	11.43	12.22	13.66	14.33	14.97

### R-404A/507 extended capacities (kW) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
EX2-00X	0.23	0.46	0.56	0.61	0.65	0.73	0.76	0.46	0.56	0.61	0.65	0.73	0.76	0.42	0.52	0.56	0.60	0.67	0.70
EX2-000	0.4	0.81	1.00	1.08	1.15	1.29	1.35	0.78	0.95	1.03	1.10	1.23	1.29	0.74	0.91	0.98	1.05	1.18	1.23
EX2-001	0.81	1.66	2.04	2.20	2.35	2.63	2.76	1.63	1.99	2.15	2.30	2.57	2.70	1.52	1.86	2.01	2.15	2.41	2.52
EX2-002	1.1	2.23	2.73	2.95	3.15	3.53	3.70	2.19	2.69	2.90	3.10	3.47	3.64	2.09	2.56	2.76	2.95	3.30	3.46
EX2-003	2.0	4.07	4.39	5.39	5.76	6.44	6.75	3.96	4.86	5.24	5.61	6.27	6.57	3.79	4.64	5.01	5.36	5.99	6.28
EX2-004	2.7	5.49	6.72	7.26	7.76	8.68	9.10	5.38	6.59	7.12	7.61	8.51	8.92	5.10	6.24	6.74	7.21	8.06	8.45
EX2-M00	4.3	8.74	10.71	11.57	12.37	13.83	14.50	8.57	10.49	11.33	12.12	13.55	14.21	8.14	9.97	10.77	11.51	12.87	13.50

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
EX2-00X	0.23	0.42	0.52	0.56	0.60	0.67	0.70	0.46	0.50	0.53	0.59	0.62	0.65	0.42	0.46	0.49	0.55	0.58	0.60
EX2-000	0.4	0.71	0.87	0.94	1.00	1.12	1.17	0.78	0.64	0.90	1.01	1.05	1.10	0.71	0.71	0.82	0.91	0.96	1.00
EX2-001	0.81	1.45	1.78	1.92	2.05	2.29	2.41	1.56	1.68	1.80	2.01	2.11	2.20	1.45	1.45	1.68	1.87	1.97	2.05
EX2-002	1.1	1.95	2.38	2.58	2.75	3.08	3.23	2.12	2.29	2.45	2.74	2.88	3.00	1.98	1.98	2.29	2.56	2.68	2.80
EX2-003	2.0	3.58	4.38	4.73	5.06	5.65	5.93	3.86	4.17	4.46	4.98	5.22	5.46	3.61	3.61	4.17	4.66	4.89	6.11
EX2-004	2.7	4.81	5.90	6.37	6.81	7.61	7.98	5.24	5.66	6.05	6.76	7.09	7.41	4.89	4.89	5.64	6.31	6.61	6.91
EX2-M00	4.3	7.68	9.41	10.16	10.86	12.15	12.74	8.32	8.99	9.61	10.74	11.26	11.76	7.75	7.75	8.95	10.01	10.50	10.96

R-407C extended capacities (kW) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
EX2-00X	0.23	0.60	0.74	0.80	0.85	0.95	1.0	0.60	0.74	0.80	0.85	0.95	1.00	0.57	0.69	0.75	0.80	0.90	0.94
EX2-000	0.4	1.06	1.30	1.40	1.50	1.65	1.75	1.06	1.30	1.40	1.68	1.68	1.76	0.99	1.21	1.31	1.40	1.57	1.64
EX2-001	0.81	2.16	2.64	2.86	3.05	3.41	3.58	2.12	2.60	2.81	3.36	3.36	3.52	2.05	2.51	2.72	2.90	3.25	3.40
EX2-002	1.1	2.94	3.60	3.89	4.16	4.65	4.87	2.87	3.51	3.79	4.53	4.53	4.76	2.76	3.38	3.65	3.90	4.37	4.58
EX2-003	2.0	5.35	6.55	7.07	7.56	8.45	8.86	5.24	6.42	6.93	8.28	8.28	8.69	5.03	6.16	6.65	7.11	7.95	8.34
EX2-004	2.7	7.22	8.84	9.55	10.21	11.42	11.98	7.08	8.67	9.37	11.19	11.19	11.74	6.80	8.32	8.99	9.61	10.75	11.27
EX2-M00	4.3	11.47	14.05	15.17	16.22	18.14	19.02	11.26	13.79	14.89	17.80	17.80	18.67	10.83	13.27	14.33	15.32	17.13	17.96

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
EX2-00X	0.23	0.57	0.69	0.75	0.80	0.90	0.94	0.60	0.65	0.69	0.78	0.81	0.85	0.57	0.61	0.65	0.73	0.77	0.80
EX2-000	0.4	0.96	1.17	1.26	1.35	1.51	1.59	1.06	1.15	1.23	1.37	1.44	1.50	0.9w9	1.07	1.14	1.28	1.34	1.40
EX2-001	0.81	1.95	2.38	2.58	2.75	3.08	3.23	2.12	2.29	2.45	2.74	2.88	3.00	2.02	2.18	2.33	2.60	2.73	2.85
EX2-002	1.1	2.66	3.25	3.51	3.75	4.20	4.40	2.90	3.14	3.35	3.75	3.93	4.11	2.76	2.98	3.19	3.56	3.74	3.90
EX2-003	2.0	4.81	5.90	6.37	6.81	7.61	7.98	5.27	5.70	6.09	6.81	7.14	7.46	5.03	5.43	5.80	6.49	6.81	7.11
EX2-004	2.7	6.48	7.93	8.57	9.16	10.24	10.74	7.15	7.72	8.26	9.23	9.68	10.11	6.76	7.30	7.81	8.73	9.15	9.56
EX2-M00	4.3	10.34	12.66	13.67	14.62	16.34	17.14	11.36	12.27	13.12	14.67	15.39	16.07	10.80	11.66	12.47	13.94	14.62	15.27

R-502 extended capacities (kW) - EX2 Series

Capacities are for EX2 @ 100% duty cycle

Valve type	Nominal rating	Evaporator temperature																	
		10°C						0°C						-10°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	400	600	700	800	1000	1100	400	600	700	800	1000	1100
EX2-00X	0.23	0.42	0.52	0.56	0.60	0.67	0.70	0.42	0.52	0.56	0.60	0.67	0.70	0.39	0.48	0.52	0.55	0.62	0.65
EX2-000	0.4	0.74	0.91	0.98	1.05	1.18	1.23	0.71	0.87	0.94	1.00	1.00	1.17	0.67	0.82	0.89	0.95	1.06	1.12
EX2-001	0.81	1.49	1.82	1.97	2.10	2.35	2.47	1.45	1.78	1.92	2.05	2.05	2.41	1.38	1.69	1.83	1.95	2.18	2.29
EX2-002	1.1	1.98	2.43	2.62	2.80	3.13	3.29	1.95	2.38	2.58	2.75	2.75	3.23	1.88	2.30	2.48	2.65	2.97	3.11
EX2-003	2.0	3.55	4.47	4.82	5.16	5.77	6.05	3.54	4.34	4.68	5.01	5.01	5.87	3.40	4.16	4.50	4.81	5.37	5.64
EX2-004	2.7	4.92	6.03	6.51	6.96	7.78	8.16	4.81	5.90	5.37	6.81	6.81	7.98	4.57	5.59	6.04	6.46	7.22	7.57
EX2-M00	4.3	7.82	9.58	10.35	11.06	12.37	12.97	7.65	9.36	10.12	10.81	10.81	12.68	7.29	8.93	9.65	10.31	11.53	12.09

Valve type	Nominal rating	Evaporator temperature																	
		-20°C						-30°C						-40°C					
		Pressure drop across valve (kPa)						Pressure drop across valve (kPa)						Pressure drop across valve (kPa)					
		400	600	700	800	1000	1100	600	700	800	1000	1100	1200	600	700	800	1000	1100	1200
EX2-00X	0.23	0.35	0.43	0.47	0.50	0.56	0.59	0.93	0.42	0.45	0.50	0.50	0.55	0.39	0.42	0.45	0.50	0.53	0.55
EX2-000	0.4	0.64	0.78	0.84	0.90	1.01	1.06	0.71	0.76	0.82	0.91	0.91	1.00	0.67	0.73	0.78	0.87	0.91	0.95
EX2-001	0.81	1.31	1.60	1.73	1.85	2.07	2.17	1.42	1.53	1.64	1.83	1.83	2.00	1.35	1.45	1.55	1.74	1.82	1.90
EX2-002	1.1	1.77	2.17	2.34	2.50	2.80	2.94	1.95	2.10	2.25	2.51	2.51	2.75	1.81	1.95	2.08	2.33	2.44	2.55
EX2-003	2.0	3.22	3.95	4.26	4.56	5.09	5.34	3.50	3.79	4.05	4.52	4.52	4.96	3.29	3.56	3.80	4.25	4.46	4.66
EX2-004	2.7	4.35	5.33	5.76	6.16	6.88	7.22	4.74	5.12	5.48	6.12	6.12	5.71	4.46	4.82	5.15	5.76	6.04	6.31
EX2-M00	4.3	6.94	8.50	9.18	9.81	10.97	11.51	7.54	8.14	8.71	9.73	9.73	10.66	7.08	7.65	8.18	9.14	9.59	10.01

## R-410A extended capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

Valve type	Condensing temperature (°F)	Evaporating temperature (°F)											
		60	50	40	30	20	10	0	-10	-20	-30	-40	-50
EX4	140	5	5	5	5	5	5	5	5	5	5	5	5
EX5		15	15	16	16	16	16	16	16	15	15	15	15
EX6		36	37	38	38	38	38	38	38	37	37	36	35
EX7		99	102	104	105	105	105	105	104	103	101	99	97
EX8		265	271	277	279	281	281	280	277	274	269	264	258
EX4	130	5	5	5	5	6	6	6	6	5	5	5	5
EX5		15	16	16	16	17	17	17	17	16	16	16	16
EX6		37	38	39	40	40	40	40	40	40	39	39	38
EX7		101	105	107	109	110	110	111	110	109	108	106	104
EX8		269	279	285	292	293	295	296	294	291	288	283	277
EX4	120	5	5	6	6	6	6	6	6	6	6	6	6
EX5		15	16	17	17	17	17	17	17	17	17	17	17
EX6		37	39	40	41	42	42	42	42	42	42	41	40
EX7		101	106	110	112	114	115	116	116	116	114	113	111
EX8		270	283	293	299	305	308	309	310	309	305	301	297
EX4	110	5	5	5	6	6	6	6	6	6	6	6	6
EX5		15	15	16	17	17	17	18	18	18	17	17	17
EX6		35	37	39	40	42	42	43	43	43	42	42	41
EX7		96	102	107	111	114	115	117	118	117	116	115	113
EX8		257	273	286	297	305	308	313	314	313	309	308	303
EX4	100	5	5	5	6	6	6	6	6	6	6	6	6
EX5		14	15	16	17	17	17	18	18	18	18	18	18
EX6		33	36	38	40	41	42	43	43	43	43	43	42
EX7		90	98	105	110	113	116	118	119	119	118	118	116
EX8		240	261	281	294	301	308	315	316	316	315	316	311
EX4	90	4	4	5	5	5	6	6	6	6	6	6	6
EX5		12	13	15	16	16	17	17	18	18	18	18	18
EX6		28	33	36	38	40	41	42	42	43	43	43	43
EX7		78	89	98	104	109	112	116	116	118	118	118	117
EX8		207	239	260	277	290	300	308	311	314	314	315	313
EX4	80	3	4	4	5	5	5	6	6	6	6	6	6
EX5		9	12	13	15	15	16	17	17	17	17	17	17
EX6		22	28	32	35	37	39	40	41	42	42	42	42
EX7		61	77	87	97	103	107	111	113	114	116	115	114
EX8		163	204	233	257	274	286	297	300	305	309	308	305
EX4	70	2	3	4	4	5	5	5	5	6	6	6	6
EX5		5	9	11	13	14	15	16	16	17	17	17	17
EX6		11	21	27	31	34	37	39	39	40	41	41	41
EX7		31	59	75	86	94	101	106	108	111	112	114	113
EX8		84	157	201	230	251	270	284	289	295	300	303	301
EX4	60	-	1	3	4	4	5	5	5	5	5	5	5
EX5		-	4	8	11	13	14	15	15	16	16	16	16
EX6		-	10	20	26	30	33	36	37	38	39	40	39
EX7		-	27	56	72	84	92	98	102	105	108	109	109
EX8		-	72	150	192	224	245	262	273	281	287	291	290
EX4	50	-	-	1	3	3	4	4	5	5	5	5	5
EX5		-	-	3	8	10	12	14	14	15	15	16	16
EX6		-	-	8	19	25	29	33	35	36	37	38	38
EX7		-	-	21	53	69	80	90	95	99	102	104	104
EX8		-	-	57	143	185	214	239	254	265	272	278	277

## R-407C extended capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

Valve type	Condensing temperature bubble point (°F)	Evaporating temperature (°F)							
		60	50	40	30	20	10	0	-10
EX4	140	5	5	5	5	5	5	5	5
EX5		14	15	15	15	15	15	14	14
EX6		34	35	35	35	35	35	34	33
EX7		95	97	97	97	96	95	94	92
EX8		253	257	258	259	256	255	250	244
EX4	130	5	5	5	5	5	5	5	5
EX5		15	15	15	15	15	15	15	14
EX6		35	35	36	36	36	35	35	34
EX7		95	96	98	98	98	97	96	94
EX8		253	257	261	261	261	260	256	252
EX4	120	5	5	5	5	5	5	5	5
EX5		14	15	15	15	15	15	15	15
EX6		34	35	36	36	36	36	36	36
EX7		93	96	99	99	99	100	99	98
EX8		249	256	264	265	265	266	264	261
EX4	110	4	5	5	5	5	5	5	5
EX5		14	14	15	15	15	15	15	15
EX6		33	34	35	35	36	36	36	35
EX7		90	93	96	97	99	99	99	98
EX8		239	248	255	260	263	264	263	260
EX4	100	4	4	5	5	5	5	5	5
EX5		13	14	14	15	15	15	15	15
EX6		30	32	34	35	35	36	36	36
EX7		84	89	94	96	98	9	99	98
EX8		224	239	250	256	260	263	254	262
EX4	90	4	4	4	5	5	5	5	5
EX5		11	13	13	14	14	15	15	15
EX6		27	30	32	33	34	35	35	35
EX7		75	83	87	92	94	96	97	96
EX8		201	220	233	244	250	256	259	257
EX4	80	3	4	4	4	4	5	5	5
EX5		10	11	12	13	13	14	14	14
EX6		23	26	29	31	32	33	34	34
EX7		63	73	80	85	88	91	93	93
EX8		169	193	212	227	235	243	247	248
EX4	70	2	3	4	4	4	4	4	4
EX5		7	9	11	12	13	13	14	14
EX6		17	22	26	28	30	31	32	33
EX7		47	61	71	77	83	87	89	90
EX8		125	164	190	206	220	231	236	239
EX4	60	0	2	3	3	4	4	4	4
EX5		2	7	9	10	11	12	13	13
EX6		4	16	21	24	27	29	30	31
EX7		10	43	58	67	74	79	82	85
EX8		26	115	154	179	197	211	219	225
EX4	50	-	-	2	3	3	4	4	4
EX5		-	-	6	8	10	11	12	12
EX6		-	-	15	20	23	26	27	29
EX7		-	-	40	55	64	70	75	79
EX8		-	-	107	146	170	187	201	210

## R-22 extended capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

Valve type	Condensing temperature (°F)	Evaporating temperature (°F)											
		60	50	40	30	20	10	0	-10	-20	-30	-40	-50
EX4	140	5	5	5	5	5	5	5	5	5	5	5	5
EX5		15	15	15	16	16	16	16	15	15	15	15	15
EX6		35	36	37	37	38	38	37	37	37	36	36	35
EX7		97	100	101	102	103	104	103	102	102	100	98	96
EX8		260	266	270	273	275	276	272	271	266	262	262	257
EX4	130	5	5	5	5	5	5	5	5	5	5	5	5
EX5		14	15	15	15	16	16	16	15	15	15	15	15
EX6		34	35	36	37	37	37	37	37	37	37	36	36
EX7		94	97	100	101	102	103	102	102	101	101	99	98
EX8		251	258	266	270	273	274	273	273	270	268	264	260
EX4	120	4	5	5	5	5	5	5	5	5	5	5	5
EX5		14	14	15	15	15	15	16	15	15	15	15	15
EX6		33	34	35	36	37	37	37	37	37	37	37	36
EX7		90	94	97	99	100	102	103	102	102	101	100	99
EX8		240	250	259	264	268	272	274	272	271	270	268	263
EX4	110	4	4	5	5	5	5	5	5	5	5	5	5
EX5		12	13	14	14	15	15	15	15	15	15	15	15
EX6		30	32	34	34	35	36	36	36	37	36	36	36
EX7		82	88	92	95	98	99	100	100	101	99	99	98
EX8		219	234	246	253	260	263	266	266	268	265	263	261
EX4	100	4	4	4	5	5	5	5	5	5	5	5	5
EX5		11	12	13	14	14	15	15	15	15	15	15	15
EX6		27	29	31	33	34	35	35	36	36	36	35	35
EX7		74	81	87	91	93	96	97	98	98	98	98	97
EX8		197	216	231	242	249	256	259	263	263	262	260	258
EX4	90	3	4	4	4	4	5	5	5	5	5	5	5
EX5		9	11	12	13	13	14	14	14	14	14	14	14
EX6		22	26	29	31	32	33	34	34	35	35	35	34
EX7		61	71	78	84	87	91	93	94	95	95	95	94
EX8		163	190	209	224	233	242	249	251	255	254	253	251
EX4	80	2	3	3	4	4	4	4	4	5	5	5	5
EX5		7	9	10	11	12	13	13	14	14	14	14	14
EX6		16	21	25	27	29	30	32	33	33	33	33	33
EX7		44	58	68	75	81	84	87	89	90	91	91	91
EX8		117	156	182	201	215	224	233	239	240	243	243	241
EX4	70	-	2	3	3	4	4	4	4	4	4	4	4
EX5		-	6	8	10	11	12	12	13	13	13	13	13
EX6		-	15	20	24	26	28	30	31	31	32	32	32
EX7		-	40	55	65	72	77	81	84	85	87	88	87
EX8		-	108	147	173	191	205	217	224	227	231	234	233
EX4	60	-	-	2	3	3	3	4	4	4	4	4	4
EX5		-	-	6	8	9	10	11	12	12	12	12	12
EX6		-	-	13	19	22	25	27	28	29	29	30	30
EX7		-	-	36	51	61	68	74	76	79	81	82	82
EX8		-	-	97	137	163	182	196	204	211	216	219	219
EX4	50	-	-	-	2	2	3	3	3	4	4	4	4
EX5		-	-	-	5	7	9	10	11	11	11	12	12
EX6		-	-	-	11	17	21	23	25	26	27	28	28
EX7		-	-	-	31	47	57	65	69	73	74	76	77
EX8		-	-	-	83	126	152	172	185	194	199	203	206

## R-134a extended capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

Valve type	Condensing temperature (°F)	Evaporating temperature (°F)								
		60	50	40	30	20	10	0	-10	-20
EX4	140	4	4	4	4	4	4	4	3	3
EX5		11	11	11	11	11	11	11	11	10
EX6		27	27	27	27	27	26	26	25	25
EX7		74	75	75	75	73	73	71	69	68
EX8		197	200	200	199	196	194	190	185	181
EX4	130	4	4	4	4	4	4	4	4	3
EX5		11	11	11	11	11	11	11	11	10
EX6		26	26	27	27	27	27	26	26	25
EX7		72	73	74	74	73	73	72	70	69
EX8		191	194	198	197	196	194	192	187	183
EX4	120	3	4	4	4	4	4	4	4	4
EX5		10	11	11	11	11	11	11	11	11
EX6		25	26	26	27	27	27	26	26	25
EX7		68	71	73	73	73	73	72	71	70
EX8		182	188	194	196	195	195	193	189	186
EX4	110	3	3	3	4	4	4	4	4	3
EX5		10	10	11	11	11	11	11	11	11
EX6		23	24	25	26	26	26	26	26	25
EX7		63	65	69	70	71	71	71	70	69
EX8		168	176	183	187	189	191	189	188	184
EX4	100	3	3	3	3	3	3	3	3	3
EX5		9	9	10	10	10	11	11	11	10
EX6		20	22	24	24	25	25	25	25	25
EX7		56	60	65	67	69	69	69	69	68
EX8		149	161	173	178	183	184	185	184	182
EX4	90	2	3	3	3	3	3	3	3	3
EX5		7	8	9	9	10	10	10	10	10
EX6		16	19	21	22	23	24	24	24	24
EX7		44	52	58	61	64	66	66	66	66
EX8		118	139	153	163	170	175	177	176	177
EX4	80	1	2	2	3	3	3	3	3	3
EX5		4	6	7	8	9	9	9	10	10
EX6		10	15	18	20	21	22	23	23	23
EX7		27	40	49	54	58	60	62	62	63
EX8		72	107	130	144	154	160	165	166	167
EX4	70	-	1	2	2	3	3	3	3	3
EX5		-	3	6	7	8	8	9	9	9
EX6		-	8	13	16	18	20	21	21	22
EX7		-	22	37	45	50	54	57	59	59
EX8		-	58	98	120	134	145	152	156	158
EX4	60	-	-	1	2	2	2	3	3	3
EX5		-	-	2	5	6	7	8	8	8
EX6		-	-	5	12	15	17	18	19	20
EX7		-	-	14	32	40	46	50	52	53
EX8		-	-	38	84	107	122	133	139	143
EX4	50	-	-	-	-	1	2	2	2	2
EX5		-	-	-	-	4	5	6	7	7
EX6		-	-	-	-	9	13	15	16	17
EX7		-	-	-	-	26	36	42	45	48
EX8		-	-	-	-	69	95	111	120	128

## R-404A/R-507 extended capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

Valve type	Condensing temperature (°F)	Evaporating temperature (°F)											
		60	50	40	30	20	10	0	-10	-20	-30	-40	-50
EX4	130	3	3	3	3	3	3	3	3	3	2	2	2
EX5		9	9	9	9	9	9	8	8	8	8	7	7
EX6		21	21	22	21	21	21	20	20	19	18	17	16
EX7		58	59	59	58	58	57	56	54	52	50	48	45
EX8		153	156	157	156	154	152	148	143	139	133	127	120
EX4	120	3	3	3	3	3	3	3	3	3	3	3	3
EX5		9	9	9	10	9	9	9	9	9	9	8	8
EX6		22	22	23	23	23	23	22	22	21	20	20	19
EX7		59	61	62	63	62	62	61	60	58	56	54	52
EX8		158	162	165	168	166	165	163	169	165	149	144	138
EX4	110	3	3	3	3	3	3	3	3	3	3	3	3
EX5		9	9	10	10	10	10	10	9	9	9	9	8
EX6		21	22	23	23	23	23	23	23	22	22	21	20
EX7		58	60	63	63	64	64	63	62	61	59	58	56
EX8		153	161	167	168	170	171	168	165	163	158	154	148
EX4	100	3	3	3	3	3	3	3	3	3	3	3	3
EX5		8	9	9	10	10	10	10	10	10	10	9	9
EX6		20	21	23	23	24	24	24	24	23	23	22	22
EX7		54	59	62	64	65	66	66	66	64	63	62	59
EX8		145	156	165	171	174	175	176	173	171	168	164	158
EX4	90	2	3	3	3	3	3	3	3	3	3	3	3
EX5		7	8	9	9	10	10	10	10	10	10	10	9
EX6		17	20	21	23	23	24	24	24	24	23	23	23
EX7		48	54	58	62	64	65	66	66	66	64	63	62
EX8		127	144	156	164	170	173	176	176	175	171	169	165
EX4	80	2	2	3	3	3	3	3	3	3	3	3	3
EX5		6	7	8	9	9	10	10	10	10	10	10	9
EX6		13	17	19	21	22	23	23	24	24	23	23	23
EX7		37	46	53	58	61	63	64	65	65	64	63	62
EX8		98	124	142	154	162	168	171	173	172	171	169	166
EX4	70	1	2	2	3	3	3	3	3	3	3	3	3
EX5		2	5	7	8	9	9	9	10	10	10	10	10
EX6		6	13	17	19	21	22	23	23	24	23	23	23
EX7		16	35	46	52	57	60	62	64	64	64	64	63
EX8		42	94	122	138	152	160	166	170	172	170	170	168
EX4	60	-	1	2	2	2	3	3	3	3	3	3	3
EX5		-	2	5	7	8	8	9	9	9	9	9	9
EX6		-	4	12	16	18	20	21	22	22	22	23	22
EX7		-	11	33	43	50	55	58	60	61	62	62	61
EX8		-	30	89	116	133	146	155	159	163	164	165	162
EX4	50	-	-	-	2	2	2	3	3	3	3	3	3
EX5		-	-	-	5	6	7	8	9	9	9	9	9
EX6		-	-	-	11	15	18	19	20	21	21	22	22
EX7		-	-	-	31	42	48	53	56	58	59	60	59
EX8		-	-	-	82	111	128	142	149	154	157	160	158
EX4	40	-	-	-	-	1	2	2	2	3	3	3	3
EX5		-	-	-	-	4	6	7	8	8	8	8	9
EX6		-	-	-	-	10	14	17	18	19	20	20	21
EX7		-	-	-	-	27	38	46	50	53	55	56	56
EX8		-	-	-	-	72	102	122	133	142	146	149	150



## R-23 extended capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

Valve type	Condensing temperature (°F)	Evaporating temperature (°F)									
		-50	-60	-70	-80	-90	-100	-110	-120	-130	-140
EX4	0	5	5	5	5	5	5	5	5	5	5
EX5		14	15	15	16	16	16	16	16	16	16
EX6		33	35	36	38	38	39	39	39	39	38
EX4	-10	4	4	5	5	5	5	5	5	5	5
EX5		12	13	14	15	15	15	16	15	16	15
EX6		29	32	34	35	36	37	37	37	37	37
EX4	-20	3	4	4	4	5	5	5	5	5	5
EX5		10	12	13	14	14	15	15	15	15	15
EX6		24	28	31	33	34	35	36	36	36	36
EX4	-30	2	3	4	4	4	4	5	5	5	5
EX5		7	9	11	12	13	13	14	14	14	14
EX6		17	23	26	29	31	32	33	33	33	34
EX4	-40	-	2	3	3	4	4	4	4	4	4
EX5		-	6	9	10	11	12	12	13	13	13
EX6		-	16	21	25	27	29	30	31	31	31
EX4	-50	-	-	2	3	3	3	4	4	4	4
EX5		-	-	5	8	9	10	11	11	12	12
EX6		-	-	13	19	23	25	26	27	28	28

## R-124 extended capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

Valve type	Condensing temperature (°F)	Evaporating temperature (°F)				
		80	70	60	50	40
EX4	210	2	2	2	2	2
EX5		6	6	6	5	5
EX6		15	14	13	13	12
EX4	200	2	2	2	2	2
EX5		7	6	6	6	6
EX6		16	15	15	14	14
EX4	190	2	2	2	2	2
EX5		7	7	7	7	6
EX6		17	17	17	16	15
EX4	180	3	2	2	2	2
EX5		8	8	7	7	7
EX6		18	18	18	17	17
EX4	170	3	3	2	2	2
EX5		8	8	8	7	7
EX6		18	18	18	18	17
EX4	160	3	3	3	3	3
EX5		8	8	8	8	8
EX6		18	19	19	18	18
EX4	150	2	2	3	3	3
EX5		7	8	8	8	8
EX6		18	18	18	18	18

## R-744 extended capacities (Tons) - EX4-8 Series, as expansion and liquid injection valves

The following tables provide the capacity of valves at different conditions considering 20 psi pressure drop through liquid line:

Valve type	Condensing temperature (°F)	Evaporating temperature (°F)						
		10	0	-10	-20	-30	-40	-50
EX4	30	6	7	8	9	10	10	10
EX5		18	22	25	27	29	30	31
EX6		43	53	60	65	70	73	75
EX7		117	145	165	179	191	200	206
EX8		312	388	439	479	510	534	549
EX4	20	-	6	7	8	9	9	10
EX5		-	18	22	25	27	29	30
EX6		-	43	53	60	65	69	72
EX7		-	119	145	164	178	189	197
EX8		-	319	387	437	476	506	526
EX4	10	-	-	6	7	8	9	9
EX5		-	-	18	22	25	27	29
EX6		-	-	43	53	60	65	68
EX7		-	-	119	145	163	178	187
EX8		-	-	318	386	436	474	500
EX4	0	-	-	-	6	7	8	9
EX5		-	-	-	17	21	24	26
EX6		-	-	-	41	51	58	63
EX7		-	-	-	114	140	159	172
EX8		-	-	-	303	373	423	458
EX4	-10	-	-	-	-	5	7	8
EX5		-	-	-	-	17	20	23
EX6		-	-	-	-	40	49	55
EX7		-	-	-	-	109	134	152
EX8		-	-	-	-	290	359	405
EX4	-20	-	-	-	-	3	5	6
EX5		-	-	-	-	19	16	20
EX6		-	-	-	-	22	38	47
EX7		-	-	-	-	61	104	129
EX8		-	-	-	-	163	278	344
EX4	-30	-	-	-	-	-	3	5
EX5		-	-	-	-	-	8	15
EX6		-	-	-	-	-	19	35
EX7		-	-	-	-	-	53	96
EX8		-	-	-	-	-	142	257

## EX4-8 nominal capacities (Tons) - as hot gas bypass regulator

Valve type	R-22/R-407C	R-134a	R-404A/R-507
EX4	1.4	1.0	1.3
EX5	4.5	3.1	4.3
EX6	10.5	7.3	10.1
EX7	37.3	26.0	35.7
EX8	113.0	79.0	108.5

The nominal capacity is based on the following conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Subcooling
R-22, R-134a, R-404A, R-507	+40°F	+100°F	2°F
R-407C	+40°F bubble point	+100°F dew point	2°F

Remarks: Note 1: Bi-flow versions are not released for hot gas bypass applications.  
 Note 2: EX4, EX5, EX6, EX7 and EX8 must be installed with motor downward in hot gas line applications.  
 This insures the valve life expectancy.

## Extended capacities (Tons) - EX4-8 Series

Valve Type	Liquid / Condensing temperature°F	R-22 / R-407C	R-134a	R-404A / R-507
EX4	140 bubble point for all refrigerants (147 dew point for R-407C)	2	1	2
EX5		7	5	6
EX6		15	11	13
EX7		54	38	46
EX8		165	117	139
EX4	130 bubble point for all refrigerants (138 dew point for R-407C)	2	1	2
EX5		6	4	5
EX6		14	10	12
EX7		49	35	44
EX8		150	106	132
EX4	120 bubble point for all refrigerants (128 dew point for R-407C)	2	1	2
EX5		6	4	5
EX6		13	9	12
EX7		45	32	41
EX8		138	97	126
EX4	110 bubble point for all refrigerants (119 dew point for R-407C)	2	1	1
EX5		5	3	5
EX6		12	8	11
EX7		41	29	38
EX8		124	87	117

## EX6-8 nominal capacities (Tons) - as suction pressure regulator (evaporator or crankcase)

Valve type	R-407C	R-22	R-134a	R-404A
EX6	1.1	1.1	0.9	1.0
EX7	3.8	4.0	3.0	3.5
EX8	11.5	12.2	9.2	10.5

The nominal capacity is based on the following conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Subcooling	Pressure drop
r-22, R-134a, R-404A	+40°F	+100°F	2°F	2 psid
R-407C	+40°F bubble point	+100°F dew point	2°F	2 psid

Remarks: Bi-flow versions are not released for use below -40°F.

EX6, EX7 and EX8 must be installed with motor downward in suction line applications.

This insures the valve life expectancy.

Multiply above nominal capacities by following factors to obtain capacities at different pressure drops:

ΔP, psid	1.5	2.0	3.0	4.5
Correction factor	0.82	1.00	1.15	1.41

Example: EX6 provides 1 ton at 2.0 psid pressure drop with R-404A: 4 psi pressure drop.

## R-22 extended capacities (Tons) - EX6-8 Series, suction pressure regulator duty

Valve type	Condensing temperature °F	Evaporating temperature °F									
		50	40	30	20	10	0	-10	-20	-30	-40
EX6	140	1	1	1	1	1	1	1	0	0	0
EX7		4	3	3	3	2	2	2	2	1	1
EX8		11	10	9	8	7	6	5	5	4	3
EX6	130	1	1	1	1	1	1	1	0	0	0
EX7		4	3	3	3	3	2	2	2	1	1
EX8		12	11	10	8	8	7	6	5	4	4
EX6	120	1	1	1	1	1	1	1	0	0	0
EX7		4	4	3	3	3	2	2	2	1	1
EX8		12	11	10	9	8	7	6	5	4	4
EX6	110	1	1	1	1	1	1	1	1	0	0
EX7		4	4	3	3	3	2	2	2	2	1
EX8		13	12	11	9	8	7	6	6	5	4
EX6	100	1	1	1	1	1	1	1	1	0	0
EX7		4	4	4	3	3	3	2	2	2	1
EX8		14	12	11	10	9	8	7	6	5	4

## R-407C extended capacities (Tons) - EX6-8 Series, suction pressure regulator duty

Valve type	Condensing temperature bubble point °F	Evaporating temperature °F				
		50	40	30	20	10
EX6	140	1	1	1	1	1
EX7		3	3	3	2	2
EX8		10	9	8	7	6
EX6	130	1	1	1	1	1
EX7		4	3	3	2	2
EX8		11	9	8	7	7
EX6	120	1	1	1	1	1
EX7		4	3	3	3	2
EX8		12	10	9	8	7
EX6	110	1	1	1	1	1
EX7		4	4	3	3	2
EX8		12	11	10	8	8
EX6	100	1	1	1	1	1
EX7		4	4	3	3	3
EX8		13	11	10	9	8

## R-134a extended capacities (Tons) - EX6-8 Series, suction pressure regulator duty

Valve type	Condensing temperature °F	Evaporating temperature °F				
		50	40	30	20	10
EX6	140	1	1	1	1	0
EX7		3	2	2	2	2
EX8		8	7	6	5	5
EX6	130	1	1	1	1	0
EX7		3	3	2	2	2
EX8		9	8	7	6	5
EX6	120	1	1	1	1	1
EX7		3	3	2	2	2
EX8		9	8	7	6	5
EX6	110	1	1	1	1	1
EX7		3	3	3	2	2
EX8		10	9	8	7	6
EX6	100	1	1	1	1	1
EX7		3	3	3	2	2
EX8		11	9	8	7	6

## R-404A/R-507 extended capacities (Tons) - EX6-8 Series, suction pressure regulator duty

Valve type	Condensing temperature °F	Evaporating temperature °F									
		50	40	30	20	10	0	-10	-20	-30	-40
EX6	140	1	1	1	0	0	0	0	0	0	0
EX7		3	2	2	2	2	1	1	1	1	1
EX8		8	7	6	5	5	4	3	3	2	2
EX6	130	1	1	1	1	1	0	0	0	0	0
EX7		3	3	2	2	2	2	1	1	1	1
EX8		9	8	7	6	5	5	4	3	3	2
EX6	120	1	1	1	1	1	0	0	0	0	0
EX7		3	3	3	2	2	2	1	1	1	1
EX8		10	9	8	7	6	5	4	4	3	3
EX6	110	1	1	1	1	1	1	0	0	0	0
EX7		4	3	3	2	2	2	2	1	1	1
EX8		11	10	9	8	7	6	5	4	4	3
EX6	100	1	1	1	1	1	1	1	0	0	0
EX7		4	3	3	3	2	2	2	2	1	1
EX8		12	11	9	8	7	6	5	5	4	3

## EX5-8 nominal capacities (Tons) - as condensing pressure regulator and liquid duty

Valve type	R-407C	R-22	R-134a	R-404A
EX5	5	6	5	4
EX6	12	13	12	9
EX7	44	46	43	31
EX8	133	140	131	93

Refrigerant	Evaporating temperature	Condensing temperature	Subcooling	Pressure drop
R-22, R-134a, R-404A	+40°F	+100°F	2°F	5 psid
R-407C	+40°F dew point	+100°F bubble	2°F	5 psid

Multiply above nominal capacities by following factors to obtain capacities at different pressure drops.

ΔP, psid	2.0	3.0	5.0
Correction factor	0.65	0.76	1.00

## R-22 extended capacities (Tons) - EX5-8 Series, condensing pressure regulator and liquid duty

Valve type	Condensing temperature °F	Evaporating temperature °F									
		50	40	30	20	10	0	-10	-20	-30	-40
EX5	140	4	4	4	4	4	4	4	4	4	4
EX6		10	10	10	10	10	9	9	9	9	9
EX7		36	36	35	35	34	33	33	32	31	31
EX8		111	109	107	105	104	102	100	98	96	94
EX5	130	5	5	5	4	4	4	4	4	4	4
EX6		11	11	11	10	10	10	10	10	10	9
EX7		39	38	38	37	37	36	35	35	34	33
EX8		118	116	115	113	111	109	107	105	103	101
EX5	120	5	5	5	5	5	5	5	5	4	4
EX6		12	12	11	11	11	11	11	10	10	10
EX7		42	41	41	40	39	39	38	37	37	36
EX8		126	125	123	121	119	117	115	113	111	109
EX5	110	5	5	5	5	5	5	5	5	5	5
EX6		12	12	12	12	12	12	11	11	11	11
EX7		44	43	43	42	42	41	40	40	39	38
EX8		133	132	130	128	126	124	122	120	118	116
EX5	100	6	6	6	5	5	5	5	5	5	5
EX6		13	13	13	13	12	12	12	12	12	11
EX7		47	46	46	45	44	44	43	42	41	41
EX8		142	140	138	136	134	132	130	128	126	124

R-134a extended capacities (Tons) - EX5-8 Series,  
Condensing pressure regulator and liquid duty

Valve type	Condensing temperature °F	Evaporating temperature °F			
		50	40	30	20
EX5	140	4	4	4	4
EX6		9	9	9	8
EX7		33	32	31	30
EX8		100	98	95	92
EX5	130	4	4	4	4
EX6		10	10	9	9
EX7		36	35	34	33
EX8		108	105	102	99
EX5	120	5	5	4	4
EX6		11	11	10	10
EX7		39	38	37	36
EX8		117	115	112	108
EX5	110	5	5	5	5
EX6		12	11	11	11
EX7		41	40	39	38
EX8		125	122	119	116
EX5	100	5	5	5	5
EX6		12	12	12	12
EX7		44	43	42	41
EX8		134	131	128	125

R-1404A/R-507 extended capacities (Tons) - EX5-8 Series,  
Condensing pressure regulator and liquid duty

Valve type	Condensing temperature °F	Evaporating temperature °F									
		50	40	30	20	10	0	-10	-20	-30	-40
EX5	140	2	2	2	2	2	2	2	2	2	2
EX6		5	5	5	5	5	4	4	4	4	4
EX7		19	19	18	17	17	16	15	14	13	13
EX8		59	57	55	52	50	48	45	43	41	38
EX5	130	3	3	3	2	2	2	2	2	2	2
EX6		6	6	6	6	5	5	5	5	5	4
EX7		22	22	21	20	19	19	18	17	16	15
EX8		68	66	63	61	59	56	54	52	49	47
EX5	120	3	3	3	3	3	3	3	2	2	2
EX6		7	7	7	7	6	6	6	6	5	5
EX7		26	25	24	23	23	22	21	20	19	19
EX8		78	76	73	71	69	66	64	61	59	56
EX5	110	3	3	3	3	3	3	3	3	3	3
EX6		8	8	8	7	7	7	7	6	6	6
EX7		28	28	27	26	25	24	23	23	22	21
EX8		86	84	81	79	77	74	71	69	66	64
EX5	100	4	4	4	4	3	3	3	3	3	3
EX6		9	9	8	8	8	8	7	7	7	7
EX7		31	31	30	29	28	27	26	26	25	24
EX8		95	93	91	88	86	83	80	78	75	73

## R-407C extended capacities (Tons) - EX5-8 Series, Condensing pressure regulator and liquid duty

Valve type	Condensing temperature dew point °F	Evaporating temperature °F			
		50	40	30	20
EX5	140	4	4	4	4
EX6		9	9	9	8
EX7		32	32	31	30
EX8		98	96	94	91
EX5	130	4	4	4	4
EX6		10	10	9	9
EX7		35	34	34	33
EX8		106	105	102	100
EX5	120	5	5	4	4
EX6		11	11	10	10
EX7		38	38	37	36
EX8		117	115	112	110
EX5	110	5	5	5	5
EX6		12	11	11	11
EX7		41	40	40	39
EX8		125	123	120	118
EX5	100	5	5	5	5
EX6		12	12	12	12
EX7		44	44	43	42
EX8		135	133	130	128

## EX6-8 nominal capacities (Tons) - for hot gas flow such as heat reclaim application

Valve type	R-22 / R-407C	R-404A / R-507
EX6	3.1	2.8
EX7	11.1	10.2
EX8	33.8	30.7

The nominal capacity is based on the following conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Subcooling	Pressure drop	Isentropic efficiency
R-22, R-404A, R-507	+40°F	+100°F	2°F	2 psid	80%
R-407C	+40°F bubble point	+100°F dew point	2°F	2 psid	80%

Remarks: Bi-flow versions are not released for hot gas flow applications.  
EX6, EX7 and EX8 must be installed with motor downward in suction line applications.  
This insures the valve life expectancy.



R-22/R-407C extended capacities (Tons) - EX6-8 Series,  
Hot gas flow such as heat reclaim application

Valve type	Condensing temperature °F	Pressure drop psi	Evaporating temperature °F											
			60	50	40	30	20	10	0	-10	-20	-30	-40	-50
EX6	140	1.5	1.6	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.1
EX7			5.6	5.5	5.3	5.2	5.0	4.9	4.7	4.6	4.4	4.3	4.1	4.0
EX8			17.0	16.6	16.2	15.7	15.3	14.8	14.4	13.9	13.4	13.0	12.5	12.0
EX6		7	3.4	3.3	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4
EX7			12.2	11.9	11.6	11.3	10.9	10.6	10.3	10.0	9.6	9.3	9.0	8.6
EX8			37.0	36.1	35.2	34.2	33.3	32.3	31.3	30.3	29.3	28.2	27.2	26.2
EX6		14	4.8	4.7	4.5	4.4	4.3	4.2	4.0	3.9	3.8	3.7	3.5	3.4
EX7			17.3	16.9	16.4	16.0	15.6	15.1	14.6	14.2	13.7	13.2	12.7	12.3
EX8			52.5	51.3	49.9	48.6	47.3	45.9	44.5	43.0	41.6	40.2	38.7	37.3
EX6	120	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.1
EX7			5.5	5.3	5.2	5.1	4.9	4.8	4.7	4.5	4.4	4.3	4.1	4.0
EX8			16.6	16.2	15.8	15.4	15.0	14.6	14.2	13.8	13.4	12.9	12.5	12.1
EX6		7	3.3	3.3	3.2	3.1	3.0	2.9	2.9	2.8	2.7	2.6	2.5	2.4
EX7			11.8	11.6	11.3	11.0	10.7	10.4	10.1	9.9	9.6	9.3	8.9	8.6
EX8			35.9	35.1	34.3	33.5	32.6	31.7	30.8	29.9	29.0	28.1	27.2	26.2
EX6		14	4.6	4.5	4.4	4.3	4.2	4.1	4.0	3.9	3.7	3.6	3.5	3.4
EX7			16.8	16.4	16.0	15.6	15.2	14.8	14.4	14.0	13.5	13.1	12.7	12.3
EX8			50.9	49.7	48.6	47.4	46.2	44.9	43.7	42.4	41.1	39.8	38.5	37.2
EX6	100	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.1
EX7			5.2	5.1	5.0	4.9	4.7	4.6	4.5	4.4	4.3	4.1	4.0	3.9
EX8			15.8	15.4	15.1	14.7	14.4	14.0	13.7	13.3	12.9	12.5	12.2	11.8
EX6		7	3.2	3.1	3.0	3.0	2.9	2.8	2.7	2.7	2.6	2.5	2.4	2.4
EX7			11.2	11.0	10.7	10.5	10.2	10.0	9.7	9.5	9.2	8.9	8.7	8.4
EX8			34.1	33.4	32.6	31.9	31.1	30.4	29.6	28.8	28.0	27.1	26.3	25.5
EX6		14	4.4	4.3	4.2	4.1	4.0	3.9	3.8	3.7	3.6	3.5	3.4	3.3
EX7			15.8	15.5	15.2	14.8	14.5	14.1	13.7	13.4	13.0	12.6	12.2	11.8
EX8			48.0	47.0	46.0	45.0	43.9	42.8	41.7	40.6	39.5	38.3	37.2	36.0
EX6	80	1.5	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0
EX7			4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1	4.0	3.9	3.8	3.7
EX8			14.7	14.4	14.1	13.8	13.5	13.2	12.8	12.5	12.2	11.9	11.5	11.2
EX6		7	2.9	2.9	2.8	2.8	2.7	2.6	2.6	2.5	2.4	2.4	2.3	2.2
EX7			10.4	10.2	10.0	9.8	9.6	9.3	9.1	8.9	8.6	8.4	8.2	7.9
EX8			31.6	31.0	30.4	29.7	29.0	28.4	27.7	27.0	26.3	25.6	24.8	24.1
EX6		14	4.0	4.0	3.9	3.8	3.7	3.6	3.5	3.4	3.4	3.3	3.2	3.1
EX7			14.6	14.3	14.0	13.7	13.4	13.1	12.8	12.5	12.1	11.8	11.5	11.1
EX8			44.3	43.4	42.6	41.7	40.7	39.8	38.8	37.9	36.9	35.9	34.8	33.8

R-404A/R-507 extended capacities (Tons) - EX6-8 Series,  
Hot gas flow such a heat reclaim applications

Valve type	Condensing temperature °F	Pressure drop psi	Evaporating temperature °F											
			60	50	40	30	20	10	0	-10	-20	-30	-40	-50
EX6	140	1.5	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.6
EX7			4.2	4.1	3.9	3.7	3.5	3.3	3.2	3.0	2.8	2.6	2.4	2.2
EX8			12.8	12.3	11.8	11.3	10.7	10.1	9.6	9.0	8.4	7.8	7.2	6.6
EX6		7	2.6	2.5	2.4	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.4	1.3
EX7			9.2	8.8	8.4	8.1	7.7	7.3	6.8	6.4	6.0	5.6	5.2	4.7
EX8			27.8	26.7	25.6	24.5	23.3	22.0	20.8	19.5	18.2	16.9	15.6	14.4
EX6		14	3.6	3.4	3.3	3.2	3.0	2.8	2.7	2.5	2.4	2.2	2.0	1.9
EX7			13.0	12.5	12.0	11.4	10.9	10.3	9.7	9.1	8.5	7.9	7.3	6.7
EX8			39.4	37.9	36.3	34.7	33.0	31.3	29.5	27.7	25.9	24.1	22.2	20.4
EX6	120	1.5	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8
EX7			4.6	4.5	4.3	4.2	4.0	3.8	3.7	3.5	3.3	3.2	3.0	2.8
EX8			14.0	13.6	13.1	12.7	12.2	11.7	11.2	10.7	10.1	9.6	9.1	8.5
EX6		7	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.7
EX7			10.0	9.7	9.4	9.0	8.7	8.3	8.0	7.6	7.2	6.9	6.5	6.1
EX8			30.4	29.5	28.5	27.5	26.4	25.4	24.3	23.1	22.0	20.9	19.7	18.6
EX6		14	3.9	3.8	3.7	3.5	3.4	3.3	3.1	3.0	2.8	2.7	2.5	2.4
EX7			14.1	13.7	13.3	12.8	12.3	11.8	11.3	10.8	10.3	9.7	9.2	8.7
EX8			43.0	41.7	40.3	38.9	37.4	35.9	34.4	32.8	31.2	29.6	28.0	26.3
EX6	100	1.5	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9
EX7			4.7	4.6	4.4	4.3	4.2	4.0	3.9	3.7	3.6	3.4	3.3	3.1
EX8			14.2	13.9	13.5	13.1	12.7	12.2	11.8	11.4	10.9	10.4	10.0	9.5
EX6		7	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.2	2.1	2.0	1.9
EX7			10.1	9.9	9.6	9.3	9.0	8.7	8.4	8.1	7.8	7.4	7.1	6.8
EX8			30.8	30.0	29.2	28.3	27.4	26.5	25.5	24.6	23.6	22.6	21.6	20.6
EX6		14	4.0	3.9	3.7	3.6	3.5	3.4	3.3	3.2	3.0	2.9	2.8	2.6
EX7			14.3	13.9	13.5	13.1	12.7	12.3	11.9	11.4	11.0	10.5	10.0	9.6
EX8			43.5	42.3	41.2	39.9	38.7	37.4	36.1	34.7	33.3	31.9	30.5	29.1
EX6	80	1.5	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9
EX7			4.6	4.5	4.4	4.2	4.1	4.0	3.9	3.8	3.6	3.5	3.4	3.2
EX8			13.9	13.6	13.3	12.9	12.6	12.2	11.8	11.4	11.0	10.6	10.2	9.8
EX6		7	2.8	2.7	2.6	2.6	2.5	2.4	2.4	2.3	2.2	2.1	2.0	2.0
EX7			9.9	9.6	9.4	9.2	8.9	8.7	8.4	8.1	7.8	7.6	7.3	7.0
EX8			30.0	29.3	28.6	27.8	27.1	26.3	25.5	24.7	23.8	22.9	22.1	21.2
EX6		14	3.8	3.7	3.7	3.6	3.5	3.4	3.3	3.2	3.0	2.9	2.8	2.7
EX7			13.9	13.5	13.2	12.9	12.5	12.2	11.8	11.4	11.0	10.6	10.2	9.8
EX8			42.1	41.1	40.1	39.1	38.0	36.9	35.8	34.7	33.5	32.3	31.1	29.8

## R-404A/R-507 extended capacities (kW) EX4-8 Series, As expansion and liquid injection valves

Valve type	Condensing temperature (°C)	Evaporating temperature (°C)												
		+15	10+	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
EX4	+60	9	9	9	9	9	9	9	8	8	8	7	7	6
EX5		28	28	28	28	28	27	26	25	24	23	22	21	20
EX6		68	68	68	67	66	65	63	61	58	56	33	50	47
EX7		186	187	186	184	181	177	172	166	160	153	145	137	129
EX8		495	498	496	491	482	471	458	443	425	407	387	366	344
EX4	+55	10	10	10	10	10	10	10	9	9	9	8	8	8
EX5		30	31	31	31	30	30	29	29	28	27	26	25	23
EX6		72	73	74	74	73	72	70	69	67	64	62	59	56
EX7		198	201	202	202	200	197	193	188	182	176	169	162	154
EX8		527	535	538	537	533	525	514	501	486	470	451	432	411
EX4	+50	10	10	11	11	11	11	10	10	10	10	9	9	9
EX5		31	32	32	32	32	32	32	31	30	30	29	28	27
EX6		74	76	77	78	78	77	76	75	73	71	69	66	64
EX7		203	208	211	213	219	211	208	204	200	194	188	181	174
EX8		541	555	564	567	567	562	555	545	532	518	501	484	465
EX4	+45	10	10	11	11	11	11	11	11	11	10	10	10	9
EX5		31	32	33	33	33	33	33	33	32	32	31	30	29
EX6		74	77	79	80	80	80	80	79	78	76	74	72	69
EX7		201	210	215	219	220	220	219	216	212	208	202	196	190
EX8		537	559	574	583	587	586	582	575	566	553	539	524	506
EX4	+40	10	10	11	11	11	11	11	11	11	11	11	10	10
EX5		29	31	33	33	34	34	34	34	34	33	32	32	31
EX6		71	75	78	80	81	82	82	81	81	79	78	76	74
EX7		193	205	214	219	223	225	225	223	221	217	213	208	202
EX8		515	547	570	585	594	598	598	595	588	578	567	553	538
EX4	+35	9	10	10	11	11	11	11	11	11	11	11	11	11
EX5		27	30	31	33	34	34	34	34	34	34	33	33	32
EX6		65	71	75	79	81	82	83	83	82	81	80	79	77
EX7		178	195	207	215	221	225	226	226	225	223	219	215	210
EX8		474	519	551	574	590	599	603	604	600	594	585	573	560
EX4	+30	8	9	10	10	11	11	11	11	11	11	11	11	11
EX5		23	27	30	31	33	34	34	34	34	34	34	33	33
EX6		56	65	71	75	78	81	82	83	83	82	81	80	79
EX7		153	177	194	206	215	221	224	226	226	225	223	219	215
EX8		409	472	517	550	573	588	598	603	603	600	593	584	573

R-404A/R-507 extended capacities (kW) EX4-8 Series,  
As expansion and liquid injection valves

Valve type	Condensing temperature (°C)	Evaporating temperature (°C)												
		+15	10+	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
EX4	+25	6	8	9	10	10	11	11	11	11	11	11	11	11
EX5		17	23	27	29	31	32	33	34	34	34	34	34	33
EX6		42	55	64	70	74	78	80	81	82	82	81	80	79
EX7		114	150	174	191	204	213	218	222	224	224	223	220	217
EX8		305	400	465	510	543	566	582	592	596	597	593	587	579
EX4	+20	1	5	7	8	9	10	10	11	11	11	11	11	11
EX5		3	16	22	26	28	30	32	33	33	33	33	33	33
EX6		8	40	53	62	68	73	76	78	80	80	80	80	79
EX7		21	108	146	170	187	200	208	214	218	219	220	218	216
EX8		56	289	388	453	499	532	555	571	580	585	585	582	576
EX4	+15			5	7	8	9	10	10	10	11	11	11	11
EX5				15	21	25	28	29	31	32	32	32	33	32
EX6				37	51	60	66	71	74	76	77	78	78	78
EX7				101	139	164	181	194	202	208	212	213	214	213
EX8				268	371	437	484	516	540	555	564	569	569	566
EX4	+10				5	7	8	9	9	10	10	10	10	10
EX5					14	20	24	26	28	30	31	31	31	31
EX6					33	48	57	64	68	71	73	75	75	75
EX7					91	131	156	174	186	195	201	204	206	206
EX8					242	350	417	464	496	519	535	544	548	549

## R-22 extended capacities (kW) EX4-8 Series, as expansion and liquid injection valves

Valve type	Condensing temperature (°C)	Evaporating temperature (°C)												
		+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
EX4	+20		6	9	10	12	13	13	14	14	15	15	15	15
EX5			18	26	32	36	39	41	42	44	45	45	45	46
EX6			43	63	76	85	93	98	102	105	107	108	109	109
EX7			117	173	209	235	254	269	280	288	294	298	300	300
EX8			312	461	557	627	678	718	747	768	784	793	799	801
EX4	+15			5	8	10	11	12	13	13	14	14	14	14
EX5				15	24	30	34	37	39	40	42	42	43	43
EX6				37	58	71	81	88	93	97	100	102	103	104
EX7				101	160	196	222	241	256	266	274	279	283	285
EX8				269	426	524	593	644	682	710	731	745	754	759
EX4	+10				4	7	9	10	11	12	13	13	13	13
EX5					12	22	28	31	34	36	38	39	40	40
EX6					29	53	66	76	82	87	91	94	96	97
EX7					80	145	182	208	227	241	251	258	263	267
EX8					214	386	485	554	604	642	669	689	702	711

## R-134a extended capacities (kW) EX4-8 Series, as expansion and liquid injection valves

Valve type	Condensing temperature °C	Extended capacity (kW) Evaporating temperature (°C)												
		+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
EX4	+60	13	13	13	13	13	13	12	12	12	12	11	11	11
EX5		39	39	39	39	39	39	38	37	36	35	34	33	32
EX6		93	94	94	94	93	92	90	89	87	84	82	79	77
EX7		255	257	258	257	255	252	248	243	237	231	224	217	210
EX8		679	686	688	686	680	672	661	648	633	616	598	580	560
EX4	+55	12	13	13	13	13	13	13	12	12	12	12	11	11
EX5		38	39	39	39	39	39	38	38	37	36	35	34	33
EX6		91	92	93	94	93	93	92	90	88	86	84	82	80
EX7		249	253	256	257	256	254	251	247	242	237	231	225	218
EX8		663	676	683	685	683	678	670	659	647	632	616	599	582
EX4	+50	12	12	13	13	13	13	13	12	12	12	12	12	11
EX5		36	38	38	39	39	39	38	38	37	37	36	35	34
EX6		87	90	91	92	93	92	92	91	89	88	86	84	81
EX7		238	246	250	253	254	253	251	249	245	240	235	229	223
EX8		636	655	668	675	677	676	671	663	653	640	627	611	595
EX4	+45	11	12	12	12	12	13	12	12	12	12	12	12	11
EX5		34	36	37	38	38	38	38	38	37	37	36	35	35
EX6		81	85	88	90	91	91	91	90	89	88	86	84	82
EX7		223	234	241	246	248	249	249	247	244	240	236	231	226
EX8		595	623	642	655	662	664	663	658	651	641	629	616	602
EX4	+40	10	11	11	12	12	12	12	12	12	12	12	12	11
EX5		31	33	35	36	37	37	37	37	37	36	36	35	34
EX6		74	79	83	85	87	88	89	88	88	87	85	84	82
EX7		202	217	227	234	239	242	243	242	240	238	234	230	225
EX8		539	578	606	625	638	645	647	646	641	634	625	614	601
EX4	+35	9	10	10	11	11	12	12	12	12	12	12	11	11
EX5		27	30	32	34	35	35	36	36	36	36	35	35	34
EX6		63	71	76	80	83	84	85	86	85	85	84	83	81
EX7		173	194	209	219	226	231	234	235	234	232	230	227	223
EX8		463	517	556	584	604	616	623	625	624	620	613	604	594
EX4	+30	7	8	9	10	11	11	11	11	11	11	11	11	11
EX5		20	25	28	30	32	33	34	34	34	34	34	34	33
EX6		49	60	67	73	76	79	81	82	82	82	81	80	79
EX7		133	164	184	199	210	217	221	224	225	224	223	221	217
EX8		356	436	492	534	559	578	590	597	600	599	595	588	580
EX4	+25	3	6	8	9	9	10	10	11	11	11	11	11	11
EX5		10	18	23	26	29	30	31	32	33	33	33	32	32
EX6		23	121	152	137	188	198	206	210	213	214	213	212	210
EX7		63	121	152	173	188	198	206	210	213	214	213	212	210
EX8		169	322	406	462	501	529	548	560	567	570	569	565	559
EX4	+20		2	5	7	8	9	9	10	10	10	10	10	10
EX5			5	16	21	25	27	28	29	30	31	31	31	31
EX6			12	38	51	58	64	68	70	72	73	73	73	73
EX7			34	105	139	160	175	186	193	197	200	201	201	199
EX8			90	281	370	427	467	495	514	526	533	536	535	532
EX4	+15				4	6	7	8	9	9	9	9	9	9
EX5					13	19	22	25	26	27	28	28	29	29
EX6					32	45	53	59	62	65	67	68	68	68
EX7					87	123	145	161	171	178	183	186	187	187
EX8					231	328	388	428	456	475	488	495	498	498
EX4	+10					3	5	6	7	8	8	8	9	9
EX5						9	16	20	22	24	25	26	26	26
EX6						22	38	47	52	56	59	61	62	62
EX7						61	104	128	144	155	162	167	170	171
EX8						162	277	341	384	413	432	445	452	455

## R-407C extended capacities (kW) EX4-8 Series, as expansion and liquid injection valves

Valve type	Condensing temperature °C		Evaporating temperature (°C)												
	Dew point	Bubble point	+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
EX4	+64	+60	16	17	17	17	17	17	16	16	16	15	15	15	14
EX5			50	51	51	51	51	50	50	49	48	47	46	45	43
EX6			119	120	121	121	121	119	118	116	114	112	109	106	103
EX7			328	332	333	333	332	329	325	320	314	308	301	293	285
EX8			874	884	889	889	885	877	867	854	838	821	802	781	759
EX4	+59	+55	17	17	17	17	17	17	17	17	16	16	16	15	15
EX5			50	51	52	52	52	52	51	51	50	49	48	47	46
EX6			120	122	123	124	124	123	122	121	119	117	114	112	109
EX7			330	336	339	341	341	339	336	332	328	322	315	308	301
EX8			879	895	904	909	908	904	897	886	873	858	840	821	801
EX4	+54	+50	16	17	17	17	17	17	17	17	17	17	16	16	16
EX5			50	51	52	52	53	53	52	52	51	51	50	49	48
EX6			118	121	123	125	125	125	125	123	122	120	118	116	113
EX7			326	334	340	343	345	345	343	340	336	331	325	319	312
EX8			869	891	906	915	919	919	914	907	896	883	868	851	832
EX4	+50	+45	16	16	17	17	17	17	17	17	17	17	17	16	16
EX5			48	50	51	52	53	53	53	52	52	51	51	50	49
EX6			115	119	122	124	125	125	125	125	124	122	120	118	116
EX7			316	327	336	341	344	346	345	344	341	337	332	326	320
EX8			843	873	894	909	918	921	920	916	908	897	884	869	853
EX4	+45	+40	15	16	16	17	17	17	17	17	17	17	17	17	16
EX5			46	48	50	51	52	52	52	52	52	52	51	50	49
EX6			109	114	118	121	123	124	125	125	124	123	121	120	118
EX7			300	315	326	334	339	342	344	343	341	338	334	330	324
EX8			801	840	870	891	905	913	916	915	910	902	891	878	864
EX4	+40	+35	14	15	16	16	17	17	17	17	17	17	17	17	16
EX5			42	45	48	49	50	51	52	52	52	51	51	50	50
EX6			101	108	113	117	120	122	123	123	123	122	121	120	118
EX7			278	297	312	323	330	335	338	339	338	337	334	330	325
EX8			742	793	832	860	880	894	901	904	902	897	889	879	866

## R-407C extended capacities (kW) EX4-8 Series, as expansion and liquid injection valves

Valve type	Condensing temperature°C		Evaporating temperature (°C)													
	Dew point	Bubble point	+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
EX4	+35	+30	12	14	15	15	16	16	16	17	17	17	17	16	16	
EX5			38	42	45	47	48	49	50	51	51	51	51	50	50	49
EX6			90	99	106	111	115	118	119	120	121	120	120	120	119	117
EX7			248	273	292	306	317	324	329	331	332	331	329	326	323	
EX8			661	729	779	817	844	864	876	883	885	884	878	870	860	
EX4	+30	+25	10	12	13	14	15	15	16	16	16	16	16	16	16	
EX5			32	37	41	44	46	47	48	49	49	49	49	49	48	
EX6			75	88	97	103	108	112	115	116	117	117	117	116	115	
EX7			207	241	266	285	299	309	316	320	322	323	322	320	317	
EX8			552	644	710	760	796	823	841	853	860	861	859	854	846	
EX4	+26	+20	7	10	12	13	14	14	15	15	16	16	16	16	15	
EX5			23	30	36	39	42	44	46	47	47	48	48	48	47	
EX6			54	72	85	94	100	105	108	111	112	113	113	113	112	
EX7			148	199	233	258	276	289	299	305	309	312	312	311	309	
EX8			395	530	621	687	735	770	796	814	825	831	832	829	824	
EX4	+21	+15		7	9	11	12	13	14	14	15	15	15	15	15	
EX5				21	29	34	38	40	42	44	45	45	46	46	46	
EX6				50	69	81	90	96	101	104	106	108	108	108	108	
EX7				137	189	223	247	265	277	287	293	297	299	299	298	
EX8				365	503	594	658	705	740	764	781	791	796	796	795	
EX4	+16	+10			6	9	11	12	13	13	14	14	14	14	14	
EX5					19	27	32	36	38	40	42	43	43	43	43	
EX6					45	64	76	85	91	96	99	101	103	103	103	
EX7					123	176	210	234	251	264	273	279	282	282	284	
EX8					329	470	561	624	670	704	727	743	753	753	758	



## R-410A extended capacities (kW) EX4-8 Series, as expansion and liquid injection valves

Valve type	Condensing temperature °C	Evaporating temperature (°C)												
		+15	+10	+5	0	-5	-10	-15	-20	18	-30	-35	-40	-45
EX4	+30	13	15	16	17	18	19	20	20	20	20	20	20	20
EX5		38	44	49	52	55	57	59	60	61	61	61	61	61
EX6		93	107	118	126	133	138	142	145	147	148	148	148	147
EX7		255	294	325	348	366	380	390	398	403	406	407	406	405
EX8		680	786	866	928	976	1013	1041	1061	1075	1083	1086	1084	1079
EX4	+25	10	13	15	16	17	18	19	19	20	20	20	20	20
EX5		29	38	44	48	52	54	56	58	59	60	60	60	60
EX6		71	91	106	117	125	131	136	140	143	144	145	146	145
EX7		195	251	291	321	344	361	375	385	392	397	399	400	399
EX8		520	669	775	855	916	964	1000	1027	1046	1058	1065	1067	1065
EX4	+20	4	9	12	14	16	17	18	18	19	19	19	20	20
EX5		13	28	37	43	47	51	53	55	57	58	58	59	59
EX6		31	68	89	103	114	122	129	133	137	139	141	142	142
EX7		84	188	244	284	314	337	354	367	377	383	388	390	390
EX8		225	501	652	758	837	898	944	979	1005	1023	1034	1040	1042
EX4	+15		3	9	12	14	15	16	17	18	18	19	19	19
EX5			10	27	36	42	46	49	52	54	55	56	57	57
EX6			23	65	86	100	111	119	125	130	133	135	137	137
EX7			64	178	236	276	305	327	344	357	366	372	376	378
EX8			172	475	629	735	813	873	917	951	976	992	1003	1008
EX4	+10			1	8	11	13	15	16	17	17	18	18	18
EX5				4	25	34	40	44	47	50	52	53	54	55
EX6				10	60	82	96	107	115	121	125	128	130	132
EX7				28	166	225	265	294	315	332	344	352	358	362
EX8				76	443	600	706	783	841	885	917	940	956	965

## R-410A extended capacities (kW) EX4-8 Series, as expansion and liquid injection valves

Valve type	Condensing temperature °C	Evaporating temperature (°C)												
		+15	+10	+5	0	-5	-10	-15	-20	18	-30	-35	-40	-45
EX4	+60	17	17	18	18	18	18	18	18	18	18	17	17	17
EX5		51	52	53	54	54	54	54	54	53	53	52	51	50
EX6		123	126	129	130	131	131	131	130	129	127	125	123	120
EX7		339	348	354	358	360	361	360	358	354	350	344	338	331
EX8		-	-	-	-	-	-	-	-	-	-	-	-	-
EX4	+55	18	18	19	19	19	19	19	19	19	19	19	18	18
EX5		53	55	56	57	57	58	58	58	57	57	56	55	54
EX6		127	132	135	137	138	139	139	139	138	137	135	133	131
EX7		350	362	370	377	381	383	383	382	380	377	372	366	360
EX8		935	965	988	1005	1016	1021	1023	1020	1014	1005	992	978	961
EX4	+50	18	18	19	19	20	20	20	20	20	20	20	19	19
EX5		53	55	57	58	59	60	60	60	60	59	59	58	57
EX6		128	133	137	140	142	144	145	145	144	143	142	140	138
EX7		351	366	377	386	392	396	398	398	397	394	391	386	380
EX8		936	975	1006	1029	1045	1056	1061	1062	1059	1052	1043	1030	1015
EX4	+45	17	18	19	19	20	20	20	20	20	20	20	20	20
EX5		52	54	57	58	60	60	61	61	61	61	61	60	59
EX6		124	131	136	141	144	146	147	148	148	147	146	145	143
EX7		342	361	375	387	395	401	405	407	407	405	403	399	394
EX8		913	962	1001	1031	1054	1070	1080	1085	1085	1082	1075	1064	1052
EX4	+40	16	17	18	19	20	20	20	21	21	21	21	20	20
EX5		49	52	55	57	59	60	61	62	62	62	62	61	61
EX6		118	126	133	138	142	145	147	149	149	149	149	148	146
EX7		324	348	366	381	392	400	406	409	411	411	409	406	402
EX8		864	927	977	1015	1045	1067	1082	1091	1095	1095	1091	1084	1073
EX4	+35	15	16	18	18	19	20	20	20	21	21	21	20	20
EX5		45	49	53	55	58	59	60	61	62	62	62	62	61
EX6		108	118	127	134	139	143	146	148	149	149	149	149	148
EX7		296	326	349	368	382	393	401	406	409	411	410	409	406
EX8		789	869	932	981	1019	1048	1069	1083	1092	1095	1095	1090	1082

## R-22 extended capacities (kW) EX4-8 Series, as expansion and liquid injection valves

Valve type	Condensing temperature (°C)	Evaporating temperature (°C)												
		+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
EX4	+60	17	17	18	18	18	18	18	18	18	17	17	17	17
EX5		51	52	53	54	54	54	54	54	53	53	52	52	51
EX6		123	126	128	129	130	130	130	129	128	127	126	124	122
EX7		337	345	351	355	357	358	357	356	353	350	345	340	335
EX8		900	921	936	946	952	954	953	948	941	932	921	908	893
EX4	+55	16	17	17	18	18	18	18	18	18	18	17	17	17
EX5		50	51	52	53	54	54	54	54	54	53	53	52	52
EX6		119	123	126	128	129	130	130	130	129	128	127	126	124
EX7		328	339	346	352	355	357	358	357	356	353	350	345	340
EX8		876	903	923	938	948	953	955	953	949	941	932	921	908
EX4	+50	16	16	17	17	18	18	18	18	18	18	18	17	17
EX5		48	50	51	52	53	54	54	54	54	54	53	53	52
EX6		114	119	123	125	127	129	129	129	129	128	127	126	125
EX7		314	327	337	345	350	354	355	356	355	353	351	347	343
EX8		838	873	899	919	933	943	948	949	947	942	935	925	914
EX4	+45	15	16	16	17	17	17	17	18	18	18	17	17	17
EX5		45	47	49	51	52	52	53	53	53	53	53	52	52
EX6		107	113	118	121	124	126	127	128	128	127	127	126	124
EX7		295	311	324	334	341	346	349	351	351	350	348	346	342
EX8		787	830	864	890	909	923	932	936	937	934	929	922	912
EX4	+40	13	15	15	16	16	17	17	17	17	17	17	17	17
EX5		41	44	46	48	50	51	52	52	52	52	52	52	51
EX6		98	106	111	116	119	122	124	125	125	125	125	124	123
EX7		270	290	306	319	328	335	340	343	345	345	344	342	339
EX8		719	774	817	850	875	894	907	915	919	919	916	911	903
EX4	+35	12	13	14	15	16	16	16	17	17	17	17	17	17
EX5		36	40	43	45	47	49	50	50	51	51	51	51	50
EX6		86	96	103	109	113	117	119	121	122	122	122	122	121
EX7		237	264	284	300	312	321	327	332	335	336	336	335	333
EX8		632	703	757	799	831	856	873	885	893	896	896	893	888
EX4	+30	10	11	13	14	15	15	16	16	16	16	16	16	16
EX5		29	35	39	42	44	46	47	48	49	49	49	49	49
EX6		70	83	93	100	106	110	113	116	117	118	118	118	118
EX7		194	229	256	276	291	303	312	318	322	325	326	326	324
EX8		516	611	682	735	776	808	831	848	859	866	869	868	865
EX4	+25	7	9	11	12	13	14	15	15	15	16	16	16	16
EX5		20	28	33	37	40	43	44	46	46	47	47	48	48
EX6		47	67	80	90	97	102	106	109	112	113	114	114	114
EX7		130	184	220	246	266	281	292	301	307	311	313	314	314
EX8		347	491	587	656	709	749	779	802	818	829	835	837	836

## R-124 extended capacities (kW) EX4-8 Series, as expansion and liquid injection valves

Valve type	Condensing temperature °C	Evaporating temperature (°C)						
		+30	+25	+20	+15	+10	+5	0
EX4	+100	7	7	7	6	6	6	5
EX5		22	21	20	19	18	17	16
EX6		53	51	49	47	44	42	39
EX4	+95	8	8	7	7	7	7	6
EX5		24	23	23	22	21	20	19
EX6		57	56	54	52	50	47	45
EX4	+90	8	8	8	8	7	7	7
EX5		25	25	24	24	23	22	21
EX6		61	59	58	56	54	52	50
EX4	+85	9	9	8	8	8	8	7
EX5		26	26	25	25	24	23	23
EX6		63	62	61	60	58	56	54
EX4	+80	9	9	9	8	8	8	8
EX5		27	27	26	26	25	25	24
EX6		64	63	63	62	61	59	57
EX4	+75	9	9	9	9	9	8	8
EX5		27	27	27	26	26	25	25
EX6		64	64	64	63	62	61	60
EX4	+70	9	9	9	9	9	9	8
EX5		26	26	27	27	26	26	25
EX6		62	63	64	63	63	62	61
EX4	+65	8	8	9	9	9	9	8
EX5		25	26	26	26	26	26	26
EX6		60	61	62	63	63	62	62
EX4	+60	8	8	8	8	8	8	8
EX5		23	24	25	26	26	26	26
EX6		56	58	60	61	62	62	61

## R-23 extended capacities (kW) EX4-8 Series, as expansion and liquid injection valves

Valve type	Condensing temperature °C	Evaporating temperature (°C)											
		-45	-50	-55	-60	-65	-70	-75	-80	-85	-90	-95	-100
EX4	-10	17	18	19	19	19	19	19	19	19	19	19	18
EX5		53	55	56	57	58	58	58	58	58	57	57	56
EX6		127	132	135	138	139	140	140	140	139	138	137	135
EX4	-15	16	17	18	18	19	19	19	19	19	19	18	18
EX5		50	52	54	55	56	57	57	57	57	57	56	55
EX6		119	125	130	133	135	137	137	137	137	136	135	134
EX4	-20	15	16	17	17	18	18	18	18	18	18	18	18
EX5		45	48	51	53	54	55	55	55	55	55	55	54
EX6		109	117	122	127	130	132	133	134	133	133	132	131
EX4	-25	13	14	15	16	17	17	17	18	18	18	18	17
EX5		40	44	47	49	51	52	53	53	53	53	53	53
EX6		96	106	113	118	122	125	127	128	129	128	128	127
EX4	-30	11	13	14	15	16	16	16	17	17	17	17	17
EX5		33	38	42	45	47	49	50	51	51	51	51	51
EX6		78	92	101	108	114	117	120	122	122	123	123	122
EX4	-35	7	10	12	13	14	15	15	16	16	16	16	16
EX5		22	30	36	40	43	45	46	47	48	48	48	48
EX6		53	73	86	96	103	108	111	114	115	116	116	116
EX4	-40		6	9	11	12	13	14	14	15	15	15	15
EX5			19	28	33	37	40	42	43	44	45	45	45
EX6			46	67	80	90	96	101	104	106	108	108	108
EX4	-45			5	8	10	11	12	13	13	13	14	14
EX5				15	25	30	34	37	39	40	41	41	41
EX6				37	60	73	82	88	93	96	98	99	100

## R-744 extended capacities (kW) EX4-8 Series, as expansion and liquid injection valves

Valve type	Condensing temperature °C	Evaporating temperature (°C)												
		+8	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50
EX4	+10	5	12	18	22	26	29	31	33	34	35	36	37	38
EX5		15	36	55	68	79	87	94	99	104	108	110	113	114
EX6		36	86	132	164	189	208	225	238	249	257	264	269	273
EX7		99	237	362	450	518	572	617	653	683	707	726	740	750
EX8		-	-	-	-	-	-	-	-	-	-	-	-	-
EX4	+5			12	19	23	27	29	32	33	35	36	37	38
EX5				37	57	71	81	90	96	102	106	110	113	115
EX6				89	137	170	195	215	231	244	254	263	269	274
EX7				244	376	466	535	589	634	670	699	722	739	753
EX8				-	-	-	-	-	-	-	-	-	-	-
EX4	0				12	19	24	27	30	32	34	35	36	37
EX5					38	58	72	83	91	98	103	107	111	113
EX6					90	139	173	198	218	234	247	257	265	271
EX7					247	383	475	544	598	642	677	705	727	744
EX8					659	1023	1267	1452	1598	1715	1809	1883	1942	1987
EX4	-5					12	19	24	27	30	32	34	35	36
EX5						97	59	73	83	91	98	103	107	110
EX6						89	140	174	199	219	234	247	257	264
EX7						245	385	477	547	601	644	678	705	725
EX8						654	1028	1275	1460	1604	1718	1809	1881	1937
EX4	-10						12	19	24	27	30	32	34	35
EX5							36	58	72	83	91	97	102	106
EX6							87	139	173	198	217	233	245	254
EX7							239	382	475	544	597	639	671	697
EX8							639	1021	1269	1452	1594	1705	1793	1861
EX4	-15							11	19	23	27	29	31	33
EX5								35	57	71	82	89	96	100
EX6								84	137	171	195	214	229	240
EX7								229	376	468	536	588	628	660
EX8								613	1003	1250	1431	1570	1677	1761

## R-744 extended capacities (kW) EX4-8 Series, as expansion and liquid injection valves

Valve type	Condensing temperature °C	Evaporating temperature (°C)												
		+8	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50
EX4	-20								11	18	23	26	29	31
EX5									33	56	70	80	87	93
EX6									79	133	166	191	209	223
EX7									216	365	457	523	574	613
EX8									576	974	1220	1398	1532	1636
EX4	-25								10	18	22	25	28	
EX5									30	53	67	77	85	
EX6									72	128	161	185	202	
EX7									198	350	442	507	556	
EX8									528	935	1179	1353	1483	
EX4	-30									9	17	21	24	
EX5										27	51	64	74	
EX6										64	121	154	177	
EX7										175	332	423	486	
EX8										466	887	1129	1298	
EX4	-35										7	16	20	
EX5											22	47	61	
EX6											53	113	146	
EX7											145	310	400	
EX8											386	828	1068	
EX4	-40											5	14	
EX5												16	43	
EX6												37	103	
EX7												103	284	
EX8												275	759	

## R-407 extended capacities (EXV)

As expansion valve the following correction factors (kt) related to evaporating and condensing temperatures apply

Liquid temperature °C	Correction factors for EXV evaporating temperature °C													
	+20	+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
+65	1.51	1.53	1.55	1.58	1.61	1.64	1.68	1.71	1.75	1.80	1.85	1.90	1.96	2.02
+60	1.35	1.37	1.39	1.41	1.43	1.46	1.49	1.52	1.55	1.59	1.63	1.67	1.71	1.76
+55	1.23	1.25	1.26	1.28	1.30	1.32	1.35	1.37	1.40	1.43	1.46	1.50	1.53	1.57
+50	1.14	1.15	1.16	1.18	1.20	1.22	1.24	1.26	1.28	1.31	1.33	1.36	1.39	1.43
+45	1.06	1.07	1.08	1.10	1.11	1.13	1.14	1.16	1.18	1.20	1.23	1.25	1.28	1.31
+40	0.99	1.00	1.01	1.02	1.04	1.05	1.07	1.08	1.10	1.12	1.14	1.16	1.18	1.21
+35	0.93	0.94	0.95	0.96	0.97	0.99	1.00	1.01	1.03	1.05	1.06	1.08	1.10	1.13
+30	0.88	0.89	0.90	0.91	0.92	0.93	0.94	0.95	0.97	0.98	1.00	1.02	1.03	1.05
+25	0.83	0.84	0.85	0.86	0.87	0.88	0.89	0.90	0.91	0.93	0.94	0.96	0.97	0.99
+20	0.79	0.80	0.81	0.82	0.82	0.83	0.84	0.85	0.87	0.88	0.89	0.91	0.92	0.94
+15	0.76	0.76	0.77	0.78	0.78	0.79	0.80	0.81	0.82	0.83	0.85	0.86	0.87	0.89
+10	0.72	0.73	0.74	0.74	0.75	0.76	0.77	0.77	0.78	0.79	0.81	0.82	0.83	0.84
+5	0.69	0.70	0.70	0.71	0.72	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79	0.80
0	0.66	0.67	0.68	0.68	0.69	0.69	0.70	0.71	0.72	0.73	0.73	0.74	0.75	0.77
-5	0.64	0.64	0.65	0.65	0.66	0.67	0.67	0.68	0.69	0.70	0.70	0.71	0.72	0.73
-10	0.62	0.62	0.62	0.63	0.63	0.64	0.65	0.65	0.66	0.67	0.68	0.68	0.69	0.70

## For applications as expansion valve the following correction factors (kΔp)

Related to the pressure drop at valve apply

Correction factors for EXVs														
ΔP (bar)	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5
kΔP	3.51	2.87	2.48	2.22	2.03	1.88	1.76	1.66	1.57	1.5	1.43	1.38	1.33	1.28
ΔP (bar)	8	9	10	11	12	13	14	15	16	17	18	19	20	21
kΔP	1.24	1.17	1.11	1.06	1.01	0.97	0.94	0.91	0.88	0.85	0.83	0.81	0.79	0.77

## Application hot gas bypass - nominal capacities (kW)

Valve type	Kv, m <sup>3</sup> /h	R22 / R407C	R134a	R404A / R507
EX4	0.21	4.9	3.4	4.6
EX5	0.68	16	11	15
EX6	1.57	37	26	35
EX7	5.58	131	92	126
EX8	16.95	399	278	382

The nominal capacity (Qn) is based on the following conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Subcooling
R407C	+4°C (dew point)	+38°C bubble point / +43°C dew point	1K
R22, R134a, R404A, R507	+4°C	+38°C	1K

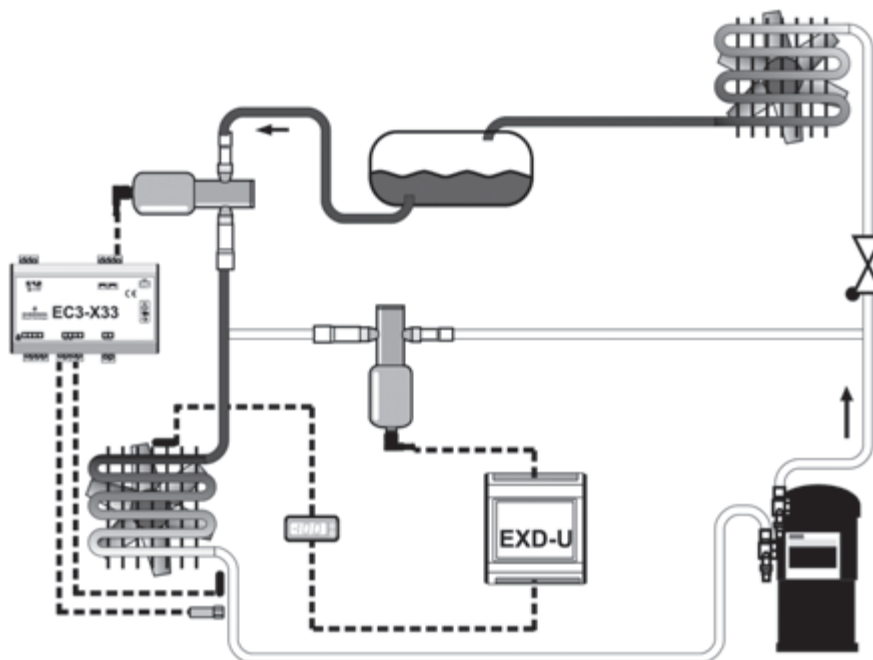
For other operating conditions use Excel-based Selection Tool (download from [www.emersonclimate.eu](http://www.emersonclimate.eu)) or use the following quick selection tables.

Biflow versions are not released for hot gas bypass applications.

EX4 .. EX8 must be installed with motor downward in hot gas line applications. This ensures the valve life expectancy. Install a check valve on main hot gas line just after branch to Control Valve.



Valve type	Extended capacity (kW)			Condensing temperature °C
	R22 / R407C	R134a	R404A / R507	
EX4	7	4.9	5.8	60 bubble point for all refig. (64 dew point for R407C)
EX5	23	16	19	
EX6	54	38	45	
EX7	191	135	161	
EX8	581	411	488	
EX4	6.1	4.3	5.5	50 bubble point for all refig. (54 dew point for R407C)
EX5	20	14	18	
EX6	46	32	41	
EX7	163	115	147	
EX8	495	348	447	
EX4	4.9	3.7	4.9	40 bubble point for all refig. (45 dew point for R407C)
EX5	16	12	16	
EX6	38	27	36	
EX7	136	95	130	
EX8	414	289	394	
EX4	4.3	2.8	4	30 bubble point for all refig. (35 dew point for R407C)
EX5	14	9	13	
EX6	32	22	31	
EX7	112	78	111	
EX8	340	236	336	



## Application suction pressure regulation (Evaporating or crankcase pressure) - nominal capacities (kW)

Valve type	Kv, m3/h	R407C	R22	R134a	R404A
EX6	1.57	3.9	4.1	3.1	3.5
EX7	5.58	14	15	11	13
EX8	16.95	42	45	34	38

The nominal capacity (Qn) is based on the following conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Subcooling	Pressure drop
R407C	+4°C (dew point)	+38°C bubble point / +43°C dew point	1K	0.15 bar
R22, R134a, R404A	+4°C	+38°C	1K	0.15 bar

For other operating conditions use Excel-based Selection Tool (download from [www.emersonclimate.eu](http://www.emersonclimate.eu)) or use the following quick selection tables.

For biflow versions attention should be paid to the temperature range TS -40°C to +80°C! The EX6 .. EX8 must be installed with motor downward in suction line applications. This ensures the valve life expectancy.

Example: The EX6 provides 3.5 kW at 0.15 bar pressure drop with R404A or  $3.5 * 1.41 = 4.9$  kW at 0.3 bar pressure drop.

Multiply above nominal capacities by following factors to obtain capacities at different pressure drops:

Typical Order Package

- 1) Valve EX6, EX7 or EX8 Plug and cable assembly EXV-M60
- 2) Controller Kit EXD-U00 Part No. 808 038

$\Delta P$ , bar	0.10	0.15	0.20	0.30
Correction factor	0.82	1.00	1.15	1.41

## R-134a extended capacities (kW) EX6-8 Series

Valve type	Condensing temperature °C	Evaporating temperature (°C)				
		+10	+5	0	-10	-20
EX6	+60	3	2	2	2	1
EX7		10	9	8	6	4
EX8		30	27	24	18	13
EX6	+50	3	3	2	2	1
EX7		11	10	9	7	5
EX8		34	30	27	21	15
EX6	+40	3	3	3	2	2
EX7		12	11	10	8	6
EX8		38	34	30	23	17
EX6	+30	4	3	3	2	2
EX7		14	12	11	8	6
EX8		41	37	33	26	19
EX6	+20	4	4	3	3	2
EX7		15	13	12	9	7
EX8		45	40	36	28	21

## R-22 extended capacities (kW) EX6-8 Series

Valve type	Condensing temperature °C	Evaporating temperature (°C)						
		+10	+5	0	-10	-20	-30	-40
EX6	+60	4	3	3	3	2	2	1
EX7		13	12	11	9	7	5	4
EX8		41	37	34	27	22	17	12
EX6	+50	4	4	3	3	2	2	1
EX7		15	13	12	10	8	6	5
EX8		45	41	37	30	24	19	14
EX6	+40	5	4	4	3	2	2	1
EX7		16	15	13	11	9	7	5
EX8		49	45	41	33	27	21	15
EX6	+30	5	4	4	3	3	2	2
EX7		17	16	14	12	9	7	5
EX8		53	48	44	36	29	22	16
EX6	+20	5	5	4	4	3	2	2
EX7		19	17	15	13	10	8	6
EX8		56	52	47	39	31	24	18

R-404A/R-507 extended capacities (kW) EX6-8 Series,  
Application suction pressure regulation (evaporating or crankcase pressure)

Valve type	Condensing temperature °C	Evaporating temperature (°C)					
		+10	+5	0	-20	-30	-40
EX6	+60	3	2	2	1	1	1
EX7		9	8	8	4	3	2
EX8		29	26	23	13	10	7
EX6	+50	3	3	3	2	1	1
EX7		12	11	9	6	4	3
EX8		36	32	29	18	13	9
EX6	+40	4	3	3	2	1	1
EX7		14	12	11	7	5	4
EX8		42	38	34	21	16	12
EX6	+30	4	4	4	2	2	1
EX7		16	14	13	8	6	5
EX8		48	43	39	25	19	14
EX6	+20	5	4	4	3	2	1
EX7		17	16	14	9	7	5
EX8		53	48	44	28	21	16

R-407C extended capacities (kW) EX6-8 Series,  
Application suction pressure regulation (evaporating or crankcase pressure)

Valve type	Condensing temperature		Evaporating temperature (°C)				
	Dew point °C	Bubble point °C	+10	+5	0	-10	-20
EX6	+64	+60	3	3	3	2	2
EX7			12	11	10	8	6
EX8			36	33	29	23	18
EX6	+54	+50	4	3	3	2	2
EX7			14	12	11	9	7
EX8			41	37	34	27	21
EX6	+45	+40	4	4	3	3	2
EX7			15	14	12	10	8
EX8			46	42	38	30	23
EX6	+35	+30	5	4	4	3	2
EX7			17	15	14	11	9
EX8			51	46	41	33	26
EX6	+26	+20	5	5	4	3	3
EX7			18	16	15	12	9
EX8			55	50	45	36	28

## Application condensing pressure regulation and liquid duty - nominal capacities (kW)

Valve type	Kv, m <sup>3</sup> /h	R407C	R22	R134a	R404A
EX5	0.68	18	20	18	13
EX6	1.57	43	46	42	30
EX7	5.58	153	162	151	106
EX8	16.95	463	491	458	323

The nominal capacity (Q<sub>n</sub>) is based on the following conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Subcooling	Pressure drop
R407C	+4°C (dew point)	+38°C bubble point / +43°C dew point	1K	0.35 bar
R22, R134a, R404A	+4°C	+38°C	1K	0.35 bar

Multiply above nominal capacities by following factors to obtain capacities at different pressure drops:

ΔP, bar	0.15	0.20	0.35
Correction factor	0.65	0.76	1.00

Example:

The EX6 provides 30 kW at 0.35bar pressure drop with R404A or  
 $30 * 0.76 = 22.8$  kW at 0.2 bar pressure drop.

## R-134a extended capacities (kW) EX5-8 Series

Valve type	Condensing temperature °C	Evaporating temperature (°C)			
		+10	0	-10	-20
EX5	+60	14	13	13	12
EX6		32	31	29	27
EX7		115	109	104	98
EX8		350	332	315	296
EX5	+50	16	15	15	14
EX6		37	36	34	32
EX7		133	127	121	115
EX8		405	387	369	350
EX5	+30	18	18	17	16
EX6		42	41	39	37
EX7		151	145	139	133
EX8		458	440	422	403
EX5	+40	20	20	19	18
EX6		47	46	44	42
EX7		168	162	156	150
EX8		512	493	474	455
EX5	+20	22	22	21	20
EX6		52	51	49	47
EX7		186	180	173	167
EX8		564	546	526	507

## R-22 extended capacities (kW) EX5-8 Series, as expansion and liquid injection valves

Valve type	Condensing temperature °C	Evaporating temperature (°C)					
		+10	0	-10	-20	-30	-40
EX5	+60	15	15	15	14	14	13
EX6		36	35	34	33	32	30
EX7		128	124	120	116	112	108
EX8		387	377	365	353	341	328
EX5	+50	17	17	16	17	16	15
EX6		41	40	36	39	36	35
EX7		144	141	129	137	129	124
EX8		439	428	391	416	391	377
EX5	+30	19	19	19	18	17	17
EX6		45	44	43	42	41	39
EX7		161	157	153	149	145	140
EX8		488	477	465	453	439	426
EX5	+40	21	21	20	20	19	19
EX6		50	49	48	46	45	44
EX7		177	173	169	165	160	156
EX8		536	525	513	500	486	472
EX5	+20	23	23	22	22	21	21
EX6		54	53	52	51	49	48
EX7		192	188	184	180	175	171
EX8		584	572	560	547	533	519

R-404A/R-507 extended capacities (kW) EX5-8 Series,  
Application condensing pressure regulation and liquid duty

Valve type	Condensing temperature °C	Evaporating temperature (°C)					
		+10	0	-10	-20	-30	-40
EX5	+60	8	8	7	6	6	5
EX6		19	17	16	15	13	12
EX7		66	62	58	53	48	43
EX8		202	189	175	160	146	130
EX5	+50	11	10	9	9	8	8
EX6		24	23	22	20	19	17
EX7		87	82	78	73	67	62
EX8		264	250	236	220	205	189
EX5	+30	13	12	12	11	10	10
EX6		30	28	27	26	24	23
EX7		106	101	96	91	85	80
EX8		321	306	291	276	260	243
EX5	+40	15	14	14	13	12	12
EX6		35	33	32	30	29	27
EX7		123	119	114	108	103	97
EX8		375	360	345	329	312	295
EX5	+20	17	16	16	15	14	14
EX6		40	38	37	35	34	32
EX7		141	136	131	125	120	114
EX8		427	412	397	380	363	346

## R-407C extended capacities (kW) EX5-8 Series, Application condensing pressure regulation and liquid duty

Valve type	Condensing temperature		Evaporating temperature (°C)			
	Dew point °C	Dew point °C	+10	0	-10	-20
EX5	+64	+60	14	13	12	12
EX6			32	30	29	28
EX7			112	108	103	98
EX8			340	327	313	298
EX5	+54	+50	16	15	15	14
EX6			37	36	35	33
EX7			132	128	123	118
EX8			402	388	373	358
EX5	+45	+30	18	18	17	17
EX6			43	41	40	38
EX7			152	147	142	137
EX8			460	446	431	415
EX5	+35	+40	21	20	19	19
EX6			48	47	45	44
EX7			170	166	160	155
EX8			517	503	487	471
EX5	+26	+20	23	22	22	21
EX6			53	52	50	49
EX7			189	184	179	173
EX8			573	558	543	526

## Application hot gas flow such as heat reclaim application - nominal capacities (kW)

Valve Type	Kv, m3/h	R22 / R407C	R134a	R404A / R507	R410A
EX6	1.57	11	9	10	13
EX7	5.58	39	33	36	47
EX8	16.95	119	101	108	144

The nominal capacity (Qn) is based on the following conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Subcooling	Pressure drop	Isentropic efficiency
R407C	+4°C (dew point)	+38°C bubble point / +43°C dew point	1K	0.35 bar	80%
R22, R134a, R404A, R507	+4°C	+38°C	1K	0.35 bar	80%

For other conditions see following tables.

Valves must be installed with motor downward in hot gas line applications. This ensures the valve life expectancy. Bi-flow versions are not released for hot gas flow applications.



## R-134a extended capacities (kW) EX6-8 Series

Valve type	Condensing temperature °C	Pressure drop bar	Evaporating temperature (°C)													
			+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
EX6	+60	0.1	5	5	4	4	4	4	4	4	4	4	3	3	3	3
EX7			16	16	16	15	15	14	14	13	13	12	12	11	10	
EX8			50	49	47	46	44	43	41	40	38	37	35	33	32	
EX6		0.5	10	10	10	9	9	9	8	8	8	7	7	7	6	
EX7			36	35	34	33	32	31	30	29	28	26	25	24	23	
EX8			110	107	104	101	97	94	91	87	84	80	77	74	70	
EX6		1.0	14	14	13	13	12	12	12	11	11	10	10	9	9	
EX7			50	49	47	46	44	43	41	40	38	37	35	34	32	
EX8			152	148	144	139	135	130	126	121	116	112	107	102	97	
EX6	+50	0.1	5	4	4	4	4	4	4	4	4	3	3	3	3	
EX7			16	16	15	15	14	14	14	13	13	12	12	11	11	
EX8			49	48	47	45	44	43	41	40	39	37	36	35	33	
EX6		0.5	10	10	9	9	9	9	8	8	8	8	7	7	7	
EX7			35	35	34	33	32	31	30	29	28	27	26	25	24	
EX8			108	105	102	99	97	94	91	88	85	82	79	76	73	
EX6		1.0	14	13	13	13	12	12	12	11	11	10	10	10	9	
EX7			49	48	46	45	44	43	41	40	39	37	36	34	33	
EX8			148	145	141	137	133	129	125	121	117	113	109	105	100	
EX6	+40	0.1	4	4	4	4	4	4	4	4	4	3	3	3	3	
EX7			16	15	15	14	14	14	13	13	13	12	12	11	11	
EX8			47	46	45	44	43	42	40	39	38	37	36	34	33	
EX6		0.5	10	9	9	9	9	8	8	8	8	7	7	7	7	
EX7			34	33	32	32	31	30	29	28	27	26	26	25	24	
EX8			103	100	98	96	93	91	88	86	83	80	78	75	73	
EX6		1.0	13	13	12	12	12	12	11	11	11	10	10	10	9	
EX7			46	45	44	43	42	41	40	39	38	36	35	34	33	
EX8			141	138	134	131	128	124	121	117	114	110	107	103	100	
EX6	+30	0.1	4	4	4	4	4	4	4	4	3	3	3	3	3	
EX7			15	14	14	14	13	13	13	12	12	12	11	11	11	
EX8			44	43	42	42	41	40	39	38	37	35	34	33	32	
EX6		0.5	9	9	9	8	8	8	8	8	7	7	7	7	6	
EX7			32	31	30	30	29	28	28	27	26	25	25	24	23	
EX8			96	94	92	90	88	86	84	81	79	77	75	72	70	
EX6		1.0	12	12	12	11	11	11	11	10	10	10	9	9	9	
EX7			43	42	41	40	39	38	37	36	35	34	33	32	31	
EX8			130	128	125	122	119	117	114	111	108	105	102	98	95	

## R-22/R-407C extended capacities (kW) EX5-8 Series, Application hot gas flow such as heat reclaim application

Valve type	Condensing temperature °C	Pressure drop bar	Evaporating temperature (°C)												
			+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
EX6	+60	0.1	6	5	5	5	5	5	5	5	5	4	4	4	4
EX7			20	19	19	18	18	17	17	16	16	15	15	14	14
EX8			59	58	57	55	54	53	51	50	48	47	45	44	42
EX6		0.5	12	12	12	11	11	11	10	10	10	10	9	9	9
EX7			43	42	41	40	39	38	37	36	35	34	33	32	31
EX8			131	129	126	123	119	116	113	110	107	103	100	97	94
EX6		1.0	17	17	16	16	15	15	15	14	14	13	13	13	12
EX7			60	59	58	56	55	53	52	51	49	48	46	45	43
EX8			183	179	175	171	167	162	158	154	149	145	140	135	131
EX6	+50	0.1	5	5	5	5	5	5	5	5	4	4	4	4	4
EX7			19	19	18	18	17	17	17	16	16	15	15	14	14
EX8			58	57	56	54	53	52	51	49	48	47	45	44	42
EX6		0.5	12	12	11	11	11	11	10	10	10	10	9	9	9
EX7			42	41	40	40	39	38	37	36	35	34	33	32	31
EX8			128	126	123	120	117	115	112	109	106	103	100	97	94
EX6		1.0	17	16	16	15	15	15	14	14	14	13	13	13	12
EX7			59	57	56	55	54	52	51	50	49	47	46	44	43
EX8			178	175	171	167	163	159	155	151	147	143	139	135	131
EX6	+40	0.1	5	5	5	5	5	5	5	4	4	4	4	4	4
EX7			18	18	18	17	17	16	16	16	15	15	15	14	14
EX8			56	55	54	52	51	50	49	48	47	45	44	43	42
EX6		0.5	11	11	11	11	10	10	10	10	9	9	9	9	8
EX7			40	40	39	38	37	36	35	35	34	33	32	31	30
EX8			123	120	118	115	113	110	108	105	103	100	97	94	92
EX6		1.0	16	15	15	15	14	14	14	14	13	13	12	12	12
EX7			56	55	54	53	52	50	49	48	47	46	44	43	42
EX8			170	167	163	160	157	153	149	146	142	139	135	131	127
EX6	+30	0.1	5	5	5	5	4	4	4	4	4	4	4	4	4
EX7			17	17	17	16	16	16	15	15	15	14	14	14	13
EX8			53	52	51	50	49	48	46	45	44	43	42	41	40
EX6		0.5	11	10	10	10	10	10	9	9	9	9	9	8	8
EX7			38	37	37	36	35	34	34	33	32	31	30	30	29
EX8			115	113	111	109	107	104	102	100	97	95	93	90	88
EX6		1.0	15	14	14	14	14	13	13	13	12	12	12	12	11
EX7			52	51	50	49	48	47	46	45	44	43	42	41	40
EX8			159	156	153	150	147	144	141	138	134	131	128	124	121

\* Condensing temperatures R407C:

The relation between bubble points and dew points is as follows:

Bubble point °C	Dew point °C
+60	+64
+50	+54
+40	+45
+30	+35

R-404A extended capacities (kW) EX5-8 Series,  
Application hot gas flow such as heat reclaim application

Valve type	Condensing temperature °C	Pressure drop bar	Evaporating temperature (°C)												
			+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
EX6	+60	0.1	4	4	4	4	4	3	3	3	3	3	3	2	2
EX7			15	14	14	13	13	12	11	11	10	10	9	8	8
EX8			45	43	42	40	38	36	35	33	31	29	27	25	23
EX6		0.5	9	9	8	8	8	7	7	7	6	6	6	5	5
EX7			32	31	30	29	28	26	25	24	22	21	20	18	17
EX8			99	95	92	88	84	80	76	72	68	64	60	56	52
EX6		1.0	13	12	12	11	11	10	10	9	9	8	8	7	7
EX7			45	44	42	40	39	37	35	33	31	29	27	26	24
EX8			137	132	127	122	117	112	106	101	95	89	84	78	72
EX6	+50	0.1	5	4	4	4	4	4	4	4	3	3	3	3	3
EX7			16	16	15	15	14	14	13	13	12	11	11	10	10
EX8			49	47	46	44	43	41	40	38	36	35	33	31	30
EX6		0.5	10	10	9	9	9	8	8	8	7	7	7	6	6
EX7			35	34	33	32	31	30	29	28	26	25	24	23	22
EX8			107	104	101	98	95	91	88	84	80	77	73	69	65
EX6		1.0	14	13	13	13	12	12	11	11	10	10	9	9	8
EX7			49	48	46	45	43	42	40	38	37	35	33	32	30
EX8			149	145	141	136	131	127	122	117	112	107	102	96	91
EX6	+40	0.1	5	4	4	4	4	4	4	4	4	3	3	3	3
EX7			16	16	16	15	15	14	14	13	13	12	12	11	11
EX8			50	49	47	46	45	43	42	40	39	37	36	34	33
EX6		0.5	10	10	10	9	9	9	9	8	8	8	7	7	7
EX7			36	35	34	33	32	31	30	29	28	27	26	25	24
EX8			109	107	104	101	98	95	92	89	86	83	79	76	73
EX6		1.0	14	14	13	13	13	12	12	11	11	11	10	10	9
EX7			50	49	48	46	45	44	42	41	39	38	36	35	33
EX8			152	148	144	140	136	132	128	124	119	115	110	105	101
EX6	+30	0.1	5	4	4	4	4	4	4	4	4	4	3	3	3
EX7			16	16	15	15	15	14	14	13	13	13	12	12	11
EX8			49	48	47	46	45	43	42	41	40	38	37	36	34
EX6		0.5	10	10	10	9	9	9	9	8	8	8	8	7	7
EX7			35	35	34	33	32	31	31	30	29	28	27	26	25
EX8			108	105	103	101	98	95	93	90	87	84	81	78	76
EX6		1.0	14	13	13	13	13	12	12	12	11	11	10	10	10
EX7			49	48	47	46	45	43	42	41	40	38	37	36	34
EX8			149	146	142	139	135	132	128	124	120	117	113	109	104

R-410A extended capacities (kW) EX 5-8 Series,  
Application hot gas flow such as heat reclaim application

Valve type	Condensing temperature °C	Pressure drop bar	Evaporating temperature (°C)												
			+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
EX6	+60	0.1	6	6	6	6	5	5	5	5	5	5	4	4	4
EX7			21	21	20	20	19	19	18	18	17	16	16	15	15
EX8			64	63	62	60	58	57	55	53	52	50	48	46	44
EX6		0.5	13	13	13	12	12	12	11	11	11	10	10	10	9
EX7			47	46	45	44	43	41	40	39	38	36	35	34	32
EX8			143	140	137	133	130	126	122	118	115	111	107	103	99
EX6		1.0	19	18	18	17	17	16	16	15	15	14	14	13	13
EX7			66	64	63	61	60	58	56	55	53	51	49	47	46
EX8			200	196	191	186	182	177	171	166	161	155	150	144	138
EX6	+50	0.1	6	6	6	6	6	6	5	5	5	5	5	5	4
EX7			22	22	21	21	20	20	19	19	18	18	17	17	16
EX8			67	66	65	63	62	60	59	57	55	54	52	50	48
EX6		0.5	14	14	13	13	13	12	12	12	11	11	11	10	10
EX7			49	48	47	46	45	44	43	42	40	39	38	37	35
EX8			149	146	143	140	137	133	130	126	123	119	115	111	108
EX6		1.0	19	19	19	18	18	17	17	16	16	15	15	14	14
EX7			69	67	66	64	63	61	60	58	57	55	53	51	50
EX8			209	204	200	196	191	186	182	177	172	167	161	156	151
EX6	+40	0.1	6	6	6	6	6	6	5	5	5	5	5	5	5
EX7			22	22	21	21	20	20	19	19	18	18	17	17	16
EX8			67	66	65	63	62	60	59	58	56	54	53	51	50
EX6		0.5	14	13	13	13	13	12	12	12	11	11	11	11	10
EX7			49	48	47	46	45	44	43	42	41	40	39	37	36
EX8			148	146	143	140	137	134	131	127	124	121	117	114	110
EX6		1.0	19	19	18	18	18	17	17	16	16	16	15	15	14
EX7			68	67	66	64	63	61	60	59	57	55	54	52	51
EX8			207	203	199	195	191	187	182	178	173	168	164	159	154
EX6	+30	0.1	6	6	6	6	6	5	5	5	5	5	5	5	5
EX7			21	21	21	20	20	19	19	19	18	18	17	17	16
EX8			65	64	63	61	60	59	58	56	55	53	52	51	49
EX6		0.5	13	13	13	13	12	12	12	12	11	11	11	10	10
EX7			47	46	45	45	44	43	42	41	40	39	38	37	36
EX8			143	141	138	135	133	130	127	124	121	118	115	112	109
EX6		1.0	18	18	18	17	17	17	16	16	16	15	15	14	14
EX7			65	64	63	62	61	60	58	57	56	54	53	51	50
EX8			199	195	192	188	185	181	177	173	169	165	160	156	152







# Electronic controllers and sensors

## Selection table electronic controllers

Description	Network communication		
	Without	TCP/IP	Modbus
<b>Superheat controllers and stepper motor drivers</b>			
Superheat controller for electrical control valves EX4-8 and FX5-9	EC3-X33	EC3-X32	
Digital superheat controller for electrical control valves EX4-6	EC3-D73	EC3-D72	
Universal stepper driver module for electrical control valves EX4-8	EXD-U01		
Superheat controller for electrical control valves EX4-8 and FX5-9			EXD-SH1/2
Superheat controller for electrical control valves EXM/L			EXD HP1/2
<b>Economizer controller for tandem compressors</b>			
Enhanced wet vapor injection with EXM/L			EXD TEVI
<b>Display case and cold room controllers for electrical control valve</b>			
Temperature + superheat control of EX4-8 (stepper motor)		EC3-332	
<b>Condensing unit controllers</b>			
For 1 copeland scroll digital™ and 1 single stage or 2 single stage compressors, fan speed control		EC2-552	
<b>Pressure transmitter</b>			
Output signal 4 ... 20MA	PT5		
<b>Temperature sensors</b>			
NTC / PT1000	ECN-N/ ECP-P...		
<b>Compressor soft starter</b>			
For single phase compressor motors with up to 32A	CSS		
<b>Electronic fan speed controllers</b>			
Pressure actuated, current range 0.1 ... 4A	FSY/FSM		
Fan speed control modules for ec-type motors	FSE		

## CSS-25U / CSS-32U Compressor soft starter

The Compressor Soft Starter CSS-25U / CSS-32U is used for switching, protecting and starting current limitation of single phase compressors in residential heat pump applications.

### Features

- For motors with maximum operating current up to 25A/32A
- Limitation of starting current to less than 45 A (Part No. 805209 less than 30 A)
- Self-adjusting for use in 50 Hz or 60 Hz supply
- Self-adjusting to motor current - no manual adjustment or calibration necessary
- Alarm relay output
- Start capacitor for improved motor acceleration is switched off after start
- Low voltage shutdown
- Locked rotor recognition and shutdown
- Delay function to limit number of motor starts per hour
- Thyristor protected contactor for long life
- No extra motor contactor needed
- Self-diagnostics
- Mounting clip for easy installation allows DIN rail mounting in two directions
- Easy connection by cage type screw terminals wire Ø 4mm



CSS-32W

### CE Standards:

- LVD 2006/95/EC low voltage directive
- EN 60947-1 Low voltage switchgear and controlgear
- EN 60947-4-2 Contactors and motor-starters - AC semiconductor motor controllers and starters
- EN 60335-1, EN 60335-2-40: Safety of household and similar electrical appliances (PCN 805 204 and 805 205 only, confirmed and certified by independent test lab VDE.)
- EMC 2004/108/EC
- ROHS 2011/65/EU

### Selection table

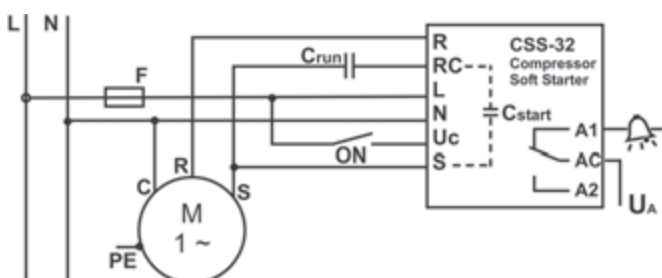
Type	Part no.	Part no. (20 Pieces)	Description	I max
CSS-32U	805 204	805 204 M	Soft starter incl. mounting clip, VDE released version	32A
CSS-25U	805 205	805 205M	Soft starter incl. mounting clip, VDE released version	25A
CSS-25U	805 209	805 209M	Soft starter incl. mounting clip (limitation of starting current to less than 30 A)	25A
K00-003	807 663	-	3-Pol screw connector to alarm output for wires up to 2.5mm <sup>2</sup> ; bag with 50 pieces	

### Technical data

Operating voltage	230 V 50/60 Hz nominal
Nominal compressor current	cSS-32U: 32A max. CSS-25U: 25A max.
Maximum start current	cSS-32U: 45A CSS-25U (805 205): 45A CSS-25U (805 209): 30A
Operating temperature	-20 ... +55°C non condensing
Storage temperature	-20 ... +65°C non condensing
Start capacitor	200 ... 240 uF
Time delay after stop	0.5 ... 5 min

Alarm relay, AgNi (SPDT)	
Resistive (AC1) max.	250V~ / 3A 30V= / 3A
Flexible cable cross section CSS-32U/-25U all terminals	0.25 ... 4 mm
Flexible cable cross section Alarm output connector K00-003	0.25 ... 2.5 mm
Max. vibration (At 10 ... 1000 Hz)	4 g
Weight	430 g
Protection acc. IEC 529	IP 20

### Wiring diagram



### CSS contacts

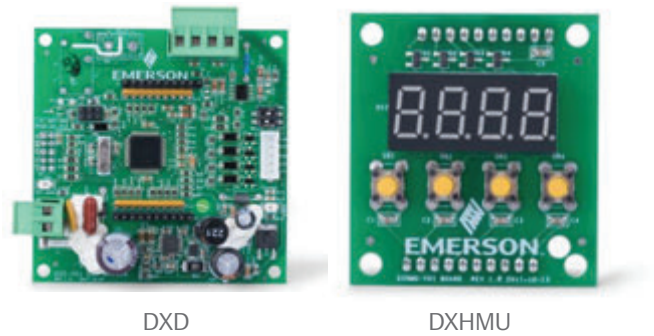
- R = output motor run winding
- RC = output run capacitor
- L = 230v / AC power input
- N = neutral line
- UC = start input (on if connected to 230V)
- S = output start winding from start capacitor
- A1, AC, A2 = alarm relay contact

## DXD Uni-polar electronic expansion valve driver

DXD is designed for controlling the electronic expansion valve which is driven by a uni-polar stepper-motor, like Emerson DX3. The DXD is willing to drive the stepper motor by converting a 0~10VDC or 4~20mA analogue input from the master controller to the stepper pulses, which can be controlled manually as well.

### Features

- Drive one 12VDC uni-polar electronic expansion valve
- Accept 0~10V or 4~20mA analogue input
- Human-machine interface DXHMU is available for manual control of the valve, and can show the real-time steps. (DXHMU is optional, which can be ordered separately)



DXD

DXHMU

### Selection table

PCN	Product	Note
098311	Driver board DXD-500	Maximum steps: 500
098312	Driver board DXD-650	Maximum steps: 650
098313	Display DXHMU	Order separately



## EC2 series condensing unit controllers

### With web server function and TCP/IP interface

#### Features

- Maintenance and alarm management
- Sensor failure handling
- Inputs for common low and common high pressure alarms
- Configuration data stored in non-volatile memory
- Electrical connection via plug-in type screw terminals
- Web Server Function and TCP/IP Interface (see beginning of this chapter)
- Operation and commissioning via local or remote PC
- CE marking



EC2 Controller

#### Condensing unit controllers

- To control a combination of compressors and condenser fans based on suction and condensing pressure respectively
- Control of Copeland Scroll Digital™ Compressors



K02-211



ECT-323

#### Communication TCP/IP ethernet

- Web Server Function provides monitoring and configuration through a standard Web browser. Ethernet interface, as used in most office PCs
- Graphical visualization via built-in Web pages
- Fixed or dynamic TCP/IP address with username and password
- Up to 30 days datalog
- Multiple language support (see [www.emersonclimate.eu](http://www.emersonclimate.eu))



PT5

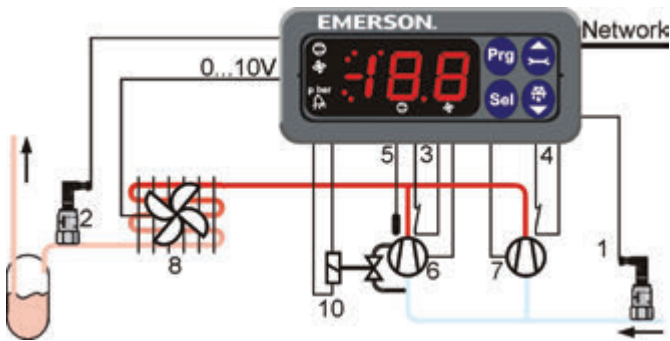
PT4-Mxx

#### Selection table

Type	Description		Part no.
Condensing unit controller			
EC2-552	Condensing unit controller for two compressors or one digital scroll and one single stage compressor, variable fan speed control		807738
EC2-552 Contr. kit	Condensing unit controller kit with terminal kit k02-540, pressure transmitter pt5-07M & PT5-30M with cable assembly, transformer ECT-323 with 25VA		808019
Terminal kits and cables			
K02-540	Terminal kit for EC2-552		800070
ECX-N60	Ethernet cable (TCP/IP)	6.0 m length	804422
Pressure transmitter			
PT5-07M	- 0.8...7 bar		802350
PT5-18M	0...18 bar		802351
PT5-30M	0...30 bar		802352
PT5-50M	0...50 bar		802353
PT4-M15	Cable Assembly for PT5	1.5 m cable length	804803
PT4-M30		3 m cable length	804804
PT4-M60		6 m cable length	804805
Transformers			
ECT-323	Transformer Class II – 230 VAC Input, 24 V output, 25 VA		804424

## Block diagrams

EC2-552 condensing unit controller for 2 single stage compressors or 1 Digital Scroll and 1 single stage compressor



### Inputs

- 1 = Suction pressure
- 2 = Condenser pressure
- 3 = Safety switch comp 1
- 4 = Safety switch comp 2
- 5 = Temperature input

### Outputs

- 6 = Digital scroll compressor
- 7 = Single stage compressor
- 8 = Speed controlled fan with EC-motor
- 10 = PWM digital scroll solenoid valve

# EC3 series coldroom controller

## Temperature and superheat control of EX4-8 (Stepper motor)

### Features

- Superheat control with self-adapting algorithm for Stepper Motor driven ECVs (EX4-8)
- Thermostat, fan & defrost control
- Limitation of evaporating temperature (MOP)
- Analog inputs: 3 NTC temperature sensors
- With integral backup battery to close Control Valve in case of power loss
- Analog input for suction pressure measurement using Emerson PT5 Series pressure transmitters
- Digital inputs for compressor safety and coldroom door contact
- Relay outputs for compressor, defrost and alarm plus programmable relay
- All parameters and functions are programmable:
  - via TCP/IP Ethernet controller (EC3-332)
  - with keypad of optional display unit ECD-001
- Electrical connections via plug-in type screw terminals
- Lightweight aluminum enclosure for DIN rail mounting
- Multiple language support (see [www.emersonclimate.eu](http://www.emersonclimate.eu))
- CE marking
- IP20 protection class



EC3-332

ECD-001

### Communication TCP/IP ethernet

- Web server function provides monitoring and configuration through a standard web browser. Ethernet interface, as used in most office PCs
- Graphical visualization via built-in Web pages
- Fixed or dynamic TCP/IP address with username and password
- Up to 30 days datalog
- Multiple language support (see [www.emersonclimate.eu](http://www.emersonclimate.eu))

### Features of ECD-001 display unit

- For various system temperatures and valve opening readout
- Connection to EC3 Series via a RJ45 Western Digital plug. No further power cables required
- 2 1/2 digit display
- Indicator LEDs for compressor, fan, heater and alarm
- 4 keys allow parameter modification
- Easy mounting in panels with 71 x 29 mm cutout
- IP65 if mounted in front panel

## Selection table

Type	Description		Part no.
Condensing unit controller			
EC2-332	Coldroom controller EXV stepper motor drive		807632
EC2-332 Contr. Kit	Coldroom controller kit with terminal kit K02-540, pressure transmitter PT5-07M & PT5-30M with cable assembly, transformer ECT-323 25VA		808013
Terminal kits and cables			
K03-331	Terminal kit for EC2-332		800648
ECX-N50	Ethernet cable (TCP/IP)	6 m length	804422
Display unit			
ECD-001	ECN-S30		807641
ECC-N10	Connection cable EC3 to ECD	1 m cable length	807860
ECC-N30		3 m cable length	807861
ECC-N50		5 m cable length	807862
Temperature sensors			
ECN-S15	NTC sensors - air type, (10 kΩ at 25°C)	1.5 m cable length	804304
ECN-S30		3 m cable length	804305
ECN-S60		6 m cable length	804284
ECN-N30	NTC sensors - pipe type, (10 kΩ at 25°C)	3 m cable length	804496
ECN-N60		6 m cable length	804497
ECN-N99		12 m cable length	804499
ECN-F60	NTC sensors - fin type, (10 kΩ at 25°C)	6 m cable length	804283
Pressure transmitter			
PT5-07M	- 0.8...7 bar		
PT5-18M	0...18 bar		
PT4-M15	Cable assembly for PT5	1.5 m cable length	804803
PT4-M30		3 m cable length	804804
PT4-M60		6 m cable length	804805
Transformers			
ECT-323	Transformer class II – 230 VAC input, 24 V output, 25 VA		804424
ECT-623	Transformer class II – 230 VAC input, 24 V output, 60 VA (only EX8)		804421

## EC3-X32 / EC3-X33 Series superheat controllers

For stable superheat control with stepper motor driven electrical control valves Series EX4-8 and FX5-9

## EC3-D72 / EC3-D73 Series digital superheat controllers

For stable superheat control only with EX4-6 electrical control valves and automatic synchronisation of the PWM capacity control valve incorporated into the Copeland Scroll Digital™ compressor technology



EC3-X33 with ECD-002

### Features

- Limitation of evaporating pressure (MOP)
- Feed-through of 20 mA signal of evaporating pressure transmitter to operate third party controllers with a common pressure transmitter
- Intelligent alarm management, superheat alarm
- Monitoring of sensors and sensor wiring, detection of sensor and wiring failures
- Integral rechargeable battery to close electrical control valve in case of power loss
- Electrical connection via plug-in type screw terminals
- Aluminum housing for DIN rail mounting

### Additional features EC3-X32 and EC3-D72 with TCP/IP

- WebServer functionality allows monitoring and configuration of controllers through a standard web browser (e.g. Internet Explorer®)
- Internal data logging
- Freeze protection
- Low and high superheat alarm
- Low pressure switch function/alarm

### ECD-002 display unit

- Front panel mounted interface for parameter and status read-out and controller setup via keypad
- Indicator LEDs for valve opening/closing, external ON and alarm

### Selection table

Description	Stand alone		TCP/IP	
	Type	Part no.	Type	Part no.
Superheat controller for EX4-8 & FX5-9	EC3-X33	807783	EC3-X32	807782
Superheat controller kit*	EC3-X33 Contr.Kit	808036	EC3-X32 Contr.Kit	808037
Terminal kit	K03-X33	807645	K03-X32	807644
Superheat controller for EX4-6	EC3-D73	807804	EC3-D72	807805
Superheat controller kit*	EC3-D73 Contr.Kit	808041	EC3-D72 Contr.Kit	808042
Terminal kit	K03-331	807648	K03-331	807648

Note: \* Kits contain terminal kit, pressure transmitter PT5-07M with cable assembly, NTC sensor ECN-N60, transformer ECT-623

## Selection table - accessories

Description		Type	Part no.
Display/keypad unit (opt.)		EC3-X32	807782
Connection cable EC3 to ECD-002	Cable length 1.0 m	ECC-N10	807860
	Cable length 3.0 m	ECC-N30	807861
	Cable length 5.0 m	ECC-N50	807862
Temperature sensor	Cable length 3.0 m	ECN-N30	804496
	Cable length 6.0 m	ECN-N60	804497
	Cable length 12.0 m	ECN-N99	804499
<b>Pressure sensor</b>			
for R22 / R134a / R507 / R404A / R407A / R407C / R407F / R124 / R448A / R449A / R450A / R513A / R1234ze	0.8...7 bar	PT5-07M	802350
		PT5-07T	802370
for R410A	0...18 bar	PT5-18M	802351
		PT5-18T	802371
for R410A / R744	0...30 bar	PT5-30M	802352
		PT5-30T	802382
for R744	0...50 bar	PT5-50M*	802353
Plug and cable assembly for pressure sensor	Cable length 1.5 m	PT4-M15	804803
	Cable length 3.0 m	PT4-M30	804804
	Cable length 6.0 m	PT4-M60	804805
<b>Transformer - 230VAC Input, 24V output, Din rail mounting</b>			
For one set of controller and valve	25 VA	ECT-323	804424
For two sets of controllers and valves	60 VA	ECT-623	804421
Replacement battery kit			807790

Note: \*) PT5-50M is not released for use with EXD-D72/D73

## Technical data

### EC3

Supply voltage	24 VAC ±10%, 50/60 Hz
Digital input	24 VAC ±10%, 50-60 Hz 24 VDC ±10%
Power consumption	25 VA max. including connected ECV and display/keyboard
Internal battery charging time	Approximately 2 hours if battery is fully empty
Plug-in connector size	Removable screw version wire size 0.14...1.5 mm <sup>2</sup>
Marking	CE
Protection class	IP20 (nach DIN EN60529)
Mounting	DIN rail mounted
Temperature range input	ECN-Nxx: -50...+50°C

### ECD-002 display unit

Supply	From EC3 Series Controller via connecting cable
LED indicators	Valve opening, valve closing, alarm, demand
Display LED	Numeric segmental display, 2½-digits, red, with automatic decimal point between ±19.9, switchable between °C and °F
Connecting cable	ECC-Nxx or standard CAT5 patch cord with RJ45 connectors
Protection class (DIN EN 60529)	IP65 (mounting in front panel with gasket)
Mounting	Panel mount (71 x 29 mm cutout)

# EXD-SH1/2 controller for EX/CX/FX

## With modbus communication capability

EXD-SH1/2 are stand-alone universal superheat and or temperature controllers for air conditioning units or refrigeration systems.

### Features

- EXD-SH1: Control of one valve
- EXD-SH2: Control of two valves in two independent circuits
- Main function

	Circuit 1	Circuit 2
EXD-SH1	Superheat or temperature control	
EXD-SH2	Superheat or temperature control	Superheat control

- Other functions: Limitation of evaporating pressure (MOP), Low pressure switch, freeze protection and manual positioning of valve(s)
- Self-adapting superheat control function in conjunction with Emerson EX4-8 and FX5-9 series
- For multiple refrigerants, including ultralow temperature refrigerant R23 (only with ECN-Z60)
- Modbus (RTU) communication
- EXD-SH2: capability the operation of two evaporator/ EXV / Pressure sensor with single pressure transmitter
- Integrated keyboard with two lines display
- Monitoring of sensors and detection of sensor (ECN/PT5) stepper motor wiring failures
- Optional upload/download key (accessory) for transmission of parameter settings among controllers with the same setting
- Low/high superheat alarm as well as other function alarms
- Electrical connection via plug-in type screw terminals included with controller and Micro Molex EXD-M03 (must be ordered separately)
- DIN rail mounting housing



EXD-SH2



EXD-M03

### Selection table

Type	Description	Part no.	
		Multipack*	Single pack
<b>Controllers</b>			
EXD-SH1	Controller for single refrigeration circuit	-	807 855
EXD-SH2	Controller for two independent refrigeration circuits	-	807 856
EXD-M03	Molex terminal with 3 meter wires	-	807 865
ECN-N30	Temperature sensor with 3 meter cable	-	804 496
ECN-N60	Temperature sensor with 6 meter cable	-	804 497
ECN-Z60	Ultra low temperature sensor with 6 meter cable	-	807 826
<b>Pressure transmitters: PT5 (7/16-20UNF Connection)</b>			
PT5-07M	Sensing pressure range -0.8...7 Bar	802 350M	802 350
PT5-18M	Sensing pressure range 0...18 Bar	802 351M	802 351
PT5-30M	Sensing pressure range 0...30 Bar	802 352M	802 352
PT5-50M	Sensing pressure range 0...50 Bar	802 353M	802 353
PT5-150D	Sensing pressure range 0...150 Bar (1/4 NPTF)	802 379M	802 379
<b>Pressure transmitters: PT5 (Brazing connection)</b>			
PT5-07T	Sensing pressure range -0.8...7 Bar	802 380M	802 380
PT5-18T	Sensing pressure range 0...18 Bar	802 381M	802 381
PT5-30T	Sensing pressure range 0...30 Bar	802 382M	802 382
PT5-50T	Sensing pressure range 0...50 Bar	802 383M	802 383

Note: Pressure range 18 Bar for System with R410A, 30 Bar for R410A Economizer, 50/150 Bar for CO<sub>2</sub>  
 \*) PT5-xxM: 20 pcs, PT5-xxT: 10 pcs


## Accessories

Type	Description	Part no.	
M12 plug and cable for pressure transmitters PT5		Multipack (20 Pieces)	Single pack
PT4-M15	1.5 m	804 803M	804 803
PT4-M30	3.0 m	804 804M	804 804
PT4-M60	6.0 m	804 805M	804 805
Uninterruptible power supply			
ECP-024	Backup battery with two outputs for two controllers	-	804 558
K09-P00	Electrical terminal kit for ECP-024	-	804 560
EXD-PM	Super cap for only EXD-SH1 (Two pieces of EXD-PM required for one EXD-SH2)	-	807 854

## Available configuration options

	Selectable valves	
	FX5-9	EX4-8
Refrigerants	R134a, R407C, R410A, R22, R32*	R22, R23, R32*; R124, R134a, R404A, R407C, R407A, R407F, R507, R744
Main function	Superheat control	Superheat or and temperature control
Pressure transmitters	PT5, PT6 or 3rd party ratio metric	PT5, PT6 or 3rd party ratio metric

## Technical data: EXD-SH1/2

Supply voltage	24VAC/DC ±10%, 50/60Hz
Power consumption	EXD-SH1: Max. 25VA EXD-SH2: Max. 50VA
Terminals 1 to 12	Suitable for 12 poles molex plug
Terminals 13 to 36	Suitable for removable screw version: wire size 0.14 ... 1.5mm <sup>2</sup> included in controller delivery
Protection class	IP 00
Marking	

Mounting	DIN rail mounted
Accessory (12 poles molex plug with 3 meter cable)	Type: EXD-M03 (to be ordered separately)

Note: EXD-SH1/2 are not released for flammable refrigerants

## Input, Output EXD-SH1/2

Description	Specification
Analogue input(s): NTC temperature sensor Analogue input: PT1000 temperature sensor	ECN-N... (-45 ... +50°C sensing range) ECN-Z60 (-80 ... -40°C sensing range)
Analogue input(s): 4...20 mA pressure transmitters Analogue input(s): 0.5...4.5 V pressure transmitters	PT5 Third party ratio metric pressure transmitters (total error: ≤ 1%)
Digital input(s)	Dry contact, potential free
Digital output(s): alarm relay(s) Contact is closed: during alarm condition Contact is open: during normal operation and supply power OFF	Resistive load 24 V AC/DC, Max. 1 A Inductive load 24 V AC, Max. 0.5 A
Communication	RS485 RTU modbus, two wires



## EXD-HP1/2 Stand-alone superheat/economizer controller

EXD-HP1/2 are stand-alone universal superheat and or economizer controllers for heat pumps, heating units, air conditioning and precision cooling such as telecom and shelter applications.

### Features EXD-HP1/2

- Self adapting superheat/economizer control in conjunction with EMERSON stepper motor driven electronic expansion Valves EXM/EXL
- Discharge hot gas temperature control by liquid/vapor injection to compressor
- EXD-HP1: Controller with one EXV output
- EXD-HP2: Controller with two independent EXV outputs
- Controllers as slave with Modbus (RTU) communication capability. All data (read/write) accessible by any third party controller having modbus communication (RTU)
- Upload/download key (accessory) for transmission of parameter settings among controllers with the same setting
- Low pressure switch and freeze protection function
- Manual positioning of valve(s)
- Limitation of evaporating pressure (MOP)
- Low/high superheat alarm
- Monitoring of sensors and sensor wiring / detection of sensor and wiring failures
- Integrated display (3-digit LEDs) and keyboard
- Electrical connection via plug-in type screw terminals (included with controller)
- DIN rail mounting housing

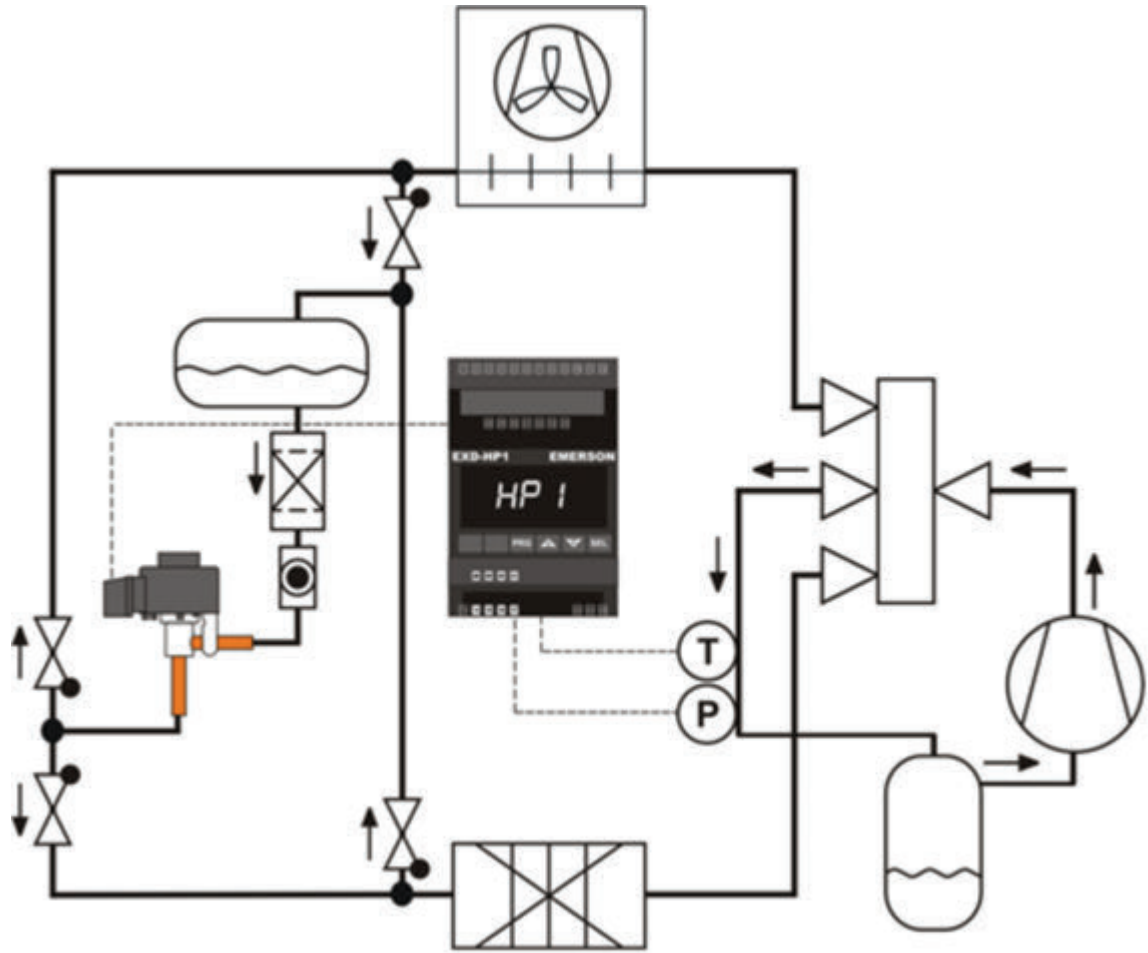


EXD-HP2

### Selection table

Type	Description	Part no.	
		Multipack	Single pack
<b>Controllers</b>			
EXD-HP1	with 1 EXV output	807836M	807836 - HP1
EXD-HP2	with 2 EXV outputs	807837M	807837 - HP2
<b>Valves / Coils</b>			
EXM-B0A	Electronic expansion valve	800399M	-
EXM-B0B		800400M	-
EXM-B0D		800401M	-
EXM-B0E		800402M	-
EXM-125	Coil 12 VDC	800403M	-
EXL-B1F	Electronic expansion valve	800405M	-
EXL-B1G		800406M	-
EXL-125	Coil 12 VDC	800407M	-
<b>Temperature sensor</b>			
ECP-P30	Temperature sensor with 3 m cable	-	804495
<b>Pressure sensors Suction pressure (Refrigerant)</b>			
PT5-07M/PT5-07T	-0.8...7 bar (R22, R134a, R407C)	802350M / 802370M	802350 / 802370
PT5-18M/PT5-18T	0 ...18 bar (R410A, R32 /suction pressure)	802351M / 802371M	802351 / 802371
PT5-30M/PT5-30T	0 ...30 bar (R410A, R32 / Intermediate pressure)	802352M / 802382M	802352 / 802382
<b>Plug and cable assembly for pressure sensors</b>			
PT4-M15	1.5 m cable length	804803M	804803
PT4-0	3.0 m cable length	804804M	804804
ECT-323	Transformer 25VA	-	804424

## Application as air to water heat pumps: Heating and cooling (package system with economizer)



### Technical data

Supply voltage	24 VAC/DC ±10%
Power consumption	EXD-HP1: Max. 15 VA EXD-HP2: Max. 20 VA
Digital inputs	EXD-HP1: Two, each potential free EXD-HP2: Three each potential free
Relay output	SPDT contacts, AgSnO Inductive (AC15) 24 VAC : 1 A Resistive: 24 VAC/DC: 4 A
Plug-in connector size	Removable screw version wire size 0.14...1.5 mm <sup>2</sup>
Protection class	IP 20
Mounting	DIN rail mounted
Marking	CE

### Input Sensors, Output valves

Description	Specification
Temperature input	ECP-P30 (3 meter cable length) Range: -30°C...+150°C
Pressure sensor input	PT5 Signal: 4 ... 20 mA

## EXD-TEVI economizer controller for tandem compressors

EXD-TEVI is a stand-alone controller for enhanced wet vapor injection for Copeland Scroll™ tandem compressors in heating applications.

### Features EXD-TEVI

- Emerson solution for specified operating map of tandem scroll
- Two EXL valves can be driven in parallel for required wide injection capacity
- Input signals: Injection (intermediate) pressure and temperature sensor as well as two compressor discharge temperature sensors
- Two independent digital inputs for recognition of tandem compressors operation
- High discharge temperature alarm
- Monitoring of sensors and sensor wiring and detection of sensor wiring failures
- Controllers as slave with Modbus (RTU) communication capability
- Upload/download key (accessory) allows to copy parameter settings from one controller to others
- Integrated 3 1/2 digit 7-segment display with 6 indicator LEDs
- Electrical connection via plug-in type screw terminals (included with controller)



EXD-TEVI

### Selection table

Type	Description	Part no.	
		Multipack	Single pack
<b>Controller</b>			
EXD-TEVI	Controller with connectors	807838M	807838
<b>Temperature sensors: ECN</b>			
ECN-N30	Temperature sensor with 3 m cable	-	804496
ECN-N60	Temperature sensor with 6 m cable	-	804497
<b>Pressure transmitters: PT5</b>			
PT5-30M	Sensing pressure range 0...30 bar (7/16-20UNF connection)	802352M	802352
PT5-30T	Sensing pressure range 0...30 bar (Brazing connection)	802382M	802382
<b>Plug and cable assembly for pressure transmitters</b>			
PT4-M15	1.5 m cable	804803M	804803
PT4-M30	3 m cable	804804M	804804
<b>Electronic expansion valve with coils</b>			
EXL-B1F	Valve body	800405M	-
EXL-B1G		800406M	-
EXL-125	coil for EXL 12VDC	800407M	-

### Technical data

Supply voltage	24VAC/DC ±10%
Power consumption	EXD-TEVI: Max. 20 VA
Digital inputs	2 (Potential Free)
Relay output (alarm)	SPDT, with AgSnO Contacts Inductive (AC15) 24V AC: 1 A Resistive: 24 V AC/DC: 4 A
Plug-in connector size	Removable Screw Version Wire size 0.14 ... 1.5mm <sup>2</sup>

Protection class	IP 20
Mounting	DIN rail mounted
Marking	CE

### Technical data: Sensors

Description	Specification
Temperature sensors	1 x 10k NTC for injection line temperature (ECN-N30 / ECN-N60) 2 x 86k NTC for discharge gas temperature (part of compressor delivery)
Pressure transmitter EVI	PT5-30M/T: 4...20 mA (Range: 0...30 Bar)

## EXD-U01 Series universal driver modules

Stepper motor valve driver specifically designed for the Emerson EX and CX Series of electrical control valves in applications such as:

- Capacity control by means of hot gas bypass
- Evaporating pressure regulator or crankcase pressure regulator
- Hot gas flow such as heat reclaim
- Condensing pressure regulation and liquid duty
- Refrigerant mass flow control in CO<sub>2</sub> transcritical systems

### Features

- Plug and play, no parameter setting
- Valve opening proportional to 4...20mA or 0...10V analogue input signal
- Digital input can be used to force valve closing
- Easy configurable by Dip-switches
- Easy wiring
- Fully tested and ready for operation



EXD-U01

### Options

- Uninterruptible power supply ECP-024 to automatically close valve after power down

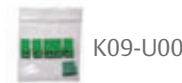
### Selection table

Type	Part no.	Description
EXD-U01	804750	Universal driver module
EXD-U01 contr. kit	808052	Universal driver module with terminal kit
K09-U00	804559	Terminal kit for EXD-U01

\* Controller kit contains terminal kit

### Accessories

Type	Part no.	Description
ECP-024	804558	Uninterruptible power supply for up to 2 drive modules
K09-P00	804560	Electrical terminal kit for ECP-024
ECT-323	804424	Transformer 25VA
ECT-623	804421	Transformer 60 VA 24V/230V AC – DIN-rail mounting



K09-U00



ECP-024



ECP-024



ECT-323



ECT-323

### Function

The driver module EXD-U01 requires an analog input signal of 4...20 mA or 0...10 V. The output is the closing/opening of EX/CX valve series and consequently the control of liquid or vapor refrigerant mass flow in accordance with the analog input. The universal driver module can be connected to any controller which can provide a 4...20 mA or 0...10 V analog signal. This gives extreme flexibility to system manufacturers to use any desired controller and achieve different functionalities. The universal driver module keeps the valve at fully close position when the input signal is 4 mA or 0 V. The valve will be fully open at 20 mA or 10 V.

### Optional uninterruptible power supply ECP-024

The optional uninterruptible power supply ECP-024 contains a rechargeable lead-acid battery, which provides enough energy to close the valve in case of power loss. ECP-024 can be connected to two EXD-U01 Driver Modules for closure of up to two valves.

### Technical data

Supply voltage	24 VAC ±10%, 50-60 Hz Note: 24 VDC supply voltage can be used but it results to lower MOPD and it needs to be verified by system manufacture.
Supply current	to be protected by a 1.0 A external fuse
Power consumption	10 VA in conjunction with EXV
Protection class	IP20
Weight	~ 800 g
Marking	<b>CE</b>

Analog input signal burden	4-20 mA 364 Ω
Analog input signal	0-10 V
Impedance	27 kΩ
Digital input	24 VAC ±10%, 50-60 Hz 24 VDC ±10%
Connector	Screw terminals for wire size 0.5-2.5 mm <sup>2</sup>
Mounting	DIN rail mounted
Housing	Aluminum

### Optional uninterruptible power supply ECP-024


Backup battery type	Lead acid gel rechargeable battery
Number of backup batteries	2, each 12 VDC, 0.8 Ah
Supply voltage	24 VAC ±10%, 50-60Hz
Output voltage, UB	18 VDC
Number of outputs to drivers	2
Marking	<b>CE</b>

Connection	Screw terminals for wire size 0.5-2.5 mm <sup>2</sup>
Mounting	DIN rail mounted
Protection class	IP20
Housing	Aluminum

## FSY/FSM Series electronic fan speed controller

Electronic speed controllers FSY / FSM control the speed of fan motors depending on pressure.

### Features

- Adjustable pressure for cut-off
- High Voltage Triac (800 Volts)
- Integrated protection circuit against voltage peaks
- Compact design
- Easy mounting and adjustment
- Easy retrofit in existing systems
- No additional gasket required (completely molded into plug)
- Multi-position plug with EMC filter cable for flexible installation
-  per 14/30/EU (together with FSF cable)
- UL file E183816
- Other pressure connection upon request (minimum order volume 100 pieces)



FSY-43S

### Selection table

Type	Part no.	Pressure range * (bar)	Factory-setting * (bar)	Factory setting * Bar	Max. operating pressure PS (bar)	Test pressure PT (bar)	Pressure connection
Fan speed controllers with cut-off mode							
FSY-41S	0715533	4.0...12.5	8.0	27	30	30	7/16"-20 UNF female
FSY-42S	0715534	9.2...21.2	15.0	32	36	36	
FSY-43S	0715537	12.4...28.4	21.8	43	48	50	
Fan speed controllers with min. Speed mode							
FSM-41S	0715520	4.0...2.5	8.0	27	30	30	7/16"-20 UNF female
FSM-42S	0715521	9.2...21.2	15.0	32	36	36	
FSM-43S	0715522	12.4...28.4	21.8	43	48	50	

Note: \*) Pressure at which fan is switched off (FSY) or at which fan is running with minimum speed (FSM)

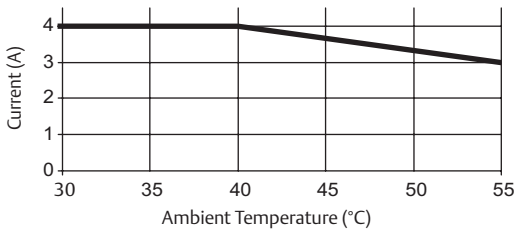
### Cable assemblies with plug and EMC filter

Type	Part no.	Temperature range (°C)	Cable length (m)
FSF-N15	804640	Temperature range: -50...+80°C	Cable length 1.5 m
FSF-N30	804641		Cable length 3.0 m
FSF-N60	804642		Cable length 6.0 m
Seal ring pack	803780	Copper gaskets 100 pcs	

## Technical data

Supply voltage	230VAC, +15%, -20%, 50/60 Hz
Nominal current (See diagram below)	0.1 ... 4 (3) A
Starting current	Max. 8 Amps/5 Sec.
Medium compatibility	HFC, HCFC, HFO/HFO Blends (Not Released for Use with Inflammable Refrigerants)
Protection class according to iec529 /en 60529	IP 65 (with Fitted Connectors FSF-xxx)
Temperature ranges °C ambient	-20...+55°C (>40°C See Diagramm)
Storage & transportation medium	-30...+70°C -20...+70°C

Max. current vs ambient temperature

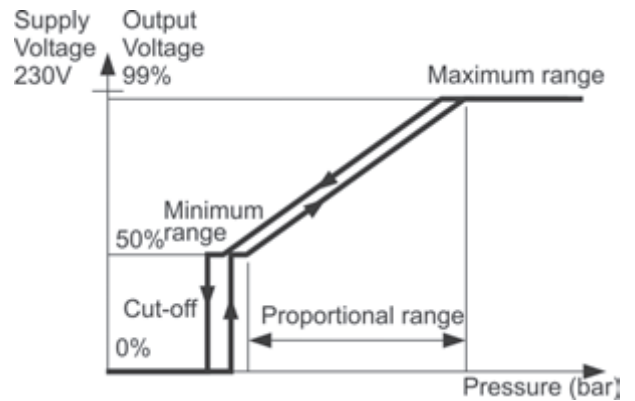


Pressure change per turn of adjustment screw	FSY-41: 4.0 .. 12.5 Bar Clockwise ~ +1.2 Bar Counterclockwise ~ -1.2 bar
	FSY-42: 9.2 .. 21.2 Bar Clockwise ~ +2.5 Bar Counterclockwise ~ -2.5 Bar
	FSY-43: 12.4 .. 28.4 Bar Clockwise ~ +3.3 Bar Counterclockwise ~ -3.3 Bar
Proportional range	FSY-41: 2.5 Bar FSY-42: 3.8 Bar FSY-43: 4.6 Bar
Housing material	PC and PA

## Function diagram

The control behaviour can be easily described by looking at the function of output voltage versus input pressure: In the maximum range the FSY provides a constant output voltage of approximately 1% below the supply voltage. The fan is running at maximum speed. Along the proportional range, the output voltage varies between maximum and minimum voltage of approximately 50% of the supply voltage. This causes the fan to slow down from maximum to minimum speed.

Further decrease of pressure in the minimum range leads to cut-off of the fan motor. Reincrease of input pressure will start the motor with a hysteresis of approximately 0.7 bar to avoid cycling. The pressure from which motor cuts off is adjustable (see selection table - adjustment range).



## FSE fan speed control module

Electronic Fan Speed Control Modules FSE generate a 0...10 V signal, which is used to control the speed of condenser fan motors in commercial refrigeration and air-conditioning systems. Ideal for use with high efficient EC-motors, but can be also used with phase cut controllers for induction motors.

### Features

- Energy saving due to improved cooling efficiency
- Pressure for minimum speed adjustable
- Small proportional band and large hysteresis to minimize cycling at small pressure changes
- Reduced fan noise level during low ambient temp. conditions
- Improved overall performance of cooling system
- Easy installation with cables for power supply and motor connection factory wired
- IP 65 protection for outdoor mounting suitable for any size of EC fan motors
- UL file nr.: E355325 (Released for 43 bar)



FSE Control Modules

### Selection chart control modules FSE

Type	Part no.	Refrigerants	Adjustment range PCut (bar)*	Factory settings (bar)	Max. operating pressure PS (bar)	PT (bar)	Pressure connection
FSE-01S	804 701	R134a	4 ... 12.5	7.8	27 bar	30 bar	7/16" -20 UNF female
FSE-02S	804 706	R22, R407C, R404A, R507	10 ... 21	15.5	32 bar	36 bar	7/16" -20 UNF female
FSE-03S	804 711	R410A	12 ... 28	20.4	45 bar	50 bar	7/16" -20 UNF female

### Cable assemblies for connection of fse control module to controller

Type	Part no.	No of leads	Diameter of leads	Temperature range °C	Cable length (m)
PS3-N15	804 580	3	0.75 mm <sup>2</sup>	-25...+80	1.5
PS3-N30	804 581				3.0
PS3-N60	804 582				6.0

### Technical data FSE

Supply voltage	10 V; Applied by controller
Operating current 0...10 VDC output	Max. 1 mA
Medium compatibility	HFC, HCFC, HFO/HFO Blends, POE-, Synthetic and mineral oils
Protection class (IEC529/EN 60529)	IP 65 with cable connector assemblies PS3-Nxx

Pressure connection FSE-01S and FSE-02S FSE-03S	Brass stainless steel
Temperature range storage and transportation operation	-30° ... +70°C -20° ... +65°C
Materials housing cover	PA



## PT5 Pressure transmitter

PT5 pressure transmitters convert a pressure into a linear electrical 4..20 mA output signal suitable for controlling simple compressor and fan switching to the more sophisticated application of superheat modulation of electronic control valves.

With competitive performance to price characteristics and an easy to install pre-fabricated M12 cable assembly, PT5 transmitters are the designers choice for all heat pump, refrigeration and air conditioning applications.

### Features

- Piezo-resistive sensor with output signal 4...20 mA and 2-wire connection for the precise operation of superheat, compressor or fan control systems
- Specially calibrated pressure ranges with  $\pm 1\%$  accuracy performance to fulfill demands of today's refrigeration and HVAC applications
- Fully hermetic
- PT5-xxM with 7/16"-20UNF pressure connection and Schrader valve opener
- PT5-xxT with 40 mm stainless steel tube and integrated brazing neck for easy mounting in applications requiring a fully hermetic system solution
- PT5-150D for subcritical and transcritical CO<sub>2</sub> systems
- Vibration, shock and pulsation resistant
- Protection class IP65 / IP67 (type-specific)
- UL (File No. E258370)



PT5-xxM  
with PT4-Mxx Cable Assembly



PT5-150D



PT5-xxT

### Selection table

Type	Part no.		Pressure range for signal output (Bar)*	Output signal	Medium temp. range at pressure connection (°C)	Ps: Max. working pressure (Bar)*	Pt: Test pressure (Bar)*	Burst pressure (Bar)*	Pressure connection
	Single pack	Multi-pack**							
PT5-07M	802 350	802 350M	-0.8.. 7	4..20 mA	-40 .. +100	27	30	150	7/16" – 20 UNF (with Schrader Valve Opener)
PT5-18M	802 351	802 351M	0 .. 18			50	63	250	
PT5-30M	802 352	802 352M	0 .. 30			60	100	400	
PT5-50M	802 353	802 353M	0 .. 50			100	150	400	
PT5-07T	802 380	802 380M	-0.8.. 7		-40 .. +135	27	30	150	6 mm ODM
PT5-18T	802 381	802 381M	0 .. 18			50	63	250	
PT5-30T	802 382	802 382M	0 .. 30			60	100	400	
PT5-50T	802 383	802 383M	0 .. 50			100	150	400	
PT5-150D	802 379	-	0 .. 150	-40 .. +100	220	320	1000	1/4" NPT (male)	

\*) Sealed Gauge Pressure

\*\*) PT5xxM: 20 Pcs, PT5-xxT: 10 Pcs

### Selection table plug/cable assemblies: Assembly fits all models

Type	Part no.		Cable length	Weight (g/Piece)	Temperature range
	Single pack	Multi pack*			
PT4-M15	804 803	804 803M	1.5 m	50	-50 ... +80°C Static Application -25 ... +80°C Mobile Application
PT4-M30	804 804	804 804M	3.0 m	80	
PT4-M60	804 805	804 805M	6.0 m	140	



## Technical data pressure transmitter

Supply voltage (Polarity protected)	Nominal: 24VDC Range: 7.. 30VDC PT5-150D: 7 .. 26.4VDC
Permissible noise & ripple influence of supply voltage	< 1 Vp-p < 0.02 %FS/V
Operating current	Maximum ≤ 24 mA 4...20 mA Output
Load resistance	$R_L \leq \frac{U_b - 7.0V}{0.02A}$
Response time	≤ 5 ms
Temperatures Transport and storage Operating ambient housing Medium: PT5-xxM, -150D PT5-xxT	-25 .. +80 °C -40 .. +80 °C -40 .. +100 °C -40 .. +135 °C (UL listed -40...+100°C)

Sensor lifetime	30 Million load cycles with 1.3 times of nominal pressure
Electrical connection PT4-Mxx cable assembly	M12 connection according to EN61076-2-101 Part 2 prefabricated, various cable Lengths
Approvals/markings	CE: 2004/108/EEC, EN 61326 emission (Group 1; Class B) and immunity (Industrial Locations) UL, cRUus (UL File Nr. E258370)
Protection class (EN 60529)	PT5-07, -18: IP65 with Plug PT5-30, -50, -150: IP67 with Plug
Materials housing, pressure connector and diaphragm with medium contact	Stainless steel 316L, 1.4534 1.4301 (PT5-xxT)
Electrical connector	Highly resistive, fiberglass-enforced plastic PBTGF30

## Accuracy performance

Type	Total error *	Temperature range
PT5-07 / 18	±1% FS	-40 ... +20 °C
PT5-30 / -50/	±1% FS ±2% FS	+10 ... +50 °C -10 ... +80 °C
PT5-150D	±1% FS ±2% FS	+10 ... +50 °C -10 ... +100 °C

\*) Total error includes non-linearity, hysteresis, repeatability as well as offset and span drift due to the temperature changes.

Note: % FS is related to percentage of full sensor scale.

## Pressure transmitter PT5N

PT5N Pressure Transmitters convert a pressure into a linear electrical 4...20 mA output signal suitable for controlling simple compressor and fan switching to the more sophisticated application of superheat modulation of Electronic Control Valves. With competitive performance to price characteristics and an easy to install pre-fabricated M12 cable assembly, PT5N transmitters are the designer choice for all heat pump, refrigeration and air conditioning applications.



PT5N-30M

### Features

- Thick film technology, with stainless steel pressure sensing element fully laser welded to the pressure connection, enabling full hermetic feature.
- With output signal 4-20 mA / 2-wire connection suitable for supply voltage range 7...33VDC
- Calibrated for specific temperature and pressure ranges
- Easy install M12 electrical connection with pre-assembled cable assemblies available in various lengths and enable protection class IP67 against moisture and water ingress
- Vibration, shock and pulsation resistant

### Options

- PT5N-xxM versions with 7/16"-20UNF pressure connection and Schrader valve opener
- PT5N-xxT with 6x40 mm stainless steel tube and integrated brazing neck for easy mounting in applications requiring a fully hermetic system solution
- PT5N-150D with pressure connection 1/4"-18 NPT male suitable for subcritical and transcritical CO2 systems
- Available in single or 25 pieces multipack
- Fully exchangeable with PT5 series

### Selection Table

Type	Part code number		Pressure sensing range, bar *	Max. working pressure PS, bar *	Pressure connection
	Single pack	MultiPack			
PT5N-07M	805350	805350M	-0.8...7	27	7/16" – 20 UNF (with Schrader valve opener)
PT5N-18M	805351	805351M	0...18	48	
PT5N-30M	805352	805352M	0...30	60	
PT5N-50M	805353	805353M	0...50	75	
PT5N-07T	805380	805380M	-0.8...7	27	6 mm tube x 40 mm long
PT5N-18T	805381	805381M	0...18	48	
PT5N-30T	805382	805382M	0...30	60	
PT5N-50T	805383	805383M	0...50	75	
PT5N-150D	805379	805379M	0...150	150	1/4"-18 NPT (male)

Note: \*) Sealed gauge pressure

### Selection table cables assemblies: assembly fits all models

Type	Part no.		Cable length **	Temperature range
	Single pack	Multipack 20 pcs		
PT4-M15	804803	804803M	1.5m	-50...+80 °C static application -25...+80 °C mobile application
PT4-M30	804804	804804M	3.0m	
PT4-M60	804805	804805M	6.0m	

Note: \*\*) Longer length of the electrical connection cable beyond 6.0 m must be verified by user in term of output signal as well as EMC within installed system.

## Technical Data Pressure Transmitter

Supply Voltage (Polarity Protected)	Nominal: 24VDC Range: 7.. 33VDC
Load Resistance	$R_L \leq \frac{U_b - 7.0V}{0.02A}$
Response Time	≤ 2 ms
Weight (without plug and cable assembly)	PT5N-xxM: ~87g PT5N-150D: 73g PT5N-xxT: ~103g
Mounting Position	Non position sensitive; details see operating instructions
Temperatures Transport and Storage Operating Ambient Housing Medium	-50 .. +100 °C -30 .. +85 °C -40 .. +135 °C

Electrical Connection PT4-Mxx Cable Assembly	M12 connection according to EN61076-2-101 Part 2 Prefabricated, various cable lengths
Medium compatibility	A1 group refrigerants
Marking	CE acc. EMC Directive (EN 61326-2-3, EN 50121-3-2) UL (E325110) pending
Protection Class (EN 60529)	IP67 with mounted plug and cable assembly
Vibration at 15...2000Hz	20g according to IEC 60068-2-6
Materials Housing Pressure Connection PT5N-xxT	Stainless steel 1.4404/AISI316L Stainless steel 1.4301/AISI 304

## Accuracy Performance

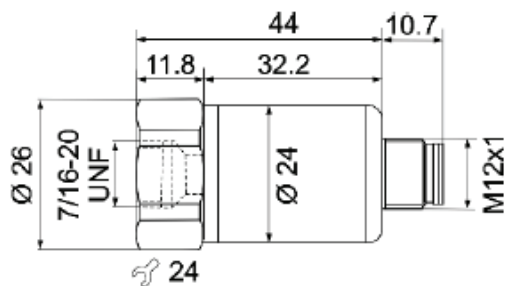
Type	Total Error <sup>1</sup>	Temperature Range
PT5N-07 / -18	≤ ±1% FS	-40 ... +20°C
PT5N-30 / -50	≤ ±1% FS ≤ ±2% FS	+10 ... +50°C -10 ... +80°C
PT5N-150D	≤ ±1% FS ≤ ±2% FS	+10 ... +50°C -10 ... +90°C

Note: <sup>1</sup>) Total error includes non-linearity, hysteresis, repeatability as well as offset and span drift due to the temperature changes.

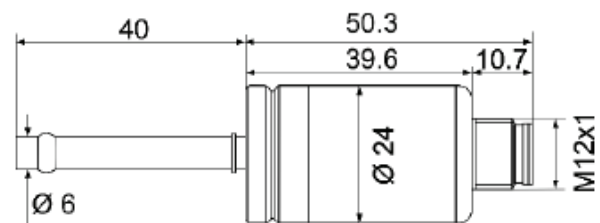
%FS is related to Percentage of Full sensor Scale.

## Dimensions (mm)

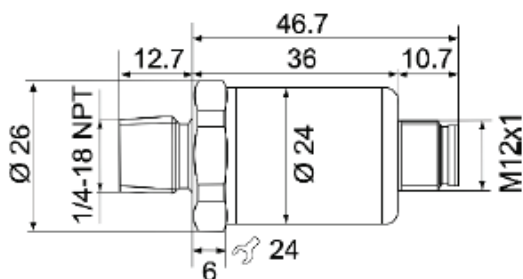
PT5N-xxM



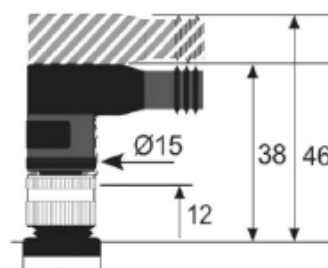
PT5N-xxT



PT5N-150D



PT4-Mxx - M12 Plug



# Solenoid valves & coils

## Quick select guide – Refrigeration applications

Application	Feature	Valve	Nominal liquid capacity R-22 (in Tons)*	Nominal liquid capacity R-410A (in Tons)*	
Liquid line discharge gas suction line	Two way, normally closed solenoid valve	50RB	.54		
		100RB2	1.3		
		200RB2	3.6		
		200RB3	4.8		
		200RB4	8.0		
		200RB5	8.2		
		200RB6	9.5		
		200RB7	17.0		
		200RB9	30.5		
		200RB12	34.9		
		200RD 2		3.4	
		200RD 3		4.5	
		200RD 4		7.5	
		200RD 5		7.7	
	200RD 6		8.9		
			240RA8	15.6	
			240RA9 (5/8)	23.3	
			240RA9 (1-1/8)	30.5	
			240RA12	34.9	
			240RA16	58.0	
			240RA20	95.4	
		Two way, normally open solenoid valve	500RB2	3.1	
			500RB3	4.8	
			500RB4	5.6	
			500RB5	8.2	
			500RB6	10.0	
	500RB7		15.6		
	540RA8		15.6		
	540RA9 (5/8)		23.3		
	540RA9 (1-1/8)		30.5		
	540RA12		34.9		
	540RA16		58.0		
	540RA20		95.4		

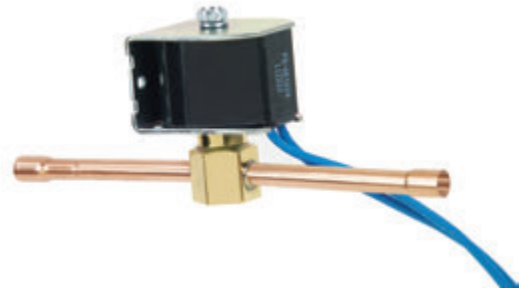
\* 3 psi pressure drop per ARI Standard 760.  
All ratings are based on largest connection size.

## 50RB solenoid valves & coils

The 50RB is a direct-acting, 2-way, normally closed valve. 50RB valves are used for liquid or discharge gas refrigerant service.

### Features

- Long-life molded coils
- Extended ends for easy installation (standard)
- Screw-on coil
- 100 mesh inlet screen standard



### Options

- Connection sizes to fit your system
- Straight-thru design
- Replace with RMF coil

### Specifications

- PTFE seat material
- 30" leads
- Maximum fluid temperature: 250°F
- Maximum working pressure: 500 psig
- MOPD: 300 psig
- UL/CUL file number: MH25894

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

### Nomenclature example: 50RB 4T22 SML 120/50-60

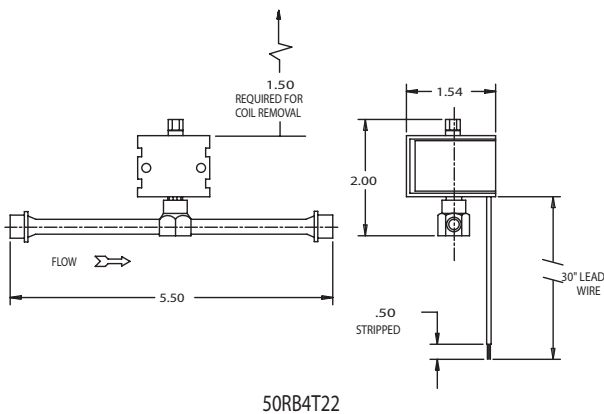
50R	B	4	T	2	2	SML	120/50-60
Basic valve type	Design series	Port size (In 1/64")	Connection type T = ODF straight thru	Inlet connection size (In 1/8")	Outlet connection size (In 1/8")	Coil (RMF as Replacement)	Coil voltages

### Ordering information and nominal\* liquid capacity table – Tons (kW)

PCN	Description	Connection size	Coil voltage/HZ	R-22	R-134a	R-407C	R-404A/ R-507	R-448A/ R-449A	R-450A/ R-513A
063588	50RB 4 T 2 2 SML	1/4" ODF	24/50-60	0.54 (1.9)	0.41 (1.4)	0.51 (1.8)	0.34 (1.2)	0.54 (1.9)	0.37(1.3)
063455	50RB 4 T 2 2 SML		120/50-60						
063514	50RB 4 T 2 2 SML		220/50-60						

Capacities based on 100°F liquid and 40°F saturated evaporator per ARI standard 760-87.  
\*See Extended Capacity Tables for ratings at a wide range of conditions.

### Dimensional data (In)



## 100RB solenoid valves & coils

The 100RB is a direct-acting, 2-way, normally closed valve. 100 RB valves are used for liquid or discharge gas refrigerant service.

### Features

- One coil fits all valve sizes
- Extended ends for easy installation (standard)
- Long-life molded coils
- PTFE O-ring for superior external sealing

### Options

- SAE or ODF connection sizes in 1/4" and 3/8", 1/4" NPTF



### Specifications

- Maximum fluid temperature: 250°F
- Maximum working pressure: 500 psig
- MOPD: 300 psig
- UL/CUL file number: MP 604

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

### Nomenclature example: 100RB 2F2 VLC

100R	B	2	F	2	VLC
Series	Design series	Port size (in 1/16")	Connection type F = SAE S = ODF P = NPTF	Connection size (in 1/8")	Coil*

Capacities based on 100°F liquid and 40°F saturated evaporator per ARI standard 760-87.  
\*See Extended Capacity Tables for ratings at a wide range of conditions.

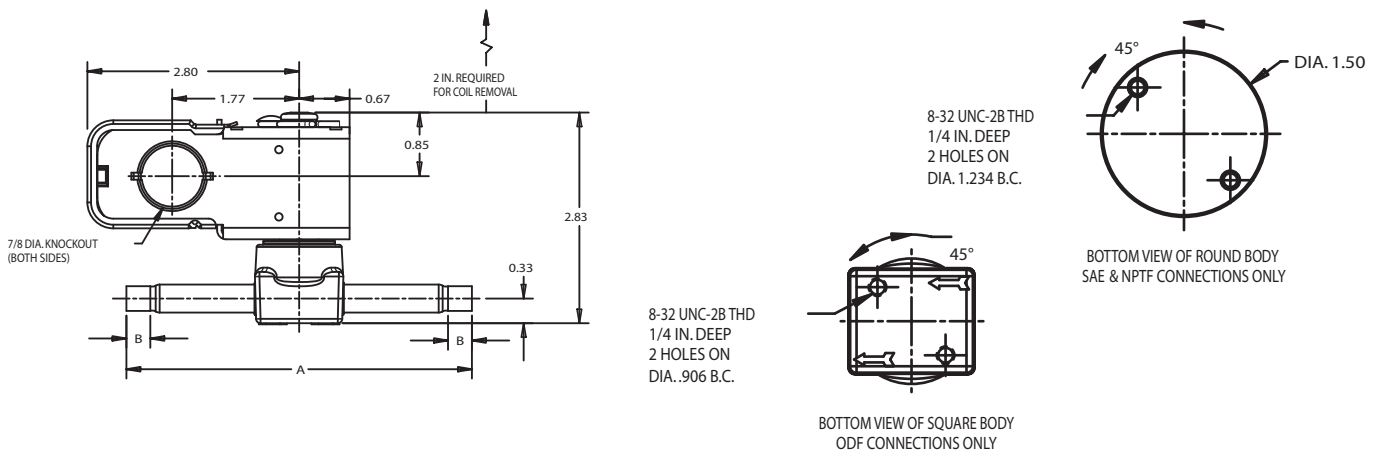
### Ordering information and nominal\* liquid capacity table – Tons (kW)

PCN	Description	Connection size	R-22	R-134a	R-407C	R-404A/ R-507	R-448A/ R-449A	R-450A/ R-513A
047503	100RB 2S2 VLC	1/4" ODF	1.27 (4.5)	0.96 (3.4)	1.21 (4.3)	0.85 (3.0)	1.3 (4.5)	0.9 (3.1)
047504	100RB 2S3 VLC	3/8" ODF						
047505	100RB 2S4 VLC	1/2" ODF						
047500	100RB 2F2 VLC	1/4" SAE						
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 per ARI standard 760-87.  
\*See Extended Capacity Tables for ratings at a wide range of conditions.

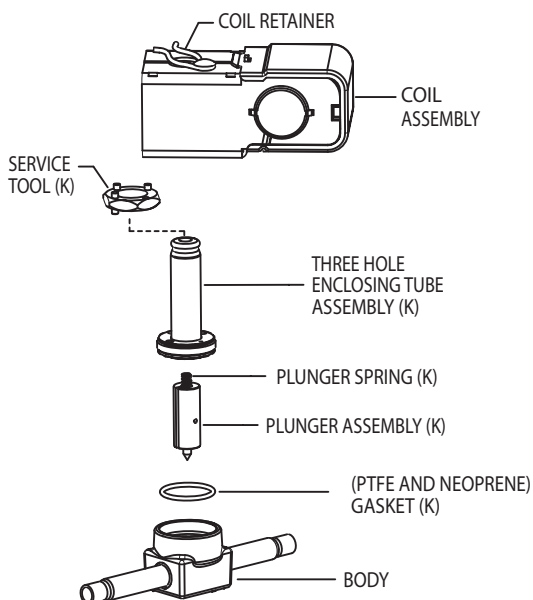
# 100RB

## Dimensional data (in)



Valve	Connection size	A	B
100RB 2S2 VLC	1/4 ODF	4.63	0.31
100RB 2S3 VLC	3/8 ODF	4.63	0.31
100RB 2S4 VLC	1/2 ODF	4.63	0.38
100RB 2F2 VLC	1/4 SAE	3.10	-
100RB 2F3 VLC	3/8 SAE	3.47	-
100RB 2P2 VLC	1/4 NPTF	1.56	-

## Exploded view & parts kit data



Valve repair kit  
 "K" indicates part is supplied in valve repair kit KS30112 (PCN 049191)  
 Note: Universal (2/3 hole) spanner wrench X11981-1 (PCN 027451) included in complete repair kit.

Coil assembly  
 See coil assemblies for availability.

Parts kit  
 KG-10041 PCN: 054812  
 (Contains 12 pieces each of PTFE and neoprene O-rings.)

## 200RB solenoid valves & coils

The 200RB is a pilot-operated, 2-way, normally closed valve. 200RB valves are used for liquid, discharge, or suction gas refrigerant service.

### Features

- All coils fit all solenoid valves
- Extended ends for easy installation (standard)
- Long-life molded coils
- PTFE O-ring for superior external sealing

### Options

- Available in 7 port sizes
- Manual stem or mounting stud
- Bi-Flow operation-conversion either factory assembled or with kit KS-30377 (except 200RB 7 & 9)



### Specifications

- Maximum fluid temperature: 250°F
- Maximum working pressure: 680 psig
- Minimum operating pressure drop: 2 psi
- MOPD: 300 psig
- UL/CUL file number: MP604

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

NOTE: MOPD based on AC application. Consult application engineer for DC application.

### Nomenclature example: 200RB 4T3M VLC

200RB	4	T	3	M	BF	VLC
Series	Port size	Connection type	Connection size	(Optional)	(Optional)	Coil*
	(In 1/16")	F = SAE S = Short solder T = Copper extended Ends	(In 1/8")	T = Mounting stud M = Manual opening stem	BF = Bi-Flow	VLC = Valve Less Coil

\* Valves are shipped without the solenoid coils (VLC = Valve Less Coil). See coil assemblies for availability.

### Ordering information and nominal \* liquid capacity table – Tons (kW)

Model	Connection size	PCN			R-22	R-134a	R-290	R-407C	R-410A	R-404A/ R-507	R-448A/ R-449A	R-450A/ R-512A
		Standard valve	Mounting stud <sup>1</sup>	Manual stem <sup>2</sup>								
200RB 2F5	1/4 SAE	053104	-	-								
200RB 2F3	3/8 SAE	062611	-	-	3.6 (12.7)	2.7 (9.6)	3.8 (13.4)	3.4 (11.9)	3.4 (11.9)	2.3 (8.2)	3.6 (12.7)	2.5 (8.7)
200RB 2T2	1/4 ODF	053105	053236	-								
200RB 2T3	3/8 ODF	053106	054170	-								
200RB 3F3	3/8 SAE	052726	056438	-								
200RB 3F4	1/2 SAE	052727	055855	-	4.8 (16.9)	3.6 (12.7)	5.0 (17.6)	4.5 (15.9)	4.5 (15.8)	3.1 (10.9)	4.8 (17.0)	3.3 (11.6)
200RB 3T2	1/4 ODF	049608	-	-								
200RB 3T3	3/8 ODF	049609	049585	065620								
200RB 3T4	1/2 ODF	049692	-	065621								
200RB 4F3	3/8 SAE	047506	047508	047507								
200RB 4S3	3/8 ODF X 1/2 ODM	047511	047513	047512								
200RB 4S4	1/2 ODF X 5/8 ODM	047516	047515	047514	8.0 (28.0)	6.0 (21.1)	8.3 (29.2)	7.5 (26.3)	7.5 (26.4)	5.1 (18.0)	8.0 (28.1)	5.5 (19.3)
200RB 4T3	3/8 ODF	047517	049162	049186								
200RB 4T4	1/2 ODF	047518	049163	049187								
200RB 4T5	5/8 ODF	058950	058045	056518								
200RB 5F4	1/2 SAE	047519	047521	047520								
200RB 5F5	5/8 SAE	059729	047523	047522								
200RB 5S4	1/2 ODF X 5/8 ODM	047524	047526	047525	8.2 (28.9)	6.2 (21.8)	8.6 (30.1)	7.7 (27.2)	7.7 (26.4)	5.3 (18.6)	8.3 (29.0)	5.7 (19.9)
200RB 5S5	5/8 ODF	049201	047528	047527								
200RB 5T3	3/8 ODF	061227	054323	-								
200RB 5T4	1/2 ODF	057206	049164	049188								
200RB 5T5	5/8 ODF	059730	049165	049189								
200RB 6F4	1/2 SAE	059731	047531	047530								
200RB 6F5	5/8 SAE	059732	047534	047533								
200RB 6S4	1/2 ODF X 5/8 ODM	047537	047539	047538	9.5 (33.3)	7.2 (25.2)	9.9 (34.7)	8.9 (31.4)	8.9 (31.3)	6.1 (21.5)	9.5 (33.5)	6.5 (23.0)
200RB 6S5	5/8 ODF	047540	047542	047541								
200RB 6T4	1/2 ODF	047544	047546	047545								
200RB 6T5	5/8 ODF	056766	047548	047547								
200RB 7S5	5/8 ODF X 7/8 ODM	064037	-	-								
200RB 7T4	1/2 ODF	064062	-	-	17.0 (59.8)	12.7 (44.6)	-	16.2 (57.0)	15.7 (55.2)	11.1 (39.0)	17.1 (60.0)	11.7 (41.2)
200RB 7T5	5/8 ODF	064063	064562	064267								
200RB 7T7	7/8 ODF	064282	064284	064283								
200RB 9T5	5/8 ODF	064762	064764	064763								
200RB 9T7	7/8 ODF	064645	064766	064765	29.5 (103.8)	22.5 (79.1)	-	28.0 (98.3)	27.7 (97.6)	18.3 (64.2)	29.6 (104.2)	20.3 (71.5)
200RB 9T9	1 1/8 ODF	064767	064769	064768								

<sup>1</sup> Add "T" to the end of description for Mounting Stud

<sup>2</sup> Add "M" to the end of the description for Manual Stem

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

All ratings are based on largest connection size.

\* See Extended Capacity Tables for ratings at a wide range of conditions.



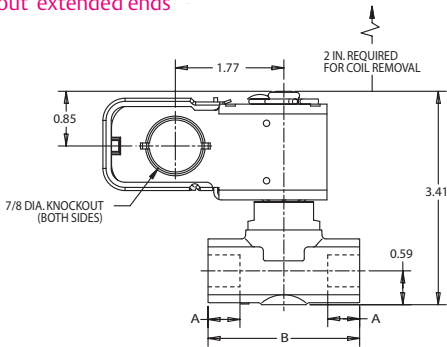
# 200RB

## Ordering information and nominal \* reverse flow liquid capacity table for bi-flow solenoids

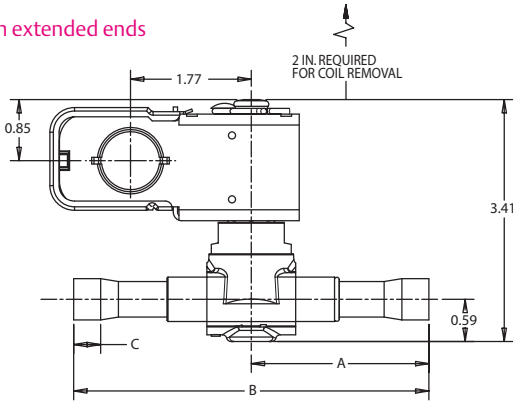
Model	Connection size	PCN	R-22	R-134A	R-290	R-407C	R-410A	R-404A/R-507	R-448A/R-449A	R-450A/R-513A
200RB 3T3BFVLC	3/8 ODF	009689	5.5 (19.5)	4.4 (15.6)	5 (17.6)	5.2 (18.3)	4.5 (15.8)	3.6 (12.6)	5.6 (19.6)	4.1 (14.3)
200RB 4T3BFVLC	3/8 ODF	009690	9.2 (32.3)	7.4 (25.9)	5.8 (20.6)	8.6 (30.4)	5.3 (18.5)	5.9 (20.8)	9.2 (32.4)	6.7 (23.6)
200RB 5T4BFVLC	1/2 ODF	009692	9.5 (33.4)	7.6 (26.7)	8.6 (30.1)	8.9 (31.4)	7.7 (27.1)	6.1 (21.5)	9.5 (33.5)	6.9 (24.4)
200RB 5T5BFVLC	5/8 ODF	009693								
200RB 6T5BFVLC	5/8 ODF	009694	11.0 (38.5)	838 (30.8)	9.9 (34.7)	10.3 (36.2)	8.89 (31.3)	7.1 (24.8)	11.0 (38.7)	8.0 (28.2)

## 200RB2-6 dimensional data (in.)

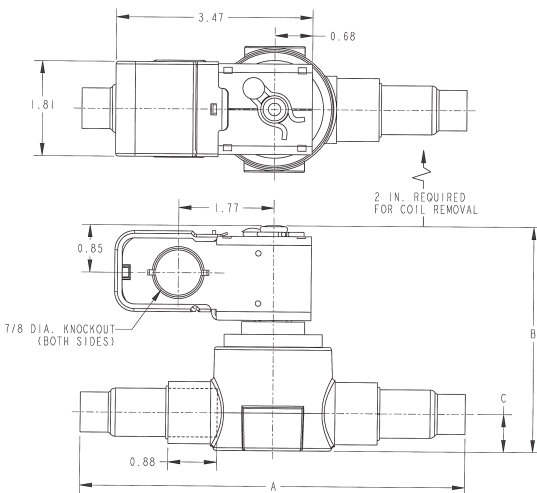
Without extended ends



With extended ends



## 200RB7 and 200RB9 dimensional data (in.)



## Without extended ends

Model	Port size	Conn. size & style	A	B
200RB 4S3	1/4	3/8 ODF x 1/2 ODM	0.50	
200RB 4S4		1/2 ODF x 5/8 ODM	0.56	
200RB 4F3		3/8 SAE (male flare)	-	3.12
200RB 5S4	5/16	1/2 ODF x 5/8 ODM	0.56	2.37
200RB 5S5		5/8 ODF		
200RB 5F4		1/2 SAE (male flare)	-	3.50
200RB 5F5		5/8 SAE (male flare)	-	3.75
200RB 6S4	3/8	1/2 ODF x 5/8 ODM	0.56	2.37
200RB 6S5		5/8 ODF		
200RB 6F4		1/2 SAE (male flare)	-	3.50
200RB 6F5		5/8 SAE (male flare)	-	3.75

## With extended ends

Model	Port size	Conn. size & style	A	B	C
200RB 2T2	1/8	1/4 ODF	2.42	4.62	0.25
200RB 2T3		3/8 ODF			0.31
200RB 3T2	3/16	1/4 ODF	2.42	4.62	0.25
200RB 3T3		3/8 ODF			0.31
200RB 3T4		1/2 ODF	2.50	5.00	0.38
200RB 4T4	1/4	5/8 ODF	3.25	6.50	0.50
200RB 4T5		5/8 ODF	3.25	6.50	0.50
200RB 5T3	5/16	3/8 ODF	2.31	4.62	0.31
200RB 5T4		1/2 ODF	2.50	5.00	0.38
200RB 5T5		5/8 ODF	3.25	6.50	0.50
200RB 6T3	3/8	3/8 ODF	2.31	4.62	0.31
200RB 6T4		1/2 ODF	2.50	5.00	0.38
200RB 6T5		5/8 ODF	3.25	6.50	0.50

Model	Port size	Conn. size & style	A	B	C
200RB 7S5	7/16	5/8 ODF x 7/8 ODM	2.98	3.69	0.53
200RB 7T5		5/8 ODF x 5/8 ODF	6.88		
200RB 7T7		7/8 ODF x 7/8 ODF	7.13		
200RB 9T5	9/16	5/8 ODF x 5/8 ODF	6.88	4.05	0.68
200RB 9T6		3/4 ODF x 3/4 ODF	7.38		
200RB 9T7		7/8 ODF x 7/8 ODF	7.13		
200RB 9T9		1 1/8 ODF x 1 1/8 ODF	8.50		

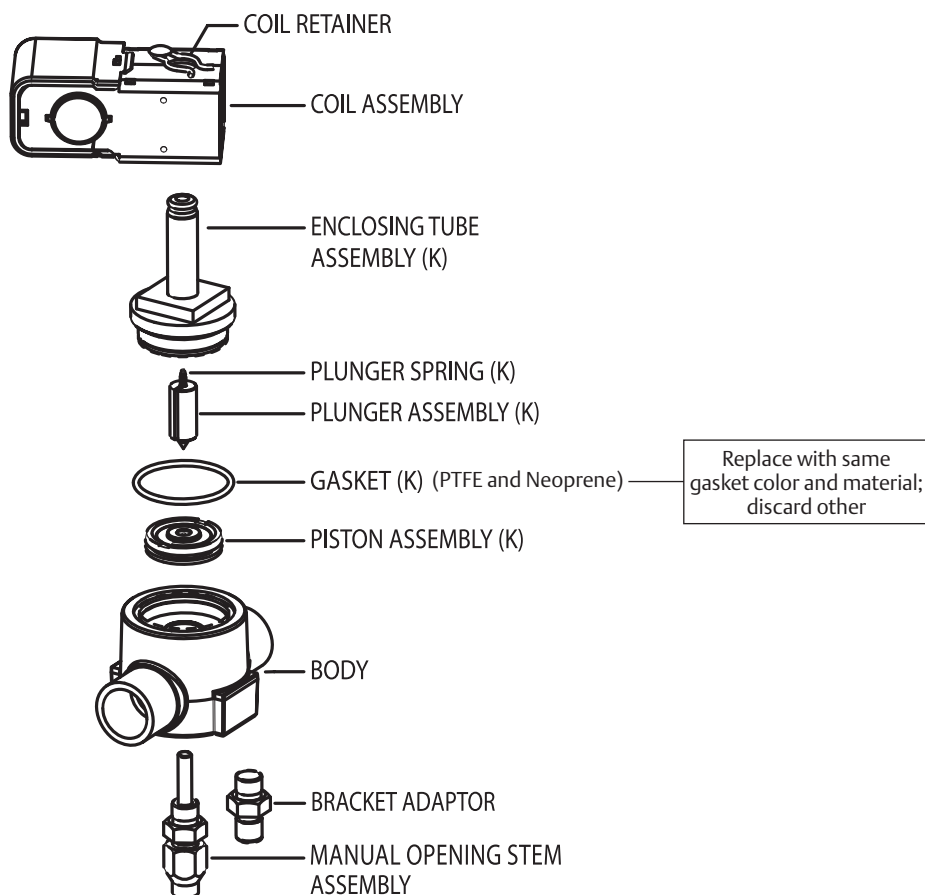
## 200RB valve kits

### Exploded view & parts kit data

Valve repair kit  
"K" indicates part is supplied in complete valve repair kit

Gasket kit  
Contains 12 pieces each of ptfе  
And neoprene o-rings

Coil assembly  
See coil assemblies for availability.



Valve	Complete kit	PCN	Manual opening stem kit	PCN	Bi-flow kit*	PCN	Gasket kit	PCN
200RB2	KS-30115	049194	-	-	KS-30387	066224	KG-10025	049190
200RB3	KS-30115	049194	KS-30377	065695	KS-30387	066224	KG-10025	049190
200RB4	KS-30115	049194	KS-30117	053959	KS-30387	066224	KG-10025	049190
200RB5	KS-30115	049194	KS-30117	053959	KS-30387	066224	KG-10025	049190
200RB6	KS-30115	049194	KS-30117	053959	KS-30387	066224	KG-10025	049190
200RB7	KS-30354	064263	KS-30361	064831	-	-	KG-00002	064262
200RB9	KS-30362	064825	KS-30364	064832	-	-	KG-00003	064830

\*Standard 200RB unidirectional valves can be converted to Bi-Flow operation by replacing the internal parts with the components in kit KS-30387 (PCN 066224). Unlike the standard valve which permits flow in one direction only when energized, Bi-Flow operation allows the valve to flow in either direction, depending on the differential pressures when energized. If the valve is de-energized a higher down stream pressure can cause the valve to lift or flutter. 200RB7 and 200RB9 cannot be converted to a Bi-Flow valve.

## 240RA solenoid valves & coils

The 240RA is a 2-way, normally closed diaphragm valve. 240RA valves are used for liquid, suction, and hot gas service.

### Features

- One coil fits all valve sizes
- Extended ends for easy installation (standard)
- Long-life molded coils
- PTFE O-ring for superior external sealing



### Options

- Available in 7 orifice sizes
- Manual stem or mounting stud
- Bi-Flow operation-conversion either factory assembled or with kit except 200RD7 and 200RD9

### Specifications

- Maximum fluid temperature: 250°F
- Maximum working pressure: 500 psig
- MOPD: 300 psig
- UL/CUL file number: MP604

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

### 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 T = Mounting stud (Optional)	Coil*

\* NOTE: Valves are shipped without the solenoid coils (VLC = Valve Less Coil). See coil assemblies for availability.

\*\*NOTE: Letter "H" is no longer used since all 240RA valves now contain the high temperature diaphragm for hot gas.

### Ordering information and nominal liquid capacity - Tons (kW)

PCN			Description	Connection size	R-22	R-134A	R-407C	R-404A/ R-507	R-448A/ R-449A	R-450A/ R-513A
Standard valve	Mounting stud <sup>1</sup>	Manual stem <sup>2</sup>								
060374	040846	040845	240RA 8 T 5	5/8 ODF	15.6 (54.9)	12.1 (42.6)	14.8 (52.1)	10.3 (36.2)	15.7 (55.1)	10.8 (37.8)
060375	044860	045753	240RA 8 T 7	7/8 ODF						
060376	040848	040847	240RA 9 T 5	5/8 ODF	23.3 (81.9)	18.0 (63.3)	22.1 (77.2)	15.3 (53.8)	23.4 (82.3)	16.1 (56.5)
060377	043205	043204	240RA 9 T 7	7/8 ODF						
060378	044861	045752	240RA 9 T 9	1 1/8 ODF	30.5 (107.27)	23.6 (83.0)	29.0 (102.0)	20.1 (70.7)	30.6 (107.7)	21.0 (74.0)
060379	040850	040849	240RA 12 T 7	7/8 ODF						
060380	043959	045549	240RA 12 T 9	1 1/8 ODF	34.9 (122.7)	27.1 (95.3)	33.2 (116.8)	23.0 (80.9)	35.0 (123.2)	24.1 (84.6)
060381	042549	042548	240RA 16 T 9	1 1/8 ODF						
060382	044428	044788	240RA 16 T 11	1 3/8 ODF	58.0 (203.9)	45.0 (158.3)	55.2 (194.1)	38.3 (134.7)	58.2 (204.8)	40.0 (140.6)
060383	047761	046636	240RA 20 T 11	1 3/8 ODF						
060384	047747	046637	240RA 20 T 13	1 5/8 ODF	95.4 (335.5)	70.9 (249.4)	90.8 (319.3)	65.7 (231.1)	95.8 (336.8)	65.8 (231.3)
060385	054297	046638	240RA 20 T 17	2 1/8 ODF						

<sup>1</sup> Add "T" to the end of description for Mounting Stud

<sup>2</sup> Add "M" to the end of the description for Manual Stem

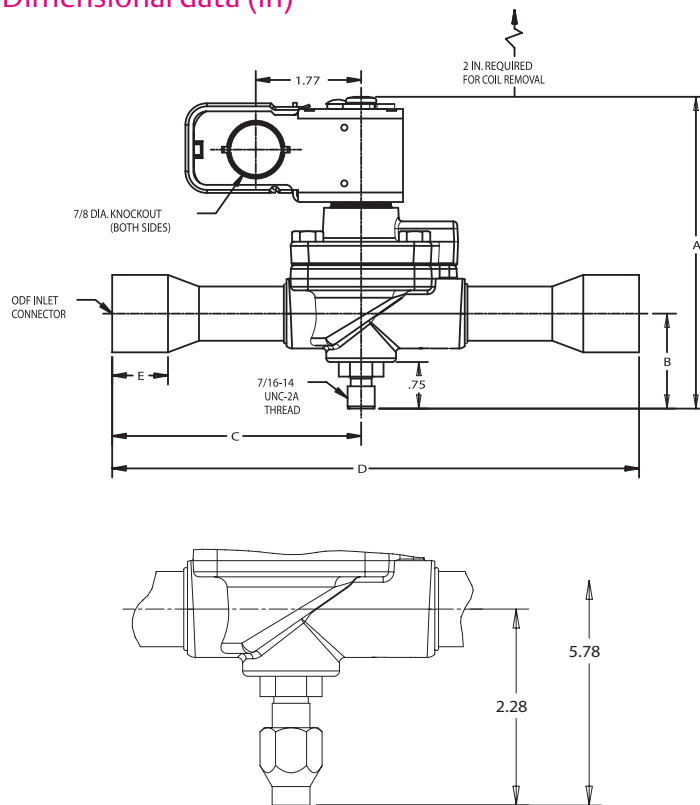
Capacities based on 100°F liquid and 40°F saturated evaporator per ARI standard 760-87.

All ratings are based on largest connection size.

\*See Extended Capacity Tables for ratings at a wide range of conditions.

# 240RA

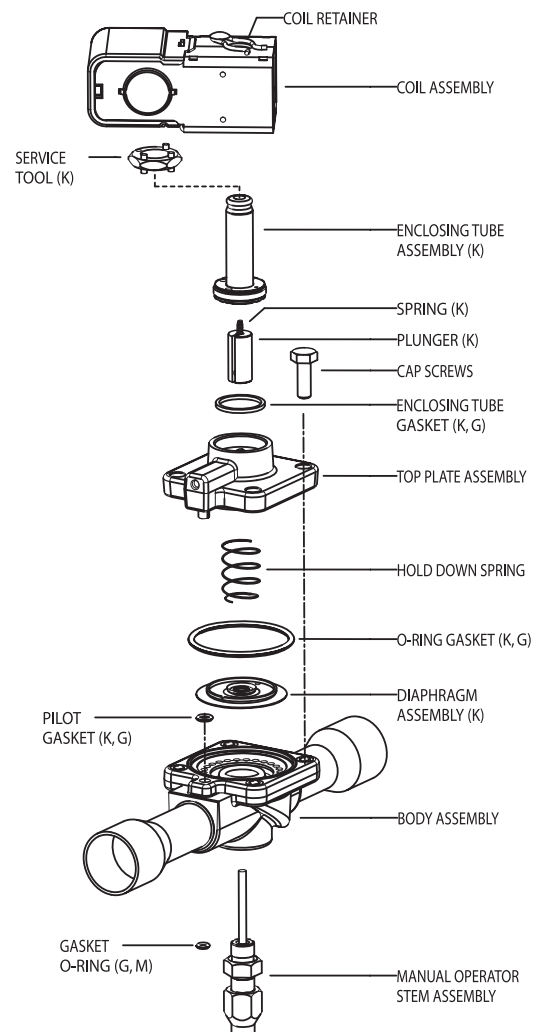
## Dimensional data (in)



WITH MANUAL STEM - "M" VERSION

Valve	Port size	Conn. size	A	B	C	D	E
240RA8T5T	1/2	5/8 ODF	4.80	1.34	3.28	6.88	0.50
240RA8T5M			5.28	1.83			
240RA8T7T		7/8 ODF	4.80	1.34	3.41	7.13	0.75
240RA8T7M			5.28	1.83			
240RA9T5T	9/16	5/8 ODF	5.08	1.50	3.20	6.88	0.50
240RA9T5M			5.56	2.08			
240RA9T7T		7/8 ODF	5.08	1.50	3.33	7.13	0.75
240RA9T7M			5.56	2.08			
240RA9T9T		1-1/8 ODF	5.08	1.50	4.02	8.50	0.91
240RA9T9M			5.56	2.08			
240RA12T7T	3/4	7/8 ODF	5.08	1.50	3.52	7.50	0.75
240RA12T7M			5.56	2.08			
240RA12T9T		1-1/8 ODF	5.08	1.50	4.02	8.50	0.91
240RA12T9M			5.56	2.08			
240RA16T9T	1	1-1/8 ODF	5.34	1.66	4.13	9.06	0.97
240RA16T9M			5.80	2.23			
240RA16T11T		1-3/8 ODF	5.34	1.66	5.13	11.06	
240RA16T11M			5.80	2.23			
240RA20T11T	1-1/4	1-3/8 ODF	5.45	1.31	5.11	10.81	1.09
240RA20T11M			6.47	2.33			
240RA20T13T		1-5/8 ODF	5.45	1.31	5.89	12.38	
240RA20T13M			6.47	2.33			
240RA20T17T		2-1/8 ODF	5.45	1.31	6.58	13.75	
240RA20T17M			6.47	2.33			

## Exploded view & parts kit data



## 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 for all 240RA valves is KG10028 (PCN 054356)

### Valve repair kit

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

### Manual stem kit

"M" indicates part is supplied in manual stem kit.

### Gasket kit

"G" indicates gasket is supplied in gasket kit.  
Note: spanner wrench (x11981-1 service tool)  
Included in complete valve kit.

### Coil assembly

See coil assemblies for availability.

# 500RB solenoid valves & coils

The 500RB is a pilot-operated, 2-way, normally open valve. 500RB valves are used for liquid, suction or discharge gas refrigerant service.

## Features

- One coil fits all valve sizes
- Extended ends for easy installation
- Can be positioned in remote locations
- Long-life molded coils
- Low pressure differential required for full opening
- PTFE O-ring for superior external sealing

## Options

- Available in 7 orifice sizes
- Manual stem or mounting stud
- Bi-Flow operation-conversion either factory assembled or with kit except 200RD7 and 200RD9



## Specifications

- Maximum fluid temperature: 250°F
- Maximum working pressure: 500 psig
- MOPD: 275 psig
- UL/CUL file number: MP604

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

NOTE: This valve requires a DM, MM or ASC2-Type coil assembly. ASC2-Type Coil requires cable assembly (PCN:059261).

## Nomenclature 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 (copper extended fittings) P = NPTF S = ODF inlet/ODM outlet	Connection size (in 1/8")	Coil*

\* NOTE: Valves are shipped without the solenoid coils (VLC = Valve Less Coil). See coil assemblies for availability.

## Ordering information and nominal liquid capacity - Tons (kW)

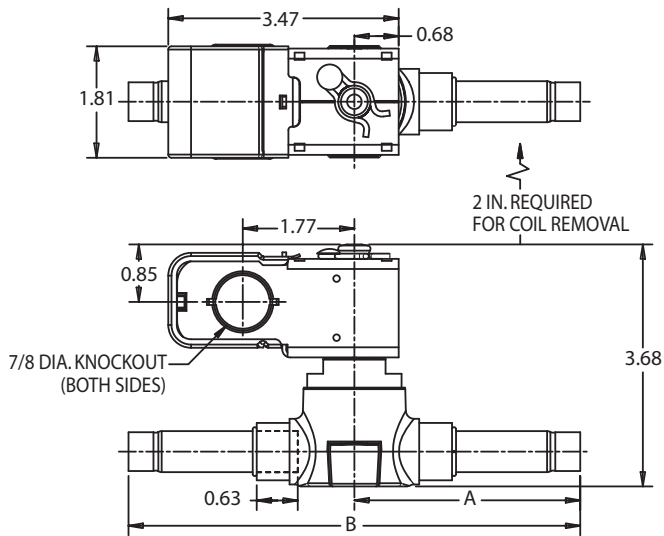
PCN	Description	Connection size	R-22	R-134a	R-407C	R-404A/R-507	R-448A/R-449A	R-450A/R-513A
063274	500RB 2 F 2	1/4 SAE	3.6 (12.7)	2.7 (9.6)	3.4 (11.9)	2.3 (8.2)	3.6 (12.7)	2.5 (8.7)
063278	500RB 2 T 2	1/4 ODF						
063280	500RB 2 T 3	3/8 ODF						
063286	500RB 3 F 4	1/2 SAE	4.8 (16.9)	3.6 (12.7)	4.5 (15.9)	3.1 (10.9)	4.8 (17.0)	3.3 (11.6)
063288	500RB 3 T 2	1/4 ODF						
063290	500RB 3 T 3	3/8 ODF						
063292	500RB 3 T 4	1/2 ODF						
063294	500RB 4 F 3	3/8 SAE						
063298	500RB 4 P 3	3/8 NPTF	8.0 (28.0)	6.0 (21.1)	7.5 (26.3)	5.1 (18.0)	8.0 (28.1)	5.5 (19.3)
063302	500RB 4 S 4	1/2 ODF x 5/8 ODM						
063304	500RB 4 T 2	1/4 ODF						
063306	500RB 4 T 3	3/8 ODF						
063308	500RB 4 T 4	1/2 ODF						
063310	500RB 4 T 5	5/8 ODF						
063312	500RB 5 F 4	1/2 SAE						
063314	500RB 5 F 5	5/8 SAE						
063316	500RB 5 P 3	3/8 NPTF						
063318	500RB 5 S 4	1/2 ODF x 5/8 ODM						
063320	500RB 5 S 5	5/8 ODF	8.2 (21.8)	6.2 (21.8)	7.7 (27.2)	5.3 (18.6)	8.3 (29.0)	5.7 (19.9)
063322	500RB 5 T 3	3/8 ODF						
063323	500RB 5 T 4	1/2 ODF						
063325	500RB 5 T 5	5/8 ODF						
063329	500RB 6 F 5	5/8 SAE						
063331	500RB 6 P 3	3/8 NPTF						
063333	500RB 6 S 4	1/2 ODF x 5/8 ODM						
063335	500RB 6 S 5	5/8 ODF						
063337	500RB 6 T 3	3/8 ODF						
063339	500RB 6 T 4	1/2 ODF						
064038	500RB 7 S 5	5/8 ODF x 7/8 ODM	17.0 (59.8)	12.7 (44.6)	16.2 (57.0)	11.1 (39.0)	17.1 (60.0)	11.7 (41.2)
064064	500RB 7 T 4	1/2 ODF						

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

\*See Extended Capacity Tables for ratings at a wide range of conditions.

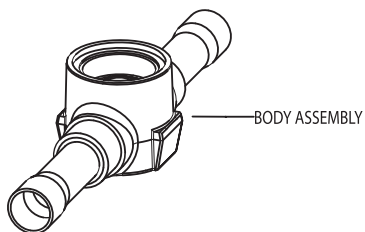
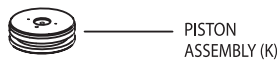
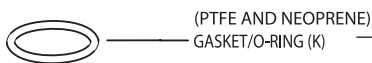
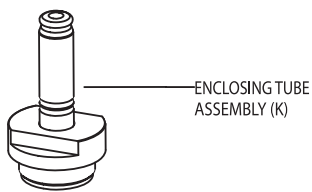
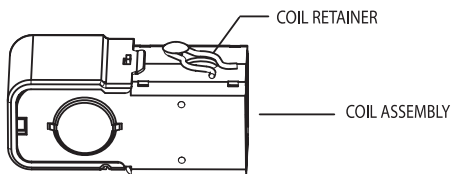
# 500RB

## Dimensional data (in)



\*NOTE: Drawing indicates extended copper tube version.

## Exploded view & parts kit data



Replace with same gasket color and material; discard other

## Without extended ends

Valve	Port size	Conn. size & style	A	B
500RB 4P3	1/4	3/8 NPTF	-	2.37
500RB 4S4		1/2 ODF X 5/8 ODM	0.56	2.37
500RB 4F3		3/8 SAE (male flare)	-	3.12
500RB 5P3	5/16	3/8 NPTF	-	2.37
500RB 5S4		1/2 ODF X 5/8 ODM	0.56	2.37
500RB 5S5		5/8 ODF	-	2.37
500RB 5F4		1/2 SAE (male flare)	-	3.50
500RB 5F5		5/8 SAE (male flare)	-	3.75
500RB 6P3	3/8	3/8 NPTF	-	2.37
500RB 6S4		1/2 ODF X 5/8 ODM	0.56	2.37
500RB 6S5		5/8 ODF	-	2.37
500RB 6F5		5/8 SAE (male flare)	-	3.75
500RB 7S5	7/16	5/8 ODF X 7/8 ODM	0.63	2.98

## With extended ends

Valve	Port size	Conn. size & style	A	B
500RB 2T2	1/8	1/4 ODF	2.42	4.67
500RB 2T3		3/8 ODF		
500RB 3T2	3/16	1/4 ODF	2.50	5.00
500RB 3T3		3/8 ODF		
500RB 3T4		1/2 ODF		
500RB 4T4	1/4	1/2 ODF	3.25	6.50
500RB 4T5		5/8 ODF		
500RB 5T3	5/16	3/8 ODF	2.31	4.63
500RB 5T4		1/2 ODF		
500RB 5T5		5/8 ODF		
500RB 6T3	3/8	3/8 ODF	2.31	4.63
500RB 6T4		1/2 ODF		

## Valve kits

Valve	Complete kit	PCN
500RB 2-6	KS-30353	064268
500RB 7	KS-30355	064264

Gasket kit  
Gasket kit KG10025 - PCN 049190  
(contains 12 pieces - each of PTFE and neoprene O-rings).

Coil assembly  
DM, MM or ASC-Type style only

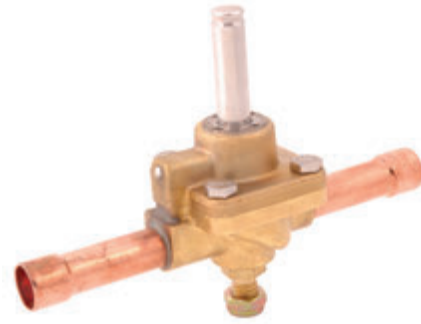
Use MagMax style coil for operation on DC voltage.  
No other DC coil may be used.

## 540RA solenoid valves & coils

The 540RA is a 2-way, normally open diaphragm valve. 540RA valves are used for liquid, suction and hot gas service.

### Features

- One coil fits all sizes
- Can be brazed into the line without disassembly
- PTFE diaphragm
- Extended ends for easy installation (standard)
- Long-life molded coils
- Low pressure differential required for full opening



### Options

- Maximum fluid temperature: 250°F
- Maximum working pressure: 500 psig
- MOPD: 250 psig
- UL/CUL file number: MP604

### Specifications

- Maximum fluid temperature: 250°F
- Maximum working pressure: 500 psig
- MOPD: 250 psig
- UL/CUL file number: MP604

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

### Nomenclature 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*

\* NOTE: Valves are shipped without the solenoid coils (VLC = Valve Less Coil). See coil assemblies for availability.

### Ordering information and nominal liquid capacity - Tons (kW)

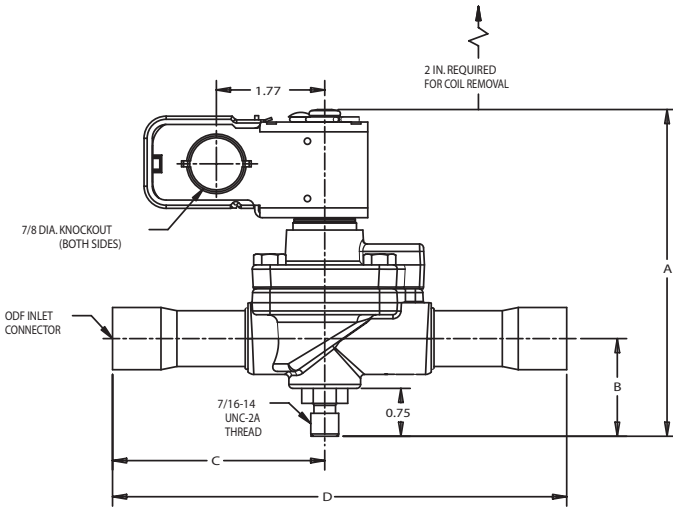
PCN		Description	Connection size	R-22	R-134a	R-407C	R-404A/R-507	R-448A/R-449A	R-450A/R-513A
Standard valve	Mounting stud <sup>1</sup>								
	058573	540RA 8 T 4	1/2 ODF	15.6 (54.9)	12.1 (42.6)	14.8 (52.1)	10.3 (36.2)	15.7 (55.1)	10.8 (37.8)
060392	046265	540RA 8 T 5	5/8 ODF						
	046266	540RA 9 T 5	5/8 ODF	23.3 (81.9)	18.0 (63.3)	22.1 (77.2)	15.3 (53.8)	23.4 (82.3)	16.1 (56.5)
060395	046268	540RA 9 T 7	7/8 ODF	30.5 (107.27)	23.6 (83.0)	29.0 (102.0)	20.1 (70.7)	30.6 (107.7)	21.0 (74.0)
060396	047497	540RA 9 T 9	1 1/8 ODF						
060397	046269	540RA 12 T 7	7/8 ODF	34.9 (122.7)	27.1 (95.3)	33.2 (116.8)	23.0 (80.9)	35.0 (123.2)	24.1 (84.6)
060398	047498	540RA 12 T 9	1 1/8 ODF						
060399	046270	540RA 16 T 9	1 1/8 ODF	58.0 (203.9)	45.0 (158.3)	55.2 (194.1)	38.3 (134.7)	58.2 (204.8)	40.0 (140.6)
	047953	540RA 16 T 11	1 3/8 ODF						
060402	047954	540RA 20 T 13	1 5/8 ODF	95.4 (335.5)	70.9 (249.4)	90.8 (319.3)	65.7 (231.1)	95.8 (336.8)	65.8 (231.3)

<sup>1</sup> Add "T" to the end of description for mounting stud

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

\*See Extended Capacity Tables for ratings at a wide range of conditions.

# 540RA



Valve	Port size	Conn. size	A	B	C	D
540RA8T5-T	1/2	5/8 ODF	4.80	1.34	3.28	6.88
540RA9T5-T	9/16	5/8 ODF	5.08	1.50	3.20	6.88
540RA9T7-T		7/8 ODF			3.33	7.13
540RA9T9-T		1 1/8 ODF			4.02	8.50
540RA12T7-T	3/4	7/8 ODF	5.08	1.50	3.52	7.50
540RA12T9-T		1 1/8 ODF			4.02	8.50
540RA16T9-T	1	1 1/8 ODF	5.34	1.66	4.25	9.06
540RA20T11-T	1-1/4	1 3/8 ODF	5.45	1.31	5.11	10.81
540RA20T13-T		1 5/8 ODF			5.89	12.38

## Exploded view & parts kit data

### Valve kits

Valve	Kit #	PCN
540RA8	KS30328	060633
540RA9	KS30329	060634
540RA12	KS30330	060635
540RA16	KS30331	060636
540RA20	KS30332	060637

Gasket Kit for all 540RA valves is KG10028 (PCN 054356)

### Valve repair kit

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

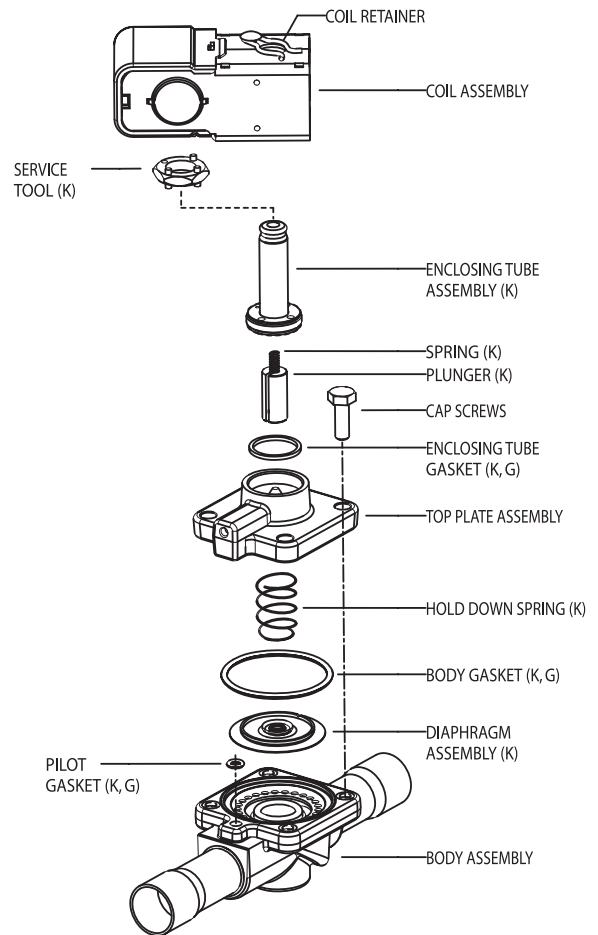
### Gasket kit

"C" indicates gasket is supplied in gasket kit.

Note: spanner wrench x11981-1 (pcn 027451) is included in complete valve kit. (Service tool used to remove and replace enclosing tube collar)

### Coil assembly

See coil assemblies for availability.





# Coils for Solenoid Valves

## Features

- Compact designs
- Coil windings are insulated to provide shock and vibration protection
- ASC2, ASC4 and ESC are designed to provide weather protection
- Interchangeable housings

## Options

- 24V 50/60 Hz
- 120V 50/60 Hz (standard)
- 208-220/208-240V 50/60 Hz
- 220-230V 50/60 Hz
- 480V 50/60 Hz
- 120-240V 50/60 Hz
- 12V D.C. (MM Series recommended)
- 24V D.C. (MM Series recommended)
- ESC coil standard frequency is 50 Hz, but can be used at 60 Hz also, keeping in mind that the MOPD will decrease.

ASC4 – DIN



ASC2 – DIN



MMG – Special DC



Requires ASC2 female connector (PCN 059261).

AMC - 1/2" Conduit



AMG - Junction box



AMS - Open frame



ESC



ASC-N15



D2-N15



## Nomenclature

Coil code		
A	M	G
Series	Insulation	Enclosure
A = 12 Watt B = 15 Watt C = 18 Watt D = 7 Watt M = 4 Watt	B or G = Class B M = Class F H = Class H	C = Conduit connection F = Open frame leads G = Junction box L = Grommet 18" leads S = Spade connection

MAGMAX Coil (Type MM): For use on dc applications only

Voltage	Amperes holding	Watts holding
12VDC	0.4	4
24VDC	0.4	4

## Solenoid coil prefix selection table 1) Select prefix 2) Select voltage 3) Select PCN

Valve type	J-box	Conduit	Leads	Spades	Molded-DIN with connector
EX2 / CX2 / OM3 / OM4 / OM5					ESC
OMB					ASC 2
50RB			SML		
100RB / 110RB / 200RB / 200RH / 240RA	AMG	AMC	AMF	AMS	ASC2 / ASC4 / ESC
222CB (Steam)	AHG	AHC			
500RB	OMG		OMF	OMS	
540RA				OMS	ASC2 / ESC
222CB (Water)	AMG	AMC	AMF	AMS	ASC2
Special DC application	MMG		MMF		

\* SML is OEM - RMF is Wholesale replacement  
Note - All coils NEMA1 except ASC2 NEMA2

AM/EM Coil:

- 204CD
- 214CB
- 211CA
- 222CB
- 210CA

Nominal voltage And frequency	Applied voltage And frequency	204CD		214C		211CA		222CB		210CA	
		Inrush	Holding	Inrush	Holding	Inrush	Holding	Inrush	Holding	Inrush	Holding
24/60	24/60	1.23	0.61	1.17	0.61	0.92	0.61	1.00	0.74	0.92	0.61
120/60	120/60	0.23	0.14	0.22	0.14	0.17	0.14	0.19	0.16	0.17	0.14
240/60	240/60	0.13	0.08	0.12	0.08	0.10	0.08	0.11	0.08	0.10	0.08
480/60	480/60	0.06	0.04	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04

See the MM (MAGMAX) Series coil for DC applications

## Coils for solenoid valves

### AM Coil: 702RA

Nominal voltage and frequency	Applied voltage and frequency	Amperes		VA	Watts max.	Coil insulation
		Inrush	Holding	Holding		
24-50/60	24/50	1.70	1.00	24	17/12	Class F Molded
24-50/60	24/60	1.41	0.64	15		
120-50/60	120/50	0.38	0.24	29		
120-50/60	120/60	0.32	0.16	19		
208-220/50 208-240/60	208/50	0.17	0.10	21		
208-220/50 208-240/60	208/60	0.15	0.06	13		
208-220/50 208-240/60	220/50	0.20	0.14	33		
208-220/50 208-240/60	240/60	0.22	0.09	22		
480-50/60	480/50	0.10	0.07	33		
480-50/60	480/60	0.09	0.04	22		

See the MM (MAGMAX) Series Coil for DC Applications

### AM Coil: 100RB 240RA 710/713RA

Nominal voltage and frequency	Applied voltage and frequency	Amperes		VA	Watts max.	Coil insulation
		Inrush	Holding	Holding		
24-50/60	24/50	1.20	.96	23	17/12	Class F Molded
24-50/60	24/60	1.0	.74	18		
120-50/60	120/50	.25	.21	25		
120-50/60	120/60	.19	.16	19		
208-220/50 208-240/60	208/50	.14	.08	17		
208-220/50 208-240/60	208/60	.12	.06	12		
208-220/50 208-240/60	220/50	.16	.10	24		
208-220/50 208-240/60	240/60	.13	.08	19		
480-50/60	480/50	.06	.05	24		
480-50/60	480/60	.05	.04	19		

See the MM (MAGMAX) Series Coil for DC Applications

### AM Coil: 200RB/200RD

Nominal voltage and frequency	Applied voltage and frequency	Amperes		VA	Watts max.	Coil insulation
		Inrush	Holding	Holding		
24-50/60	24/50	2.00	.96	23	17/12	Class F Molded
24-50/60	24/60	1.6	.74	18		
120-50/60	120/50	.45	.21	25		
120-50/60	120/60	.36	.16	19		
208-220/50 208-240/60	208/50	.19	.08	17		
208-220/50 208-240/60	208/60	.15	.06	12		
208-220/50 208-240/60	220/50	.24	.10	24		
208-220/50 208-240/60	240/60	.19	.08	19		
480-50/60	480/50	.11	.05	24		
480-50/60	480/60	.09	.04	19		

See the MM (MAGMAX) Series Coil for DC Applications

### ASC4 Coil: 200RB

Nominal voltage and frequency	Applied voltage and frequency	Amperes		VA	Watts max.	Coil insulation
		Inrush	Holding	Holding		
230-50/60	230/50				15/12	Class F Molded
230-50/60	230/60					

### ASC4 Coil: 100RB / 240RA

Nominal voltage and frequency	Applied voltage and frequency	Amperes		VA	Watts max.	Coil insulation
		Inrush	Holding	Holding		
230-50/60	230/50				15/12	Class F Molded
230-50/60	230/60					

## Coils for solenoid valves

ASC2 Coil:  
200RB / 200RD

Nominal voltage and frequency	Applied voltage and frequency	Amperes		VA	Watts max.	Coil insulation
		Inrush	Holding	Holding		
24-50/60	24/50	2.18	1.07	26	15/12	Class H Molded
24-50/60	24/60	1.90	0.81	19		
120-50/60	120/50	0.43	0.21	25		
120-50/60	120/60	0.38	0.16	19		
240-50/60	240/50	0.24	0.12	30		
240-50/60	240/60	0.21	0.09	22		

DM Coil:  
500RB

Nominal voltage and frequency	Applied voltage and frequency	Amperes		VA	Watts max.	Coil insulation
		Inrush	Holding	Holding		
24-50/60	24/50	1.80	.71	17	17/12	Class F Molded
24-50/60	24/60	1.56	.52	12		
120-50/60	120/50	.36	.14	17		
120-50/60	120/60	.31	.10	12		
240-50/60	240/50	.19	.08	19		
240-50/60	240/60	.17	.06	14		

ASC2 Coil:  
100RB  
240RA  
710/713RA

Nominal voltage and frequency	Applied voltage and frequency	Amperes		VA	Watts max.	Coil insulation
		Inrush	Holding	Holding		
24-50/60	24/50	1.67	1.10	26	15/12	Class H Molded
24-50/60	24/60	1.41	.83	20		
120-50/60	120/50	.31	.22	26		
120-50/60	120/60	.26	.16	20		
240-50/60	240/50	.17	.13	31		
240-50/60	240/60	.15	.10	23		

DM Coil:  
100RB  
240RA  
710/713RA

Nominal voltage and frequency	Applied voltage and frequency	Amperes		VA	Watts max.	Coil insulation
		Inrush	Holding	Holding		
24-50/60	24/50	1.21	.72	17	17/12	Class F Molded
24-50/60	24/60	1.02	.52	13		
120-50/60	120/50	.24	.14	17		
120-50/60	120/60	.20	.10	12		
240-50/60	240/50	.13	.08	20		
240-50/60	240/60	.11	.06	14		

RMS/RMF Coil:  
50RB

Nominal voltage and frequency	Applied voltage and frequency	Amperes		VA	Watts max.	Coil insulation
		Inrush	Holding	Holding		
24-50/60	24/50	.87	.50	12	RMF/7 RMS/10	Class F Molded
24-50/60	24/60	.90	.40	10		
120-50/60	120/50	.19	.19	22		
120-50/60	120/60	.17	.09	10		
208-50/60	208/60	.08	.03	7		
220-50/60	220/50	.10	.05	11		
240-50/60	240/50	.11	.06	14		
240-50/60	240/60	.10	.04	11		

# Coils for Solenoid Valves

## Ordering information

AMG - Junction box  
6" Leads



AMC - 1/2" Conduit  
18" Leads



AMS - Open frame  
18" Leads or 1.4" Spades



MMG



RMF



Voltage / Frequency	Description	PCN	Description	PCN	Description	PCN
24V 50/60 Hz	AHG 24V 50/60 Hz	057669	AMC 24V 50/60 Hz	057631	AMF 24V 50/60 Hz	057539
	AMG 24V 50/60 Hz	057341	AHC 24V 50/60 Hz	057736	AMF 24V 50/60 Hz	057538
	--	--	--	--	DMS 24V 50/60 Hz	062013
	DMG 24V 50/60 Hz	055129	--	--	RMF 24V 50/60 Hz	065677
	--	--	--	--	AMS 24V 50/60 Hz	057603
120V 50/60 Hz	--	--	--	--	RMS 24V 50/60 Hz	065680
	AHG 120V 50/60 Hz	057673	AMC 120V 50/60 Hz	057598	RMF 120V 50/60 Hz	065678
	AMG 120V 50/60 Hz	057331	AHC 120V 50/60 Hz	057743	AMS 120V 50/60 Hz	057349
208-220/208-240 50/60 Hz	DMG 120V 50-60 Hz	054762	--	--	RMS 120V 50/60 Hz	065204
	AHG 208-220/208-240 50/60 Hz	057671	--	--	AMF 208-220/208-240 50/60 Hz	057540
	AMG 208-220/208-240 50/60 Hz	057342	AMC 208-220/208-240 50/60 Hz	057594	RMF 208-220/208-240 50/60 Hz	065679
	DMG 208-220/208-240 50/60 Hz	054764	--	--	AMS 208-220/208-240 50/60 Hz	-57531
	--	--	--	--	RMS 208-220/208-240 50/60 Hz	-65681
480V 50/60 Hz	--	--	--	--	DMS 208-220/208-240 50/60 Hz	063399
480V 50/60 Hz	AMG 480V 50/60 Hz	057527	--	--	AMF 480V 50/60 Hz	057534
120-240V 50/60 Hz	AMG 120-240V 50/60 Hz	057343	AMC 120-240V 50/60 Hz	057730	AMF 120-240V 50/60 Hz	062410
277V 60 Hz	AMG 277V 60 Hz	057528	--	--	AMF 277V 50/60 Hz	057533
	--	--	--	--	AMS 277V 50/60 Hz	057714
12V DC	AMG 12V DC	057521	AMC 12V DC	057596	--	--
24V DC	AMG 24V DC	057523	AMC 24V DC	057633	--	--

ESC



ASC4 – DIN



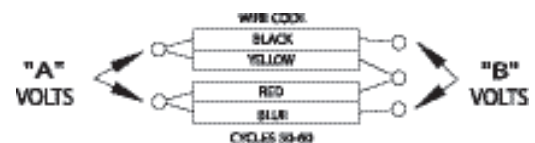
ASC2 – DIN



Voltage/Frequency	Description	PCN	Description	PCN
24V 50/60 Hz	ASC2 24/50-60	062792	--	--
24V 50/60 Hz	ASC2L 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 50/60 Hz	ASC2 208-240/50-60	062463	--	--
208-220/208-240 50/60 Hz	ASC2 GS-2562-2	015383	--	--
220-230 50/60 Hz	ASC4 220-230/50-60 GS-2723-1	017253	--	--
24V 50 Hz	ESC 24/50	801033	--	--
120V 50 Hz	ESC 120/50	801032	--	--
230V 50 Hz	ESC 230/ 50	801031	--	--
12V DC	--	--	MMG 12V DC	063524
12V DC	--	-	MMF 12V DC	062972
24V DC	ASC2 24V DC	064375	MMG 24V DC	063526
24V DC	ESC 24V DC	801030	--	--

Type	PCN	Temperature range	Cable length	Wire diameter	Connector type
ASC-N15	804570	-50...+80°C for stationary use only	1.5m	3x0.75mm²	Loose wires
ASC-N30	804571		3.0m		
ASC-N60	804572		6.0m		
ASC2 female connector	059261		18"		
Cable assembly for 24V DC Chopper plug					
D2-N15	804620	-10...+80 °C for stationary use	1.5m	Chopper plug (Low power assumption, 3W only, not released for mobile applications)	

## Dual voltage wiring diagram



A	B
120	240
240	480

AM and ASC 2 style DC coils should not be used for direct replacements on OEM equipment. The use of this coil on new applications may result in the valve not opening. New applications should use the MM coil because of the significant increase in opening power of the MM Coil over the standard AM and ASC 2 style DC coil.

Coil enclosure options	
Options	Code
Junction box	G
Conduit - 18" leads	C
Open frame - 18" leads	F
Open frame - spades	S

## Solenoid capacity tables suction gas capacities

Tons					
Suction gas capacities @ 2 psi pressure drop					
Valve series	Evaporator temperature - F				
	40	20	0	-20	-40
	R-12				
200RB/500RB/200RD 2	0.32	0.30	0.23	0.17	0.10
200RB/500RB/200RD 3	0.44	0.41	0.31	0.23	0.14
200RB/500RB/200RD 4	0.81	0.77	0.59	0.44	0.26
200RB/500RB/200RD 5	0.97	0.93	0.71	0.53	0.32
200RB/500RB/200RD 6	1.05	0.99	0.76	0.56	0.34
200RB/500RB/200RD 7	1.90	1.70	1.30	1.00	0.60
200RB/RD 9	2.05	2.45	1.90	1.40	0.85
240/540RA8	1.00	0.80	0.60	0.50	0.40
240/540RA9T5	1.30	1.10	0.90	0.70	0.50
240/540RA9	1.60	1.30	1.00	0.80	0.60
240/540RA12	2.00	1.60	1.20	1.00	0.70
240/540RA16	3.90	3.20	2.50	1.90	1.50
240/540RA20	5.50	4.50	3.50	2.70	2.10
	R-22/R407C				
200RB/500RB/200RD 2	0.34	0.28	0.22	0.18	0.13
200RB/500RB/200RD 3	0.47	0.38	0.31	0.24	0.18
200RB/500RB/200RD 4	0.89	0.73	0.58	0.46	0.34
200RB/500RB/200RD 5	1.08	0.88	0.71	0.55	0.39
200RB/500RB/200RD 6	1.14	0.93	0.75	0.59	0.43
200RB/500RB/200RD 7	1.90	1.00	1.30	1.00	0.76
200RB/RD 9	2.85	2.35	1.91	1.50	1.15
240/540RA8	1.50	1.20	1.00	0.80	0.60
240/540RA9T5	2.00	1.60	1.30	1.00	0.80
240/540RA9	2.40	2.00	1.60	1.20	1.00
240/540RA12	2.90	2.40	1.90	1.50	1.20
240/540RA16	5.80	4.70	3.80	3.00	2.30
240/540RA20	8.20	6.70	5.40	4.20	3.30
	R-502				
200RB/500RB/200RD 2	0.28	0.22	0.17	0.13	0.10
200RB/500RB/200RD 3	0.38	0.30	0.24	0.19	0.13
200RB/500RB/200RD 4	0.71	0.57	0.45	0.35	0.26
200RB/500RB/200RD 5	0.86	0.69	0.55	0.42	0.30
200RB/500RB/200RD 6	0.92	0.74	0.58	0.45	0.33
200RB/500RB/200RD 7	1.60	1.30	1.00	0.80	0.60
200RB/RD 9	2.34	1.80	1.50	1.15	0.87
240/540RA8	1.20	1.00	0.80	0.60	0.40
240/540RA9T5	1.60	1.30	1.00	0.80	0.60
240/540RA9	1.90	1.50	1.20	0.90	0.07
240/540RA12	2.30	1.90	14.50	1.10	0.80
240/540RA16	4.60	3.70	2.90	2.30	1.70
240/540RA20	6.50	5.20	4.10	3.20	2.40

kW					
Suction gas capacities @ 14.0 Kpa pressure drop					
Valve series	Evaporator temperature - C				
	4	-7	-18	-29	-40
	R-12				
200RB/500RB/200RD 2	1.13	1.06	0.81	0.60	0.35
200RB/500RB/200RD 3	1.55	1.44	1.09	0.81	0.49
200RB/500RB/200RD 4	2.85	2.71	2.07	1.55	0.91
200RB/500RB/200RD 5	3.41	3.27	2.50	1.86	1.13
200RB/500RB/200RD 6	3.69	3.48	2.67	1.97	1.20
200RB/500RB/200RD 7	6.80	6.00	4.60	3.50	2.10
200RB/RD 9	7.21	8.62	6.68	4.92	2.99
240/540RA8	3.52	2.81	2.11	1.76	1.41
240/540RA9T5	4.57	3.87	3.17	2.46	1.76
240/540RA9	5.63	4.57	3.52	2.81	2.11
240/540RA12	7.03	5.63	4.22	3.52	2.46
240/540RA16	13.72	11.25	8.79	6.68	5.28
240/540RA20	19.34	15.83	12.31	9.50	7.39
	R-22/R407C				
200RB/500RB/200RD 2	1.20	0.98	0.77	0.63	0.46
200RB/500RB/200RD 3	1.65	1.34	1.09	0.84	0.63
200RB/500RB/200RD 4	3.13	2.57	2.04	1.62	1.20
200RB/500RB/200RD 5	3.80	3.09	2.50	1.93	1.37
200RB/500RB/200RD 6	4.01	3.27	2.64	2.07	1.51
200RB/500RB/200RD 7	6.80	5.60	4.60	3.50	2.70
200RB/RD 9	10.02	8.26	6.72	5.28	4.04
240/540RA8	5.28	4.22	3.52	2.81	2.11
240/540RA9T5	7.03	5.63	4.57	3.52	2.81
240/540RA9	8.44	7.03	5.63	4.22	3.52
240/540RA12	10.20	8.44	6.68	5.28	4.22
240/540RA16	20.40	16.53	13.36	10.55	8.09
240/540RA20	28.84	23.56	18.99	14.77	11.61
	R-502				
200RB/500RB/200RD 2	0.98	0.77	0.60	0.46	0.35
200RB/500RB/200RD 3	1.34	1.06	0.84	0.67	0.46
200RB/500RB/200RD 4	2.50	2.00	1.58	1.23	0.91
200RB/500RB/200RD 5	3.02	2.43	1.93	1.48	1.06
200RB/500RB/200RD 6	3.24	2.60	2.04	1.58	1.16
200RB/500RB/200RD 7	5.60	4.60	3.50	2.80	2.10
200RB/RD 9	8.23	6.33	5.28	4.04	3.06
240/540RA8	4.22	3.52	2.81	2.11	1.41
240/540RA9T5	5.63	4.57	3.52	2.81	2.11
240/540RA9	6.68	5.28	4.22	3.17	0.25
240/540RA12	8.09	6.68	51.00	3.87	2.81
240/540RA16	16.18	13.01	10.20	8.09	5.98
240/540RA20	22.86	18.29	14.42	11.25	8.44

NOTE: Capacity is based on largest connection size.

## Suction gas capacities

Tons					
Suction gas capacities @ 2 psi pressure drop					
Valve series	Evaporator temperature - F				
	40	20	0	-20	-40
	R-134a				
200RB/500RB/200RD 2	0.26	0.21	0.16	0.11	0.08
200RB/500RB/200RD 3	0.36	0.29	0.21	0.15	0.10
200RB/500RB/200RD 4	0.69	0.54	0.42	0.28	0.16
200RB/500RB/200RD 5	0.83	0.65	0.47	0.34	0.23
200RB/500RB/200RD 6	0.88	0.69	0.52	0.37	0.26
200RB/500RB/200RD 7	1.50	1.20	0.90	0.70	0.50
200RB/RD 9	2.20	1.70	1.35	0.95	0.65
240/540RA8	0.80	0.60	0.50	0.40	0.30
240/540RA9T5	1.40	1.10	0.80	0.60	0.40
240/540RA9	1.70	1.40	1.10	0.80	0.50
240/540RA12	1.90	1.50	1.20	0.90	0.60
240/540RA16	3.20	2.50	1.90	1.40	1.00
240/540RA20	4.40	3.50	2.70	2.00	1.60
	R-450A/R-513A				
200RB/500RB/200RD 2	0.24	0.19	0.15	0.11	0.08
200RB/500RB/200RD 3	0.33	0.27	0.20	0.15	0.11
200RB/500RB/200RD 4	0.62	0.50	0.39	0.29	0.21
200RB/500RB/200RD 5	0.76	0.61	0.47	0.35	0.26
200RB/500RB/200RD 6	0.80	0.64	0.50	0.37	0.27
200RB/500RB/200RD 7	1.33	1.07	0.83	0.62	0.45
200RB/200RD 9	1.99	1.61	1.24	0.93	0.67
240/540RA8	1.05	0.85	0.65	0.49	0.35
240/540RA9T5	1.40	1.13	0.87	0.65	0.47
240/540RA9	1.68	1.35	1.04	0.78	0.57
240/540RA12	2.03	1.64	1.26	0.94	0.69
240/540RA16	4.06	3.27	2.52	1.89	1.37
240/540RA20	5.74	4.63	3.56	2.67	1.94
	R-404A/R-507				
200RB/500RB/200RD 2	0.29	0.23	0.18	0.14	0.10
200RB/500RB/200RD 3	0.39	0.31	0.24	0.19	0.13
200RB/500RB/200RD 4	0.74	0.54	0.46	0.35	0.26
200RB/500RB/200RD 5	0.90	0.71	0.56	0.42	0.30
200RB/500RB/200RD 6	0.95	0.76	0.59	0.45	0.32
200RB/500RB/200RD 7	1.70	1.30	1.00	0.80	0.60
200RB/RD 9	2.40	1.90	1.50	1.10	0.85
240/540RA8	0.90	0.70	0.50	0.40	0.30
240/540RA9T5	1.50	1.20	0.90	0.70	0.50
240/540RA9	1.90	1.50	1.20	0.90	0.60
240/540RA12	2.20	1.80	1.40	1.00	0.80
240/540RA16	3.40	2.70	2.10	1.60	1.20
240/540RA20	4.80	3.80	2.90	2.20	1.60

kW					
Suction gas capacities @ 14.0 kPa pressure drop					
Valve series	Evaporator temperature - C				
	4	-7	-18	-29	-40
	R-134a				
200RB/500RB/200RD 2	0.91	0.74	0.56	0.39	0.28
200RB/500RB/200RD 3	1.27	1.02	0.74	0.53	0.35
200RB/500RB/200RD 4	2.43	1.90	1.48	0.98	0.56
200RB/500RB/200RD 5	2.92	2.29	1.65	1.20	0.81
200RB/500RB/200RD 6	3.09	2.43	1.83	1.30	0.91
200RB/500RB/200RD 7	5.30	4.20	3.10	2.50	1.80
200RB/RD 9	7.74	5.98	4.75	3.34	2.29
240/540RA8	2.81	2.11	1.76	1.41	1.06
240/540RA9T5	4.92	3.87	2.81	2.11	1.41
240/540RA9	5.98	4.92	3.87	2.81	1.76
240/540RA12	6.68	5.28	4.22	3.17	2.11
240/540RA16	11.25	8.79	6.68	4.92	3.52
240/540RA20	15.47	12.31	9.50	7.03	5.63
	R-450A/R-513A				
200RB/500RB/200RD 2	0.84	0.67	0.52	0.39	0.28
200RB/500RB/200RD 3	1.16	0.93	0.72	0.54	0.39
200RB/500RB/200RD 4	2.19	1.77	1.36	1.02	0.74
200RB/500RB/200RD 5	2.66	2.14	1.65	1.24	0.90
200RB/500RB/200RD 6	2.80	2.26	1.74	1.31	0.95
200RB/500RB/200RD 7	4.67	3.77	2.90	2.18	1.58
200RB/200RD 9	7.01	5.65	4.36	3.27	2.37
240/540RA8	3.69	2.98	2.29	1.72	1.25
240/540RA9T5	4.92	3.97	3.06	2.29	1.66
240/540RA9	5.90	4.76	3.67	2.75	2.00
240/540RA12	7.13	5.75	4.43	3.32	2.41
240/540RA16	14.27	11.51	8.87	6.65	4.83
240/540RA20	20.17	16.27	12.53	9.40	6.82
	R-404A/R-507				
200RB/500RB/200RD 2	1.02	0.81	0.63	0.49	0.35
200RB/500RB/200RD 3	1.37	1.09	0.84	0.67	0.46
200RB/500RB/200RD 4	2.60	1.90	1.62	1.23	0.91
200RB/500RB/200RD 5	3.17	2.50	1.97	1.48	1.06
200RB/500RB/200RD 6	3.34	2.67	2.07	1.58	1.13
200RB/500RB/200RD 7	6.00	4.60	3.50	2.80	2.10
200RB/RD 9	8.44	6.68	5.28	3.87	2.99
240/540RA8	3.17	2.46	1.76	1.41	1.06
240/540RA9T5	5.28	4.22	3.17	2.46	1.76
240/540RA9	6.68	5.28	4.22	3.17	2.11
240/540RA12	7.74	6.33	4.92	3.52	2.81
240/540RA16	11.96	9.50	7.39	5.63	4.22
240/540RA20	16.88	13.36	10.20	7.74	5.63

NOTE: Capacity is based on largest connection size.

Tons					
Suction gas capacities @ 2 psi pressure drop					
Valve series	Evaporator temperature - F				
	40	20	0	-20	-40
	R-448A/R-449A				
200RB/500RB/200RD 2	0.32	0.30	0.25	0.19	0.15
200RB/500RB/200RD 3	0.44	0.42	0.34	0.27	0.21
200RB/500RB/200RD 4	0.82	0.80	0.65	0.51	0.40
200RB/500RB/200RD 5	1.00	0.97	0.79	0.61	0.48
200RB/500RB/200RD 6	1.06	1.02	0.83	0.65	0.51
200RB/500RB/200RD 7	1.76	1.70	1.38	1.08	0.85
200RB/200RD 9	2.64	2.55	2.07	1.62	1.27
240/540RA8	1.39	1.34	1.09	0.85	0.67
240/540RA9T5	1.85	1.79	1.46	1.14	0.89
240/540RA9	2.22	2.15	1.75	1.36	1.07
240/540RA12	2.69	2.59	2.11	1.65	1.30
240/540RA16	5.37	5.19	4.22	3.30	2.59
240/540RA20	7.60	7.33	5.97	4.66	3.66
	R-410A				
200RD 2	0.28	0.22	0.20	0.21	0.16
200RD 3	0.57	0.46	0.37	0.29	0.23
200RD 4	1.07	0.88	0.70	0.55	0.43
200RD 5	1.30	1.06	0.85	0.67	0.51
200RD 6	1.37	1.12	0.90	0.72	0.55
200RD 7	2.40	2.00	1.60	1.20	1.00
200RD 9	3.45	2.87	2.30	1.80	1.39

kW					
Suction gas capacities @ 14.0 kPa pressure drop					
Valve series	Evaporator temperature - C				
	4	-7	-18	-29	-40
	R-448A/R-449A				
200RB/500RB/200RD 2	1.11	1.07	0.87	0.68	0.53
200RB/500RB/200RD 3	1.53	1.48	1.20	0.94	0.74
200RB/500RB/200RD 4	2.90	2.80	2.28	1.78	1.40
200RB/500RB/200RD 5	3.52	3.40	2.76	2.16	1.70
200RB/500RB/200RD 6	3.72	3.59	2.92	2.28	1.79
200RB/500RB/200RD 7	6.19	5.98	4.86	3.80	2.98
200RB/200RD 9	9.29	8.96	7.29	5.70	4.48
240/540RA8	4.89	4.72	3.84	3.00	2.36
240/540RA9T5	6.52	6.29	5.12	4.00	3.14
240/540RA9	7.82	7.55	6.14	4.80	3.77
240/540RA12	9.45	9.12	7.42	5.80	4.56
240/540RA16	18.90	18.24	14.84	11.59	9.11
240/540RA20	26.72	25.79	20.98	16.39	12.88
	R-410A				
200RD 2	0.98	0.77	0.70	0.74	0.56
200RD 3	2.00	1.62	1.30	1.02	0.81
200RD 4	3.76	3.09	2.46	1.93	1.51
200RD 5	4.57	3.73	2.99	2.36	1.79
200RD 6	4.82	3.94	3.17	2.53	1.93
200RD 7	8.40	7.00	5.60	4.20	3.50
200RD 9	12.13	10.09	8.09	6.33	4.89

Tons					
Suction gas capacities @ 2 psi pressure drop					
Valve series	Evaporator temperature (°F)				
	0	-10	-20	-30	-40
	R-744				
200RD2	0.52	0.49	0.46	0.43	0.39
200RD3	1.07	1.00	0.94	0.87	0.80
200RD4	2.00	1.88	1.76	1.63	1.50
200RD5	2.43	2.29	2.14	1.98	1.82
200RD6	2.56	2.41	2.25	2.09	1.92
200RD7	2.71	2.55	2.39	2.21	2.03
200RD9	6.45	6.08	5.68	5.26	4.83

kW					
Suction gas capacities @ 14.0 kPa pressure drop					
Valve series	Evaporator temperature (°F)				
	0	-10	-20	-30	-40
	R-744				
200RD2	1.84	1.73	1.62	1.50	1.38
200RD3	3.75	3.53	3.30	3.06	2.81
200RD4	7.03	6.63	6.19	5.74	5.27
200RD5	8.55	8.05	7.52	6.97	6.41
200RD6	9.01	8.49	7.93	7.35	6.75
200RD7	9.53	8.98	8.39	7.78	7.14
200RD9	22.68	21.37	19.97	18.50	17.00

NOTE: Shading indicates nominal ratings at 20°F Liquid, -20°F Evaporating Temperature, and 25°F Superheat

NOTE: Shading indicates nominal ratings at 20°F Liquid, -20°F Evaporating Temperature, and 25°F Superheat

# Liquid capacities

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	0.80	1.00	1.16	1.20
200RB/500RB/200RD 2	2.28	2.80	3.23	3.61
200RB/500RB/200RD 3	3.04	3.72	4.30	4.80
200RB/500RB/200RD 4	4.95	6.17	7.12	7.97
200RB/500RB/200RD 5	5.20	6.38	7.37	8.24
200RB/500RB/200RD 6	6.01	7.36	8.50	9.50
200RB/500RB/200RD 7	10.75	13.05	15.10	17.05
200RB/RD 9	18.65	23.15	26.05	30.15
240/540RA8	10.00	12.20	14.10	15.80
240/540RA9T (5/8)	14.90	18.20	21.10	23.60
240/540RA9T (7/8, 1 1/8)	19.60	24.00	27.70	31.00
240/540RA12	22.50	27.60	31.80	35.60
240/540RA16	10.00	12.20	14.10	15.80
240/540RA20	14.90	18.20	21.10	23.60
R-22				
50RB	0.44	0.54	0.62	0.69
100RB	1.04	1.27	1.47	1.64
200RB/500RB/200RD 2	2.94	3.60	4.16	4.65
200RB/500RB/200RD 3	3.92	4.80	5.54	6.19
200RB/500RB/200RD 4	6.49	7.95	9.18	10.26
200RB/500RB/200RD 5	6.71	8.22	9.49	10.61
200RB/500RB/200RD 6	7.74	9.48	10.95	12.24
200RB/500RB/200RD 7	13.50	17.00	18.75	27.85
200RB/RD 9	23.60	29.50	34.10	38.15
240/540RA8	12.70	15.60	18.00	20.10
240/540RA9T (5/8)	19.00	23.30	26.90	30.10
240/540RA9T (7/8, 1 1/8)	24.90	30.50	35.20	39.40
240/540RA12	28.50	34.90	40.30	45.10
240/540RA16	47.40	58.00	67.00	74.90
240/540RA20	77.90	95.40	110.20	123.20
R-502				
50RB	0.30	0.35	0.40	0.50
100RB	0.70	0.83	1.00	1.10
200RB/500RB/200RD 2	1.93	2.36	2.73	3.05
200RB/500RB/200RD 3	2.57	3.14	3.63	4.06
200RB/500RB/200RD 4	4.15	5.21	6.02	6.73
200RB/500RB/200RD 5	4.50	5.39	6.22	6.69
200RB/500RB/200RD 6	5.08	6.22	7.18	8.03
200RB/500RB/200RD 7	9.22	11.29	13.04	14.57
200RB/RD 9	15.80	19.45	22.15	25.35
240/540RA8	8.20	10.10	11.70	13.00
240/540RA9T (5/8)	12.30	15.10	17.40	19.50
240/540RA9T (7/8, 1 1/8)	16.20	19.80	22.90	25.60
240/540RA12	18.50	22.70	26.20	29.30
240/540RA16	30.80	37.70	43.50	48.70
240/540RA20	50.60	62.00	71.60	80.00

NOTE: Shading indicates ARI standard ratings  
All liquid capacities are based on 40°F Evaporator Temperature and 100°F Liquid Temperature.

kW				
Liquid capacities				
Pressure drop across valve - kPa				
Valve series	13.8	20.7	27.6	34.5
R-12				
50RB	1.20	1.48	1.69	1.90
100RB	2.81	3.52	4.08	4.22
200RB/500RB/200RD 2	8.02	9.85	11.36	12.70
200RB/500RB/200RD 3	10.69	13.08	15.12	16.88
200RB/500RB/200RD 4	17.41	21.70	25.04	28.03
200RB/500RB/200RD 5	18.29	22.44	25.92	28.98
200RB/500RB/200RD 6	21.14	25.88	29.89	33.41
200RB/500RB/200RD 7	37.81	45.90	53.11	59.96
200RB/RD 9	65.59	81.42	91.62	106.03
240/540RA8	35.17	42.91	49.59	55.57
240/540RA9T (5/8)	52.40	64.01	74.21	83.00
240/540RA9T (7/8, 1 1/8)	68.93	84.41	97.42	109.02
240/540RA12	79.13	97.07	111.84	125.20
240/540RA16	35.17	42.91	49.59	55.57
240/540RA20	52.40	64.01	74.21	83.00
R-22				
50RB	1.55	1.90	2.18	2.43
100RB	3.66	4.47	5.17	5.77
200RB/500RB/200RD 2	10.34	12.66	14.63	16.35
200RB/500RB/200RD 3	13.79	16.88	19.48	21.77
200RB/500RB/200RD 4	22.82	27.96	32.29	36.08
200RB/500RB/200RD 5	23.60	28.91	33.38	37.31
200RB/500RB/200RD 6	27.22	33.34	38.51	43.05
200RB/500RB/200RD 7	47.48	59.79	65.94	97.95
200RB/RD 9	83.00	103.75	119.93	134.17
240/540RA8	44.66	54.86	63.30	70.69
240/540RA9T (5/8)	66.82	81.94	94.60	105.86
240/540RA9T (7/8, 1 1/8)	87.57	107.27	123.79	138.57
240/540RA12	100.23	122.74	141.73	158.61
240/540RA16	166.70	203.98	235.63	263.42
240/540RA20	273.97	335.51	387.56	433.28
R-502				
50RB	1.06	1.23	1.41	1.76
100RB	2.46	2.92	3.52	3.87
200RB/500RB/200RD 2	6.79	8.30	9.60	10.73
200RB/500RB/200RD 3	9.04	11.04	12.77	14.28
200RB/500RB/200RD 4	14.60	18.32	21.17	23.67
200RB/500RB/200RD 5	15.83	18.96	21.88	23.53
200RB/500RB/200RD 6	17.87	21.88	25.25	28.24
200RB/500RB/200RD 7	32.43	39.71	45.86	51.24
200RB/RD 9	55.57	68.40	77.90	89.15
240/540RA8	28.84	35.52	41.15	45.72
240/540RA9T (5/8)	43.26	53.11	61.19	68.58
240/540RA9T (7/8, 1 1/8)	56.97	69.63	80.54	90.03
240/540RA12	65.06	79.83	92.14	103.05
240/540RA16	108.32	132.59	152.99	171.27
240/540RA20	177.96	218.05	251.81	281.35

NOTE: Capacity is based on largest connection size.



## Liquid capacities

Tons				
Liquid capacities				
Pressure drop across valve - psi				
Valve series	2	3	4	5
R-134a				
50RB	0.41	0.50	0.60	0.60
100RB	0.96	1.20	1.40	1.50
200RB/500RB/200RD 2	2.72	3.33	3.85	4.30
200RB/500RB/200RD 3	3.62	4.44	5.12	5.73
200RB/500RB/200RD 4	6.00	7.35	8.49	9.49
200RB/500RB/200RD 5	6.21	7.60	8.78	9.82
200RB/500RB/200RD 6	7.16	8.77	10.13	11.32
200RB/500RB/200RD 7	12.68	15.93	18.39	20.56
200RB/RD 9	22.50	27.35	32.00	35.65
240/540RA8	12.10	14.80	17.10	19.10
240/540RA9T (5/8)	18.00	22.00	25.50	28.50
240/540RA9T (7/8, 1 1/8)	23.60	28.90	33.40	37.30
240/540RA12	27.10	33.20	38.30	42.80
240/540RA16	45.00	55.10	63.60	71.20
240/540RA20	70.90	86.80	100.30	112.10
R-450A/R-513A				
50RB	0.37	0.46	0.53	0.59
100RB	0.88	1.07	1.24	1.38
200RB/500RB/200RD 2	2.48	3.04	3.51	3.92
200RB/500RB/200RD 3	3.31	4.05	4.68	5.23
200RB/500RB/200RD 4	5.48	6.71	7.75	8.67
200RB/500RB/200RD 5	5.67	6.94	8.02	8.96
200RB/500RB/200RD 6	6.54	8.01	9.24	10.34
200RB/500RB/200RD 7	11.72	14.36	16.58	18.53
200RB/200RD 9	20.34	24.91	28.77	32.16
240/540RA8	10.76	13.17	15.21	17.01
240/540RA9T (5/8)	16.07	19.68	22.72	25.40
240/540RA9T (7/8, 1 1/8)	21.03	25.76	29.74	33.25
240/540RA12	24.06	29.47	34.03	38.05
240/540RA16	39.99	48.98	56.56	63.23
240/540RA20	65.78	80.56	93.02	104.00
R-404A/R-507				
50RB	0.30	0.34	0.40	0.40
100RB	0.70	0.85	1.00	1.10
200RB/500RB/200RD 2	1.90	2.32	2.68	3.00
200RB/500RB/200RD 3	2.52	3.09	3.57	4.00
200RB/500RB/200RD 4	4.18	5.12	5.92	6.61
200RB/500RB/200RD 5	4.33	5.30	6.12	6.84
200RB/500RB/200RD 6	4.99	6.11	7.06	7.89
200RB/500RB/200RD 7	9.06	11.10	12.81	14.33
200RB/RD 9	14.90	18.25	21.05	24.15
240/540RA8	8.40	10.30	11.90	13.30
240/540RA9T (5/8)	12.50	15.30	17.70	19.80
240/540RA9T (7/8, 1 1/8)	16.40	20.10	23.20	25.90
240/540RA12	18.80	23.00	26.60	29.70
240/540RA16	31.30	38.30	44.20	49.40
240/540RA20	53.60	65.70	75.90	84.80

NOTE: Shading indicates ARI standard ratings  
All liquid capacities are based on 40°F Evaporator Temperature and 100°F Liquid Temperature.

kW				
Liquid capacities				
Pressure drop across valve - kPa				
Valve series	13.8	20.7	27.6	34.5
R-134a				
50RB	1.44	1.76	2.11	2.11
100RB	3.38	4.22	4.92	5.28
200RB/500RB/200RD 2	9.57	11.71	13.54	15.12
200RB/500RB/200RD 3	12.73	15.62	18.01	20.15
200RB/500RB/200RD 4	21.10	25.85	29.86	33.38
200RB/500RB/200RD 5	21.84	26.73	30.88	34.54
200RB/500RB/200RD 6	25.18	30.84	35.63	39.81
200RB/500RB/200RD 7	44.59	56.02	64.68	72.31
200RB/RD 9	79.13	96.19	112.54	125.38
240/540RA8	42.55	52.05	60.14	67.17
240/540RA9T (5/8)	63.30	77.37	89.68	100.23
240/540RA9T (7/8, 1 1/8)	83.00	101.64	117.46	131.18
240/540RA12	95.31	116.76	134.70	150.52
240/540RA16	158.26	193.78	223.67	250.40
240/540RA20	249.35	305.27	352.75	394.24
R-450A/R-513A				
50RB	1.31	1.60	1.85	2.07
100RB	3.08	3.77	4.36	4.87
200RB/500RB/200RD 2	8.73	10.69	12.35	13.80
200RB/500RB/200RD 3	11.64	14.26	16.46	18.40
200RB/500RB/200RD 4	19.28	23.61	27.26	30.48
200RB/500RB/200RD 5	19.93	24.41	28.19	31.52
200RB/500RB/200RD 6	22.99	28.15	32.51	36.35
200RB/500RB/200RD 7	41.22	50.49	58.30	65.18
200RB/200RD 9	71.53	87.61	101.16	113.10
240/540RA8	37.83	46.33	53.50	59.81
240/540RA9T (5/8)	56.50	69.20	79.90	89.33
240/540RA9T (7/8, 1 1/8)	73.96	90.58	104.59	116.94
240/540RA12	84.63	103.65	119.68	133.81
240/540RA16	140.64	172.25	198.90	222.37
240/540RA20	231.33	283.32	327.15	365.76
R-404A/R-507				
50RB	1.06	1.20	1.41	1.41
100RB	2.46	2.99	3.52	3.87
200RB/500RB/200RD 2	6.68	8.16	9.43	10.55
200RB/500RB/200RD 3	8.86	10.87	12.56	14.07
200RB/500RB/200RD 4	14.70	18.01	20.82	23.25
200RB/500RB/200RD 5	15.23	18.64	21.52	24.06
200RB/500RB/200RD 6	17.55	21.49	24.83	27.75
200RB/500RB/200RD 7	31.86	39.04	45.05	50.40
200RB/RD 9	52.40	64.18	74.03	84.93
240/540RA8	29.54	36.22	41.85	46.77
240/540RA9T (5/8)	43.96	53.81	62.25	69.63
240/540RA9T (7/8, 1 1/8)	57.68	70.69	81.59	91.09
240/540RA12	66.12	80.89	93.55	104.45
240/540RA16	110.08	134.70	155.45	173.73
240/540RA20	188.51	231.06	266.93	298.23

NOTE: Capacity is based on largest connection size.

Tons				
Liquid capacities				
Pressure drop across valve - psi				
Valve series	2	3	4	5
R-448A/R-449A				
50RB	0.44	0.54	0.63	0.70
100RB	1.04	1.28	1.47	1.65
200RB/500RB/200RD 2	2.95	3.61	4.17	4.67
200RB/500RB/200RD 3	3.93	4.82	5.56	6.22
200RB/500RB/200RD 4	6.52	7.98	9.22	10.30
200RB/500RB/200RD 5	6.74	8.25	9.53	10.65
200RB/500RB/200RD 6	7.77	9.52	10.99	12.29
200RB/500RB/200RD 7	13.94	17.07	19.71	22.03
200RB/200RD 9	24.18	29.62	34.20	38.24
240/540RA8	12.79	15.66	18.09	20.22
240/540RA9T (5/8)	19.10	23.39	27.01	30.20
240/540RA9T (7/8, 1 1/8)	25.00	30.62	35.36	39.53
240/540RA12	28.61	35.04	40.46	45.24
240/540RA16	47.55	58.23	67.24	75.18
240/540RA20	78.20	95.78	110.60	123.65
R-407C				
50RB	0.40	0.51	0.60	0.70
100RB	1.00	1.21	1.40	1.60
200RB/500RB/200RD 2	2.77	3.39	3.91	4.38
200RB/500RB/200RD 3	3.68	4.51	5.21	5.82
200RB/500RB/200RD 4	6.11	7.48	8.64	9.66
200RB/500RB/200RD 5	6.31	7.73	8.93	9.98
200RB/500RB/200RD 6	7.28	8.92	10.30	11.52
200RB/500RB/200RD 7	13.10	16.15	18.65	20.65
200RB/RD 9	22.85	27.95	32.05	36.15
240/540RA8	12.10	14.80	17.10	19.10
240/540RA9T (5/8)	18.00	22.10	25.50	28.50
240/540RA9T (7/8, 1 1/8)	23.70	29.00	33.50	37.40
240/540RA12	27.10	33.20	38.30	42.90
240/540RA16	45.10	55.20	63.70	71.30
240/540RA20	74.10	90.80	104.80	117.20
R-410A				
200RD 2	2.76	3.38	3.90	4.36
200RD 3	3.67	4.50	5.19	5.80
200RD 4	6.09	7.45	8.61	9.62
200RD 5	6.29	7.71	8.90	9.95
200RD 6	7.26	8.89	10.27	11.48
200RD 7	12.20	15.70	18.10	20.10
200RD 9	22.35	27.75	32.05	36.15

Tons						
Liquid capacities						
Pressure drop across valve - psi						
Valve series	2	3	4	5	6	7
R-744						
200RD2	4.36	5.34	6.17	6.90	7.56	8.16
200RD3	5.80	7.11	8.21	9.18	10.1	10.86
200RD4	9.62	11.8	13.6	15.2	16.7	18.01
200RD5	9.95	12.2	14.1	15.7	17.2	18.62
200RD6	11.5	14.1	16.2	18.2	19.9	21.49
200RD7	20.1	24.6	28.4	31.8	34.8	37.62
200RD9	36.2	44.3	51.1	57.2	62.6	67.66

NOTE: Shading indicates nominal ratings at 1°F saturation pressure drop across solenoid valve. All liquid capacities are based on 20°F Liquid and -20°F Evaporating Temperature.

kW				
Liquid capacities				
Pressure drop across valve - kPa				
Valve series	13.8	20.7	27.6	34.5
R-448A/R-449A				
50RB	1.56	1.91	2.20	2.46
100RB	3.66	4.48	5.18	5.79
200RB/500RB/200RD 2	10.38	12.71	14.68	16.41
200RB/500RB/200RD 3	13.84	16.95	19.57	21.88
200RB/500RB/200RD 4	22.92	28.07	32.41	36.24
200RB/500RB/200RD 5	23.70	29.02	33.51	37.47
200RB/500RB/200RD 6	27.33	33.47	38.65	43.21
200RB/500RB/200RD 7	49.01	60.02	69.31	77.49
200RB/200RD 9	85.05	104.16	120.27	134.47
240/540RA8	44.97	55.08	63.60	71.11
240/540RA9T (5/8)	67.17	82.27	95.00	106.21
240/540RA9T (7/8, 1 1/8)	87.93	107.69	124.35	139.03
240/540RA12	100.61	123.23	142.29	159.08
240/540RA16	167.21	204.79	236.47	264.38
240/540RA20	275.03	336.84	388.95	434.86
R-407C				
50RB	1.41	1.79	2.11	2.46
100RB	3.52	4.26	4.92	5.63
200RB/500RB/200RD 2	9.74	11.92	13.75	15.40
200RB/500RB/200RD 3	12.94	15.86	18.32	20.47
200RB/500RB/200RD 4	21.49	26.31	30.39	33.97
200RB/500RB/200RD 5	22.19	27.19	31.41	35.10
200RB/500RB/200RD 6	25.60	31.37	36.22	40.51
200RB/500RB/200RD 7	46.53	56.97	65.80	73.54
200RB/RD 9	80.36	98.30	112.72	127.14
240/540RA8	42.55	52.05	60.14	67.17
240/540RA9T (5/8)	63.30	77.72	89.68	100.23
240/540RA9T (7/8, 1 1/8)	83.35	101.99	117.82	131.53
240/540RA12	95.31	116.76	134.70	150.88
240/540RA16	158.61	194.13	224.03	250.75
240/540RA20	260.60	319.33	368.57	412.18
R-410A				
200RD 2	9.71	11.89	13.72	15.33
200RD 3	12.91	15.83	18.25	20.40
200RD 4	21.42	26.20	30.28	33.83
200RD 5	22.12	27.12	31.30	34.99
200RD 6	25.53	31.27	36.12	40.37
200RD 7	42.91	55.22	63.66	70.69
200RD 9	78.60	97.59	112.72	127.14

kW						
Liquid capacities						
Pressure drop across valve - kPa						
Valve series	13.8	20.7	27.6	34.5	41.4	48.3
R-744						
200RD2	15.34	18.79	21.70	24.26	26.57	28.70
200RD3	20.41	25.00	28.86	32.27	35.35	38.18
200RD4	33.85	41.46	47.87	53.52	58.63	63.33
200RD5	35.01	42.88	49.51	55.36	60.64	65.50
200RD6	40.40	49.47	57.13	63.87	69.97	75.57
200RD7	70.73	86.62	100.02	111.83	122.50	132.32
200RD9	127.20	155.79	179.89	201.12	220.32	237.97

NOTE: Shading indicates nominal ratings at 1°F saturation pressure drop across solenoid valve. All liquid capacities are based on 20°F Liquid and -20°F Evaporating Temperature.

# Discharge gas capacities

Tons						
Discharge gas capacities Pressure drop across valve - psi						
VALVE SERIES	2	5	10	25	50	100
R-12						
100RB	0.10	0.20	0.30	0.50	0.50	0.50
200RB/500RB/200RD 2	0.35	0.50	0.75	1.05	1.20	1.35
200RB/500RB/200RD 3	0.45	0.75	1.00	1.45	1.75	1.85
200RB/500RB/200RD 4	0.85	1.35	1.95	2.70	3.55	4.25
200RB/500RB/200RD 5	1.05	1.65	2.45	3.30	4.45	5.45
200RB/500RB/200RD 6	1.15	1.75	2.50	3.70	4.80	5.85
200RB/500RB/200RD 7	1.50	2.40	3.30	5.20	6.60	7.20
200RB/RD 9	2.80	4.45	6.22	9.35	11.45	12.50
240/540RA8	1.50	2.40	3.30	5.20	6.60	7.20
240/540RA9T5	2.50	4.00	5.60	8.30	10.40	11.20
240/540RA9	3.20	5.00	7.10	10.10	12.10	11.10
240/540RA12	3.50	5.50	7.80	11.70	14.00	12.40
240/540RA16	5.80	9.10	12.90	18.90	23.60	24.30
240/540RA20	8.10	12.80	18.10	28.20	34.40	33.10
R-22						
100RB	0.20	0.30	0.40	0.60	0.80	1.00
200RB/500RB/200RD 2	0.45	0.75	1.05	1.65	2.10	2.40
200RB/500RB/200RD 3	0.65	1.05	1.45	2.25	2.95	3.35
200RB/500RB/200RD 4	1.25	1.95	2.80	4.05	5.50	7.05
200RB/500RB/200RD 5	1.50	2.37	3.50	4.90	6.75	9.00
200RB/500RB/200RD 6	1.60	2.55	3.60	5.50	7.40	9.45
200RB/500RB/200RD 7	2.10	3.40	4.80	7.80	10.40	12.80
200RB/RD 9	4.05	6.25	9.05	14.45	19.00	22.05
240/540RA8	2.10	3.40	4.80	7.80	10.40	12.80
240/540RA9T5	3.60	5.70	8.10	12.50	16.60	20.40
240/540RA9	4.60	7.20	10.20	15.40	20.00	23.10
240/540RA12	5.10	8.00	11.30	18.10	23.40	26.60
240/540RA16	8.30	13.20	18.70	28.60	37.80	45.63
240/540RA20	11.70	18.40	26.10	43.00	56.10	66.00
R-502						
100RB	0.20	0.20	0.30	0.50	0.70	0.80
200RB/500RB/200RD 2	0.40	0.60	0.85	1.35	1.75	2.00
200RB/500RB/200RD 3	0.55	0.85	1.20	1.80	2.35	2.80
200RB/500RB/200RD 4	1.00	1.60	2.25	3.25	4.40	5.75
200RB/500RB/200RD 5	1.20	1.95	2.75	3.95	5.45	7.30
200RB/500RB/200RD 6	1.30	2.05	2.90	4.40	6.00	7.70
200RB/500RB/200RD 7	1.70	2.70	3.80	6.20	8.30	10.40
200RB/RD 9	3.30	5.20	7.35	11.60	15.45	18.30
240/540RA8	1.70	2.70	3.80	6.20	8.30	10.40
240/540RA9T5	2.90	4.50	6.40	10.00	13.30	16.50
240/540RA9	3.60	5.70	8.10	12.30	16.10	18.80
240/540RA12	4.00	6.40	9.00	14.40	18.70	21.70
240/540RA16	6.60	10.50	14.80	22.80	30.20	37.00
240/540RA20	9.30	14.60	20.70	34.30	45.00	53.70

kW						
Discharge gas capacities Pressure drop across valve - kPa						
VALVE SERIES	13.8	34.5	69	172.5	345	690
R-12						
100RB	0.35	0.70	1.06	1.76	1.76	1.76
200RB/500RB/200RD 2	1.23	1.76	2.64	3.69	4.22	4.75
200RB/500RB/200RD 3	1.58	2.64	3.52	5.10	6.15	6.51
200RB/500RB/200RD 4	2.99	4.75	6.86	9.50	12.48	14.95
200RB/500RB/200RD 5	3.69	5.80	8.62	11.61	15.65	19.17
200RB/500RB/200RD 6	4.04	6.15	8.79	13.01	16.88	20.57
200RB/500RB/200RD 7	5.28	8.44	11.61	18.29	23.21	25.32
200RB/RD 9	9.85	15.65	21.88	32.88	40.27	43.96
240/540RA8	5.28	8.44	11.61	18.29	23.21	25.32
240/540RA9T5	8.79	14.07	19.69	29.19	36.58	39.39
240/540RA9	11.25	17.58	24.97	35.52	42.55	39.04
240/540RA12	12.31	19.34	27.43	41.15	49.24	43.61
240/540RA16	20.40	32.00	45.37	66.47	83.00	85.46
240/540RA20	28.49	45.02	63.66	99.18	120.98	116.41
R-22						
100RB	0.70	1.06	1.41	2.11	2.81	3.52
200RB/500RB/200RD 2	1.58	2.64	3.69	5.80	7.39	8.44
200RB/500RB/200RD 3	2.29	3.69	5.10	7.91	10.37	11.78
200RB/500RB/200RD 4	4.40	6.86	9.85	14.24	19.34	24.79
200RB/500RB/200RD 5	5.28	8.34	12.31	17.23	23.74	31.65
200RB/500RB/200RD 6	5.63	8.97	12.66	19.34	26.03	33.23
200RB/500RB/200RD 7	7.39	11.96	16.88	27.43	36.58	45.02
200RB/RD 9	14.24	21.98	31.83	50.82	66.82	77.55
240/540RA8	7.39	11.96	16.88	27.43	36.58	45.02
240/540RA9T5	12.66	20.05	28.49	43.96	58.38	71.74
240/540RA9	16.18	25.32	35.87	54.16	70.34	81.24
240/540RA12	17.94	28.14	39.74	63.66	82.30	93.55
240/540RA16	29.19	46.42	65.77	100.58	132.94	160.48
240/540RA20	41.15	64.71	91.79	151.23	197.30	232.12
R-502						
100RB	0.70	0.70	1.06	1.76	2.46	2.81
200RB/500RB/200RD 2	1.41	2.11	2.99	4.75	6.15	7.03
200RB/500RB/200RD 3	1.93	2.99	4.22	6.33	8.26	9.85
200RB/500RB/200RD 4	3.52	5.63	7.91	11.43	15.47	20.22
200RB/500RB/200RD 5	4.22	6.86	9.67	13.89	19.17	25.67
200RB/500RB/200RD 6	4.57	7.21	10.20	15.47	21.10	27.08
200RB/500RB/200RD 7	5.98	9.50	13.36	21.80	29.19	36.58
200RB/RD 9	11.61	18.29	25.85	40.80	54.34	64.36
240/540RA8	5.98	9.50	13.36	21.80	29.19	36.58
240/540RA9T5	10.20	15.83	22.51	35.17	46.77	58.03
240/540RA9	12.66	20.05	28.49	43.26	56.62	66.12
240/540RA12	14.07	22.51	31.65	50.64	65.77	76.32
240/540RA16	23.21	36.93	52.05	80.19	106.21	130.13
240/540RA20	32.71	51.35	72.80	120.63	158.26	188.86

NOTE: Shading indicates ARI standard ratings  
NOTE: Capacity is based on largest connection size.

# Discharge gas capacities

Tons						
Discharge gas capacities Pressure drop across valve - psi						
Valve series	2	5	10	25	50	100
R-134a						
100RB	0.20	0.20	0.30	0.50	0.60	0.60
200RB/500RB/200RD 2	0.40	0.65	0.90	1.30	1.55	1.40
200RB/500RB/200RD 3	0.55	0.85	1.20	1.75	2.15	2.05
200RB/500RB/200RD 4	1.00	1.65	2.30	3.25	4.30	5.20
200RB/500RB/200RD 5	1.25	2.00	2.85	4.00	5.40	6.85
200RB/500RB/200RD 6	1.35	2.15	3.00	4.45	5.80	6.95
200RB/500RB/200RD 7	1.80	2.80	4.00	6.20	8.00	8.90
200RB/RD 9	3.40	5.30	7.60	11.45	14.15	15.25
240/540RA8	1.80	2.80	4.00	6.20	8.00	8.90
240/540RA9T5	3.00	4.70	6.70	10.00	12.70	13.90
240/540RA9	3.80	6.00	8.50	12.20	14.80	14.20
240/540RA12	4.20	6.60	9.40	14.20	17.10	15.90
240/540RA16	6.90	10.90	15.40	22.80	28.60	30.40
240/540RA20	9.70	15.30	21.60	34.00	41.90	41.90
R-450A/R-513A						
100RB	0.13	0.20	0.28	0.41	0.51	0.53
200RB/500RB/200RD 2	0.29	0.46	0.63	0.93	1.16	1.18
200RB/500RB/200RD 3	0.42	0.66	0.92	1.35	1.67	1.71
200RB/500RB/200RD 4	0.82	1.27	1.76	2.59	3.22	3.28
200RB/500RB/200RD 5	0.98	1.53	2.11	3.11	3.86	3.94
200RB/500RB/200RD 6	1.04	1.63	2.25	3.32	4.12	4.20
200RB/500RB/200RD 7	1.37	2.14	2.96	4.36	5.41	5.52
200RB/200RD 9	2.64	4.12	5.70	8.40	10.43	10.64
240/540RA8	1.37	2.14	2.96	4.36	5.41	5.52
240/540RA9T5	2.35	3.67	5.07	7.47	9.27	9.46
240/540RA9	3.00	4.68	6.48	9.54	11.84	12.09
240/540RA12	3.33	5.19	7.18	10.58	13.13	13.40
240/540RA16	5.42	8.45	11.69	17.21	21.37	21.81
240/540RA20	7.63	11.91	16.47	24.27	30.12	30.75
R-404A/R-507						
100RB	0.20	0.30	0.40	0.60	0.70	0.90
200RB/500RB/200RD 2	0.45	0.70	1.00	1.50	1.95	2.25
200RB/500RB/200RD 3	0.60	0.95	1.30	2.00	2.65	3.15
200RB/500RB/200RD 4	1.10	1.75	2.50	3.65	4.95	6.45
200RB/500RB/200RD 5	1.35	2.05	3.00	4.35	5.80	8.15
200RB/500RB/200RD 6	1.45	2.20	3.15	4.45	6.00	8.67
200RB/500RB/200RD 7	1.80	2.90	4.10	5.70	8.90	11.30
200RB/RD 9	3.55	5.75	8.15	13.20	17.30	20.95
240/540RA8	1.80	2.90	4.10	6.70	8.90	11.30
240/540RA9T5	3.10	4.90	6.90	10.70	14.30	17.90
240/540RA9	3.90	6.20	8.70	13.30	17.40	20.20
240/540RA12	4.30	6.80	9.60	15.50	20.30	23.90
240/540RA16	7.10	11.30	16.00	23.60	30.80	36.20
240/540RA20	9.90	15.70	22.20	36.90	48.70	58.90

kW						
Discharge gas capacities Pressure drop across valve - kpa						
Valve series	13.8	34.5	69	172.5	345	690
R-134a						
100RB	0.70	0.70	1.06	1.76	2.11	2.11
200RB/500RB/200RD 2	1.41	2.29	3.17	4.57	5.45	4.92
200RB/500RB/200RD 3	1.93	2.99	4.22	6.15	7.56	7.21
200RB/500RB/200RD 4	3.52	5.80	8.09	11.43	15.12	18.29
200RB/500RB/200RD 5	4.40	7.03	10.02	14.07	18.99	24.09
200RB/500RB/200RD 6	4.75	7.56	10.55	15.65	20.40	24.44
200RB/500RB/200RD 7	6.33	9.85	14.07	21.80	28.14	31.30
200RB/RD 9	11.96	18.64	26.73	40.27	49.76	53.63
240/540RA8	6.33	9.85	14.07	21.80	28.14	31.30
240/540RA9T5	10.55	16.53	23.56	35.17	44.66	48.88
240/540RA9	13.36	21.10	29.89	42.91	52.05	49.94
240/540RA12	14.77	23.21	33.06	49.94	60.14	55.92
240/540RA16	24.27	38.33	54.16	80.19	100.58	106.91
240/540RA20	34.11	53.81	75.97	119.57	147.36	147.36
R-450A/R-513A						
100RB	0.46	0.72	0.99	1.46	1.81	1.85
200RB/500RB/200RD 2	1.03	1.61	2.23	3.28	4.07	4.16
200RB/500RB/200RD 3	1.49	2.33	3.22	4.74	5.89	6.01
200RB/500RB/200RD 4	2.87	4.48	6.19	9.12	11.32	11.55
200RB/500RB/200RD 5	3.44	5.37	7.43	10.94	13.58	13.86
200RB/500RB/200RD 6	3.67	5.73	7.92	11.67	14.49	14.79
200RB/500RB/200RD 7	4.82	7.52	10.40	15.32	19.02	19.41
200RB/200RD 9	9.29	14.50	20.05	29.54	36.67	37.43
240/540RA8	4.82	7.52	10.40	15.32	19.02	19.41
240/540RA9T5	8.26	12.89	17.82	26.26	32.60	33.27
240/540RA9	10.56	16.47	22.78	33.55	41.65	42.51
240/540RA12	11.70	18.26	25.25	37.20	46.18	47.13
240/540RA16	19.05	29.72	41.09	60.54	75.16	76.71
240/540RA20	26.85	41.89	57.93	85.34	105.94	108.13
R-404A/R-507						
100RB	0.70	1.06	1.41	2.11	2.46	3.17
200RB/500RB/200RD 2	1.58	2.46	3.52	5.28	6.86	7.91
200RB/500RB/200RD 3	2.11	3.34	4.57	7.03	9.32	11.08
200RB/500RB/200RD 4	3.87	6.15	8.79	12.84	17.41	22.68
200RB/500RB/200RD 5	4.75	7.21	10.55	15.30	20.40	28.66
200RB/500RB/200RD 6	5.10	7.74	11.08	15.65	21.10	30.49
200RB/500RB/200RD 7	6.33	10.20	14.42	20.05	31.30	39.74
200RB/RD 9	12.48	20.22	28.66	46.42	60.84	73.68
240/540RA8	6.33	10.20	14.42	23.56	31.30	39.74
240/540RA9T5	10.90	17.23	24.27	37.63	50.29	62.95
240/540RA9	13.72	21.80	30.60	46.77	61.19	71.04
240/540RA12	15.12	23.91	33.76	54.51	71.39	84.05
240/540RA16	24.97	39.74	56.27	83.00	108.32	127.31
240/540RA20	34.82	55.22	78.08	129.77	171.27	207.15

NOTE: Shading indicates ARI standard ratings  
NOTE: Capacity is based on largest connection size.

Tons						
Discharge gas capacities						
Pressure drop across valve - psi						
Valve series	2	5	10	25	50	100
R-448A/R-449A						
100RB	0.23	0.36	0.51	0.78	1.04	1.31
200RB/500RB/200RD 2	0.52	0.81	1.14	1.75	2.34	2.96
200RB/500RB/200RD 3	0.75	1.17	1.64	2.52	3.39	4.27
200RB/500RB/200RD 4	1.44	2.26	3.16	4.85	6.51	8.21
200RB/500RB/200RD 5	1.72	2.71	3.80	5.82	7.81	9.86
200RB/500RB/200RD 6	1.84	2.89	4.05	6.21	8.33	10.51
200RB/500RB/200RD 7	2.41	3.79	5.31	8.15	10.94	13.80
200RB/200RD 9	4.66	7.32	10.25	15.72	21.10	26.61
240/540RA8	2.41	3.79	5.31	8.15	10.94	13.80
240/540RA9T5	4.14	6.51	9.11	13.97	18.75	23.66
240/540RA9	5.29	8.31	11.64	17.86	23.96	30.23
240/540RA12	5.86	9.22	12.91	19.80	26.56	33.51
240/540RA16	9.54	15.00	21.00	32.22	43.23	54.54
240/540RA20	13.45	21.14	29.61	45.42	60.94	76.89
R-407C						
100RB	0.20	0.30	0.40	0.60	0.80	1.00
200RB/500RB/200RD 2	0.45	0.70	0.95	1.45	1.90	2.25
200RB/500RB/200RD 3	0.60	0.90	1.25	1.95	2.55	3.05
200RB/500RB/200RD 4	1.05	1.70	2.40	3.50	4.75	6.20
200RB/500RB/200RD 5	1.30	2.10	3.00	4.20	5.80	7.85
200RB/500RB/200RD 6	1.40	2.20	3.10	4.75	7.55	8.35
200RB/500RB/200RD 7	2.10	3.30	4.70	7.70	10.30	13.00
200RB/RD 9	3.50	5.50	7.80	12.55	16.70	20.15
240/540RA8	2.10	3.30	4.70	7.70	10.30	13.00
240/540RA9T5	3.60	5.60	8.00	12.40	16.50	20.60
240/540RA9	4.50	7.10	10.10	15.30	20.00	22.50
240/540RA12	6.00	9.50	13.40	21.20	29.60	37.10
240/540RA16	8.20	13.00	18.40	28.40	37.70	46.20
240/540RA20	11.50	18.20	25.70	42.70	56.10	67.20
R-410A						
200RD 2	0.55	0.90	1.30	2.05	2.75	3.40
200RD 3	0.80	1.25	1.75	2.80	3.75	4.70
200RD 4	1.50	2.40	3.35	5.35	6.80	9.10
200RD 5	1.85	2.95	4.25	6.75	8.30	11.30
200RD 6	2.00	3.10	4.35	6.85	9.25	12.25
200RD 7	2.30	3.55	5.00	7.80	9.80	13.00
200RD 9	4.90	7.80	11.05	17.60	24.15	30.60

kW						
Discharge gas capacities						
Pressure drop across valve - kPa						
Valve series	13.8	34.5	69	172.5	345	690
R-448A/R-449A						
100RB	0.81	1.27	1.78	2.73	3.66	4.62
200RB/500RB/200RD 2	1.82	2.86	4.00	6.14	8.24	10.40
200RB/500RB/200RD 3	2.63	4.13	5.78	8.87	11.91	15.02
200RB/500RB/200RD 4	5.05	7.94	11.12	17.06	22.90	28.89
200RB/500RB/200RD 5	6.06	9.53	13.35	20.48	27.48	34.67
200RB/500RB/200RD 6	6.47	10.17	14.24	21.84	29.31	36.98
200RB/500RB/200RD 7	8.49	13.35	18.69	28.67	38.47	48.53
200RB/200RD 9	16.37	25.74	36.04	55.29	74.19	93.60
240/540RA8	8.49	13.35	18.69	28.67	38.47	48.53
240/540RA9T5	14.55	22.88	32.04	49.15	65.94	83.20
240/540RA9	18.60	29.23	40.94	62.80	84.26	106.31
240/540RA12	20.62	32.41	45.39	69.62	93.42	117.86
240/540RA16	33.56	52.75	73.86	113.31	152.04	191.82
240/540RA20	47.30	74.35	104.12	159.72	214.32	270.39
R-407C						
100RB	0.70	1.06	1.41	2.11	2.81	3.52
200RB/500RB/200RD 2	1.58	2.46	3.34	5.10	6.68	7.91
200RB/500RB/200RD 3	2.11	3.17	4.40	6.86	8.97	10.73
200RB/500RB/200RD 4	3.69	5.98	8.44	12.31	16.71	21.80
200RB/500RB/200RD 5	4.57	7.39	10.55	14.77	20.40	27.61
200RB/500RB/200RD 6	4.92	7.74	10.90	16.71	26.55	29.37
200RB/500RB/200RD 7	7.39	11.61	16.53	27.08	36.22	45.72
200RB/RD 9	12.31	19.34	27.43	44.14	58.73	70.87
240/540RA8	7.39	11.61	16.53	27.08	36.22	45.72
240/540RA9T5	12.66	19.69	28.14	43.61	58.03	72.45
240/540RA9	15.83	24.97	35.52	53.81	70.34	79.13
240/540RA12	21.10	33.41	47.13	74.56	104.10	130.48
240/540RA16	28.84	45.72	64.71	99.88	132.59	162.48
240/540RA20	40.44	64.01	90.38	150.17	197.30	236.34
R-410A						
200RD 2	1.93	3.17	4.57	7.21	9.67	11.96
200RD 3	2.81	4.40	6.15	9.85	13.19	16.53
200RD 4	5.28	8.44	11.78	18.82	23.91	32.00
200RD 5	6.51	10.37	14.95	23.74	29.19	39.74
200RD 6	7.03	10.90	15.30	24.09	32.53	43.08
200RD 7	8.09	12.48	17.58	27.43	34.47	45.72
200RD 9	17.23	27.43	38.86	61.90	84.93	107.62

Tons					
Discharge gas capacities					
Pressure drop across valve - psi					
VALVE SERIES	2	5	10	25	50
R-744					
200RD2	0.80	1.26	1.77	2.74	3.73
200RD3	1.16	1.83	2.57	3.98	5.43
200RD4	2.18	3.43	4.82	7.46	10.18
200RD5	2.69	4.23	5.95	9.21	12.6
200RD6	2.91	4.58	6.43	9.95	13.6
200RD7	3.34	5.26	7.39	11.4	15.6
200RD9	7.12	11.2	15.7	24.4	33.3

kW					
Discharge gas capacities					
Pressure drop across valve - kPa					
VALVE SERIES	13.8	34.5	69	172.5	345
R-744					
200RD2	2.81	4.43	6.22	9.63	13.13
200RD3	4.09	6.44	9.04	14.00	19.10
200RD4	7.67	12.07	16.95	26.25	35.82
200RD5	9.45	14.89	20.91	32.38	44.18
200RD6	10.22	16.09	22.60	35.00	47.76
200RD7	11.75	18.51	25.99	40.25	54.92
200RD9	25.04	39.43	55.38	85.75	117.01

NOTE: Shading indicates nominal ratings based on 30°F Condensing with 50°F Superheat at compressor discharge, 20°F Liquid, -20°F Evaporator and 25°F Superheat at compressor suction.

NOTE: Shading indicates nominal ratings based on 30°F Condensing with 50°F Superheat at compressor discharge, 20°F Liquid, -20°F Evaporator and 25°F Superheat at compressor suction.

## Solenoid multi-purpose tool

The Solenoid Multi-Purpose Tool is a magnetic tool that holds key components together as the valve is disassembled. The manual stem adjustment makes it easy to open valves. This tool provides longer life utilizing its spanner wrench which not only makes it easier to service valves, but also protects the enclosing tube from damage.

### Features

- Magnet opens a normally closed Emerson solenoid valve that is in the de-energized state
- Incorporates a spanner wrench and drive socket which enable easy disassembly of Emerson solenoid valves 100RB & 240RA/540RA by using a 3/8" socket wrench
- Tool has a manual stem orifice used to manually adjust opening stem
- May reassemble valve with proper torque specifications on collar

### Torque specifications

100RB Series	225 in. lbs.
240RA Series	150 in. lbs.
540RA Series	150 in. lbs.

### Ordering information

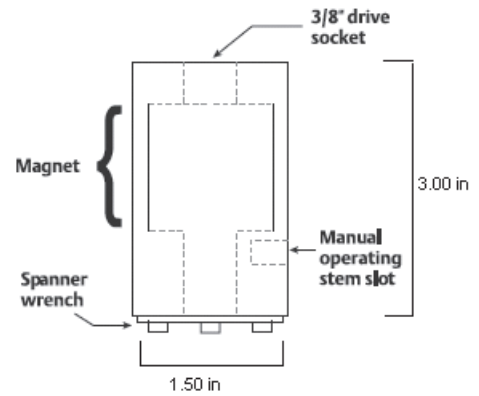
PCN	DESCRIPTION
066019	Solenoid multi-purpose tool



### Specifications

- Drive socket size 3/8"

### Dimensional data





# Industrial solenoid valves

Our Industrial solenoid valves are approved for use with the fluids utilized in secondary loops such as Ethylene and Propylene Glycol and Tyfoxit. The recommended seat material is Buna-N.

These valves referenced above are as follows:

202CB	211CA
203CA	214CA
204CD	222CB
210CA	314UB

When ordering valves for the above stated application, be sure to mention the Elastomer Code "B" which designates Buna-N.

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
Dynalene	Dynalene

## Nomenclature example: 222CB 1/2B 1/2B

2	22	C	B	1/2	B	1/2	B
Valve type 2 = 2 Way 3 = 3 Way	Product group two digits to define group	Form of flow C = Normally closed O = Normally open U = Universal	Design series letter will be advanced to identify product changes	Pipe N.P.T. 1/8" Thru 2" GS indicates non-standard	Body material B = Brass S = Stainless steel t = Stainless steel with silver shading band	Body orifice 3/65" Thru 2"	Elastomer code B = BUNA-N

## 202CB industrial solenoid valves

The 202CB is a direct-acting, normally closed valve for control of air, water, and steam applications.

### Features

- Superior life with stainless steel enclosing tube
- Repair kits available



### Options

- Brass or stainless steel bodies
- Optional Voltages: 12 or 24 VDC & 120-240, 480 & 240-480/50-60 Hz

### Specifications

- 1/8" NPT solenoid valve
- Watts: 12 A.C., 15 D.C.
- VA Inrush: 28
- VA Holding: 19
- Maximum working pressure: 500 psi (1000 psi - 3/64" orifice only)
- Weight: 1 lb
- Standard voltages: 24, 120, 208-240/50-60 Hz
- UL/CUL file number: MP604

### Ordering information

Pipe size	Orifice size	M.O.P.D <sup>2</sup>		Cv	Max. Ac fluid temp. <sup>1</sup>	Recommended coils			Description	PCN	Elastomer
		AC	DC			Size	Insulation	Enclosure			
Brass general purpose											
1/8	3/64	500	500	0.05	180°F	A 12 Watts AC 15 Watts DC	M Class F Molded	G Junction Box	202CB1/8B3/64B		BUNA-N
	1/16	500	500	0.12					202CB1/8B1/16B		
	3/32	300	125	0.22					202CB1/8B3/32B		
	1/8	150	75	0.34					202CB1/8B1/8B	030113	
	5/32	100	40	0.48					202CB1/8B5/32B	030114	
Stainless steel general purpose											
1/8	3/64	500	500	0.05	180°F	A 12 Watts AC 15 Watts DC	M Class F Molded	G Junction Box	202CB1/8S3/64B		BUNA-N
	1/16	500	500	0.12					202CB1/8S1/16B	064756	
	3/32	300	125	0.22					202CB1/8S3/32B		
	1/8	150	75	0.34					202CB1/8S1/8B		
	5/32	100	40	0.48					202CB1/8S5/32B		
Brass steam											
1/8	1/16	150	-	0.12	400°F	A 12 Watts	H Class H Molded	G Junction Box	202CB1/8B1/16T		PTFE w/Ethylene Propylene Gaskets
	3/32	150	-	0.22					202CB1/8B3/32T		
	1/8	150	-	0.34					202CB1/8B1/8T	030123	
	5/32	100	-	0.48					202CB1/8B5/32T		
1/8	1/8	150	-	0.34	400°F	A 12 Watts	H Class H Molded	G Junction Box	202CB1/8B1/8P	030118	Ethylene Prop.
1/8	5/32	100	-	0.48	400°F	A 12 Watts	H Class H Molded	G Junction Box	202CB1/8B5/32V	056954	Viton w/Ethylene Propylene Gaskets

<sup>1</sup>With an ambient temperature of 77°F.

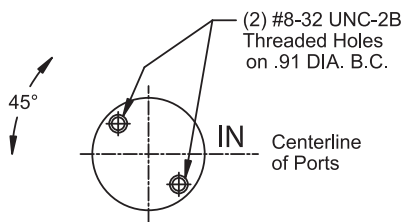
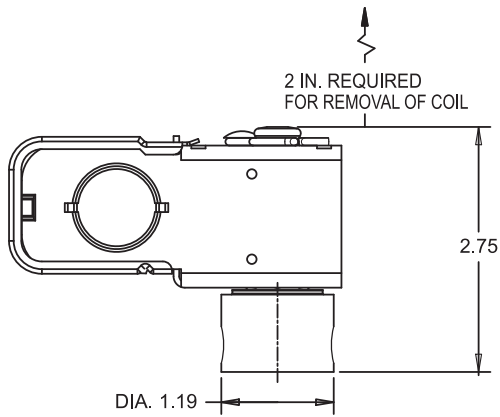
<sup>2</sup>Maximum operating pressure differential.

\*VLC - See coil assemblies for availability.

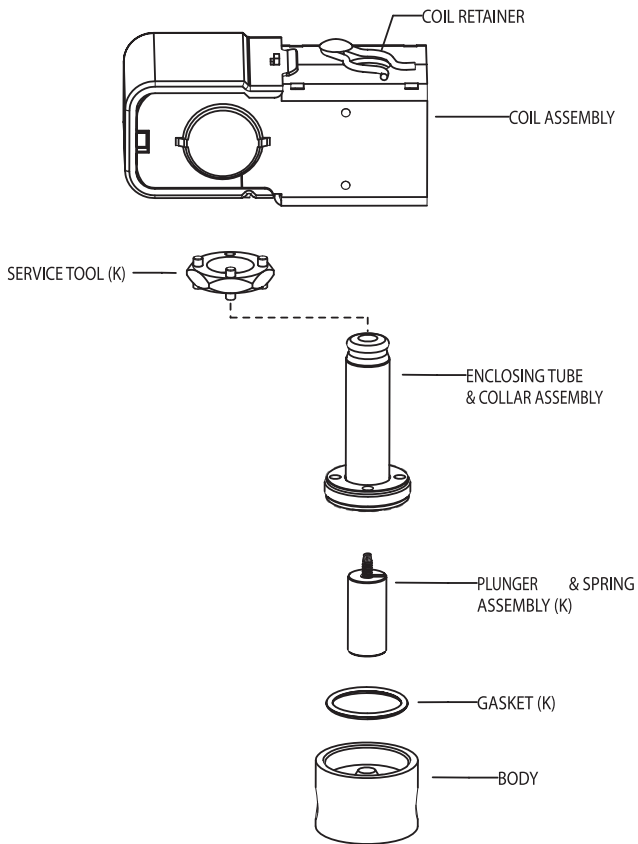


# 202CB

## Dimensional data (in)



## Exploded view

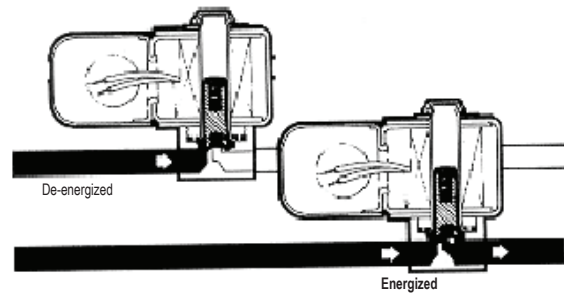


## Valve options

Options	To order
Manual override (not for steam) Minimum order qty. 100	Add suffix "M" to catalog number.
Adjustable metering (not for steam) 500 psi SWP for all orifice sizes.	Add suffix "A" to catalog number.
Silver shading band (On stainless steel valves)	Change body material code. Example: Change standard 202CB1/8S to non-standard 202CB1/8T (silver shading band)

## Valve repair kits

Seat material	Kit #	PCN
Buna-N	K-1063	066046
Viton	K-1065	066043
Rulon	K-1068	032396
Ethylene propylene	K-1064	021104



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

Coil assembly  
See coil assemblies for availability..

## 203CA industrial solenoid valves

The 203CA is a direct-acting, 2-way normally closed valve for air, water and steam applications.

### Features

- Superior life with stainless steel enclosing tubes
- Forged brass body with large wrench flats
- Repair kits available



### Options

- Optional Voltages: 120-240, 480 & 240-480/50-60 Hz

### Specifications

- 3/8" NPT Solenoid Valve
- Watts: 12 A.C.
- VA Inrush: 37 for 5/32 & 1/8 orifices  
47 for 1/4 + orifices
- VA Holding: 19
- Maximum working pressure: 500 psi
- Weight: 1 lb. 4 oz.
- Standard Voltages: 24, 120, 208-240/50-60 Hz
- UL/CUL file number: MP604

### Ordering information

Pipe size	Orifice size	M.O.P.D <sup>2</sup>	Cv	Max. Ac fluid temp. <sup>1</sup>	Recommended coils			Description	PCN	Elastomer
		AC			Size	Insulation	Enclosure			
Brass general purpose										
3/8	1/8	125	0.3	180°F	A 12 Watts AC	M Class F Molded	G Junction Box	203CA3/8B1/8B		BUNA-N
	5/32	75	0.5					203CA3/8B5/32B		
	1/4	25	1.0					203CA3/8B1/4B	030603	
	5/16	15	1.5					203CA3/8B5/16B		
	3/8	10	1.7					203CA3/8B3/8B	030605	
Stainless steel general purpose										
3/8	1/4	15	1.0	250°F	A 12 Watts AC	M Class F Molded	G Junction Box	203CA3/8B1/4P		Ethylene Propylene Gaskets
	5/16	15	1.5					203CA3/8B5/16P		
	3/8	10	1.7					203CA3/8B3/8P	030614	

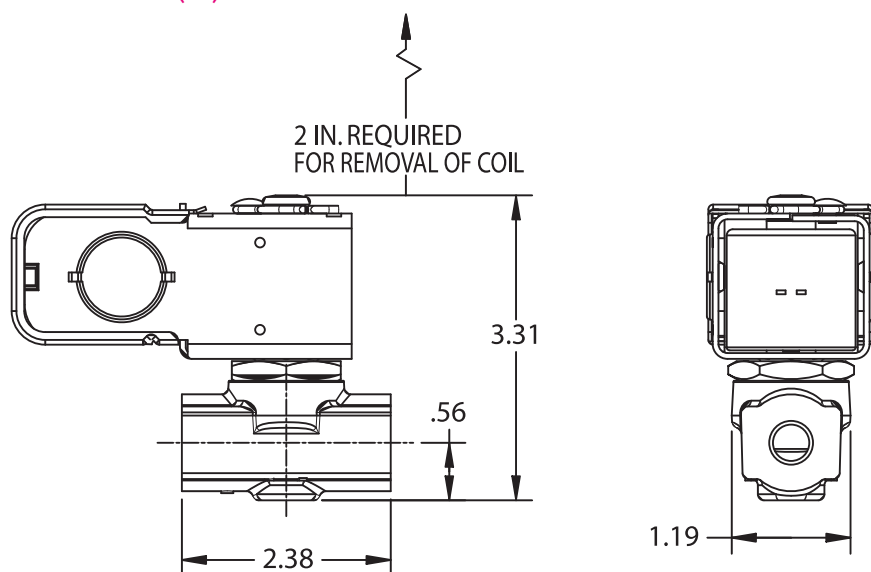
<sup>1</sup>With an ambient temperature of 77°F.

<sup>2</sup>Maximum operating pressure differential.

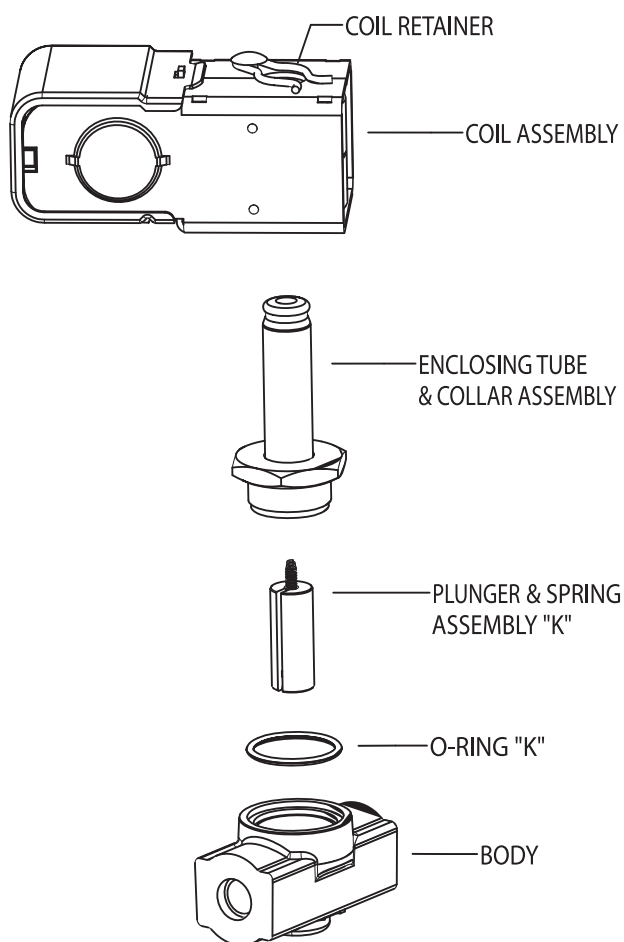
\*VLC - See coil assemblies for availability.

# 203CA

## Dimensional data (in)



## Exploded view



## Valve repair kits

Orifice size	Seat material	Kit #	PCN
1/4, 5/16, 3/8	Buna-N	K-1104	021108
	Ethylene Propylene	K-1106	040598

Valve Repair Kit  
 "K" indicates part is supplied in valve repair kit.  
 Coil Assembly  
 See coil assemblies for availability.

# 204CD industrial solenoid valves

The 204CD is a direct-acting unidirectional, normally closed valve for air, water and steam applications.



## Features

- Superior life with stainless steel enclosing tubes
- Repair kits available

## Options

- Brass or stainless steel bodies
- Optional voltages: 12 or 24 VDC & 120-240, 480 & 240-480/50-60 Hz

## Specifications

- 1/4" NPT solenoid valve
- Watts: 12 A.C., 15 D.C.
- VA Inrush: 31
- VA Holding: 19
- Maximum working pressure: 500 psi
- Weight: 1 lb. 3 oz.
- Standard voltages: 24, 120, 208-240/50-60 Hz
- UL/CUL file number: MP604

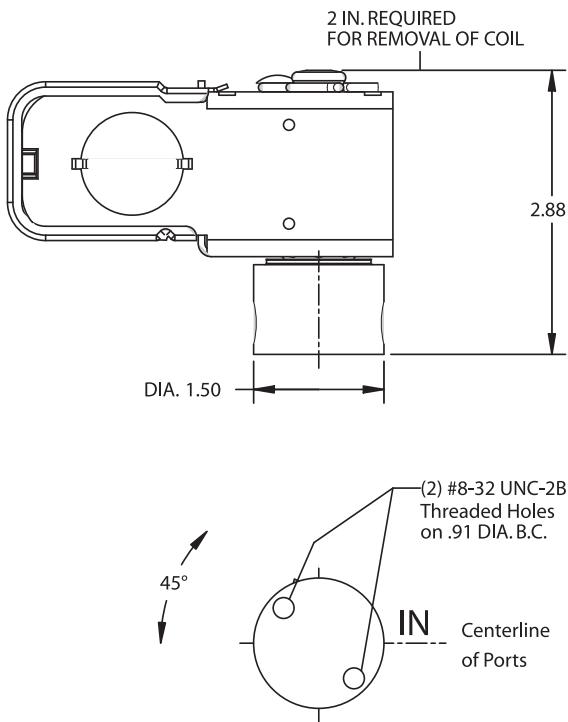
## Ordering information

Pipe size	Orifice size	M.O.P.D <sup>2</sup>		Cv	Max. Ac fluid temp. <sup>1</sup>	Recommended coils			Description	PCN	Elastomer
		AC	DC			Size	Insulation	Enclosure			
<b>Brass general purpose</b>											
1/4	3/64	500	500	0.05	180°F	A 12 Watts AC 15 Watts DC	M Class F molded	G Junction box	204CD1/4B3/64B	030731	BUNA-N
	1/16	500	500	0.12					204CD1/4B1/16B		
	3/32	300	125	0.22					204CD1/4B3/32B	030733	
	1/8	150	75	0.34					204CD1/4B1/8B	056110	
	5/32	100	40	0.48					204CD1/4B5/32B	030735	
	3/16	60	30	0.56					204CD1/4B3/16B	030736	
	1/4	20	10	0.70					204CD1/4B1/4B	030737	
<b>Stainless steel general purpose</b>											
1/4	3/64	500	500	0.05	180°F	A 12 Watts AC 15 Watts DC	M Class F molded	G Junction box	204CD1/4S3/64B		BUNA-N
	1/16	500	500	0.12					204CD1/4S1/16B		
	3/32	300	125	0.22					204CD1/4S3/32B	030870	
	1/8	150	75	0.34					204CD1/4S1/8B	030871	
	5/32	100	40	0.48					204CD1/4S5/32B		
	3/16	60	30	0.56					204CD1/4S3/16B		
	1/4	20	10	0.70					204CD1/4S1/4B	030874	
<b>Brass steam</b>											
1/4	3/64	150	-	0.05	400°F	A 12 Watts AC A	H Class H molded M	G Junction box G	204CD1/4B3/64T		PTFE w/Ethylene Propylene Gaskets
	1/16	150	-	0.12					204CD1/4B1/16T		
	3/32	150	-	0.22					204CD1/4B3/32T	030748	
	1/8	150	-	0.34					204CD1/4B1/8T	030749	
	5/32	100	-	0.48					204CD1/4B5/32T	030750	
	3/16	60	-	0.56					204CD1/4B3/16T		
	1/4	20	-	0.70	250°F			204CD1/4B1/4P		E.P. Seat	
<b>Stainless steel steam</b>											
1/4	3/64	150	-	0.05	400°F	A 12 Watts AC A	H Class H molded M	G Junction box G	204CD1/4S3/64T	030883	PTFE w/Ethylene Propylene Gaskets
	1/16	150	-	0.12					204CD1/4S1/16T		
	3/32	150	-	0.22					204CD1/4S3/32T		
	1/8	150	-	0.34					204CD1/4S1/8T	030886	
	5/32	100	-	0.48					204CD1/4S5/32T		
	3/16	60	-	0.56					204CD1/4S3/16T	030888	
	1/4	20	-	0.70	250°F			204CD1/4S1/4P		E.P. Seat	
<b>Stainless steel steam</b>											
1/4	5/32	100	-	0.48	400°F	A 12 Watts	H Class H molded	G Junction box	204CD1/4S5/3P	053492	E.P. Seat
<b>Brass steam</b>											
1/4	5/32	100	-	0.48	400°F	A 12 Watts	H Class H molded	G Junction box	204CD 1/4 B 5/32 P	064682	E.P. Seat

<sup>1</sup>With an ambient temperature of 77°F.  
<sup>2</sup>Maximum operating pressure differential.  
<sup>3</sup>VLC - See coil assemblies for availability.

# 204CD

## Dimensional data (in)



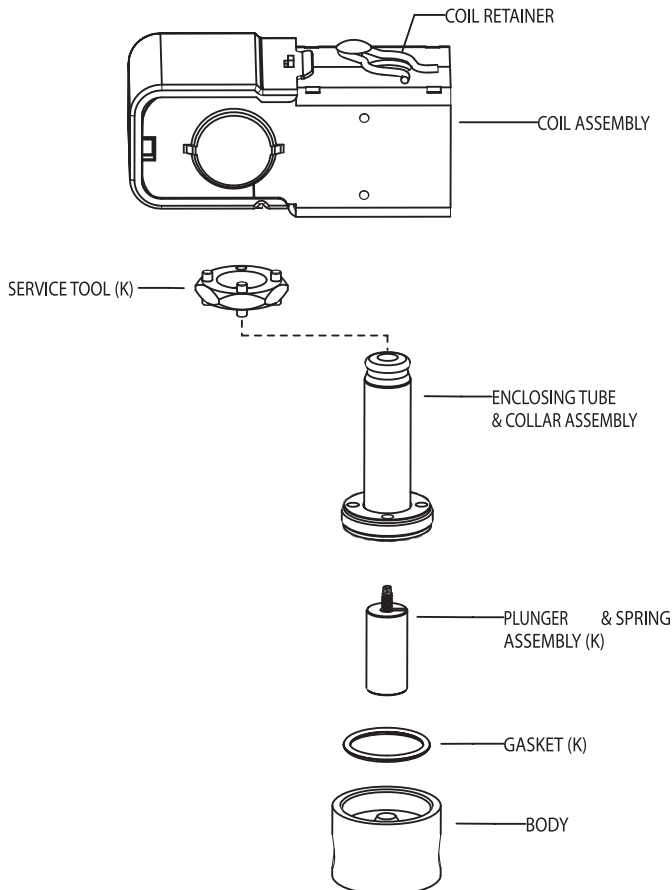
## Valve options

Options	To Order
Manual override (not for steam) Minimum order qty. 100	Add suffix "M" to catalog number.
Adjustable metering (not for steam) 500 psi SWP for all orifice sizes.	Add suffix "A" to catalog number.
Silver shading band (On stainless steel valves)	Change body material code. Example: Change standard 204CD1/4S to non-standard 204CD1/4T (silver shading band)

## Valve repair kits

Seat material	Kit #	PCN
Buna-N	K-1072	021105
Viton	K-1074	021106
Rulon	K-1077	021107
Ethylene Propylene	K-1076	032154
Buna-N (1/4 orifice only)	K-1162	039145

## Exploded view



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

Coil assembly  
For available coil assemblies, see page 126.

## 210CA/211CA industrial solenoid valves

The 210CA/211CA is a 2-way normally closed valve used in air, water and steam applications. The 210CA valve is pilot-operated and the 211CA valve is direct-acting.

### Features

- Unique captive diaphragm and seal
- Superior life with stainless steel enclosing tube
- Repair kits available

### Options

- Optional voltages: 12 or 24 VDC & 120-240, 480 & 240-480/50-60 Hz



3/8", 1/2", 3/4"



1" Only

### Specifications

- Watts: 12 A.C.
- VA inrush: 31
- VA holding: 19
- Maximum working pressure: 300 psi (250 psi on 1" 210C only)
- Weight: 1 lb. 3 oz.
- Standard voltages: 24, 120, 208-240/50-60 Hz
- Diaphragm operated solenoid valve: 210CA - from 5 to 150 psi. 3/8" to 1" NPT  
211CA - from 0 to 100 psi. 3/8" to 3/4" NPT
- UL/CUL file number: MP604

### Ordering information

Pipe size	Orifice size	M.O.P.D		Cv	Max. Ac fluid Temp. <sup>1</sup>	Recommended coils			Description	PCN	Elastomer
		AC				Size	Insulation	Enclosure			
Brass general purpose											
3/8	5/8	150		2.8	180°F	A 12 Watts AC	M Class F molded	G Junction box	210CA3/8B5/8B	030619	BUNA-N
1/2	5/8	150		3.6					210CA1/2B5/8B	030620	
3/4	3/4	125		5.5					210CA3/4B3/4B	030621	
1	1	125		13					210CA3/4B3/4P	038629	
Brass-hot water (210°F) or steam (to 250°)											
3/8	5/8	100 <sup>2</sup>	15 <sup>3</sup>	2.8	250°F	A 12 Watts AC	M Class F molded	G Junction box	210CA3/8B5/8P		Ethylene Propylene
1/2	5/8	100 <sup>2</sup>	15 <sup>3</sup>	3.6					210CA1/2B5/8P	030623	
3/4	3/4	100 <sup>2</sup>	15 <sup>3</sup>	5.5					210CA3/4B3/4P	030624	

### Ordering information

Pipe size	Orifice size	M.O.P.D		Cv	Max. Ac fluid Temp. <sup>1</sup>	Recommended coils			Description	PCN	Elastomer
		AC				Size	Insulation	Enclosure			
Brass general purpose											
3/8	5/8	100		2.8	180°F	A 12 Watts AC	M Class F molded	G Junction box	211CA3/8B5/8B	030625	BUNA-N
1/2	5/8	100		3.6					211CA1/2B5/8B	030626	
3/4	3/4	100		5.5					211CA3/4B3/4B	030627	
Brass-hot water (210°F) or steam (to 250°)											
3/8	5/8	100 <sup>2</sup>	15 <sup>3</sup>	2.8	250°F	A 12 Watts AC	M Class F molded	G Junction box	211CA3/8B5/8P	032303	Ethylene Propylene
1/2	5/8	100 <sup>2</sup>	15 <sup>3</sup>	3.6					211CA1/2B5/8P	032304	
3/4	3/4	100 <sup>2</sup>	15 <sup>3</sup>	5.5					211CA3/4B3/4P	032305	

<sup>1</sup>With an ambient temperature of 77°F.

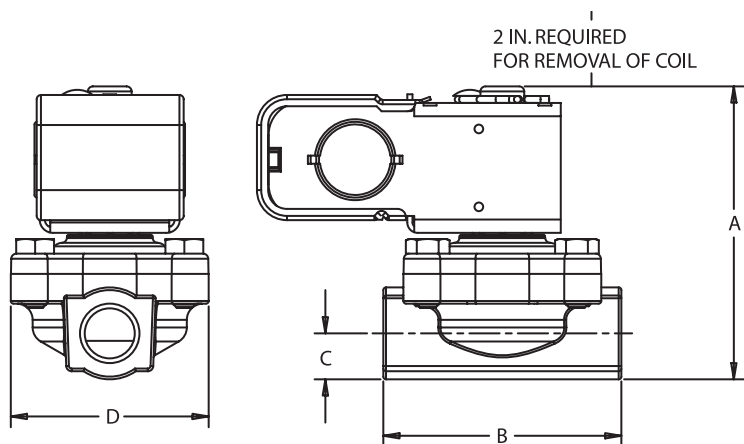
<sup>2</sup>MOPD-Hot Water

<sup>3</sup>MOPD-Steam

\*VLC - See coil assemblies for availability.

# 210CA/211CA

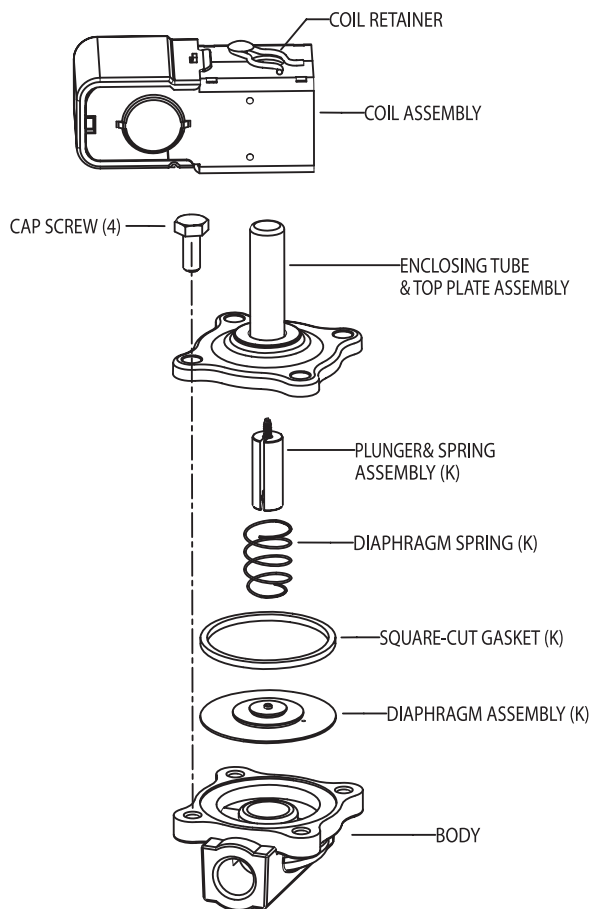
## Dimensional data (in)



Pipe size	A	B	C	D
3/8	3.56	2.75	0.53	2.29
1/2				
3/4	3.83	2.81	0.66	
1*	4.55	4.16	0.84	4.31

\* 1" Pipe available on 210C valve only

## Exploded view



## 210CA valve repair kits

Seat material	Connection 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	K-1232	045083		

## 211CA valve repair kits

Seat material	Kit #	PCN
Buna-N	K-1157	034357
Ethylene Propylene	K-1158	039879

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

Coil assembly  
See coil assemblies for availability.

# 214CB industrial solenoid valves

The 214CB is a 2-way normally closed valve for air, water, and steam applications.

## Features

- Superior life with stainless steel enclosing tube
- Forged brass body with large wrench flats
- PTFE O-ring for superior external leakage
- Repair kits available



## Options

- Optional Voltages: 480, 120-240 & 240-480/50-60 Hz

## Specifications

- 1/4" & 3/8" NPT solenoids
- Watts: 12 @ 60Hz
- VA Inrush: 44
- VA Holding: 22
- Maximum working pressure: 350 psi
- Weight: 1 lb. 4 oz.
- Standard Voltages: 24, 120, 208-240/50-60 Hz
- Pilot Operated: 2 to 200 P.S.I.
- UL/CUL file number: MP604

## Ordering information

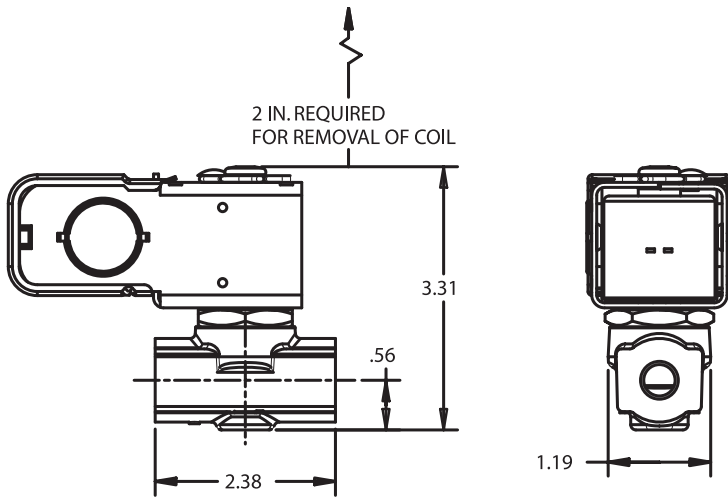
Pipe size	Orifice size	M.O.P.D <sup>2</sup>	Cv	Max. AC fluid Temp. <sup>1</sup>	Recommended coils			Description	PCN	Elastomer
		AC			Size	Insulation	Enclosure			
Brass general purpose										
1/4	1/4	200	1.2	180°F	A 12 Watts @ 60 Hz	M Class F molded	C Junction box	214CB1/4B1/4B	030540	BUNA-N
	5/16	200	1.6					214CB1/4B5/16B	030541	
	3/8	200	2.2					214CB1/4B3/8B		
3/8	1/4	200	1.2					214CB3/8B1/4B		
	5/16	200	1.6					214CB3/8B5/16B		
	3/8	200	2.2					214CB3/8B3/8B	030545	
3/8	3/8	200	2.2	400°F		Same as above		214CB 3/8B3/8P	030557	EP Seat

<sup>1</sup>With an ambient temperature of 77°F.  
<sup>2</sup>Maximum operating pressure differential.  
<sup>\*</sup>VLC - See coil assemblies for availability.

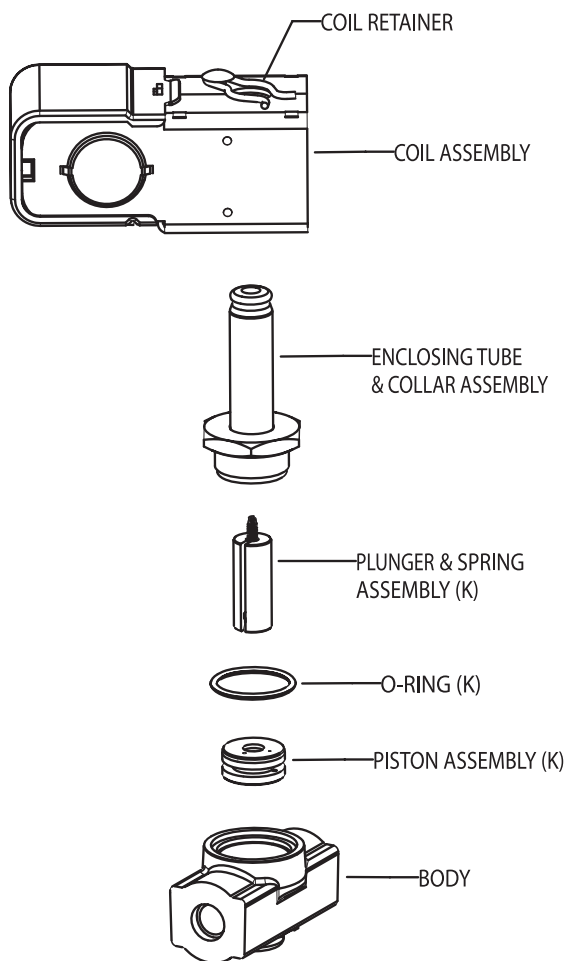


# 214CB

## Dimensional data (in)



## Exploded view



## Valve options

Options	To order
Manual override	Add suffix "M" to catalog number.

## Valve repair kits

Seat material	Kit #	PCN
Buna-N	K-1112	035074
Ethylene propylene	K-1113	041334

Valve repair kit  
Valve repair "k" indicates part is supplied in valve repair kit.

Coil assemblies  
See coil assemblies for availability.

## 222CB industrial solenoid valves

The 222CB is a 2-way normally closed valve for air, water, and steam applications.



### Features

- Forged brass body with large wrench flats
- Repair kits available

### Options

- Optional voltages: 480, 120-240 & 240-480/50-60 Hz

### Specifications

- 3/8" & 1 1/2" NPT solenoids
- Rulon seat material
- Watts: 12 @ 60Hz
- VA inrush: 38
- VA holding: 19
- Maximum working pressure: 300 psi
- Minimum operating pressure differential : 5 psi
- Standard voltages: 24, 120, 208-240/50-60 Hz
- UL/CUL file number: MP604
- Weights:
 

Pipe size	Weight
3/8, 1/2	1 lb. 8 oz.
3/4	3 lbs.
1	4 lbs. 4 oz.
1-1/4	6 lbs. 2 oz.
1-1/2	8 lbs. 6 oz.

### Ordering information

Pipe size	Orifice size	M.O.P.D <sup>2</sup>	Cv	Max. AC fluid temp. <sup>1</sup>	Recommended coils			Description	PCN	Elastomer	
		AC			Size	Insulation	Enclosure				
Brass general purpose											
3/8	1/2	250	3.5	180°F	A 12 Watts @ 60 Hz	M Class F molded	G Junction box	222CB3/8B1/2B	039917	BUNA-N	
1/2	1/2		3.5					222CB1/2B1/2B			
3/4	3/4		7.0					222CB3/4B3/4B			028192
1	1		13.0					222CB1B1B			039931
1-1/4	1-1/4		16.0					222CB1-1/4B1-1/4B			039918
1-1/2	1-1/2		25.0					222CB1-1/2B1-1/2B			038879
Brass steam											
1/2	1/2	150	3.5	400°F	A 12 Watts @ 60 Hz	H Class F molded	G Junction box	222CB1/2B1/2T	037958	Rulon with Ethylene Propylene gaskets	
3/4	3/4		7.0					222CB3/4B3/4T			039930
1	1		13.0					222CB1B1T			039834
1-1/4	1-1/4		16.0					222CB1-1/4B1-1/4T			040532
1-1/2	1-1/2		25.0					222CB1-1/2B1-1/2T			040582
Brass steam											
3/4	3/4	150	7.0	400°F	Same as above			222CB- 3/4 B-3/4 P	041314	Ethylene Prop.	

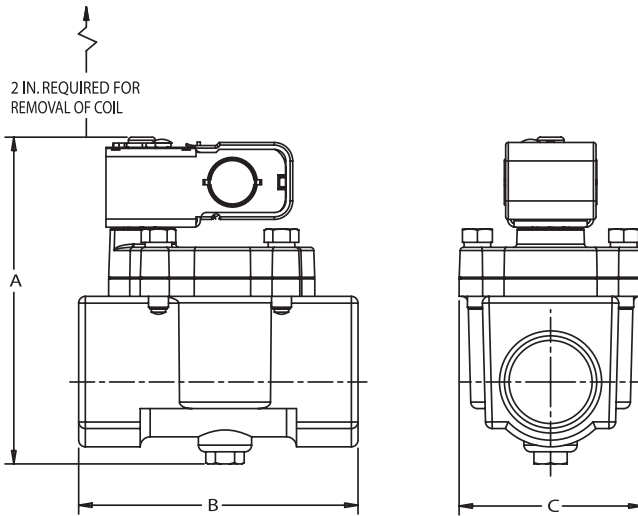
<sup>1</sup>With an ambient temperature of 77°F.

<sup>2</sup>Maximum operating pressure differential.

\*VLC - See coil assemblies for availability.

# 222CB

## Dimensional data (in)



Orifice size	A*	B	C
1/2	4.59	2.47	1.63
3/4	4.91	3.25	2.06
1	5.38	4.06	2.63
1 1/4	5.66	4.56	3.00
1 1/2	6.16	5.25	3.44

\* Add 0.97 for Manual Override

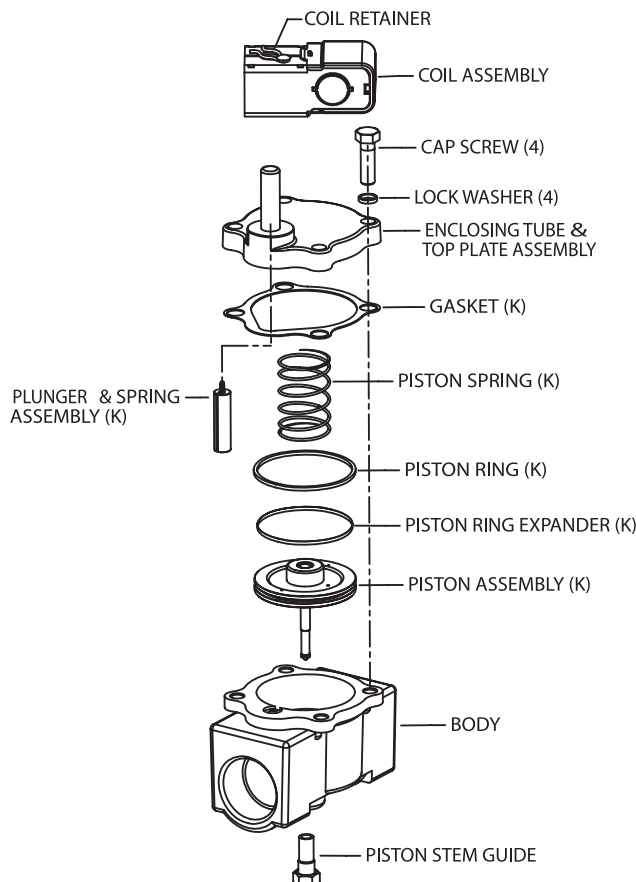
## Valve options

Options	To order
Manual override (not for steam) field installed	Add suffix "M" to catalog number.

## 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
Rulon	K-1118	029235	K-1122	021109	K-1126	034178	K-1130	034047		
Ethylene propylene			K-1121	040680						

## Exploded view



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

Coil assembly  
See coil assemblies for availability.

# 314UB industrial solenoid valves

The 314UB is a direct-acting, 3-way universal valve for air and water applications.

## Features

- Rugged industrial construction
- Both seat discs are spring loaded
- Superior life with stainless steel enclosing tube

## Options

- Brass or stainless steel bodies
- Optional Voltages: 480, 120-240 & 240-480/50-60 Hz

NOTE: 314U valves require an AMGN, EM or ASC-Type coil.



## Specifications

- 1/4" NPT Solenoids
- Watts: 12 @ 60Hz
- VA Inrush: 36
- VA Holding: 24
- Maximum working pressure: 500 psi
- Weight: 1 lb.
- Standard Voltages: 24, 120, 208-240/50-60 Hz
- UL/CUL file number: MP604

## Ordering information

Pipe size	Orifice size	M.O.P.D <sup>2</sup>		Cv		Max. Ac fluid Temp. <sup>1</sup>	Recommended coils			Description	PCN	Elastomer
		AC	Port 2	Port 3	Size		Insulation	Enclosure				
Brass general purpose												
1/4	3/64	125	0.05	0.06	180°F	A 12 Watts @ 60 Hz	M Class F molded	GN Junction box	314UB1/4B3/64B3/64B	030722	BUNA-N	
	3/32	40	0.22	0.17					314UB1/4B3/32B3/32B	030719		
Stainless steel general purpose												
1/4	3/64	125	0.05	0.06	180°F	A 12 Watts @ 60 Hz	M Class F molded	GN Junction box	314UB1/4S3/64B3/64B	030725	BUNA-N	

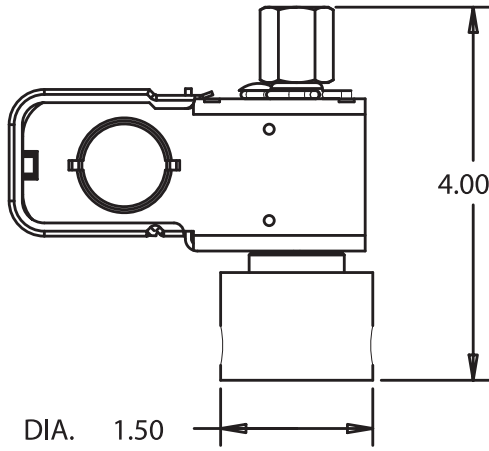
<sup>1</sup>With an ambient temperature of 77°F.

<sup>2</sup>maximum operating pressure differential.

\*VLC - See coil assemblies for availability.

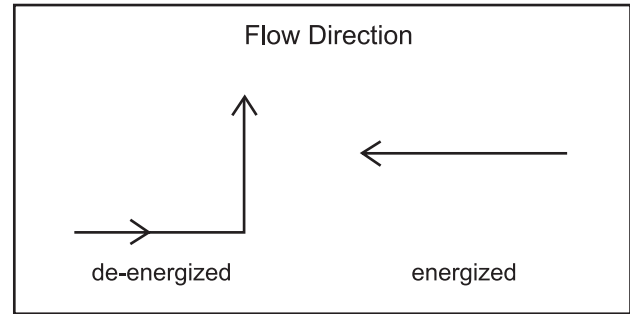
# 314UB

## Dimensional data (in)

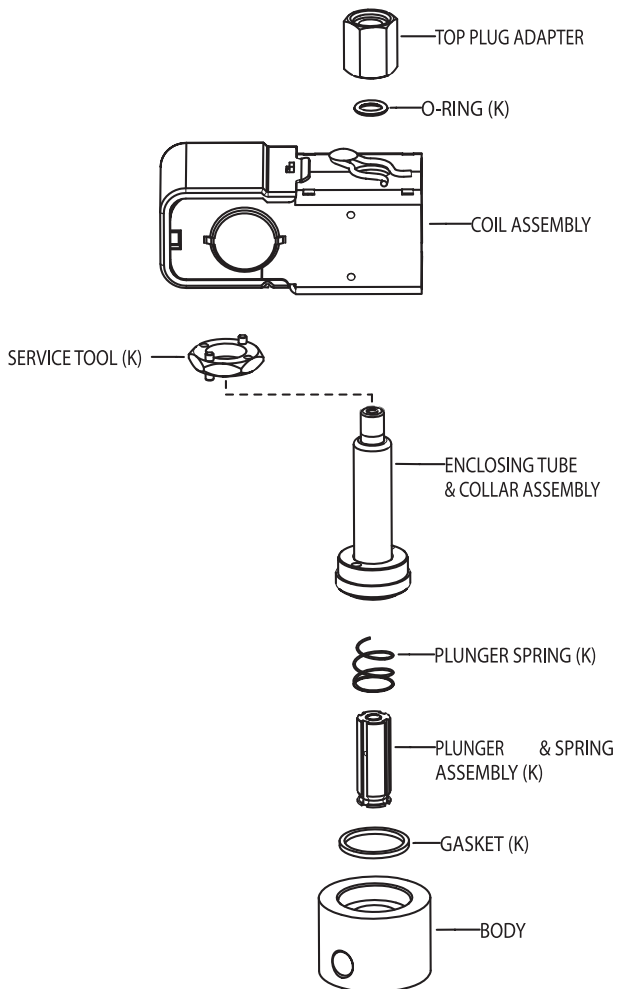


## Valve options

Options	To order
Silver shading band (on stainless steel valves)	Change body material code. Example: Change standard 314UB1/8S to non-standard 314UB1/bT (silver shading band)



## Exploded view



## Valve repair kit

Seat material	Kit #	PCN
Buna-N	K-1093	037054

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

Coil assembly  
See coil assemblies for availability.

## Old to new cross reference

Old model	Old PCN	New model	New PCN
121WB5CP02	030038	204CD 1/4B 5/32 B VLC	030735
121WB03P02	040412	204CD 1/4B 3/16 B VLC	030736
121WB04P02	040337	204CD 1/4B 1/4 B VLC	030737
121SB5CP02	040300	204CD 1/4B 5/32 T VLC	030750
201WB04P02	091876	214CB 1/4B 1/4 B VLC	030540
201WB05P02	040758	214CB 3/8B 5/16 B VLC	064854
201WB06P02	065610	214CB 3/8B 3/8 B VLC	030545
231WB08P04	030051	222CB 1/2 B 1/2 B VLC	039917
231WB12P06	039987	222CB 3/4 B 3/4 B VLC	028192
231WB16P08	034211	222CB 1 B 1 B VLC	039931
231WB20P10	040283	222CB 1-1/4 B 1-1/4 B VLC	039918
231WB24P12	040021	222CB 1-1/2 B 1-1/2 B VLC	038879
231SB08P04	034171	222CB 1/2 B 1/2 T VLC	037958
231SB12P06	040069	222CB 3/4 B 3/4 T VLC	039930
231SB16P08	030048	222CB 1 B 1 T VLC	039834
231SB20P10	040365	222CB 1-1/4 B 1-1/4 T VLC	040532
231SB24P12	040366	222CB 1-1/2 B 1-1/2 T VLC	040582
241WA10P03	035073	210CA 3/8 B 5/8 B VLC	030619
241WA10P04	035023	210CA 1/2 B 5/8 B VLC	030620
241WA12P06	035022	210CA 3/4 B 3/4 B VLC	030621
241WA16P08	038857	210CA 1 B 1 B VLC	038629

# M36 Series 3-Way solenoid valves

## Features

- For heat reclaim application
- Pilot connection to suction line required. No minimum pressure drop
- Compact size
- No disassembly necessary for brazing
- Max. allowable pressure PS: 35 bar

## Accessories

- Actuation coil and cable assemblies available for various voltages, see 'Coils ASC3 and Cable Assemblies



M36-118



M36-078 with ASC3 Coil and DS2 Chopper Plug

## Capacity data

Type	Part no.	Connection solder/ODF		Nominal capacity Q <sub>n</sub> (kW)				kv-Value m <sub>3</sub> /h	Coil type
		mm	Inch	R134a	R22	R404A / R507	R407C		
M36-078	801 420	22	7/8	28.9	35.1	31.3	38.5	6.7	ASC3
M36-118	801 421		1-1/8						

Nominal capacities at +38°C condensing temperature. +4°C evaporating temperature (saturated pressures / dew point). 0.15 Bar pressure drop between valve inlet and outlet.



# Shut off valves

## ACK check valves shut off valves

The ACK check valve is a normally closed magnetic check valve that prevents reverse refrigerant flow in liquid lines and compressor discharge lines.

### Features

- Copper Connection Sizes 1/4" through 2-5/8"
- Hermetic Spun Copper Design
- Magnetic Checking Action
- Built-In 30 Mesh Stainless Steel Strainer
- Can Be Installed In Any Position

### Nomenclature example: ACK-4

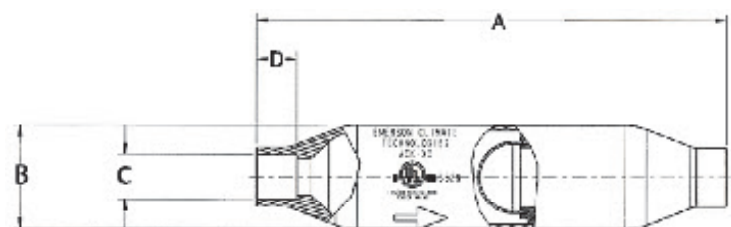
ACK	4
Check valve series	Copper ODF connection size (in 1/16")



### Specifications

- UL/CUL File number: SA 5312

### Dimensional data (in)





Ordering information and dimensional data (in)

Cross reference

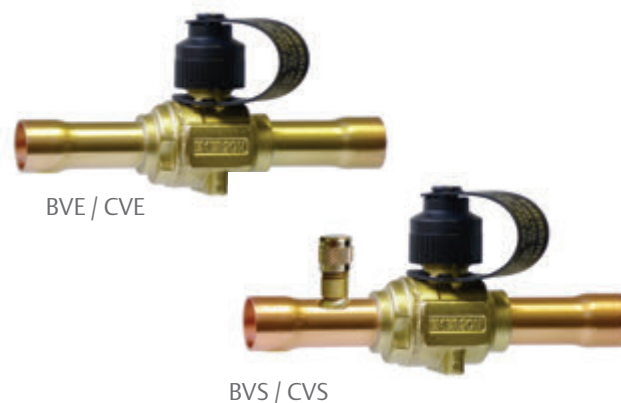
PCN	Model	Connection size	A	B	C	D	Opening pressure (oz/sq in)	Opening pressure (psig)	MWP (psig)	A-1 Components	Superior
064985	ACK-4	1/4 ODF	4.00	0.88	0.254±0.002	0.19	1.2	0.08	800	MS-4	900M-4S
064986	ACK-6	3/8 ODF			0.379±0.002	0.4	1.3	0.08		MS-6	900M-6S
064987	ACK-8	1/2 ODF	5.00	1.13	0.504±0.002	364	3.5	0.22	680	MS-8	900M-8S
064988	ACK-10	5/8 ODF			0.629±0.002	0.5				MS-10	900M-10S
064989	ACK-12	3/4 ODF	7.00	1.63	0.754±0.002	0.63	3.8	0.24	680	MS-12	900M-12S
064990	ACK-14	7/8 ODF			0.879±0.003	342				MS-14	900M-14S
064991	ACK-18	1-1/8 ODF	8.38	2.13	1.130±0.003	394	6.8	0.43	680	MS-18	N/A
064992	ACK-22	1-3/8 ODF	9.38	2.63	1.380±0.003	1.04	10.2	0.64	680	MS-22	N/A
064993	ACK-26	1-5/8 ODF	10.50	3.13	1.630±0.003	1.07	11.4	0.71	680	MS-26	N/A
064994	ACK-34	2-1/8 ODF	12.00	3.63	2.130±0.003	1.34	18.1	1.13	680	MS-34	N/A
064995	ACK-42	2-5/8 ODF	13.00	4.13	2.630±0.003	1.50	23.00	1.44	680	MS-42	N/A

Model	Nominal Tons R-22 Suction 40°F @ 1 psi	Nominal Tons R-22 Liquid 40°F @ 1 psi	Nominal Tons R-404A Discharge 40°F @ 2 psi	Nominal Tons R-404A Suction 40°F @ 1 psi	Nominal Tons R-404A Liquid 40°F @ 1 psi	Nominal Tons R-410A Discharge 40°F @ 2 psi	Nominal Tons R-410A Suction 40°F @ 1 psi	Nominal Tons R-410A Liquid 40°F @ 1 psi	Cv
ACK-4	0.40	2.60	.59	0.34	1.77	0.80	0.48	2.59	0.9
ACK-6	0.60	3.10	1.20	0.50	2.11	1.63	0.72	3.09	1.0
ACK-8	1.20	9.40	2.23	1.01	6.39	3.01	1.44	9.37	3.1
ACK-10	1.40	13	2.67	1.18	8.84	3.61	1.68	12.96	3.6
ACK-12	3.30	27	5.82	2.77	18.36	7.87	3.96	26.92	8.0
ACK-14	3.70	29	6.71	3.11	19.72	9.08	4.44	28.91	9.2
ACK-18	6	51	10.55	5.04	34.68	14.27	7.20	50.85	15.4
ACK-22	9.50	79	17.73	7.98	53.72	23.98	11.40	78.76	23.8
ACK-26	17	102	26.04	14.28	69.36	35.21	20.40	101.69	24.2
ACK-34	30	213	41.13	25.20	144.84	55.62	36.00	212.36	38.7
ACK-42	50	375	50.70	42.00	255.00	68.56	60.00	373.88	71.7

## BVE/BVS and CVE/CVS Series ball valves

### Features

- BVE/S, Max. working pressure PS: 45 bar
- CVE/S for CO<sub>2</sub>, Max. working pressure PS: 60 bar
- BVS/CVS version with Schrader valve
- Two threads at valve body for easy mounting
- Hermetic design with Laser welded valve body
- Bi-directional flow characteristics
- Valve cap retained by strap attached to main body
- Pressure relief port design
- CE Marking acc. PED (from BVE-138 up to BVE-318)
- To protect valve from unauthorized use a special seal cap is available as accessory



### Selection table BVE/BVS (UL approved)

Type BVE	Part no.	Type BVS	Part no.	Connection size ODF	
				(inch)	(mm)
BVE-014	806 730	BVS-014	806 750	1/4"	
BVE-M06	806 731	BVS-M06	806 751		6mm
BVE-038	806 732	BVS-038	806 752	3/8"	
BVE-M10	806 733	BVS-M10	806 753		10mm
BVE-012	806 734	BVS-012	806 754	1/2"	
BVE-M12	806 735	BVS-M12	806 755		12mm
BVE-058	806 736	BVS-058	806 756	5/8"	16mm
BVE-034	806 737	BVS-034	806 757	3/4"	
BVE-078	806 738	BVS-078	806 758	7/8"	22mm
BVE-118	806 739	BVS-118	806 759	1 1/8"	
BVE-M28	806 740	BVS-M28	806 760		28mm
BVE-138	806 741	BVS-138	806 761	1 3/8"	35mm
BVE-158	806 742	BVS-158	806 762	1 5/8"	
BVE-M42	806 743	BVS-M42	806 763		42mm
BVE-218	806 744	BVS-218	806 764	2 1/8"	54mm
BVE-258	806 745	BVS-258	806 765	2 5/8"	
BVE-318	806746	BVS-318	806766	3 1/8"	

### Technical data

Max. allowable pressure PS	BVE/BVS 45 Bar; CVE/CVS 60 Bar
Test pressure PT	BVE/BVS 49.5 Bar; CVE/CVS 66 Bar
Medium temperature TS	-40 ... 120°C
Medium compatibility	R410A R134a R22 R404A R507 R407C R407A R407F R1234ze R448A R449A R450A R513A R744 R124 R452A

### Accessories - Special seal caps

BVE / BVS , CVE / CVS Valve Size	Part no.	Thread (3)	Quantity per pack
1/4" ... 7/8" (6 ... 22mm)	806 770	M18x1	10 pcs
1-1/8" ... 1 3/8" (28 ... 35mm)	806 771	M27x1	10 pcs
1-5/8" (42 mm) ... 3-1/8"	806 772	M36x1	10 pcs

### Selection table CVE/CVS (Not UL approved)

Type CVE	Part no.	Type CVS	Part no.	Connection size ODF	
				(inch)	(mm)
CVE-014	808 130	CVS-014	808 150	1/4"	
CVE-M06	808 131	CVS-M06	808 151		6mm
CVE-038	808 132	CVS-038	808 152	3/8"	
CVE-M10	808 133	CVS-M10	808 153		10mm
CVE-012	808 134	CVS-012	808 154	1/2"	
CVE-M12	808 135	CVS-M12	808 155		12mm
CVE-058	808 136	CVS-058	808 156	5/8"	16mm
CVE-034	808 137	CVS-034	808 157	3/4"	
CVE-078	808 138	CVS-078	808 158	7/8"	22mm

# System protectors

## Quick select guide

### Hermetic filter driers

Type	Filter drier	Recommended use	Function
Liquid	EK	CFC, HCFC, HFC	Premium Universal Replacement
Liquid	ADK	CFC, HCFC, HFC	High Acid and Water Removal
Liquid	BOK-HH	CFC, HCFC, HFC	Burnout Cleanup with Charcoal
Liquid	BFK	CFC, HCFC, HFC	Bi-Flow Heat Pump
Suction	SFD	CFC, HCFC, HFC	Suction Line Filter Drier
Suction	CSFD	CFC, HCFC, HFC	Compact Suction Line Filter Drier
Suction	ASD	CFC, HCFC, HFC	Premium Suction Line Filter Drier
Suction	ASK-HH	CFC, HCFC, HFC	Burnout Cleanup with Charcoal
Suction	ASF	CFC, HCFC, HFC	Filter Only

### Take-apart filter driers

Type	Filter drier	Liquid	Suction
Take-Apart	STAS	X	X
Take-Apart	ADKS	X	X
Take-Apart	BTAS		X

### Replaceable cores/filters for take-apart shells

Type	Core/Filter	Recommended use	Function
Core	UK-48/100	CFC, HCFC, HFC	Premium Universal Replacement
Core	D-42/48	CFC, HCFC	High Acid Removal
Core	H-42/48/100	CFC, HCFC	High Acid and Water Removal
Core	W-42/48/100HH	CFC, HCFC, HFC	Burnout Cleanup with Charcoal
Filter	F-48/100	CFC, HCFC, HFC	Filter Only
Core	RH-48	Reclaim Use Only	High Acid and Water Removal
Core	RW-48	Reclaim Use Only	Burnout Cleanup

## System protectors recommended system tonnage

### Take-apart liquid line filter driers in Tons\*

Description	Refrigeration, low temp. & commercial installations			Air conditioning	
				Field replacement & field installations	
	R-12/R-134a/ R-448A/R-449A	R-22/ R-448A/ R-449A	R-404A/R-502/ R-507A	R-12/R-134a	R-22/R-407C/R-410A <sup>+</sup>
STAS 485T	8	10	8	8	10
STAS 487T	10	13	10	10	12 1/2
STAS 489T	10	15	10	10	15
STAS 4811T	13	20	13	13	20
STAS 967T	20	25	15	20	25
STAS 969T	25	30	20	25	30
STAS 9611T	30	35	25	30	35
STAS 9613T	35	40	30	35	40
STAS-9625S-V	40	45	35	40	45
STAS 1449T	30	40	30	30	40
STAS 14411T	40	50	35	40	50
STAS 14413T	45	55	40	45	55
STAS 14417T	60	50	45	50	60
STAS 19211T	50	70	45	50	70
STAS 19213T	60	80	55	60	80
STAS 19217T	65	85	60	65	85
ADKS 30013T	50	65	45	50	65
ADKS 30017T	60	80	50	60	80
ADKS 40017T	65	85	55	65	85
ADKS 40021T	75	100	65	75	100

\* For kW, multiply tons by 3.5

+ Consult product catalog pages for R-410A suitability.

# Hermetic liquid line filter driers (EK, ADK, BFK, BOK)

Recommended capacities at 2 psi drop (see catalog page showing ari data for capacity at 1 psi drop.)

Description	Refrigeration low temp. & commercial installations			Air conditioning field replacement & field installations		
	R-12/R-134a	R-22	R-404A/R-502/R-507	R-12/R-134a	R-22/R-407C/R-410A	
032	1/2	1/2	1/2	1	1-1/2	
032S						
033						
033S						
052	3/4	3/4				
052S						
053	1-1/2	2	1-1/2	3	4	
053S						
082	1	1	3/4	1-1/2	2	
082S		2	1	3	4	
0825S		3	4			
083	2	3	2	4	5	
083S		4			5	7-1/2
084						
084S						
162	1-1/2	2	1	1-1/2	2	
162S						
1625S	2	3	2	3	4	
163	3	5	3	4	5	
163S				5	10	
164						
164S		7-1/2		12		
165						
165S						
303	4	5		4	6	
303S		7-1/2	4	7-1/2	10	
304						
304S						
305	7-1/2	10	5	10	15	
305S				15	18	24
307S						
309S						
413	4	5	4	5	5	
414			5	7-1/2	12	
414S						
415	7-1/2	7-1/2	7-1/2	12	18	
415S						
417S	10	10		18	25	
419S		12		10	20	27
757S	20	25	15	22	30	
759S	22	30	20	25	34	

## EK liquid line filter drier system protectors

The EK Liquid Line filter drier is a premium compacted bead filter drier with a 20 micron outlet pad for maximum filtration. The EK is a premium universal replacement liquid line filter drier for CFC, HCFC and HFC refrigerants including R-12, R-134a, R-22, R-404A, R-407C, R-410A, R-500, R-502, and R-507.



### Features

- Filtration first for more effective use of surface area of desiccant
- High moisture and acid removal capacity
- Solid copper connections
- Corrosion resistant epoxy powder paint finish
- Approved for POE oils with Copeland™ compressors
- Shock resistant steel shell construction

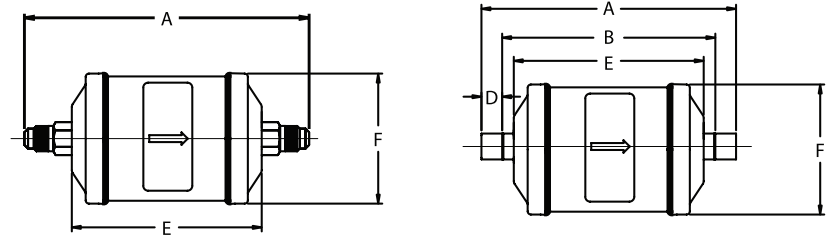
### Specifications

- Desiccant blend - optimized for high water capacity and acid capacity
- Filtration : 20 microns
- Maximum working pressure : 680 psig
- UL/CUL file number : SA 3124

### Nomenclature example: EK-083S

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

### Dimensional data



### Ordering information

PCN	Description	Dimensions (in)					Weight (lbs)
		A	B	D	E	F	
060009	EK 032	4.38					
060012	EK 032S	3.83	2.71	0.56			
060011	EK 032FM	3.92					
060010	EK 032MF	3.92			2.57	1.75	0.48
060013	EK 033	4.69					
060014	EK 033S	4.03	2.79	0.62			
047601	EK 052	4.83			3.02		
057013	EK 052MF	4.37					
047602	EK 052S	4.15	3.46	0.35			
047603	EK 053	5.14			3.02		1.04
047604	EK 053S	4.48	3.24	0.62			
047605	EK 082	5.64					
047606	EK 082S	4.96	4.27	0.35			
049551	EK 0825S	5.01	4.37	0.32			
056906	EK 083MF	5.70			3.83		
047607	EK 083	5.95			3.83		
047608	EK 083S	5.29	4.05	0.62	3.83		1.23
047609	EK 084	6.17				2.64	
047610	EK 084S	5.33	4.07	0.63			
047611	EK 162	6.58					
047612	EK 162S	5.90	5.21	0.35			
056045	EK 1625S	5.95	5.31	0.32			
047613	EK 163	6.89					
047614	EK 163S	6.24	5.43	0.40			
047615	EK 164	7.11			4.77		1.49
047616	EK 164S	6.33	5.33	0.50			
047617	EK 165	7.57					
047618	EK 165S	6.55	5.30	0.63			
047619	EK 167S	7.13	5.63	0.75			
048210	EK 303	9.66					
048211	EK 303S	9.01	8.21	0.40			
048212	EK 304	9.88					
048213	EK 304S	9.10	8.10	0.50			
048214	EK 305	10.34			7.54	3.14	3.01
048215	EK 305S	9.32	8.07	0.63			
048216	EK 306S	9.73	8.48	0.63			
048217	EK 307S	9.90	8.40	0.75			
048218	EK 309S	10.26	8.45	0.90			
048219	EK 413	9.79					
048220	EK 414	10.01					
048221	EK 414S	9.23	8.23	0.50			
048222	EK 415	10.47		-	7.67		3.35
048223	EK 415S	9.45	8.20	0.63		3.64	
048224	EK 417S	10.03	8.53	0.75			
048225	EK 419S	10.39	8.58	0.91			
048228	EK 757S	15.25	14.02	0.61			
048229	EK 759S	15.88	14.07	0.91	13.16		6.14

## EK contractor's choice filter drier system protectors

The EK Contractor's Choice filter drier is designed for foodservice and residential air conditioning applications.

### Features

- Extended solid copper connections
- Dual access valves for faster and easier system diagnosis
- Incorporates all the internal features of the premium EK

### Specifications

- Desiccant blend - optimized for high water capacity and acid capacity
- Filtration : 20 microns
- Maximum working pressure : 680 psig
- UL/CUL file number : SA 3124



### Ordering information

PCN	Description
063908	EK 032S VV
065966	EK 052S VV
065963	EK 053S VV
065964	EK 083S VV
065965	EK 163S VV

## EK cap tube filter drier system protectors

The EK Cap Tube filter drier is designed for foodservice refrigeration systems.

### Features

- Schrader valve on the inlet side acts as a maintenance and charging port
- Outlet is designed to accept capillary tubing without the need for crimping
- Extended solid copper 1/4 ODF connection inlet by cap tube
- Incorporates all the internal features of the premium EK

### Specifications

- Desiccant blend - optimized for high water capacity and acid capacity
- Filtration : 20 microns
- Maximum working pressure : 680 psig
- UL/CUL file number : SA 3124



### Ordering information

PCN	Description
063208	EK 032 SV CAP (3 cubic inch)
065846	EK 052 SV CAP (5 cubic inch)

# System Protectors EK filter driers

## Capacity tables

Description	Connections inlet/outlet	Flow capacity Tons @ 1 psi ΔP <sup>1,4</sup> (For kW, multiply Tons by 3.5)						Water capacity <sup>2</sup> Drops of water <sup>3</sup>											
								R-12		R-134a		R-22		R-407C		R-410A		R-404A/507	
		R-12	R-134a /R-450A /R-513A	R-22 /R-410A /R-448A /R-449A	R-407C	R-404A/ R-507	R-744	75 °F	125 °F	75 °F	125 °F	75 °F	125 °F	75 °F	125 °F	75 °F	125 °F	-10 °F	25 °F
EK 03 2 FM	1/4 Fem/1/4 Male SAE	1.6	2.0	2.2	2.1	1.4	2.8												
EK 03 2 MF	1/4 Male/1/4 Fem SAE	1.6	2.0	2.2	2.1	1.4	2.8												
EK 03 2	1/4 SAE	1.6	2.0	2.2	2.1	1.4	2.8												
EK 03 2 S	1/4 ODF	2.2	2.7	2.9	2.9	2.0	3.7		41	40	37	40	33	33	25	21	19	38	37
EK 032 SV	1/4 ODF	2.2	2.7	2.9	2.9	2.0	3.7												
EK 03 3	3/8 SAE	2.5	3.0	3.3	3.2	2.2	4.3												
EK 03 3 S	3/8 ODF	2.5	3.0	3.3	3.2	2.2	4.3												
EK 05 2 FM	1/4 Fem/1/4 Male SAE	1.7	2.1	2.3	2.2	1.5	3.0												
EK 05 2 MF	1/4 Male/1/4 Fem SAE	1.7	2.1	2.3	2.2	1.5	3.0												
EK 05 2	1/4 SAE	1.7	2.1	2.3	2.2	1.5	3.0												
EK 05 2 S	1/4 ODF	2.5	3.1	3.4	3.3	2.2	4.6	133	119	116	106	114	97	95	75	64	58	109	106
EK 05 3 MF	3/8 Male/3/8 Fem SAE	2.9	3.5	3.8	3.7	2.5	4.9												
EK 05 3	3/8 SAE	2.9	3.5	3.8	3.7	2.5	4.9												
EK 05 3 S	3/8 ODF	3.6	4.4	4.8	4.7	3.2	6.2												
EK 08 2 FM	1/4 Fem/1/4 Male SAE	1.9	2.3	2.5	2.4	1.7	3.2												
EK 08 2 MF	1/4 Male/1/4 Fem SAE	1.9	2.3	2.5	2.4	1.7	3.2												
EK 08 2	1/4 SAE	1.9	2.3	2.5	2.4	1.7	3.2												
EK 08 2 S	1/4 ODF	2.7	3.3	3.6	3.5	2.4	4.4												
EK 08 25 S	5/16 ODF	2.9	3.5	3.8	3.7	2.5	4.9												
EK 08 3 MF	3/8 Male/3/8 Fem SAE	3.3	4.0	4.3	4.3	2.9	5.5	274	240	237	218	235	200	195	155	159	118	224	217
EK 08 3	3/8 SAE	3.3	4.0	4.3	4.3	2.9	5.5												
EK 08 3 S	3/8 ODF	3.7	4.5	4.9	4.8	3.3	6.3												
EK 08 4	1/2 SAE	5.5	6.7	7.3	7.1	4.9	9.4												
EK 08 4 S	1/2 ODF	5.8	7.1	7.7	7.5	5.1	9.9												
EK 16 2 MF	1/4 Male/1/4 Fem SAE	1.9	2.3	2.5	2.4	1.7	3.2												
EK 16 2	1/4 SAE	1.9	2.3	2.5	2.4	1.7	3.2												
EK 16 2 S	1/4 ODF	2.5	3.1	3.4	3.3	2.2	4.4												
EK 16 25 S	5/16 ODF	2.5	3.1	3.4	3.3	2.2	4.4												
EK 16 3	3/8 SAE	3.2	3.9	4.2	4.1	2.8	5.4												
EK 16 3 S	3/8 ODF	3.6	4.4	4.8	4.7	3.2	6.2	347	301	371	341	368	313	305	240	206	186	350	340
EK 16 4	1/2 SAE	5	6.1	1.3	6.5	4.2	10.1												
EK 16 4 S	1/2 ODF	7.0	8.5	7.5	9.0	6.2	11.9												
EK 16 5	5/8 SAE	8.0	9.7	10.5	10.3	7.0	13.5												
EK 16 5 S	5/8 ODF	8.3	10.1	10.9	10.7	7.3	14.1												
EK 16 7 S	7/8 ODF	12.7	15.5	16.8	16.5	11.2	21.7												
EK 30 3	3/8 SAE	3.5	4.3	4.7	4.6	3.1	6.1												
EK 30 3 S	3/8 ODF	5.2	6.3	6.8	6.7	4.6	8.8												
EK 30 4	1/2 SAE	6.6	8.1	8.8	8.6	5.9	11.4												
EK 30 4 S	1/2 ODF	8.2	10.0	10.8	10.6	7.2	13.9												
EK 30 5	5/8 SAE	8.7	10.6	11.5	11.3	7.7	14.8	601	526	664	611	657	561	548	434	515	355	627	608
EK 30 6 S	3/4 ODF	12.1	14.8	16.0	15.7	10.7	20.6												
EK 30 7 S	7/8 ODF	13.8	16.8	18.2	17.9	12.2	23.5												
EK 30 9 S	1 1/8 ODF	16.1	19.6	21.2	20.8	14.2	27.3												
EK 41 3	3/8 SAE	3.5	4.3	4.7	4.6	3.1	6.1												
EK 41 4	1/2 SAE	8.5	10.4	11.3	11.1	7.5	14.6												
EK 41 4 S	1/2 ODF	8.9	10.8	11.7	11.5	7.8	15.1												
EK 41 5	5/8 SAE	9.8	12.0	13.0	12.8	8.7	16.8	1104	971	938	854	919	785	765	607	715	465	876	850
EK 41 7 S	7/8 ODF	16.6	20.3	22.0	21.6	14.7	28.4												
EK 41 9 S	1 1/8 ODF	22.7	27.7	30.0	29.4	20.1	38.7												
EK 75 7 S	7/8 ODF	18.2	22.2	24.1	23.6	16.1	31.1	2368	2159	2159	2019	2159	1880	1810	1460	1460	1111	2019	2019
EK 75 9 S	1 1/8 ODF	26.8	32.7	35.4	34.8	23.7	45.7												

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature  
5°F saturated vapor temperature  
3.1 lbs./min./ton for R-134a  
2.9 lbs./min./ton for R-22 and R-407C  
4.0 lbs./min./ton for R-404A/507 and R-12  
2.7 lbs./min./ton for R-410A

<sup>2</sup> Water Capacities are based on:  
Equilibrium Point Dryness (EPD) of:  
50 parts per million for R-134a, R404-A/507,  
R-410A, R-407C, and R-744  
60 parts per million for R-22  
15 parts per million for R-12

<sup>3</sup> 20 drops of water = 1 gram = 1 cc

<sup>4</sup> For 2 PSI ΔP, Multiply values by 1.4

<sup>5</sup> Since there is currently no ARI standard for R-744,

values are based on 1 ton of refrigeration at 20°F liquid refrigerant temperature and -20°F saturated vapor temperature.



Unit Size	R-12		R-134a /R-450A/R-513A		R-22 /R-448A/R-449A		R-407C		R-410A		R-404A/R-507		R-502		R-744	
	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	20°F	-20°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	2.1	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	4.8	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	6.1	6.7
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	7.5	8.3
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	21.1	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	29.2	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	53.1	58.9

## EKZ liquid line filter drier system protector

The EK Liquid Line filter drier is a premium OEM R-410A filter drier with 20 micron filtration for maximum protection.



### Features

- Filtration first for more effective use of desiccant
- High moisture removal capacity to prevent POE oil damage
- Solid copper connections
- Corrosion resistant epoxy powder paint finish
- Copeland™ brand products approved for POE Oils
- Shock resistant steel shell construction

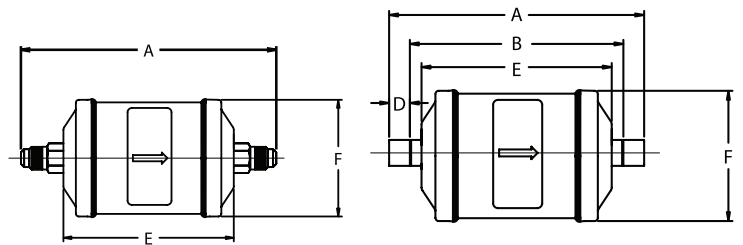
### Specifications

- Desiccant blend - 100% molecular sieve
- Filtration : 20 microns
- Maximum working pressure : 680 psig
- UL/CUL file number : SA 3124

### Nomenclature example: EKZ-083S

EKZ	08	3	S
Drier series	Unit size (in cu. in.)	Connection size (in 1/8")	S = ODF connections

### Dimensional data



### Ordering information

Description	Dimension (in)					Weight (lbs)
	A	B	D	E	F	
EKZ-032S	3.94	3.25	0.35	2.57	1.75	0.62
EKZ-033S	4.03	2.79	0.62			
EKZ-052S	4.15	3.46	0.35	3.00	2.64	0.99
EKZ-0525S	4.20	3.56	0.32			
EKZ-053S	4.48	3.24	0.62			
EKZ-054S	4.58	3.58	0.50			
EKZ-083S	5.29	4.05	0.62	3.80	2.64	1.15
EKZ-084S	5.33	4.07	0.63			
EKZ-085S	5.60	4.08	0.76			
EKZ-163S	6.24	5.43	0.40	4.76	2.64	1.48
EKZ-164S	6.33	5.33	0.50			
EKZ-165S	6.55	5.30	0.63			
EKZ-167S	7.13	5.63	0.75			
EKZ-305S	9.32	8.07	0.63	7.46	3.14	2.80
EKZ-306S	9.73	8.48	0.63			
EKZ-307S	9.90	8.40	0.75			
EKZ-417S	10.03	8.53	0.75	7.68	3.64	3.21
EKZ-419S	10.39	8.58	0.91			

# EKZ liquid line filter drier system protectors

## Capacity tables

Description	Connections inlet/outlet	Flow capacity Tons @ 1 psi ΔP <sup>1,4</sup> (For kW, multiply Tons by 3.5)							Water capacity <sup>2</sup> Drops of water <sup>3</sup>											
		R-12	R-134a /R-450A /R-513A	R-22 /R-410A /R-448A /R-449S	R-407C	R404A/ R-507	R-502	R-744	R-134a		R-22		R-407C		R-410A		R-404A/507		R-744	
									75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	-10°F	25°F
EKZ 03 2 S	1/4 ODF	2.2	2.7	2.9	2.9	2.0	1.9	3.7	49	45	49	43	45	40	45	40	49	45	35	39
EKZ 03 3 S	3/8 ODF	2.5	3.0	3.3	3.2	2.2	2.1	4.3												
EKZ 05 2 S	1/4 ODF	2.7	3.3	3.6	3.5	2.4	2.3	4.6	130	120	130	115	115	110	115	110	130	120	93	103
EKZ 05 25 S	5/16 ODF	2.8	3.4	3.8	3.7	2.5	2.4	4.9												
EKZ 05 3 S	3/8 ODF	3.6	4.4	4.8	4.7	3.2	3.1	6.2												
EKZ 05 4 S	1/2 ODF	5.6	6.9	7.5	7.4	5.0	4.8	9.7	240	225	240	210	215	210	215	210	240	225	173	191
EKZ 08 3 S	3/8 ODF	3.7	4.5	4.9	4.8	3.3	3.2	6.3												
EKZ 08 4 S	1/2 ODF	5.8	7.1	7.7	7.5	5.1	5.0	9.9												
EKZ 08 5 S	5/8 ODF	7.4	9.1	9.8	9.7	6.6	6.3	12.6	440	415	445	390	400	390	400	390	440	415	317	350
EKZ 16 3 S	3/8 ODF	3.6	4.4	4.8	4.7	3.2	3.1	6.2												
EKZ 16 4 S	1/2 ODF	7.0	8.5	9.2	9.0	6.2	6.0	11.9												
EKZ 16 5 S	5/8 ODF	8.3	10.1	10.9	10.7	7.3	7.1	14.1	730	690	730	645	660	640	660	640	730	690	522	576
EKZ 16 7 S	7/8 ODF	12.7	15.5	16.8	16.5	11.2	10.9	21.7												
EKZ 30 5 S	5/8 ODF	8.7	10.6	11.5	11.3	7.7	7.5	14.8												
EKZ 30 6 S	3/4 ODF	12.1	14.8	16.0	15.7	10.7	10.4	20.6	1030	960	1030	900	930	900	930	900	1030	960	731	806
EKZ 30 7 S	7/8 ODF	13.8	16.8	18.2	17.9	12.2	11.8	23.5												
EKZ 41 7 S	7/8 ODF	16.6	20.3	22.0	21.6	14.7	14.3	28.4												
EKZ 41 9 S	1 1/8 ODF	22.7	27.7	30.0	29.4	20.1	19.5	38.7												

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature 5°F saturated vapor temperature  
 3.1 lbs./min./ton for R-134a  
 2.9 lbs./min./ton for R-22 and R-407C  
 4.0 lbs./min./ton for R-404A/507 and R-12  
 4.4 lbs./min./ton for R-502  
 2.7 lbs./min./ton for R-410A

<sup>2</sup> Water Capacities are based on: Equilibrium Point Dryness (EPD) of:  
 50 parts per million for R-134a, R404-A/507, R-410A, R-407C, and R-744  
 60 parts per million for R-22  
 15 parts per million for R-12  
 30 parts per million for R-502

<sup>3</sup> 20 drops of water = 1 gram = 1 cc

<sup>4</sup> For 2 PSI ΔP, Multiply values by 1.4

<sup>5</sup> Since there is currently no ARI standard for R-744, values are based on 1 ton of refrigeration at 20°F liquid refrigerant temperature and -20°F saturated vapor temperature.

## Liquid refrigerant holding capacity - Ounces

Unit Size	R-12		R-134a/ R-450A/ R-513A		R-22/ R-448A/ R-449A		R-407C		R-410A		R-404A/R-507		R-502		R-744	
	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	20°F	-20°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	2.1	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	4.8	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	6.1	6.7
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	7.5	8.3
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	21.1	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	29.2	32.4
75															53.1	58.9

## ADK core style liquid line filter drier system protectors

The ADK is a solid core liquid line filter drier good for use with CFC, HCFC, and HFC refrigerants.

### Features

- Solid copper connections
- High moisture and acid removal capacity
- Corrosion resistant epoxy powder paint finish
- Copeland™ products approved for POE oils

### Specifications

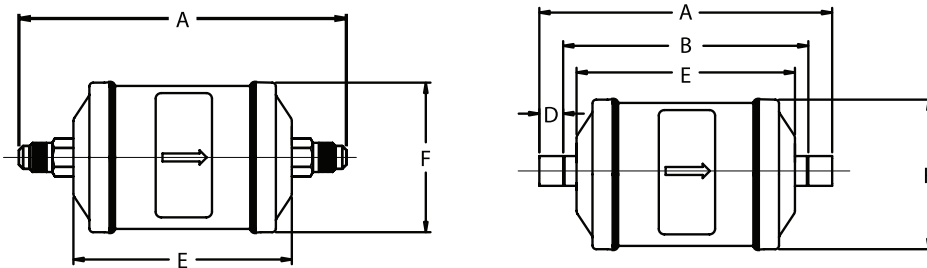
- Desiccant Blend: optimized for high water capacity and acid capacity
- Filtration: 40 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124



### Nomenclature example: ADK083S

ADK	08	3	S
Series	Unit size (in cu. in.)	Connection size (in 1/8")	S = ODF Connections (omit for SAE)

### Dimensional data



### Ordering information

PCN	Description	Connection size	Dimension (in)					Weight (lbs)
			A	B	D	E	F	
059874	ADK-032	1/4 SAE	4.38			2.57	1.75	0.51
052451	ADK-032S	1/4 ODF	3.83	2.71	0.56			
023157	ADK-033	3/8 SAE	4.69					
053172	ADK-033S	3/8 ODF	4.03	2.79	0.62	3.03	2.64	1.05
060125	ADK-052	1/4 SAE	4.84					
060126	ADK-052S	1/4 ODF	4.17	3.48	0.35			
060127	ADK-053	3/8 SAE	5.15			3.85	2.64	1.25
060128	ADK-053S	3/8 ODF	4.49	3.25	0.62			
060129	ADK-082	1/4 SAE	5.66					
060130	ADK-082S	1/4 ODF	4.99	4.29	0.35	4.78	2.64	1.53
060131	ADK-083	3/8 SAE	5.97					
060132	ADK-083S	3/8 ODF	5.30	4.07	0.62			
060133	ADK-084	1/2 SAE	6.19			4.78	2.64	1.53
060134	ADK-084S	1/2 ODF	5.35	4.09	0.63			
059838	ADK-162S	1/4 ODF	5.35	4.66	0.35			
059820	ADK-162	1/4 SAE	6.59			4.78	2.64	1.53
059839	ADK-163	3/8 SAE	6.90					
060795	ADK-163S	3/8 ODF	6.23	5	0.62			
059840	ADK-164	1/2 SAE	7.12			4.78	2.64	1.53
059841	ADK-164S	1/2 ODF	6.28	5.07	0.60			
059842	ADK-165	5/8 SAE	7.58					
059843	ADK-165S	5/8 ODF	6.55	5.09	0.73			

## System protectors

### Ordering information

PCN	Description	Connection size	Dimension (in)					Weight (lbs)
			A	B	D	E	F	
060172	ADK-303	3/8 SAE	9.66			7.54	3.14	3.11
058507	ADK-303S	5/8 ODF	9.01	8.2	0.40			
060173	ADK-304	1/2 SAE	9.88					
060176	ADK-304S	1/2 ODF	9.10	8.1	0.50			
060174	ADK-305	5/8 SAE	10.34					
060177	ADK-305S	5/8 ODF	9.32	8.07	0.63			
060178	ADK-307S	7/8 ODF	9.90	8.4	0.75			
060179	ADK-309S	1-1/8 ODF	10.26	8.44	0.90			
060182	ADK-413	3/8 SAE	9.82			7.70	3.64	3.78
060183	ADK-414	1/2 SAE	10.04					
060185	ADK-414S	1/2 ODF	9.26	8.26	0.50			
060184	ADK-415	5/8 SAE	10.50					
060186	ADK-415S	5/8 ODF	9.48	8.23	0.63			
060187	ADK-417S	7/8 ODF	10.06	8.56	0.75			
060188	ADK-419S	1-1/8 ODF	10.42	8.60	0.91			
060190	ADK-757S	7/8 ODF	15.55	14.05	0.75	13.19	3.64	6.53
060191	ADK-759S	1-1/8 ODF	15.91	14.10	0.90			

### Liquid refrigerant holding capacity - Ounces

Unit size	R-12		R-134a/R-450A/ R-513A		R-22/R-448A/ R-449A		R-407C		R-410A		R-404A/507		R-502		R-744	
	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	20°F	-20°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	2.7	2.3	1.8	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	6.0	5.3	4.9	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	7.7	6.8	5.9	6.5
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	9.5	8.4	10.1	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	26.7	23.4	16.0	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	37.2	32.4	21.4	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	67.2	59.0	38.7	42.9

# System protectors

## Capacity tables

Description	Connec- tion	Flow capacity Tons @ 1 psi ΔP 1, 4 (For kW, multiply Tons by 3.5)						Water capacity <sup>2</sup> Drops of water <sup>3</sup>																	
		R-12	R-134a/ R-450A/ R-513A	R-22/ R-448A/ R-449A	R-410A	R-407C	R-404A/ R-507	R-744	R-12		R-134a		R-22		R-407C		R-410A		R-404A/507		R-502		R-744		
			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	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F
ADK 032	1/4 SAE	1.6	1.9	2.1	2.1	2.0	1.4	2.7																	
ADK 032S	1/4 ODF	1.9	2.3	2.5	2.5	2.4	1.7	3.2	70	74	68	69	63	57	46	47	36	76	72	71	63	58	64		
ADK 033	3/8 SAE	2.2	2.7	2.9	2.9	2.9	2.0	3.7																	
ADK 033S	3/8 ODF	2.5	3.0	3.3	3.3	3.2	2.2	4.3																	
ADK 052	1/4 SAE	1.6	2.0	2.2	2.2	2.1	1.4	2.8																	
ADK 052S	1/4 ODF	2.4	2.9	3.1	3.1	3.1	2.1	4.0	185	195	180	180	130	150	120	125	95	200	190	185	165	144	169		
ADK 053	3/8 SAE	3.0	3.7	4.0	4.0	3.9	2.7	5.2																	
ADK 53S	3/8 ODF	3.7	4.5	4.9	4.9	4.8	3.3	6.3																	
ADK 082	1/4 SAE	1.6	2.0	2.2	2.2	2.1	1.4	2.8																	
ADK 082S	1/4 ODF	2.5	3.1	3.4	3.4	3.3	2.2	4.4																	
ADK 083	3/8 SAE	3.5	4.3	4.7	4.7	4.6	3.1	6.1	250	265	245	250	225	205	165	170	130	275	260	255	230	198	233		
ADK 083S	3/8 ODF	3.4	4.2	4.6	4.6	4.5	3.0	5.9																	
ADK 084	1/2 SAE	5.5	6.7	7.3	7.3	7.1	4.9	9.4																	
ADK 084S	1/2 ODF	5.7	7.0	7.6	7.6	7.4	5.1	9.8																	
ADK 162	1/4 SAE	1.6	2.0	2.2	2.2	2.1	1.4	2.8																	
ADK 163	1/4 SAE	3.6	4.4	4.8	4.8	4.7	3.2	6.2																	
ADK 163S	3/8 ODF	4.0	4.9	5.3	5.3	5.2	3.6	6.8																	
ADK 164	1/2 SAE	6.8	8.3	9.0	9.0	8.8	6.0	11.6	365	390	360	265	330	300	240	250	190	400	380	375	335	328	386		
ADK 164S	1/2 ODF	7.1	8.6	9.3	9.3	9.1	6.2	12.0																	
ADK 165	5/8 SAE	9.7	11.8	12.8	12.8	12.5	8.6	16.5																	
ADK 165S	5/8 ODF	10.7	13.1	14.2	14.2	13.9	9.5	18.3																	
ADK 167S	7/8 ODF	13.1	16.0	17.3	17.3	17.0	11.8	22.3																	
ADK 303	3/8 SAE	3.9	4.7	5.1	5.1	5.0	3.4	6.6																	
ADK 304	1/2 SAE	7.1	8.6	9.3	9.3	9.1	6.2	12.0																	
ADK 304S	1/2 ODF	7.2	8.8	9.5	9.5	9.4	6.4	12.3																	
ADK 305	5/8 SAE	11.3	13.8	15.0	15.0	14.7	10.0	19.4	820	865	800	810	740	675	540	555	420	895	845	835	745	676	796		
ADK 305S	4/8 ODF	11.9	14.5	15.7	15.7	15.4	10.5	20.3																	
ADK 306S	3/4 ODF	13.0	15.8	17.1	17.1	16.8	11.5	22.1																	
ADK 307S	7/8 ODF	14.3	17.4	18.9	18.9	18.5	12.6	24.4																	
ADK 309S	1 1/8 ODF	20.4	24.9	27.0	27.0	26.5	18.0	34.8																	
ADK 413	3/8 SAE	3.9	4.7	5.1	5.1	5.0	3.4	6.6																	
ADK 414	1/2 SAE	8.0	9.8	10.6	10.6	10.4	7.1	13.7																	
ADK 414S	1/2 ODF	8.8	10.7	11.6	11.6	11.4	7.8	15.0																	
ADK 415	5/8 SAE	12.8	15.6	16.9	16.9	16.6	11.3	21.8	1120	1210	1100	1140	1010	945	740	780	580	1260	1156	1170	1020	900	1060		
ADK 415S	5/8 ODF	13.5	16.5	17.9	17.9	17.5	12.0	23.1																	
ADK 417S	7/8 ODF	16.6	20.3	22.0	22.0	21.7	14.7	28.4																	
ADK 419S	1 1/8 ODF	20.7	25.2	27.3	27.3	26.8	18.3	35.2																	
ADK 757S	7/8 ODF	28.0	34.2	37.1	37.1	36.3	24.8	47.9																	
ADK 759S	1 1/8 ODF	30.6	37.3	40.4	40.4	39.6	27.0	52.1	1985	2100	1940	1956	1800	1635	1310	1350	1030	2170	2050	2025	1800	1750	2060		

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature 5°F saturated vapor temperature

3.1 lbs./min./ton for R-134a  
2.9 lbs./min./ton for R-22 and R-407C  
4.0 lbs./min./ton for R-404A/507 and R-12  
2.7 lbs./min./ton for R-410A

<sup>2</sup> Water Capacities are based on:

Equilibrium Point Dryness (EPD) of:  
50 parts per million for R-134a, R404-A/507, R-410A, R-407C and R-744  
60 parts per million for R-22  
15 parts per million for R-12

<sup>3</sup> 20 drops of water = 1 gram = 1 cc

<sup>4</sup> For 2 PSI ΔP, Multiply values by 1.4

<sup>5</sup> Since there is currently no ARI standard for R-744,

values are based on 1 ton of refrigeration at 20°F liquid refrigerant temperature and -20°F saturated vapor temperature.

## BFK liquid line bi-directional filter drier system protectors

The BFK is a solid core, bi-directional, liquid line filter drier for heat pump applications for use with CFC, HCFC, and HFC refrigerants.

### Features

- Available 5 to 30 cu. in. size
- Internal check valves allow flow and filtration in either direction, eliminates need for external check valves
- High moisture and acid removal capacity
- Corrosion resistant epoxy powder paint finish
- Approved for POE oils with Copeland™ compressors



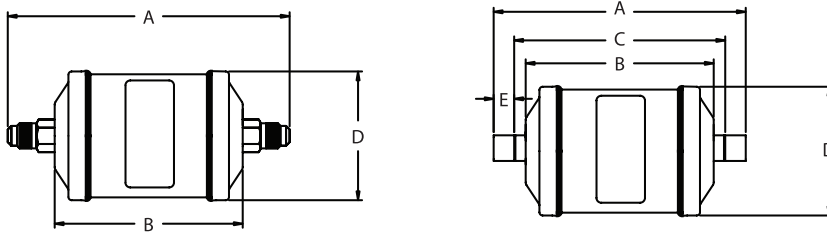
### Nomenclature example: BFK 165S

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

### Specifications

- Desiccant Blend: optimized for high water capacity and acid capacity
- Filtration: 40 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124

### Dimensional data



### Ordering information

PCN	Description	Connection	Dimensions (in)					Weight (lbs)
			A	B	C	D	E	
062300	BFK-052	1/4 SAE	4.84	3.03	3.47	2.64	0.99	
062425	BFK-052S	1/4 ODF	4.16					
062254	BFK-053	3/8 SAE	5.15					
062255	BFK-053S	3/8 ODF	4.49					
058597	BFK-0825S	5/16 ODF	5.02	3.84	4.38	2.64	0.99	
043321	BFK-083	3/8 SAE	5.96					
043323	BFK-083S	3/8 ODF	5.31					
043325	BFK-084	1/2 SAE	6.184					
043327	BFK-084S	1/2 ODF	5.40	4.70	5.37	2.64	2.08	
043728	BFK085	5/8 SAE	6.64					
043730	BFK-085S	5/8 ODF	5.62					
043330	BFK-163	3/8 SAE	6.824					
043333	BFK-163S	3/8 ODF	6.17	7.55	7.77	3.14	0.35	
043335	BFK-164	1/2 SAE	7.04					
043337	BFK-164S	1/2 ODF	6.26					
043732	BFK-165	5/8 SAE	7.50					
043734	BFK-165S	5/8 ODF	6.48	7.55	7.79	3.14	0.35	
058589	BFK-167S	7/8 ODF	7.06					
063076	BFK303	3/8 SAE	9.674					
063077	BFK-303S	3/8 ODF	9.01					
063078	BFK-304	1/2 SAE	9.89	7.55	7.81	3.14	0.35	
063079	BFK-304S	1/2 ODF	9.05					
063080	BFK-305	5/8 SAE	10.35					
063081	BFK-305S	5/8 ODF	9.32					
063082	BFK-306	3/4 SAE	10.67	7.55	7.83	3.14	0.35	
063083	BFK-306S	3/4 ODF	9.74					
063084	BFK-307S	7/8 ODF	9.91					
063451	BFK-309S	1 1/8 ODF	10.27					

# System protectors

## BFK liquid line bi-directional filter drier

Description	Conne- ction	Flow capacity Tons @ 1 psi ΔP <sup>1,4</sup> (For kW, multiply Tons by 3.5)				Water capacity <sup>2</sup> Drops of water <sup>3</sup>							
		R-22	R-410A	R-407C	R-744	R-22		R-407C		R-410A		R-744	
						75°F	125°F	75°F	125°F	75°F	125°F	-10°F	25°F
BFK-05 2	1/4 SAE	1.6	1.6	1.6	2.1	73	66	58	42	39	35	81	89
BFK-05 2S	1/4 ODF	2.2	2.2	2.2	2.8								
BFK-05 3	3/8 SAE	3.5	3.5	3.4	4.5								
BFK-05 3S	3/8 ODF	4.0	4.0	3.9	5.2								
BFK-08 3	3/8 SAE	4.5	4.5	4.4	5.8	159	144	106	79	85	75	136	150
BFK-08 3S	3/8 ODF	5.1	5.1	5.0	6.6								
BFK-08 4	1/2 SAE	6.4	6.4	6.3	8.3								
BFK-08 4S	1/2 ODF	6.7	6.7	6.6	8.6								
BFK-08 5	5/8 SAE	7.2	7.2	7.0	9.3								
BFK-08 5S	5/8 ODF	8.1	8.1	7.9	10.4								
BFK-16 3	3/8 SAE	4.6	4.6	4.5	5.9	323	294	237	179	178	160	221	260
BFK-16 3S	3/8 ODF	5.2	5.2	5.1	6.7								
BFK-16 4	1/2 SAE	7.7	7.7	7.6	9.9								
BFK-16 4S	1/2 ODF	8.1	8.1	7.9	10.4								
BFK-16 5	5/8 SAE	8.3	8.3	8.1	10.7								
BFK-16 5S	5/8 ODF	8.7	8.7	8.5	11.2								
BFK-30 3S	3/8 ODF	5.8	5.8	5.7	7.5	585	532	452	345	415	293	453	533
BFK-30 4	1/2 SAE	7.6	7.6	7.5	9.8								
BFK-30 4S	1/2 ODF	9.7	9.7	9.5	12.5								
BFK-30 5	5/8 SAE	10.3	10.3	10.1	13.3								
BFK-30 5S	5/8 ODF	14.2	14.2	13.9	18.3								
BFK-30 6S	3/4 ODF	16.0	16.0	15.7	20.6								
BFK-30 7S	7/8 ODF	16.7	16.7	16.4	21.5								
BFK-30 9S	1 1/8 ODF	18.0	18.0	17.5	23.2								

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature  
 5°F saturated vapor temperature  
 3.1 lbs./min./ton for R-134a  
 2.9 lbs./min./ton for R-22 and R-407C  
 4.0 lbs./min./ton for R-404A/507 and R-12  
 2.7 lbs./min./ton for R-410A

<sup>5</sup> Since there is currently no ARI standard for R-744, values are based on 1 ton of refrigeration at 20°F liquid refrigerant temperature and -20°F saturated vapor temperature.

<sup>2</sup> Water Capacities are based on:  
 Equilibrium Point Dryness (EPD) of:  
 50 parts per million for R-134a, R404-A/507,  
 R-410A, R-407C, and R-744  
 60 parts per million for R-22  
 15 parts per million for R-12

<sup>3</sup> 20 drops of water = 1 gram = 1 cc

<sup>4</sup> For 2 PSI ΔP, Multiply values by 1.4

## Liquid refrigerant holding capacity - Ounces

Unit Size	R-22		R-407C		R-410A		R-744	
	75°F	125°F	75°F	125°F	75°F	125°F	20°F	-20°F
05	4.6	4.2	4.4	3.9	4.1	3.5	3.7	4.1
08	7.7	6.9	7.3	6.4	6.9	5.8	6.2	6.9
16	14.2	12.7	13.5	11.8	12.6	10.6	11.4	12.7
30	21.0	18.7	20.0	17.4	19.6	16.5	16.8	18.7



# BFKZ liquid line bi-directional filter drier system protectors

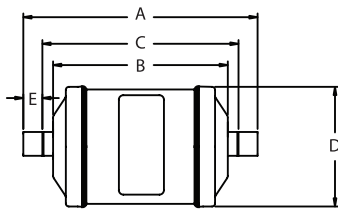
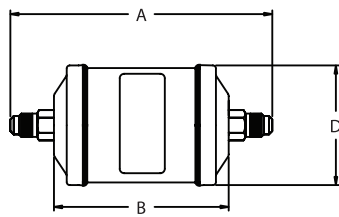
The BFKZ is a solid core, bi-directional, liquid line filter drier for OEM heat pump applications optimized for use with R-410A.



## Features

- Available 5 to 30 cu. in. size
- Internal check valves allow flow and filtration in either direction, eliminates need for external check valves
- High moisture and acid removal capacity
- Corrosion resistant epoxy powder paint finish
- Copeland™ brand products approved for POE oils

## Dimensional data



## Specifications

- Desiccant Blend: 100% Molecular Sieve Desiccant optimized for high water capacity
- Filtration: 40 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124

## Nomenclature example: BFKZ 165S

BFKZ	16	5	S
Series	Unit size (in cu. in.)	Connection size (in 1/8")	S = ODF Connections (omit for SAE)

## Ordering information

Description	Connection	Dimension (in)					Weight (lbs)			
		A	B	C	D	E				
BFKZ-052	1/4 SAE	4.84	3.00	0.00	2.64	0.35	1.03			
BFKZ-052S	1/4 ODF	4.16		3.47						
BFKZ-053	3/8 SAE	5.15		0.00						
BFKZ-053S	3/8 ODF	4.49		3.25						
BFKZ-054	1/2 SAE	5.34	3.82	Is not set up in GDL	2.64	0.62				
BFKZ-054S	1/2 ODF	4.50								
BFKZ-0825S	5/16 ODF	5.02								
BFKZ-083	3/8 SAE	5.96								
BFKZ-083S	3/8 ODF	5.31								
BFKZ-084	1/2 SAE	6.18								
BFKZ-084S	1/2 ODF	5.40								
BFKZ-085	5/8 SAE	Is not set up in GDL								
BFKZ-085S	5/8 ODF	5.62	4.37	0.63						
BFKZ-163	3/8 SAE	6.82	4.64	0.00	3.14	0.40	2.07			
BFKZ-163S	3/8 ODF	6.17		5.37						
BFKZ-164	1/2 SAE	7.04		0.00						
BFKZ-164S	1/2 ODF	6.26		5.26						
BFKZ-165	5/8 SAE	7.50		0.00						
BFKZ-165S	5/8 ODF	6.48		5.23						
BFKZ-166S	3/4 ODF	Is not set up in GDL		Is not set up in GDL				Is not set up in GDL		
BFKZ-167S	7/8 ODF	7.06		5.56				0.75		
BFKZ-305	5/8 SAE	10.35		0.00				3.14	0.76	3.18
BFKZ-305S	5/8 ODF	9.32		7.81						
BFKZ-306S	3/4 ODF	9.74	7.83							
BFKZ-307S	7/8 ODF	9.91	7.79							
BFKZ-309S	1 1/8 ODF	10.27	7.98	1.14						

# System protectors

## BFKZ capacity tables

Description	Connection	Flow capacity Tons @ 1 psi ΔP <sup>1,4</sup> (For kW, multiply Tons by 3.5)				Water capacity <sup>2</sup> Drops of water <sup>3</sup>							
		R-22	R-410A	R-407C	R-744	R-22		R-407C		R-410A		R-744	
						75°F	125°F	75°F	125°F	75°F	125°F	-10°F	25°F
BFKZ-05 2	1/4 SAE	1.6	1.6	1.6	2.1	95	90	95	90	95	90	90	105
BFKZ-05 2S	1/4 ODF	2.2	2.2	2.2	2.8								
BFKZ-05 3	3/8 SAE	3.5	3.5	3.4	4.5								
BFKZ-05 3S	3/8 ODF	4.0	4.0	3.9	5.2								
BFKZ-05 4	1/2 SAE	6.0	6.0	5.9	7.7								
BFKZ-05 4S	1/2 ODF	6.3	6.3	6.2	8.1								
BFKZ-082 5S	5/16 ODF	3.0	3.0	3.0	3.9	150	140	150	140	150	140	149	175
BFKZ-08 3	3/8 SAE	4.5	4.5	4.4	5.8								
BFKZ-08 3S	3/8 ODF	5.1	5.1	5.0	6.6								
BFKZ-08 4	1/2 SAE	6.4	6.4	6.3	8.3								
BFKZ-08 4S	1/2 ODF	6.7	6.7	6.6	8.6								
BFKZ-08 5	5/8 SAE	7.2	7.2	7.0	9.3								
BFKZ-08 5S	5/8 ODF	8.1	8.1	7.9	10.4	295	280	295	280	295	280	289	338
BFKZ-16 3	3/8 SAE	4.6	4.6	4.5	5.9								
BFKZ-16 3S	3/8 ODF	5.2	5.2	5.1	6.7								
BFKZ-16 4	1/2 SAE	7.7	7.7	7.6	9.9								
BFKZ-16 4S	1/2 ODF	8.1	8.1	7.9	10.4								
BFKZ-16 5	5/8 SAE	8.3	8.3	8.1	10.7								
BFKZ-16 5S	5/8 ODF	8.7	8.7	8.5	11.2	550	540	610	570	610	570	418	490
BFKZ-16 6S	3/4 ODF	15.0	15.0	14.7	19.4								
BFKZ-16 7S	7/8 ODF	16.0	16.0	15.7	20.6								
BFKZ-30 5	5/8 SAE	10.3	10.3	10.1	13.3								
BFKZ-30 5S	5/8 ODF	14.2	14.2	13.9	18.3								
BFKZ-30 6S	3/4 ODF	16.0	16.0	15.7	20.6								
BFKZ-30 7S	7/8 ODF	16.7	16.7	16.4	21.5	18.0	18.0	17.5	23.2				
BKFZ-30 9S	1-1/8 ODF	18.0	18.0	17.5	23.2								

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature 5°F saturated vapor temperature  
 3.1 lbs./min./ton for R-134a  
 2.9 lbs./min./ton for R-22 and R-407C  
 4.0 lbs./min./ton for R-404A/507 and R-12  
 4.4 lbs./min./ton for R-502  
 2.7 lbs./min./ton for R-410A

<sup>2</sup> Water Capacities are based on: Equilibrium Point Dryness (EPD) of: 50 parts per million for R-134a, R404-A/507, R-410A, R-407C, and R-744  
 60 parts per million for R-22  
 15 parts per million for R-12  
 30 parts per million for R-502

<sup>3</sup> 20 drops of water = 1 gram = 1 cc

<sup>4</sup> For 2 PSI ΔP, Multiply values by 1.4

<sup>5</sup> Since there is currently no ARI standard for R-744, values are based on 1 ton of refrigeration at 20°F liquid refrigerant temperature and -20°F saturated vapor temperature.

## Liquid refrigerant holding capacity - Ounces

Unit Size	R-22		R-407C		R-410A		R-744	
	75°F	125°F	75°F	125°F	75°F	125°F	20°F	-20°F
05	4.6	4.2	4.4	3.9	4.1	3.5	3.7	4.1
08	7.7	6.9	7.3	6.4	6.9	5.8	6.2	6.9
16	14.2	12.7	13.5	11.8	12.6	10.6	11.4	12.7
30	21.0	18.7	20.0	17.4	19.6	16.5	16.3	18.7

## BOK-HH liquid line burnout filter drier system protectors

The BOK-HH is a liquid line filter drier for burnout clean-up and wax removal. The BOK-HH incorporates an activated carbon blended solid core for the effective clean-up of systems following a severe burnout.

### Features

- Designed for maximum effectiveness in the clean-up of systems following a severe burnout
- Corrosion resistant epoxy powder paint finish
- Activated carbon blend for soluble contaminant and wax removal
- Solid copper connections
- R-410A compatible



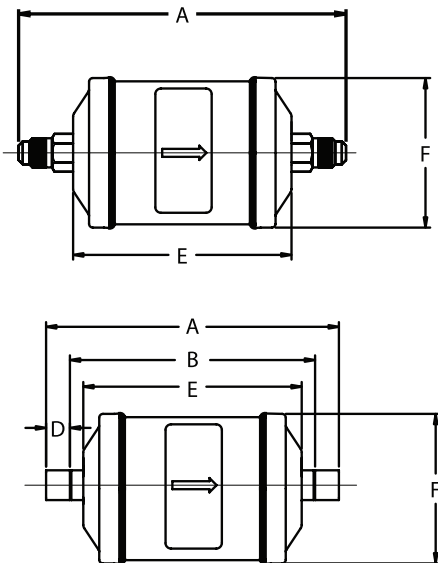
### Specifications

- Filtration: 40 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124

Nomenclature example: BOK 305S-HH

BOK	30	5	S	HH
Series	Unit Size (in cu. in.)	Connection Size (in 1/8")	S = ODF connections (omit for SAE)	Activated carbon Blend

### Dimensional data



### Ordering information

PCN	Description	Connection size	Dimensions (in)					Weight (lbs)
			A	B	D	E	F <sup>1</sup>	
060223	BOK-082-HH	1/4 SAE	5.66	--	--	3.85	2.64	1.00
064591	BOK-082S-HH	1/4 ODF	4.99	4.29	0.35			
060224	BOK-083-HH	3/8 SAE	5.97	--	--			
064572	BOK-83S-HH	3/8 ODF	5.30	4.07	0.62	4.60	3.14	2.00
060240	BOK-162-HH	1/4 SAE	6.41	--	--			
060241	BOK-163-HH	3/8 SAE	6.72	--	--			
060242	BOK-163S-HH	3/8 ODF	6.06	5.26	0.40			
060228	BOK-164-HH	1/2 SAE	6.94	--	--			
060229	BOK-164S-HH	1/2 ODF	6.16	5.16	0.50			
060230	BOK-165-HH	5/8 SAE	7.40	--	--	7.54	3.75	3.75
060231	BOK-165S-HH	5/8 ODF	6.38	5.13	0.63			
060232	BOK-303-HH	3/8 SAE	9.66	--	--			
060233	BOK-304-HH	1/2 SAE	9.88	--	--			
060234	BPK-304S-HH	1/2 ODF	9.10	8.10	0.50			
060235	BOK-305-HH	5/8 SAE	10.34	--	--			
060236	BOK-305S-HH	5/8 ODF	9.32	8.07	0.63	7.60	3.64	4.75
060237	BOK-414-HH	1/2 SAE	9.94	--	--			
060238	BOK-415-HH	5/8 SAE	10.40	--	--			
060239	BOK-417S-HH	7/8 ODF	9.96	8.46	0.75			
064593	BOK-415S-HH	5/8 ODF	9.38	8.13	0.63			

<sup>1</sup> Does not include weld bead

# System protectors

## BOK-HH liquid line burnout filter drier

Description	Connections	Flow capacity Tons @ 1 psi ΔP <sup>1,4</sup> (For kW, multiply Tons by 3.5)							Water capacity <sup>2</sup> Drops of water <sup>3</sup>																					
		R-12		R-134a		R-22		R-407C	R-410A		R-404A/ R-507		R-744		R-12		R-134a		R-22		R-407C		R-410A		R-404A/ R-507		R-502		R-744	
		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	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	-10°F	25°F	
BOK 08 2-HH	1/4 SAE	1.2	1.5	1.6	1.6	1.6	1.1	2.1	180	118																				
BOK 08 2S-SH	1/4 ODF	-	3.1	3.4	3.4	3.3	2.2	4.4	-	-	88	71	78	59	74	45	66	38	93	71	109	79	51	63						
BOK 08 3-HH	3/8 SAE	3.2	3.9	4.2	4.2	4.1	2.8	5.4	180	118																				
BOK 08 3S-HH	3/8 ODF	-	4.2	4.6	4.6	4.5	3.0	5.9	-	-																				
BOK 16 2-HH	1/4 SAE	1.2	1.5	1.6	1.6	1.6	1.1	2.1																						
BOK 16 3-HH	3/8 SAE	3.6	4.3	4.7	4.7	4.6	3.1	6.1																						
BOK 16 3S-HH	3/8 ODF	4.8	5.8	6.3	6.3	6.2	4.2	8.1																						
BOK 16 4-HH	1/2 SAE	7.0	8.6	9.3	9.3	9.1	6.2	12.0	209	143	171	141	153	117	91	56	77	41	182	141	135	100	93	113						
BOK 16 4S-HH	1/2 ODF	8.4	10.2	11.1	11.1	10.9	7.4	14.3																						
BOK 16 5-HH	5/8 SAE	10.5	12.8	13.9	13.9	13.6	9.3	17.9																						
BOK 16 5S-HH	5/8 ODF	10.5	12.8	13.9	13.9	13.6	9.3	17.9																						
BOK 30 3-HH	3/8 SAE	3.6	4.3	4.7	4.7	4.6	3.1	6.1																						
BOK 30 4-HH	1/2 SAE	8.1	9.9	10.7	10.7	10.5	7.2	13.8																						
BOK 30 4S-HH	1/2 ODF	8.9	10.8	11.7	11.7	11.5	7.8	15.1	552	367	300	245	267	204	234	146	160	94	318	247	342	249	167	203						
BOK 30 5-HH	5/8 SAE	11.1	13.5	14.6	14.6	14.3	9.8	18.8																						
BOK 30 5S-HH	5/8 ODF	12.0	14.6	15.8	15.8	15.5	10.6	20.4																						
BOK 41 4-HH	1/2 SAE	8.4	10.2	11.1	11.1	10.9	7.4	14.3																						
BOK 41 5-HH	5/8 SAE	13.4	16.3	17.7	17.7	17.4	11.8	22.8	623	410	427	344	379	282	256	155	220	125	454	342	380	274	249	305						
BOK 41 5S-HH	5/8 ODF	13.4	16.3	17.7	17.7	21.1	14.4	22.8																						
BOK 41 7S-HH	7/8 ODF	16.3	19.8	21.5	21.5	21.1	14.4	27.7																						

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature  
 5°F saturated vapor temperature  
 3.1 lbs./min./ton for R-134a  
 2.9 lbs./min./ton for R-22 and R-407C  
 4.0 lbs./min./ton for R-404A/507 and R-12  
 2.7 lbs./min./ton for R-410A

<sup>2</sup> Water Capacities are based on:  
 Equilibrium Point Dryness (EPD) of:  
 50 parts per million for R-134a, R404-A/507,  
 R-410A, R-407C, and R-744  
 60 parts per million for R-22  
 15 parts per million for R-12

<sup>3</sup> 20 drops of water = 1 gram = 1 cc

<sup>4</sup> For 2 PSI ΔP, Multiply values by 1.4

<sup>5</sup> Since there is currently no ARI standard for R-744, values are based on 1 ton of refrigeration at 20°F liquid refrigerant temperature and -20°F saturated vapor temperature.

## Liquid refrigerant holding capacity - Ounces

Unit size	R-12		R-134a		R-22		R-407C		R-410A		R-404A/507		R-502		20°F	-20°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	75°F	125°F		
08	7.3	6.6	6.7	6.0	6.6	5.9	6.3	5.5	5.9	4.9	5.8	4.9	6.7	5.9	5.3	5.9
16	13.9	12.7	12.8	11.5	12.6	11.3	12.0	10.5	11.2	9.4	11.1	9.3	12.9	11.3	10.1	11.3
30	21.8	19.9	20.1	18.1	19.8	17.8	18.9	16.6	11.7	14.9	17.4	14.7	20.2	17.7	16.0	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	21.4	23.8

## ALF liquid filter system protectors

The ALF is a liquid line refrigerant filter for recovery, recycle and reclaim usage. The ALF is also used for protecting solenoid and expansion valve parts from debris.

### Features

- Filtering media that maximizes removal of finer particles
- Corrosion resistant epoxy powder paint finish



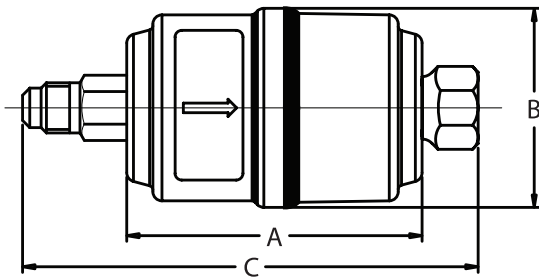
### Nomenclature example: ALF 033S

ALF	03	3	S
Series	Unit Size	Connection size Inlet (in 1/8")	Connection style S = ODF Omit for SAE

### Specifications

- Filtration: 40 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124

### Dimensional data



### Ordering Information

PCN	Description	Connection size inlet/outlet	Dimensions (in)		
			A	B <sup>1</sup>	C
056618	ALF-032S	1/4 ODF	2.56	1.63	3.88
057193	ALF-032MF	1/4 SAE Male In			4.00
		1/4 SAE Female Out			
057140	ALF-033S	3/8 ODF			4.13
056645	ALF-034S	1/2 ODF			

<sup>1</sup> Does not include weld bead

Recovery, recycle and reclaim refrigerant flow capacity (lbs./Min. Liquid)

R-134a/R-450A/ R-513A	R-22/R-410A/ R-448A/R-449A	R-404A/R-507
7.6	8.0	8.0

# Spun copper liquid line filter drier system protectors

The CU series is a high capacity spun copper solid core filter drier ideal for superior corrosion resistance in ocean going vessels and coastal applications.

## Features

- All copper construction for extreme corrosion resistance
- 100% molecular sieve solid core drier
- For use with CFC, HCFC and HFC refrigerants



## Nomenclature example: CU 163S

CU	16	3	S
Series	Unit size	Connection size (in 1/8")	ODF

## Specifications

- Maximum working pressure: 500 psig
- Filtration: 40 microns
- UL/CUL file number: SA 7175

## Ordering information and capacity tables

PCN	Description	Connection	Flow capacity Tons @ 1 psi ΔP <sup>14</sup> (For kW, multiply Tons by 3.5)					Water capacity <sup>2</sup>											
								Drops of water <sup>3</sup>											
			R-12	R-134a	R-22	R-407C	R-404A/ R-507	R-12		R-134a		R-22		R-407C		R-404A/ R-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	
064389	CU 03 3 S	3/8 ODF	2.1	2.6	2.8	2.7	1.9	96	87	93	87	87	81	72	57	96	93	90	81
064393	CU 08 3 S	3/8 ODF	2.9	3.5	3.8	3.7	2.5	212	191	205	191	191	177	156	122	212	205	198	177
064394	CU 08 4 S	1/2 ODF	3.5	4.2	4.6	4.5	3.1												
064395	CU 16 3 S	3/8 ODF	3.3	4.0	4.3	4.2	2.9	287	257	277	257	257	237	207	158	287	277	267	237

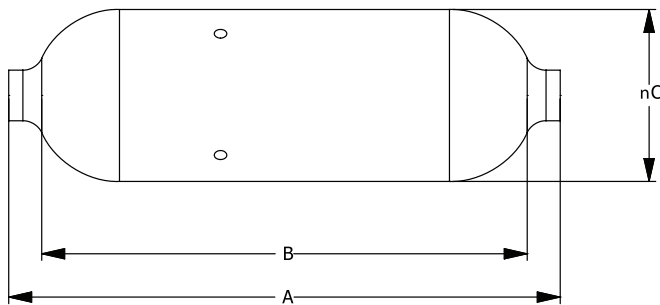
<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature  
5°F saturated vapor temperature  
3.1 lbs./min./ton for R-134a  
2.9 lbs./min./ton for R-22 and R-407C  
4.0 lbs./min./ton for R-404A/507 and R-12  
2.7 lbs./min./ton for R-410A

<sup>2</sup> Water Capacities are based on:  
Equilibrium Point Dryness (EPD) of:  
50 parts per million for R-134a, R404-A/507,  
R-410A and R-407C  
60 parts per million for R-22  
15 parts per million for R-12

<sup>3</sup> 20 drops of water = 1 gram = 1 cc

<sup>4</sup> For 2 PSI ΔP, Multiply values by 1.4

## Dimensional Data (in)



Description	Overall length (A)	Lay-In dimension (B)	Diameter
CU 03	3.94	3.25	1.63
CU 05	5.19	4.50	1.63
CU 08	6.06	5.38	2.00
CU 16	6.63	6.00	2.00

# Spun copper liquid line service filter drier system protectors

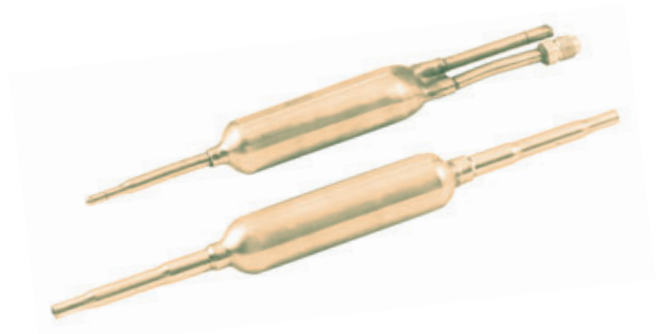
Recommended for use in original equipment or replacement residential, air-conditioning or refrigeration equipment.

## Features

- All copper construction for extreme corrosion resistance
- 100% molecular sieve solid core drier
- For use with CFC, HCFC and HFC refrigerants

## Specifications

- Maximum working pressure: 500 psig
- Filtration: 100 microns
- UL/CUL file number: SA 7175



## Ordering information and capacity tables

PCN	Description	Parker equivalent <sup>1</sup>	Connections		Flow capacity Tons @ 1 psi ΔP <sup>1,4</sup> (For kW, multiply Tons by 3.5)			Water capacity <sup>2</sup> Drops of water <sup>3</sup>					
								R-134a		R-22		R-404A/R-507	
			Inlet	Outlet	R-12 R-134a R-450A R-513A	R-22 R-410A R-448A R-449A	R-404A/ R-507	75°F	125°F	75°F	125°F	75°F	125°F
064023	CU-80	MMS-80	1/4 ODF	1/4 ODF	.33	.5	.33	25	23	25	22	23	23
064026	CU-619	620-SP	1/4 ODF	Cap	.5	.5	1.5	25	23	25	22	23	23
064027	CU-620	620	5/16 ODF	Cap	1.0	2.0	1.0	50	46	50	44	46	46
064119	CU-621	621	5/16 ODF	Cap	.5	.5	1.5	50	46	50	44	46	46
064024	CU-200	MMS-200	5/16 ODF, 3/8 ODF	5/16 ODF, 3/8 ODF	.75	1.0	.75	50	46	50	44	46	46
064025	CU-319	319	5/16 ODF	Cap	1.0	2.0	1.0	75	66	75	66	69	69

Standard Product Offering

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature  
5°F saturated vapor temperature  
3.1 lbs./min./ton for R-134a  
2.9 lbs./min./ton for R-22 and R-407C

1.4  
4.0 lbs./min./ton for R-404A/507 and R-12  
2.7 lbs./min./ton for R-410A

<sup>2</sup> Water Capacities are based on:  
Equilibrium Point Dryness (EPD) of:  
50 parts per million for R-134a, R404-A/507,  
R-410A and R-407C

60 parts per million for R-22  
15 parts per million for R-12

<sup>3</sup> 20 drops of water = 1 gram = 1 cc

<sup>4</sup> For 2 PSI ΔP, Multiply values by

## Dimensional data (in)

Description	Length	Diameter
CU-80	7 3/8	3/4
CU-619	8 7/8	3/4
CU-620	9 1/2	1
CU-621	9	1
CU-200	10 1/2	1
CU-319	9 3/4	1 3/16

# STAS steel liquid and suction line filter drier system protectors

## STAS CO steel liquid and suction line filter drier for CO<sub>2</sub>

The STAS is a replaceable core filter drier for CFC, HCFC, and HFC refrigerants for use in large commercial air conditioning and refrigeration systems. The STAS-CO is specifically designed for CO<sub>2</sub> (R-744) systems.

### Features

- Slotted cover/unique internal hardware for hassle-free installation
- Full flow fittings for low pressure drop
- Corrosion resistant epoxy powder paint finish
- Sturdy steel shells for long life
- Solid copper connections
- 100 mesh outlet screen



### Specifications

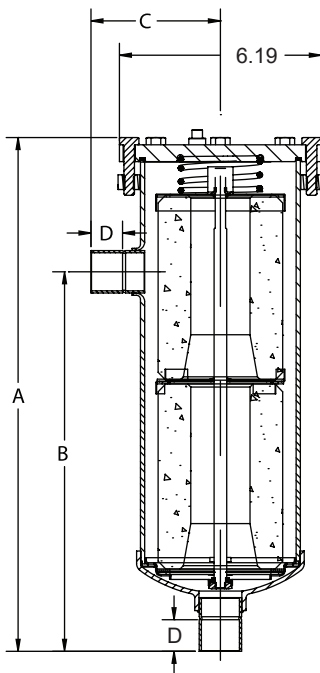
- Filtration (with core): 40 microns
- Maximum working pressure: SV version = 500 psig  
T version = 680 psig
- UL/CUL file number: SA7175

### Nomenclature example: STAS 489T

STAS	48	9	T
Steel take-apart series	Unit size (In cu. In.)	Connection size (In 1/8")	System Service T = Liquid Line Service SV = Suction Line Service

STAS Models are shipped without filter or filter drier cores. See filter or filter drier cores for availability. Uses 48 cubic inch cores.

### Dimensional data



### STAS ordering information

PCN	Description	Connection Size	Number of 48 in <sup>3</sup> cores	Desiccant volume (Cu. In.)	Dimensions (in)					
					A	B	C	D		
053001	STAS-485T	5/8 ODF	1	48	9.94	6.00	3.78	0.63		
053003	STAS-487T	7/8 ODF			9.69	6.25	3.75	0.78		
053005	STAS-489T	1 1/8 ODF			9.75	6.31	3.84	0.94		
053007	STAS-4811T	1 3/8 ODF			9.84	6.44	3.97	0.94		
053043	STAS-4813S-V <sup>1</sup>	1 5/8 ODF			9.88	6.02	4.03	1.13		
053044	STAS-4817S-V <sup>1</sup>	2 1/8 ODF			10.06	6.56	4.56	1.34		
053045	STAS-4821S-V <sup>1</sup>	2 5/8 ODF			10.44	7.03	4.75	1.04		
053375	STAS-4813T	1 5/8 ODF			9.88	6.50	4.03	1.13		
053938	STAS-4811SV	1 3/8 ODF			9.84	6.44	3.97	0.94		
053010	STAS-967T	7/8 ODF			2	96	15.19	11.72	3.75	0.78
053012	STAS-969T	1 1/8 ODF	15.22	11.78			3.84	0.94		
053014	STAS-9611T	1 3/8 ODF	15.31	11.91			3.97	1.03		
053017	STAS-9613T	1 5/8 ODF	15.38	11.97			4.03	1.13		
053018	STAS-9617T	2 1/8 ODF	15.56	12.03			4.56	1.34		
053047	STAS-9617S-V <sup>1</sup>	2 1/8 ODF	15.56	12.03			4.56	1.34		
053048	STAS-9621S-V <sup>1</sup>	2 5/8 ODF	15.94	12.50			4.75	1.50		
059739	STAS-9625 SV <sup>1</sup>	3 1/8 ODF	16.54	12.63			5.44	1.66		
053020	STAS-1449T	1 1/8 ODF	3	144			21.25	17.38	3.84	0.94
053022	STAS-14411T	1 3/8 ODF					21.34	17.53	3.97	1.03
053024	STAS-14413T	1 5/8 ODF			21.38	17.59	4.03	1.13		
053025	STAS-14417T	2 1/8 ODF			21.56	17.63	4.56	1.34		
053028	STAS-19211T	1 3/8 ODF	4	192	26.91	23.00	3.97	1.03		
053030	STAS-19213T	1 5/8 ODF			26.94	23.17	4.03	1.13		
053031	STAS-19217T	2 1/8 ODF			27.13	23.13	4.56	1.34		
056213	STAS-1927/5T	7/8 X 5/8			26.50	6.00	3.69	0.78/0.63		

<sup>1</sup> "SV" style include stainless steel bolts and access valve.

NOTE: "T" style can be used for suction by removing pipe plug and installing X-11562-2.

### STAS-CO ordering information

PCN	Description	Connection size	Number of 48 in <sup>3</sup> cores	Desiccant volume (Cu. In.)	Dimensions (In)			
					A	B	C	D
066725	STAS-CO485T	5/8 ODF	1	48	9.37	6.06	3.78	0.50
066726	STAS-CO487T	7/8 ODF	1	48	9.50	6.25	3.74	0.75
066727	STAS-CO489T	1 1/8 ODF	1	48	9.60	6.30	3.85	0.91
066728	STAS-CO969T	1 1/8 ODF	2	96	15.20	11.90	3.85	0.91
066729	STAS-CO9611T	1 3/8 ODF	2	96	15.35	12.04	3.97	0.97

Note: STAS-CO has UL approval for use with CO<sub>2</sub> (R-744) at a maximum working pressure of 680 psig.



# STAS steel liquid and suction line filter drier system protectors

## STAS CO steel liquid and suction line filter drier for CO<sub>2</sub>

Description	Connections	Liquid flow capacity Tons @ 1 psi ΔP <sup>1,2,3</sup>						
		R-134a R-450A R-513A	R-22 R-410A R-448A R-449A	R-407C	R-404A /507	R-502	R-410A	R-744 <sup>4</sup>
STAS-485T	5/8 ODF	21	22	21	15	14	22	28
STAS-487T	7/8 ODF	38	41	39	27	25	41	53
STAS-489T	1 1/8 ODF	53	58	56	38	36	58	75
STAS-4811T	1 3/8 ODF	75	81	78	53	41	81	
STAS-4813T	1 5/8 ODF	81	89	85	58	58	89	
STAS-967T	7/8 ODF	42	45	43	30	27	45	
STAS-969T	1 1/8 ODF	65	71	68	47	42	71	92
STAS-9611T	1 3/8 ODF	80	87	83	57	54	87	112
STAS-9613T	1 5/8 ODF	92	100	95	65	58	100	
STAS-1449T	1 1/8 ODF	66	72	69	47	41	72	
STAS-14411T	1 3/8 ODF	92	100	96	65	60	100	
STAS-14413T	1 5/8 ODF	93	101	97	66	66	101	
STAS-14417T	2 1/8 ODF	110	120	115	78	76	120	
STAS-19211T	1 3/8 ODF	94	102	98	67	64	102	
STAS-19213T	1 5/8 ODF	103	113	108	74	69	113	
STAS-19217T	2 1/8 ODF	113	123	117	80	78	123	

<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature

- 5°F saturated vapor temperature
- 3.1 lbs./min./ton for R-134a
- 2.9 lbs./min./ton for R-22 and R-407C
- 4.0 lbs./min./ton for R-404A/507 and R-12

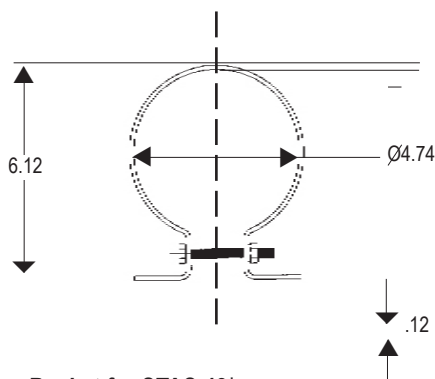
<sup>2</sup> For 2 PSI ΔP, Multiply values by 1.4

<sup>3</sup> For kW, multiply by 3.5

<sup>4</sup> R-744: Since there is currently no ARI standard for R-744, values are based on 1 ton of refrigeration at 20°F liquid refrigerant temperature and -20°F saturated vapor temperature.

### Replacement parts for STAS

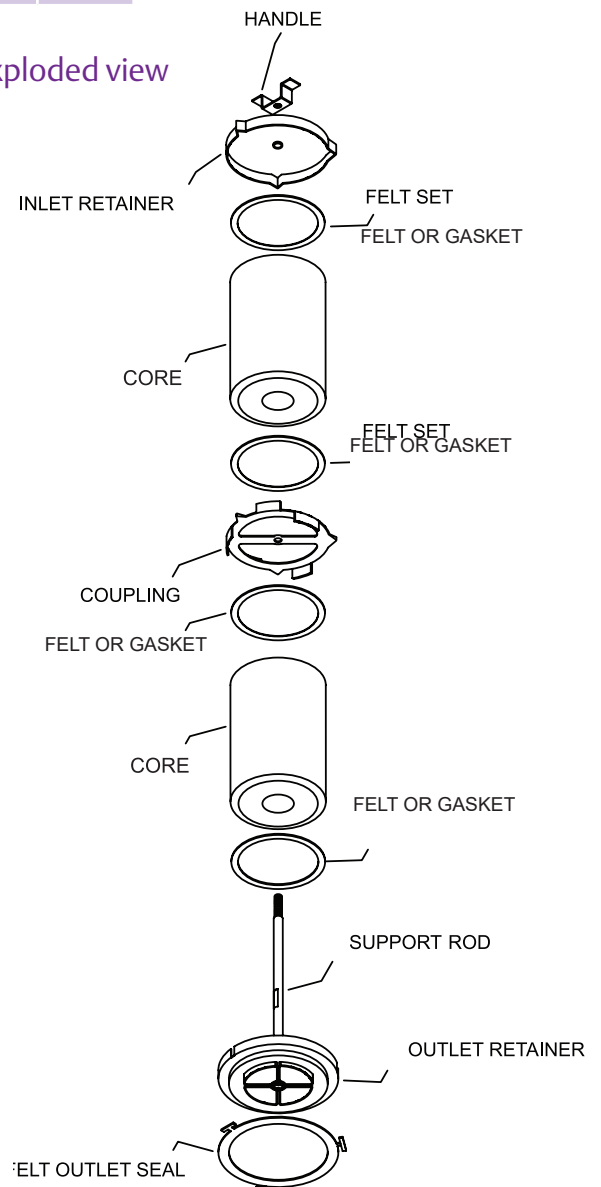
Flange cover assembly	Description	PCN
All STAS Driers - Include Flange Cover, Compression Spring, Pipe Plug, and Grade 5 Bolts	X12176-3	054046
Shell strainer assembly		
STAS-48	X27458-1	060274
STAS-96	X27458-2	060275
STAS-144	X27458-3	060276
STAS-192	X27458-4	060277
Miscellaneous parts		
Cover Bolts (Stainless steel - suction line service)	X25787-7	053121
Access Valve (V Option)	X11562-2	037409
Gasket Set (Includes cover gasket and felt set)	X11983-1	027453
Handle	26446-1	053812
Inlet Retainer	26477-1	053813
Spring	26439-1	060258
Mounting Bracket	X28747-1	061715



#### Mounting Bracket for STAS 48\*

\*More than one mounting bracket may be required for shell sizes 96 and above.

### Exploded view



## ADKS liquid and suction line filter drier system protection

The ADKS is a replaceable core filter drier for use with CFC, HCFC, and HFC refrigerants in very large commercial air conditioning and refrigerant systems.

### Features

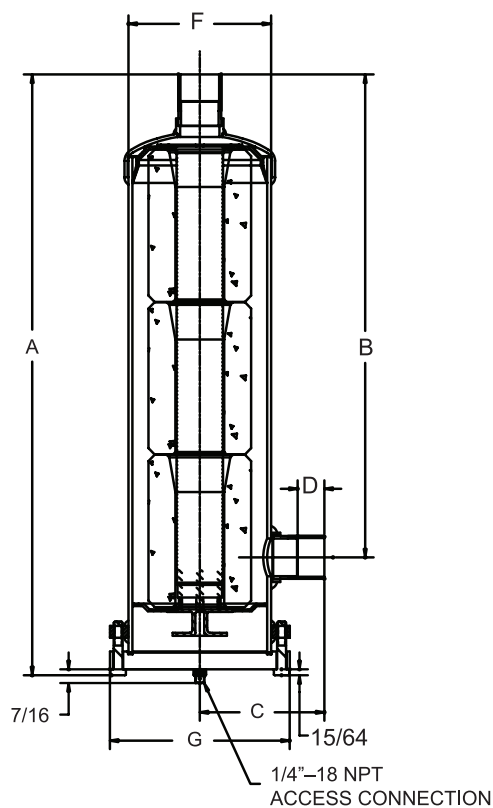
- Full flow fittings for low pressure drop
- Corrosion resistant epoxy powder paint finish
- Sturdy steel shells for long life durability



### 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

### Dimensional data



### Specifications

- Filtration (with core): 40 microns
- Maximum working pressure: 500 psig\*
- UL/CUL file number: SA 3124
- Bolt Torque: 35 ft-lbs

\*Note: Not suitable for R-410A applications above 500 psig.

### Ordering information

PCN	Description	Connection size	Number Of 100 in <sup>3</sup> Cores	Dimensions (in)						Weight (lbs)
				A	B	C	D	F*	G	
026570	ADKS-30013T	1 5/8 ODF	3	25.27	20.32	5.24	1.13	6.00	7.56	39.00
037978	ADKS-30017T	2 1/8 ODF		25.41	20.45	5.43	1.66			
032105	ADKS-40017T	2 1/8 ODF	4	31.91	26.95	5.43	1.66	6.00	7.56	46.00
037570	ADKS-40021T	2 5/8 ODF		32.81	27.86	6.19	1.47			

\* Does not include weld bead  
<sup>1</sup> "H" Dimension is the clearance required to change the internal hardware assembly  
T = 1/4" FPT access connection

ADKS Models are shipped without filter cores or filter drier cores. See filter or filter drier cores for availability. Uses 100 cubic inch cores.

# ADKS liquid and suction line filter drier system protectors

## Capacity tables (in Tons)

### Liquid line for replaceable block type ADKS filter driers

Description	Connection	Flow capacity in Tons @ 1 psi $\Delta P$ <sup>1, 2</sup>					
		R-12	R-134a/R-450A/ R-513A	R-22/R-410A /R-448A/ R-449A	R-407C	R-404/507	R-502
ADKS 30013T	1 5/8 ODF	83	102	110	108	73	49
ADKS 30017T	2 1/8 ODF	121	148	160	157	107	59
ADKS 40017T	2 1/8 ODF	128	157	170	167	114	63
ADKS 40021T	2 5/8 ODF	136	166	180	177	120	71

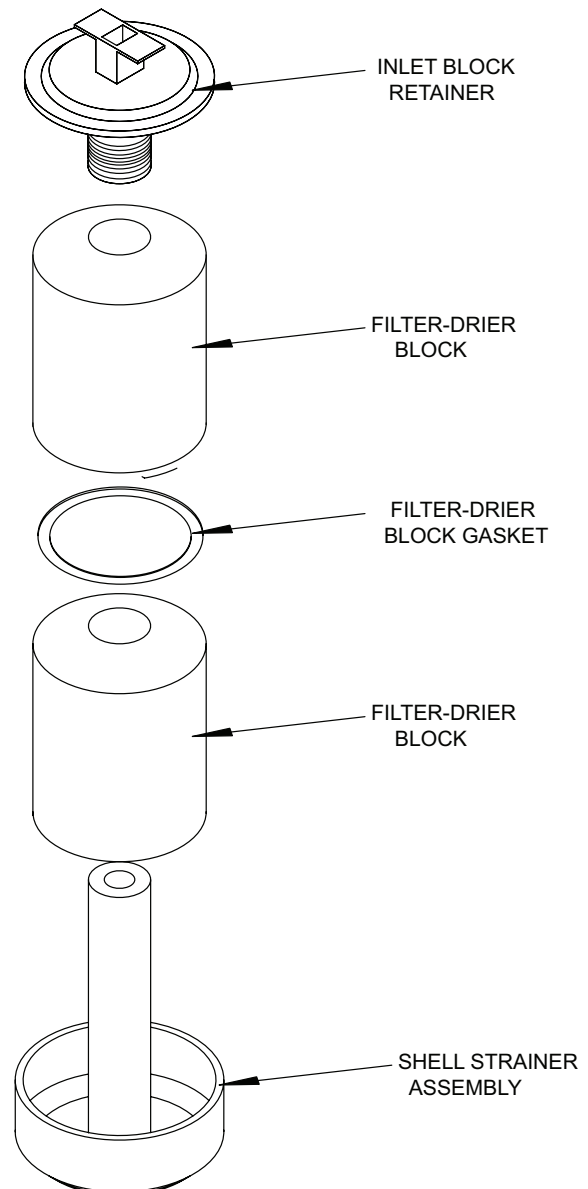
<sup>1</sup> All ratings in accordance with ARI Standard 710-04. 86°F liquid refrigerant temperature  
5°F saturated vapor temperature  
3.1 lbs./min./ton for R-134a  
2.9 lbs./min./ton for R-22 and R-407C  
4.0 lbs./min./ton for R-404A/507 and R-12

<sup>2</sup> For 2 PSI  $\Delta P$ . Multiply values by 1.4

## Replacement parts

Flange cover	Description	PCN
ADKS-300, ADKS-400	X12176-2	027467
Shell	Strainer	Assembly
ADKS-300	X10574-5	039967
ADKS-400	X10574-6	038315
Miscellaneous parts		
Gasket set (Includes cover gasket)	X-11983-2	027454

## Exploded view



# Filter drier cores and filters system protectors

Universal replacement cores and filter cores for use in our ADKS and STAS shells and similar competitive Take-Apart type filter drier shells. May not be used for BTAS.

## Features

- Water capacities to suit specific system conditions
- Exceptional acid capacities for normal system protection, or to effectively clean-up following a compressor burnout
- Activated carbon blend for soluble contaminant and wax removal (W-HH Series)



## Nomenclature example: H 48

H	48
Series	Cubic Inch

## Specifications

- Interchangeable with competitive products
- 48 cubic inch cores used in STAS
- 100 cubic inch cores used in ADKS

NOTE: Filter Drier cores are suitable for use with R-11 AND R-123 but filters are NOT.

## Ordering information and capacity tables

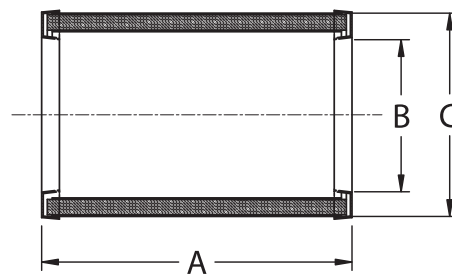
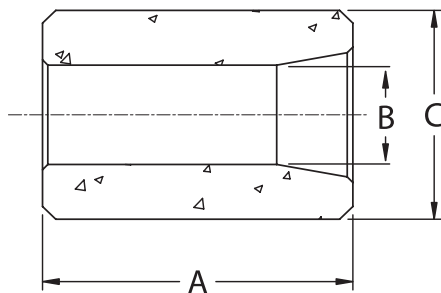
PCN	Description <sup>3</sup>	Recommended Refrigerant Type	Function	Refrigerant													
				R-134a		R-22		R-407C		R-404A/R-507		R-410A		R-502		R-744	
				75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	14°F	75°F
061617	UK-48	CFC, HCFC, HFC	Premium Universal Replacement	1272	1168	1181	1072	1033	786	1319	1241	976	707	1332	1150	1184	1388
059541	D-48	CFC, HCFC	High Acid Removal	415	340	363	254	225	95	457	343	210	86	388	225	186	218
059542	H-48	CFC, HCFC	High Acid and Water Removal	676	538	597	436	445	285	721	535	380	226	643	475	274	321
061235	W-48-HH	CFC, HCFC, HFC	Burnout Cleanup	387	294	335	226	290	165	417	289	249	130	444	306	328	386
089338	H-100	CFC, HCFC	High Acid and Water Removal	1112	834	962	673	726	418	1199	839	672	364	1109	758		
062549	HX-48	CFC, HCFC, HFC	Highest Water Removal	1710	1600	1600	1491	1459	1161	1765	1710	1280	930	1932	1744		
062424	UK-100	CFC, HCFC, HFC	Premium Universal Replacement	2769	2550	2574	2345	2182	1682	2868	2710	-	-	2787	2437		
043582	W-100-HH	CFC, HCFC, HFC	Burnout Cleanup	1077	812	938	621	629	363	1162	792	573	307	960	663		
089559	F-48	CFC, HCFC, HFC	Filter (Suction Only)	N/A													
047664	F-48R	CFC, HCFC, HFC	Filter (Suction Only) Reverse Flow														
095762	F-100	CFC, HCFC, HFC	Filter (Suction Only)														
061237	RH-48	CFC, HCFC	Refrigerant Reclaim - Max. Moisture Removal	1096	920	1037	790	750	530	1090	940	650	420	643	475		
061238	RW-48	CFC, HCFC	Refrigerant Reclaim - Max. Acid Removal	583	493	532	380	380	230	600	482	350	197	444	306		

<sup>1</sup> Water Capacities are based on: Equilibrium Point Dryness (EPD) of: 50 parts per million for R-134a, R404-A/R-410A and R-407C 60 parts per million for R-22 15 parts per million for R-12

<sup>2</sup> 20 drops of water = 1 gram = 1 cc

<sup>3</sup> D-42, H-42 and W-42 include one neoprene composite lid gasket and one core gasket. All other cores include a universal neoprene composite gasket kit which includes 2 sizes of replacement lid gaskets, and gaskets for the top and bottom of the core or filter.

## Dimensional data



Filter drier block size	Dimensions			Weight (lbs)
	A	B	C	
42	6.00	1.58	3.12	1.00
48	5.50	1.77	3.72	1.50
100	6.50	2.06	4.81	4.00

Catalog number	Dimensions			Weight (lbs)
	A	B	C	
F-48/F-48R	5.50	2.81	3.88	0.75
F-100	6.50	3.75	4.81	1.50

# BTAS brass take-apart suction line filter drier system protectors

The BTAS is a replaceable core filter drier for suction line services ideal for commercial refrigeration applications.

## Features

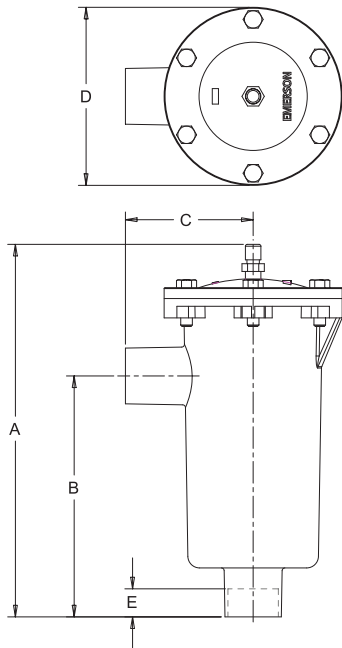
- Full flow fittings for low pressure drop
- Corrosion resistant brass body with stainless steel bolts
- Special cartridge design exclusive to brass shell



## Nomenclature example: BTAS 311SV

BTAS	3	11	SV
Brass take-apart series	Unit size	Connection size (In 1/8")	Suction line service

## Dimensional data



## Specifications

- Filtration : 40 microns
- Maximum working pressure : 400 psig
- UL/CUL file number : SA 3124

## Ordering information

Pcn	Description	Connection size	Nominal shell size (in)	Dimensions (in)					Weight (Lbs)
				A	B	C	D	E	
049462	BTAS-27 S-V	7/8 ODF	2	9.75	6.57	2.19	3.75	0.75	6.75
049465	BTAS-39 S-V	1 1/8 ODF	3	10.31	6.81	3.31	4.63	0.91	10.25
049466	BTAS-311 S-V	1 3/8 ODF		11.06	6.94	3.44		0.97	10.50
049467	BTAS-313 S-V	1 5/8 ODF		11.25	7.13	3.63		1.09	11.00
049468	BTAS-317 S-V	2 1/8 ODF		11.50	7.38	3.88		1.34	11.20
064169	BTAS-411 S-V	1 3/8 ODF		4	11.41	7.81		4.13	5.75
049470	BTAS-413 S-V	1 5/8 ODF	12.03		7.81	4.13	1.09	16.75	
049471	BTAS-417 S-V	2 1/8 ODF	12.28		8.06	4.13	1.34	17.20	
049472	BTAS-421 S-V	2 5/8 ODF	12.41		8.19	4.94	1.47	18.00	
049473	BTAS-517 S-V	2 1/8 ODF	5		13.44	8.41	4.19	7.09	
049474	BTAS-521 S-V	2 5/8 ODF		13.56	8.47	4.94	1.47		29.00
049475	BTAS-525 S-V	3 1/8 ODF		13.25	8.16	4.63	1.66		29.25

BTAS models are shipped without filter cartridge or Filter Drier cartridge.

# BTAS brass take-apart suction line filter drier system protectors

## Type A-F replaceable filter cartridges

PCN	Filter Core	For Shell No.	Core O.D.	Core Length	Filter Area (Sq. In.)	Weight (lbs)
049479	A2F	BTAS-2	1 29/32	6 3/8	66	0.33
049480	A3F	BTAS-3	2 3/4	6 7/8	115	0.50
049481	A4F	BTAS-4	3 3/4	7 1/2	189	0.88
049482	A5F	BTAS-5	4 5/16	8 1/2	270	1.00

## 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 (lbs)
049483	A2F-D	BTAS-2	1 29/32	6 3/8	4.2	0.50
049484	A3F-D	BTAS-3	2 3/4	6 7/8	13.3	0.88
049485	A4F-D	BTAS-4	3 3/4	7 1/2	26.0	1.20
049486	A5F-D	BTAS-5	4 5/16	8 1/2	36.5	1.20

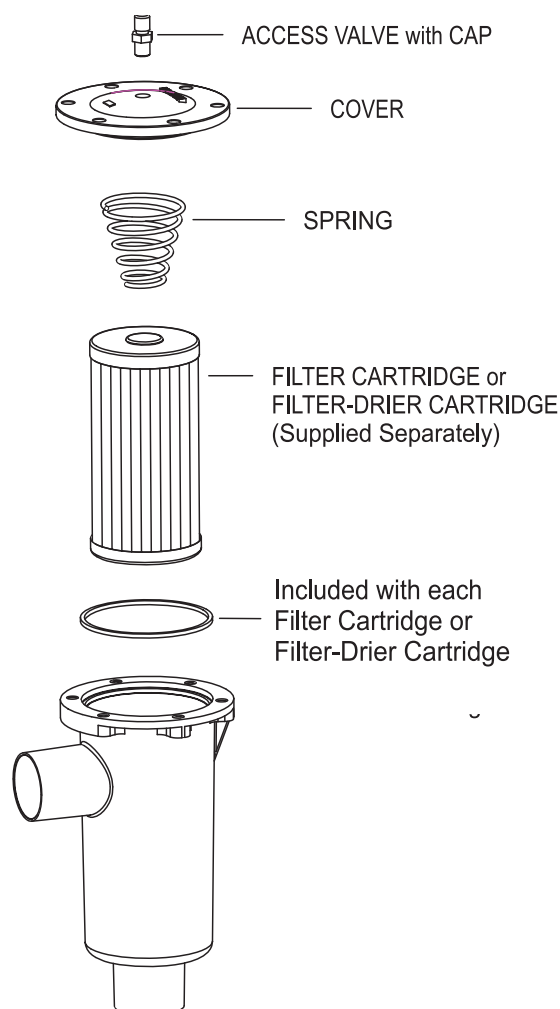
## Replacement parts\*

Misc. parts	Description	PCN
Access valve	X11562-2	037409
BTAS 2 repair kit*	KD-30519-2	065970
BTAS 3 repair kit*	KD-30519-3	065971
BTAS 4 repair kit*	KD-30519-4	065972
BTAS 5 repair kit*	KD-30519-5	065973
BTAS 2 seal ring kit	KD-40015-1	066430
BTAS 3 seal ring kit	KD-40015-2	066431
BTAS 4 seal ring kit	KD-40015-3	066432
BTAS 5 seal ring kit	KD-40015-4	066433

\* Repair kits contain cover bolts, cover, spring and seal ring.

BTAS models are shipped without filter cartridge or Filter Drier cartridge.

## Exploded view



## ASD premium suction line filter drier system protectors

The ASD is a premium suction line filter drier for use with CFC, HCFC and HFC refrigerants. The ASD is optimized for high moisture, acid, and solid contaminant removal.

### Features

- Outstanding filtration for ultimate compressor protection
- Dual access valves for easy pressure readings
- Solid copper connections
- Corrosion resistant epoxy powder paint finish



### Specifications

- Filtration : 40 microns
- Maximum working pressure : 500 psig
- UL/CUL file number : SA 3124

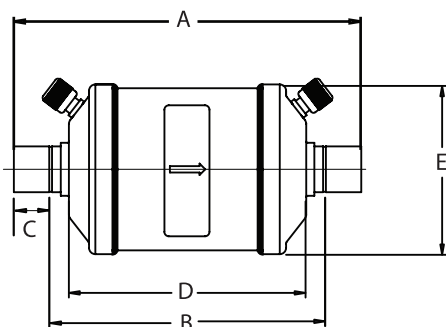
### Nomenclature example: ASD 35S5V

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

### Ordering information

PCN	Description	Connection size	Dimensions (in)					Weight (lbs)
			A	B	C	D	E	
056352	ASD 28F3	3/8 SAE	5.59	--	0.44	4.13	3.69	2.00
049168	ASD 28S3-W	3/8 ODF	5.59	4.72	0.44	4.13		
049169	ASD 28S4-W	1/2 ODF	5.69	4.69	0.50	4.13		
049170	ASD 35F5-W	5/8 SAE	7.56	--	--	4.75	3.69	2.50
049171	ASD 35S5-W	5/8 ODF	6.22	5.28	0.63	4.75		
049172	ASD 45S6-W	3/4 ODF	7.75	6.50	0.63	5.56	3.69	3.00
049173	ASD 45S7-W	7/8 ODF	7.94	6.44	0.75	5.56		
049174	ASD 50S9-W	1 1/8 ODF	8.84	7.03	0.91	6.13		
049175	ASD 75S11-W	1 3/8 ODF	12.25	10.31	0.97	8.25	3.69	5.00
049176	ASD 75S13-W	1 5/8 ODF	12.16	9.91	1.13	8.25		

### Dimensional data



## SFD suction line filter drier system protectors

The SFD is a standard suction line filter drier for use after a burnout or when major work has been performed. It is for use with CFC, HCFC and HFC refrigerants.

### Features

- Solid copper connections
- Dual access valves for easy pressure readings
- Corrosion resistant epoxy powder paint finish
- R-410A compatible



### Nomenclature example: SFD 13S5-VV

SFD	13	S	5	VV
Series	Unit size (In cu. In.)	Connections S = ODF F = SAE	Connection size (In 1/8")	Dual access valves

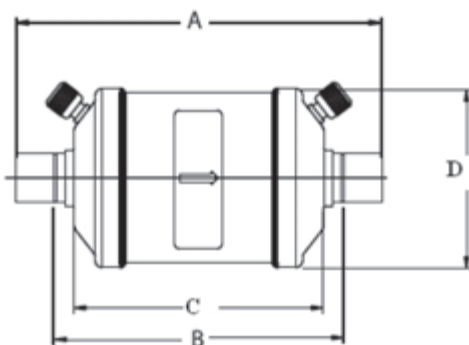
### Specifications

- Filtration : 40 microns
- Maximum working pressure : 500 psig
- UL/CUL file number : SA 3124

### Order Information

PCN	Description	Connection size	Dimensions (in)				Weight (lbs)
			A	B	C	D	
064045	SFD 08S4-VV	1/2 ODF	4.94	3.94	3.38	3.14	2.00
064046	SFD 08S5-VV	5/8 ODF	5.16	3.91			
064047	SFD 08S6-VV	3/4 ODF	5.56	4.31			
060244	SFD 13F3-VV	3/8 SAE	5.50	N/A			
060245	SFD 13S3-VV	3/8 ODF	4.84	3.97		3.64	
060246	SFD 13S4-VV	1/2 ODF	4.94	3.94			
060247	SFD 13S4-VV	1/2 ODF	5.75	N/A			
060248	SFD 13F5-VV	5/8 SAE	6.13	N/A			
060249	SFD 13S5-VV	5/8 ODF	5.16	3.91			
060250	SFD 13S6-VV	3/4 ODF	5.25	4.00			
060262	SFD 13S7-VV	7/8 ODF	5.75	4.25			
056505	SFD 27S6-VV	3/4 ODF	7.00	5.75	5.13		3.00
060251	SFD 27S7-VV	7/8 ODF	7.50	6.00			
060252	SFD 27S9-VV	1 1/8 ODF	7.63	5.81			
060253	SFD 54S11-VV	1 3/8 ODF	12.25	10.31	8.25	4.50	
060254	SFD 54S13-VV	1 5/8 ODF	12.16	9.91			

### Dimensional data





## CSFD compact suction line filter drier system protectors

The CSFD has a compact solid desiccant core perfect for short lay-in applications. The CSFD is used for moisture, acid and solid contaminant removal. It is for use with CFC, HCFC and HFC refrigerants.

### Features

- Dual access valves for easy pressure readings
- High acid removal capacity
- Solid copper fittings for easiest brazing
- Corrosion resistant epoxy powder paint finish



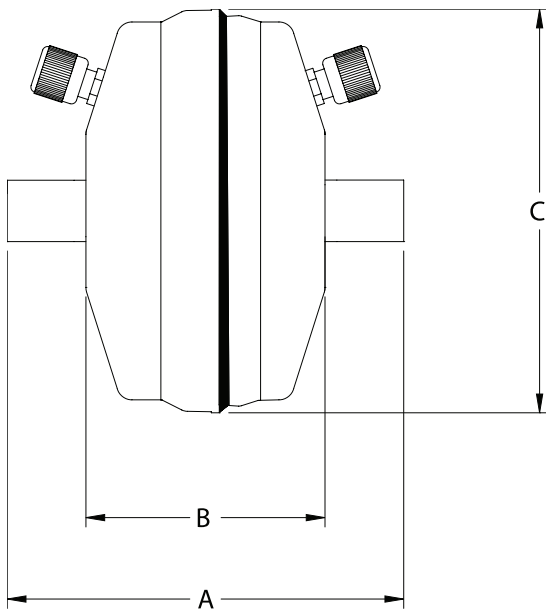
### Nomenclature example: CSFD 14S4-VV

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

### Specifications

- Filtration : 40 microns
- Maximum working pressure : 500 psig
- UL/CUL file number : SA 3124

### Dimensional data



### Ordering information

PCN	Description	Connection size	Dimensions (in)		
			A	B	C
062231	CSFD-14S4-W	1/2 ODF	4.25	2.75	4.63
062232	CSFD-14S5-W	5/8 ODF	4.50		
062233	CSFD-14S6-W	3/4 ODF	4.38		
062234	CSFD-14S7-W	7/8 ODF	4.56		
062235	CSFD-14S9-W*	1 1/8 ODF	4.88		
* 400 psig Maximum Working Pressure					

## ASK-HH suction line filter drier system protectors

The ASK utilizes a solid core with an activated carbon blend to maximize acid, moisture and wax removal. It is for use with CFC, HCFC and HFC refrigerants.

### Features

- Dual access valves for easy pressure readings
- Corrosion resistant epoxy powder paint finish
- Activated carbon blend for soluble contaminant and wax
- Solid copper connections



### Nomenclature example: ASK 165S-VV-HH

ASK	16	5	S	VV	HH
Series	Unit size (In cu. In.)	Connection size (In 1/8")	Connection S = ODF	Dual access valves	Charcoal blend

### Specifications

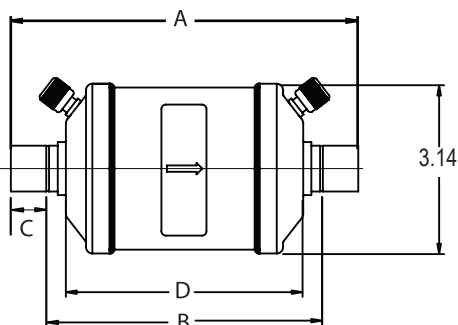
- Filtration : 40 microns
- Maximum working pressure : 500 psig
- UL/CUL file number : SA 3124

### Ordering information

PCN	Description	Connection size	Dimensions (in)				Weight (lbs)
			A	B	C	D	
056508	ASK 165S-W-HH	5/8 ODF	6.38	5.13	0.63	4.63	2.00
056509	ASK 166S-W-HH	3/4 ODF	6.75	5.50	0.38		
056510	ASK 167S-W-HH	7/8 ODF	6.94	5.26	0.75		
056511	ASK 306S-W-HH	3/4 ODF	9.69	8.56	0.63	7.50	3.75
056512	ASK 307S-W-HH	7/8 ODF	9.88	8.38	0.75		
056513	ASK 309S-W-HH	1 1/8 ODF	10.19	8.38	0.94		

<sup>1</sup> Dimension does not include weld bead

### Dimensional data



## ASF suction line filter system protectors

The ASF is a specifically designed filter to protect the compressor from dirt and all solid contaminants.

### Features

- Dual access valves for easy pressure readings
- Solid copper connections
- Corrosion resistant epoxy powder paint finish



### Nomenclature example: ASF 35S5-VV

ASF	35	S	5	VV
Series	Unit size (in cu. in.)	Connections S = ODF F = SAE	Connection size (in 1/8")	Dual access valves

### Specifications

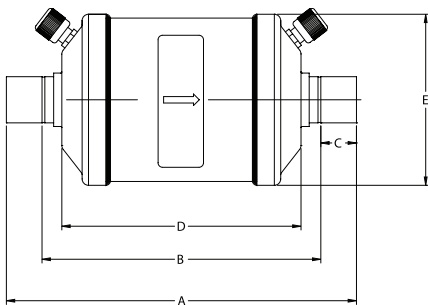
- Filtration : 40 microns
- Maximum working pressure : 500 psig
- UL/CUL file number : SA 3124

### Ordering information

PCN	Description	Connection size	Dimensions					Weight (lbs)
			A	B	C	D	E*	
062961	ASF 11S4	1/2 ODF	4.38	3.38	0.50	2.88	2.63	1.50
062962	ASF 11S5	5/8 ODF	4.63	3.38	0.63	2.88	2.63	1.50
062963	ASF 28S7	7/8 ODF	6.50	5.00	0.75	4.13	3.06	2.00
062964	ASF 28S7-VV	1 1/8 ODF	7.41	5.61	0.91	4.13	3.06	2.00
049177	ASF 28S3-VV	3/8 ODF	5.59	4.72	0.44	4.13	3.69	2.00
049178	ASF 28S4-VV	1/2 ODF	5.69	4.69	0.50	4.13	3.69	2.00
049179	ASF 35F5-VV	5/8 SAE	7.56	-	-	4.75	3.69	2.50
049180	ASF 35S5-VV	5/8 ODF	6.53	5.28	0.63	4.75	3.69	2.50
059999	ASF 45F3-VV	3/8 SAE	7.69	-	-	5.56	3.69	3.00
049181	ASF 45S6-VV	3/4 ODF	7.75	6.50	0.63	5.56	3.69	3.00
049182	ASF 45S7-VV	7/8 ODF	7.94	6.44	0.75	5.56	3.69	3.00
049183	ASF 50S9-VV	1 1/8 ODF	8.84	7.03	0.91	6.13	5.00	3.50
063113	ASF 64S17-V	2 1/8 ODF	11.75	9.06	1.31	7.63	5.00	3.50
063115	ASF 64S21-V	2 5/8 ODF	13.00	10.00	1.50	7.88	5.00	3.50
049184	ASF 75S11-VV	1 3/8 ODF	12.25	10.31	0.97	8.25	5.00	5.00
049185	ASF 75S13-VV	1 5/8 ODF	12.16	9.91	1.13	8.25	5.00	5.00

\* Dimension does not include weld bead

### Dimensional data



## APD pulsation dampener/muffler system protectors

The APD series is designed to reduce noise and vibration on the compressor discharge lines.

### Features

- Compact size
- Full flow fittings
- Solid copper connections
- Corrosion resistant epoxy powder paint finish
- Rugged steel shells for vibration resistance
- Shock resistant steel shell construction



### Specifications

- Maximum working pressure : 680 psig
- Operating Range : -40°F to +250°F
- UL/CUL file number : SA 5760

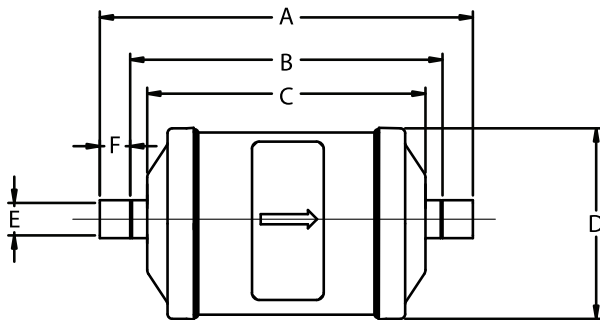
### Nomenclature example: APD 053 SB

APD	05	3	S	B
Pulsation dampener	Cubic inches	Fitting size in 1/8"	ODF fittings	With baffles (Omit for standard)

### Flow capacity

Fitting size	Tons
3/8	5-10
1/2	10-20
5/8	15-25
7/8	25-35
1 1/8	35+

### Dimensional data



### Ordering information

PCN	Description	Dimensions (in)					
		A	B	C	D	E	F
061862	APD 1R	6.00	5.00	4.47	3.02	0.50	0.50
049651	APD 054 S-B	4.56	3.56	3.00			
059144	APD 163 S	6.25	5.38	4.75	2.63	0.38	0.38
060119	APD 165 S-B	6.56	5.31			0.63	0.63
061042	APD 167S-B	7.13	5.04	4.77	3.13	0.88	1.04
056989	APD 309 S	10.25	8.44	7.50	3.13	1.13	0.88

## HMI hermetic moisture indicators system protectors

The HMI is designed to provide an accurate method of determining the moisture content of a system's refrigerant. The HMI has a unique high accuracy moisture indicator for CFC, HCFC, and HFC refrigerants.



### Features

- Highest sensitivity moisture indicator available
- Hermetic, leak-free construction
- Single indicator for all common refrigerants
- Accurate color calibration at low ppm levels and higher temperatures
- Wide angle viewing/high visibility window for ease of monitoring
- All brass corrosion resistant body for fewer leaks
- Solid copper connections

### Specifications

- Maximum working pressure : 680 psig
- UL/CUL file number : SA 9566

### 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

PCN	Description	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	HMI-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	
065622	HMI-1TT2MF	Sweat x Sweat (ODM x ODF)	1/4	
065814	HMI-1TT3MF		3/8	
065979	HMI-1TT4MF		1/2	
065980	HMI-1TT5MF		5/8	

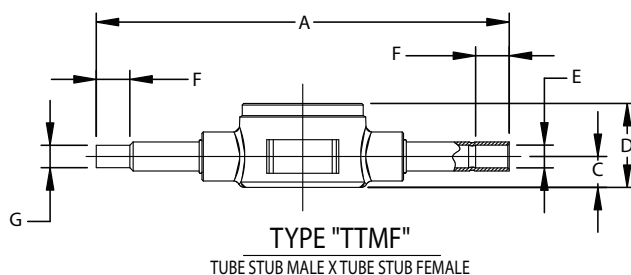
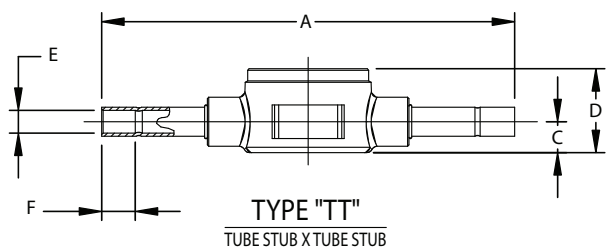
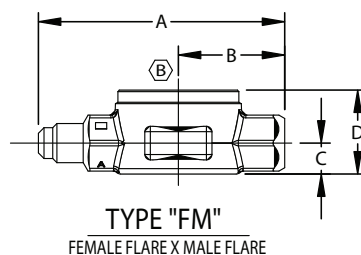
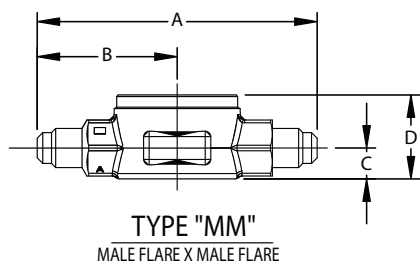
### Moisture content color code (ppm H2O)

Indication liquid temperature	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

Indication liquid temperature	Dry (Dark blue)				Caution (Purple)				Wet (Salmon)			
	-40°F	-4°F	32°F	68°F	-40°F	-4°F	32°F	68°F	-40°F	-4°F	32°F	68°F
R-744	3	6	11	20	5	10	19	34	16	32	63	116

# HMI hermetic moisture indicators system protectors

## Dimensional data



## Dimensional data (in)

Type number	Connection size	A	B	C	D	E	F Min	G
HMI - 1MM2	1/4 SAE	3.13	1.56	0.34	0.94			
HMI - 1MM3	3/8 SAE	3.38	1.69	0.34	0.94			
HMI - 1MM4	1/2 SAE	3.62	1.81	0.47	1.19			
HMI - 1MM5	5/8 SAE	3.88	1.94	0.47	1.19			
HMI - 1MM6	3/4 SAE	5.00	2.50	0.59	1.53			
HMI - 1FM2	1/4 SAE FM	2.75	1.19	0.34	0.94			
HMI - 1FM3	3/8 SAE FM	3.00	1.31	0.47	1.19			
HMI - 1FM4	1/2 SAE FM	3.22	1.41	0.47	1.19			
HMI - 1TT2	1/4 ODF	5.56		0.34	0.94	0.25	0.38	
HMI - 1TT3	3/8 ODF	5.61		0.34	0.94	0.38	0.40	
HMI - 1TT4	1/2 ODF	5.87		0.47	1.19	0.50	0.50	
HMI - 1TT5	5/8 ODF	5.87		0.61	1.19	0.63	0.63	
HMI - 1TT6	3/4 ODF	6.56		0.61	1.50	0.75	0.63	
HMI - 1TT7	7/8 ODF	6.31		0.61	1.50	0.88	0.75	
HMI - 1TT9	1 1/8 ODF	6.59		0.67	1.37	1.13	0.90	
HMI - 1TT2MF	1/4 ODM x 1/4 ODF	5.56		0.34	0.94	0.25	0.38	0.25
HMI - 1TT3MF	3/8 ODM x 3/8 ODF	5.61		0.34	0.94	0.38	0.38	0.38
HMI - 1TT4MF	1/2 ODM x 1/2 ODF	5.87		0.47	1.19	0.50	0.50	0.50
HMI - 1TT5MF	5/8 ODM x 5/8 ODF	5.87		0.61	1.19	0.63	0.50	0.62

## AMI moisture indicators system protectors

The AMI is designed to provide an accurate method of determining the moisture content of a system's refrigerant. The AMI has a unique high accuracy moisture indicator for CFC, HCFC and HFC refrigerants. For the AMI-2 Series, see the bottom of the following page.



### Features

- Highest sensitivity moisture indicator available
- Take-Apart design for easy repair
- 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
- Solid copper connections

### Specifications

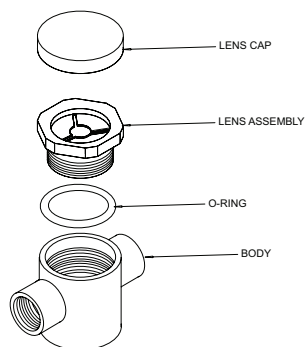
- Maximum working pressure : 680 psig
- UL/CUL file number : SA 9566

### Nomenclature example: AMI 1SS4

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

### Replacement parts For AMI

PCN	Part	Number
021371	Lenscap	12740-1
020877	"O" Ring	PS1525-2
027511	Lens Assembly Kit (Consists of lens assembly, lens cap and "O" ring)	X12978-1



### Ordering information

PCN	Description	Series	Connection size
048804	AMI-1MM3	Male Flare x Male Flare	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		7/8
031578	AMI-1TT9 EXTENDED ENDS	1 1/8	
060255	AMI-1TT11 EXTENDED ENDS	1 3/8	
048800	AMI-1FM2	Female Flare x Male Flare	1/4
048801	AMI-1FM3		3/8
048802	AMI-1FM4		1/2

### Moisture content color code (ppm H2O)

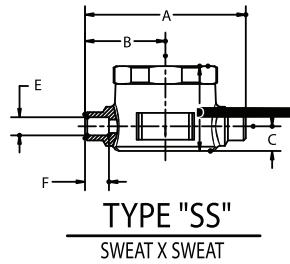
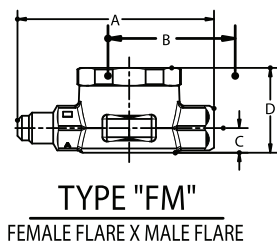
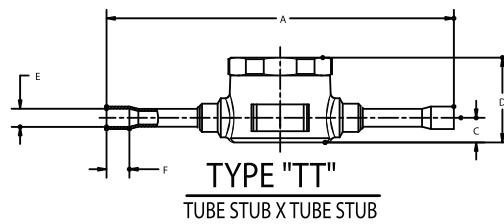
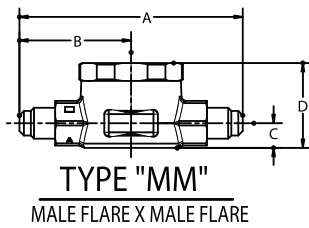
Indication liquid temperature	Dry (Dark blue)			Caution (Purple)			Wet (Salmon)		
	75°F	100°F	125°F	75°F	100°F	125°F	75°F	100°F	125°F
R-12	1.4	2.5	4	5	9	15	25	43	70
R-134A	20	35	60	35	55	85	130	160	190
R-22	25	35	50	40	65	90	145	205	290
R-407C	26	40	64	42	68	109	150	230	370
R-410A	30	55	75	50	85	120	165	290	420
R-404A/507	15	25	45	33	50	80	120	150	180

Indication liquid temperature	Dry (Dark blue)				Caution (Purple)				Wet (Salmon)			
	-40°F	-4°F	32°F	68°F	-40°F	-4°F	32°F	68°F	-40°F	-4°F	32°F	68°F
R-744	3	6	11	20	5	10	19	34	16	32	63	116

# System protectors AMI moisture indicators

## AMI-1

### Dimensional data

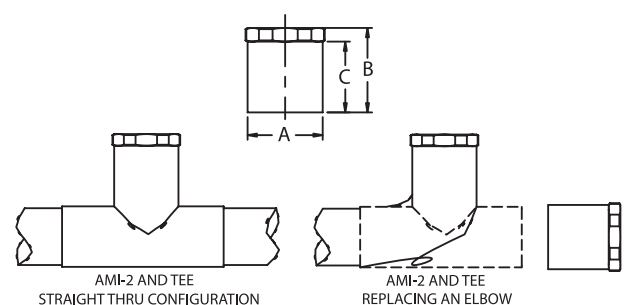


### Dimensional data (in)

Description	Connection size	A	B	C	D	E	F Min.				
AMI-1MM2	1/4 SAE	3.13	1.56	0.34	1.19						
AMI-1MM3	3/8 SAE	3.38	1.69								
AMI-1MM4	1/2 SAE	3.63	1.81	0.47	1.44						
AMI-1MM5	5/8 SAE	3.88	1.94								
AMI-1FM2	1/4 SAE	2.75	1.19	0.4w7	1.44						
AMI-1FM3	3/8 SAE	3.00	1.31								
AMI-1FM4	1/2 SAE	3.22	1.41								
AMI-1SS2	1/4 ODF	2.25	1.13	0.34	1.19	0.25	.32				
AMI-1SS3	3/8 ODF					0.38	.32				
AMI-1SS4	1/2 ODF					2.63	1.31	0.47	1.44	0.50	.38
AMI-1SS5	5/8 ODF									0.63	.50
AMI-1SS7	7/8 ODF					3.13	1.56	0.61	1.75	0.88	.76
AMI-1SS9	1 1/8 ODF	3.38	1.69	0.67	1.92	1.13	.90				
AMI-1TT2	1/4 ODF	4.89		0.34	1.19	.25	.32				
AMI-1TT3	3/8 ODF					0.38	.32				
AMI-1TT4	1/2 ODF					4.92		0.47	1.44	0.50	.38
AMI-1TT5	5/8 ODF									4.91	
AMI-1TT7	7/8 ODF					6.36		0.61	1.75	0.88	.76
AMI-1TT9	1 1/8 ODF	6.59		0.67	1.92	1.125	.90				
AMI 1TT11	1 3/8 ODF	6.94		1.00	2.39	1.38	1.3				

### AMI-2 series dimensions (in)

PCN	Description	Connection size	A Dia.	B	C
064167	AMI-2S7	7/8 ODM	0.88	1.34	1.00
064168	AMI-2S9	1 1/8 ODM	1.13	1.25	1.00
022303	AMI-2S11	1 3/8 ODM	1.38	1.56	1.94
028388	AMI-2S13	1 5/8 ODM	1.63	1.69	1.44
031219	AMI-2S17	2 1/8 ODM	2.13	1.94	1.69



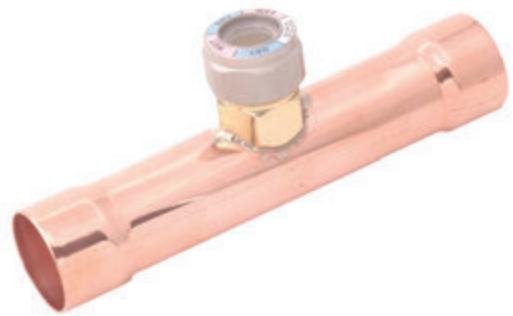


## A-IHL moisture indicators system protectors

The A-IHL saddle design moisture indicator is used for large diameter tubing in CFC, HCFC and HFC refrigerants.

### Features

- Saddle design
- Solid copper connections
- Replaceable moisture indicator
- Eliminates the need for bypass installation - positive reaction to system moisture levels



### Specifications

- Maximum working pressure : 680 psig
- UL/CUL file number : SA 9566

### Nomenclature example: A-IHL 9S

A-IHL	9	S
Series	Connection size (in 1/8")	S = ODF

### Ordering information

PCN	Model	Connection size	Overall length (in)
060853	A-IHL-9S	1 1/8 ODF	6.31
061030	A-IHL-11S	1 3/8 ODF	7.12
061031	A-IHL-13S	1 5/8 ODF	7.87
061032	A-IHL-17S	2 1/8 ODF	8.68

## ACC charge compensator system protectors

The ACC is a charge compensator that is designed to work in heat pump applications. It increases system efficiency by storing extra refrigerant in the heating mode. It then returns refrigerant back into circulation in the cooling mode.

### Features

- Solid copper connection
- Corrosion resistant epoxy powder paint finish

### Nomenclature example: ACC -3637S

ACC	36	3	7	S
Series	Internal volume (cu. in.)	Diameter (in.)	Connection size (in. 1/8")	ODF



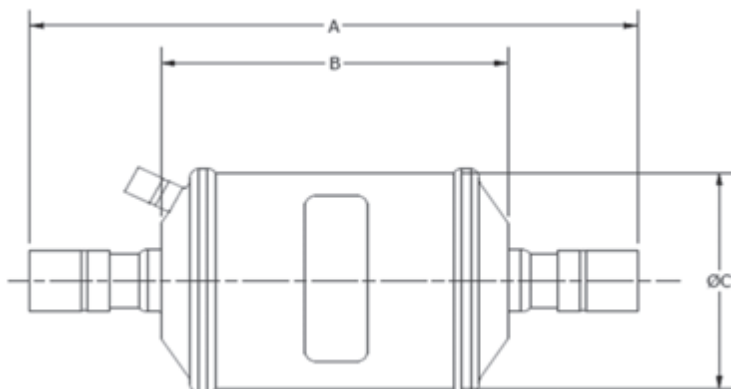
### Specifications

- Maximum working pressure : 680 psig
- UL/CUL file number : SA5760

### Ordering information

PCN	Description	Internal volume (Cu. In.)	Liquid line connection	Connection	Dimensions (in.)			Holding capacity (oz.)	
					A	B	C	R-410A	
								75°F	125°F
066631	ACC-2336S	23	3/8 ODF	3/4 ODF	7.19	3.33	3.50	15	13
066632	ACC-3636S	36	3/8 ODF	3/4 ODF	8.94	5.08	3.50	24	20
066633	ACC-3637S		3/8 ODF	7/8 ODF	8.94	5.08	3.50	24	20
066634	ACC-4736S	47	3/8 ODF	3/4 ODF	10.18	6.32	3.50	31	26
066635	ACC-4737S		3/8 ODF	7/8 ODF	10.18	6.32	3.50	30	25
066493	ACC-6236S	62	3/8 ODF	3/4 ODF	12.06	8.20	3.50	40	34
066636	ACC-6237S		3/8 ODF	7/8 ODF	12.06	8.20	3.50	40	33
066637	ACC-7837S	78	3/8 ODF	7/8 ODF	14.11	10.25	3.50	51	43
066638	ACC-7836S		3/8 ODF	3/4 ODF	14.11	10.25	3.50	50	42
066639	ACC-9536S	95	3/8 ODF	3/4 ODF	15.86	12.00	3.50	60	51
066640	ACC-9537S		3/8 ODF	7/8 ODF	15.86	12.00	3.50	59	50

### Dimensional data



## ASZ series accumulator

The Emerson ASZ series accumulator featured with high pressure resistant material is ideal for high efficiency R410A air conditioning application, available for systems through 120 kW R410A nominal capacity.

### Features

- Hermetic design
- ODF copper connections for easy soldering
- Corrosion resistant epoxy powder paint finish
- Inlet deflector directs refrigerant flow to prevent internal splashing and aid in the collection of refrigerant oil
- Operate in a range of -40°C to 4°C evaporator temperature
- Maximum Working Pressure (MWP): 34.5 Bar
- Fusible Plug Temperature: 221°C



### Nomenclature

A	SZ	6	25	13
Series	Accumulator suction R410A application	Diameter (in)	Height (in)	Fitting Size in 1/8"

### Selection table with nominal capacity and dimensional data:

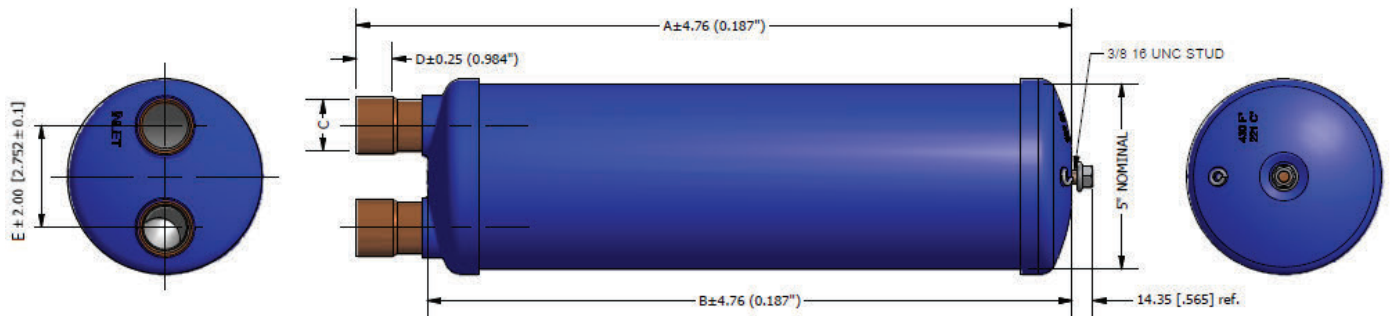
PCN	Model description	"C Nominal fitting size (Inch)"	Diameter (mm)	"A Total height (mm)"	"B Tank height (mm)"	"D Fitting depth (mm)"	"E Fitting separation (mm)"	Weight (Kg)	Nominal capacity R410A (+4°C) (KW)	Holding capacity** R410A (+4°C) (g.)
066471	ASZ 5 96	3/4	127.0 (~5")	246	216	16.0	69.9	2.7	17.2	2,488
066472	ASZ 5 97	7/8		251	215	19.1	69.9	2.7	31.4	2,488
066473	ASZ 5 126	3/4		328	298	16.0	69.9	3.6	17.2	3,354
066474	ASZ 5 127	7/8		334	298	19.1	69.9	3.7	31.4	3,364
066475	ASZ 5 137	7/8		376	340	19.1	69.9	4.1	31.4	3,806
066476	ASZ 5 139	1-1/8		380	340	23.0	69.9	4.2	50.8	3,824
066477	ASZ 5 179	1-1/8		470	430	23.0	69.9	5.2	50.8	4,783
066478	ASZ 5 1711	1-3/8		475	430	24.6	69.9	5.2	81.0	4,810
066479	ASZ 6 117	7/8	152.4 (~6")	313	279	19.1	74.6	5.2	31.4	4,810
066480	ASZ 6 137	7/8		354	320	19.1	74.6	5.9	31.4	5,428
066481	ASZ 6 139	1-1/8		363	320	23.0	74.6	5.9	50.8	5,455
066482	ASZ 6 1411	1-3/8		395	349	24.6	74.6	6.4	81.0	5,925
066483	ASZ 6 1713	1-5/8		480	432	27.7	80.0	7.8	122.8	7,225
066484	ASZ 6 2013	1-5/8		559	510	27.7	80.0	9.1	122.8	8,413
066485	ASZ 6 2513	1-5/8		683	635	27.7	80.0	11.2	122.8	10,349

\*\* Holding capacity consider only 50% volume of refrigerant charge per safety.

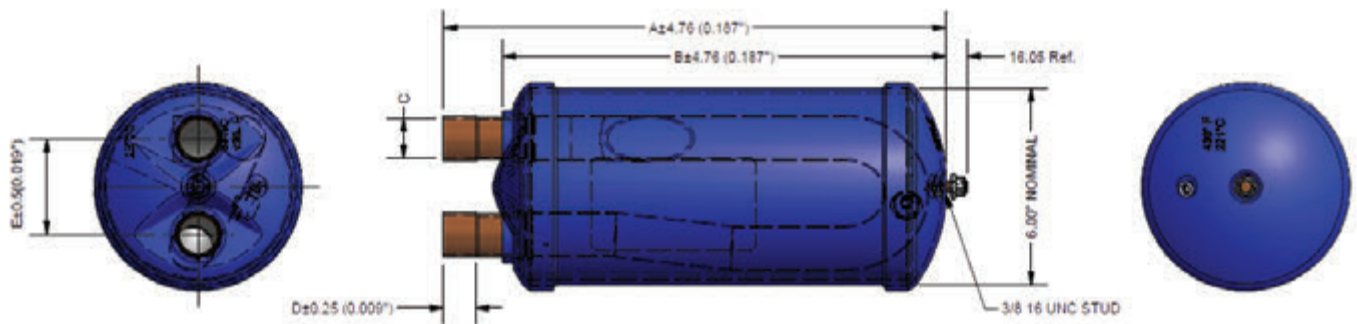
## ASZ series accumulator

### Dimensional (mm) :

Tube nominal diameter 127.0 (~5")



Tube nominal diameter 152.4 (~6")



### ASZ suction accumulator capacity tables (R410A, kW)

Description	Evaporator temperature (°C)				
	4	-7	-18	-29	-40
ASZ 5 96	17.2	12.1	7.8	4.6	3.1
ASZ 5 97	31.4	22.0	14.3	8.3	5.6
ASZ 5126	17.2	12.1	7.8	4.6	3.1
ASZ 5 127	31.4	22.0	14.3	8.3	5.6
ASZ 5 137	31.4	22.0	14.3	8.3	5.6
ASZ 5 139	50.8	35.8	22.9	13.8	9.1
ASZ 5 179	50.8	35.8	22.9	13.8	9.1
ASZ 5 1711	81.0	57.0	36.7	22.1	14.7
ASZ 6 117	31.4	22.0	14.3	8.3	5.6
ASZ 6 137	31.4	22.0	14.3	8.3	5.6
ASZ 6 139	50.8	35.8	22.9	13.8	9.1
ASZ 6 1411	81.0	57.0	36.7	22.1	14.7
ASZ 6 1713	122.8	86.3	55.3	33.4	22.1
ASZ 6 2013	122.8	86.3	55.3	33.4	22.1
ASZ 6 2513	122.8	89.8	55.3	33.4	22.1

The maximum capacity in tons recommended is based on a pressure drop through the accumulator equivalent to 0.5°C.

Note:

- The minimum system capacity in tons must be no less than 15% of the stated capacity in order to ensure a positive return of oil.
- Minimum evaporator temperature of -40°C. Minimum temperature of the suction gas through the accumulator is -11°C.

# AAS suction accumulators

The Emerson AAS series suction line accumulators are available for systems through 28.5 tons (R22) nominal capacity and are applicable with CFC, HCFC, HFC refrigerants.

## Features

- Designed to operate in a range of +40°F to -40°F evaporator temperature
- Fusible plug on larger diameter units
- Solid copper connections
- Corrosion resistant epoxy powder paint finish
- Inlet deflector directs refrigerant flow to prevent internal splashing and aid in the collection of refrigerant oil in the bottom of the accumulator
- Internal orifice with strainer for optimum oil return



## Nomenclature example: AAS 5 127

A	AS	5	12	7
Series	Accumulator Suction	Diameter (in)	Height (in)	Fitting Size in 7/8"

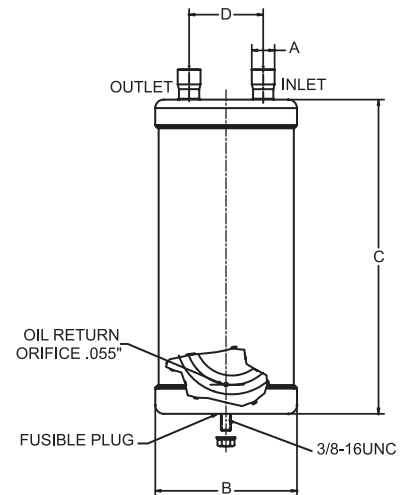
## Specifications

- Maximum working pressure: 300 psig
- Fusible plug temperature: 430°F

## Ordering information and dimensional data (in)

PCN	Model description	"A Nominal fitting size (in)"	"B Diameter (in)"	"C Total height (in)"	"D Fitting separation (in)"	"Tons R-22 (+40°F)"	"Holding capacity (Lbs.) 5.0% Full"		
							"40°F liquid R22/R134a"	"40°F liquid R404A/R507"	
016254	AAS 3 84*	1/2	3"	8	1.63	2.0	1.5	1.5	
016256	AAS 3 105*	5/8		10	1.63	3.0	2.0	2.0	
016257	AAS 3 125*	5/8		12	1.63	3.0	3.0	2.5	
016258	AAS 3 126*	3/4		12	1.63	4.0	3.0	2.5	
016259	AAS 3 145*	5/8		15	1.63	3.0	3.5	3.0	
016260	AAS 3 146*	3/4		14	1.63	4.0	3.5	2.75	
016261	AAS 4 64	1/2	4"	6	2.50	2.0	2.5	2.0	
016262	AAS 4 65	5/8		6	2.50	3.0	2.5	2.0	
016263	AAS 4 105	5/8		10	2.50	3.0	4.0	3.5	
016264	AAS 4 106	3/4		10	2.50	4.0	4.0	3.5	
016265	AAS 5 96	3/4	5"	9	2.75	4.0	6.0	5.5	
016266	AAS 5 97	7/8		9	2.75	7.3	6.0	5.5	
016267	AAS 5 126	3/4		12	2.75	4.0	8.0	7.5	
016268	AAS 5 127	7/8		12	2.75	7.3	8.0	7.5	
016269	AAS 5 137	7/8		13	2.75	7.3	8.5	8.0	
016270	AAS 5 139	1-1/8		13	2.75	11.8	8.5	8.0	
016271	AAS 5 179	1-1/8		17	2.75	11.8	12.0	10.0	
016272	AAS 5 1711	1-3/8		17	2.75	18.8	12.0	10.0	
016273	AAS 6 117	7/8		6"	11	2.94	7.3	10.0	9.0
016274	AAS 6 137	7/8			13	2.94	7.3	12.0	11.0
016275	AAS 6 139	1-1/8	13		2.94	11.8	12.0	11.0	
016276	AAS 6 1411	1-3/8	14		2.94	18.8	15.0	12.0	
016282	AAS 6 1711	1-3/8	17		2.94	28.5	16.0	15.0	
016277	AAS 6 1713	1-5/8	17		2.94	28.5	16.0	15.0	
016279	AAS 6 2013	1-5/8	20		2.94	28.5	20.0	16.0	
016281	A-AS 6 2513	1-5/8	25		2.94	28.5	25.0	20.0	

## Dimensional data



\*Not supplied with a fusible plug

Description	R-134a /R-450/R-513A					R-404A/R-507				
	-40°F	-20°F	0°F	+20°F	+40°F	-40°F	-20°F	0°F	+20°F	+40°F
AAS 384	0.20	0.30	0.60	0.80	1.20	0.20	0.40	0.80	1.00	1.30
AAS 3105	0.30	0.50	0.80	1.20	1.70	0.40	0.60	1.20	1.60	2.00
AAS 3125	0.30	0.50	0.80	1.20	1.70	0.40	0.60	1.20	1.60	2.00
AAS 3126	0.40	0.60	1.00	1.60	2.30	0.40	0.70	1.50	2.00	2.60
AAS 3145	0.30	0.50	0.80	1.20	1.70	0.40	0.60	1.20	1.60	2.00
AAS 3146	0.40	0.60	1.00	1.60	2.30	0.40	0.70	1.50	2.00	2.60
AAS 464	0.20	0.30	0.60	0.80	1.20	0.20	0.40	0.80	1.00	1.30
AAS 465	0.30	0.50	0.80	1.20	1.70	0.40	0.60	1.20	1.60	2.00
AAS 4105	0.30	0.50	0.80	1.20	1.70	0.40	0.60	1.20	1.60	2.00
AAS 4106	0.40	0.60	1.00	1.60	2.30	0.40	0.70	1.50	2.00	2.60
AAS 596	0.40	0.60	1.00	1.60	2.30	0.40	0.70	1.50	2.00	2.60
AAS 597	0.70	1.10	1.80	2.80	4.00	0.80	1.30	2.70	3.60	4.60
AAS 5126	0.40	0.60	1.00	1.60	2.30	0.40	0.70	1.50	2.00	2.60
AAS 5127	0.70	1.10	1.80	2.80	4.00	0.80	1.30	2.70	3.60	4.60
AAS 5137	0.70	1.10	1.80	2.80	4.00	0.80	1.30	2.70	3.60	4.60
AAS 5139	1.30	2.00	3.10	5.00	7.20	1.40	2.10	4.40	5.90	7.60
AAS 5179	1.90	3.00	3.10	5.00	7.20	1.40	2.10	4.40	5.90	7.60
AAS 51711	1.90	3.00	4.60	7.30	10.70	2.20	3.40	7.20	9.60	12.20
AAS 6117	0.70	1.10	1.80	2.80	4.00	0.80	1.30	2.70	3.60	4.60
AAS 6137	0.70	1.10	1.80	2.80	4.00	0.80	1.30	2.70	3.60	4.60
AAS 6139	1.30	2.00	3.10	5.00	7.20	1.40	2.10	4.40	5.90	7.60
AAS 61411	1.90	3.00	4.60	7.30	10.70	2.20	3.40	7.20	9.60	12.20
AAS 61711	3.00	4.80	7.30	11.70	17.00	3.30	5.10	10.70	14.20	18.20
AAS 61713	3.00	4.80	7.30	11.70	17.00	3.30	5.10	10.70	14.20	18.20
AAS 62013	3.00	4.80	7.30	11.70	17.00	3.30	5.10	10.70	14.20	18.20
AAS 62513	3.00	4.80	7.30	11.70	17.00	3.30	5.10	10.70	14.20	18.20

Description	R-22 /R-448 / R-449A					R-502				
	-40°F	-20°F	0°F	+20°F	+40°F	-40°F	-20°F	0°F	+20°F	+40°F
AAS 384	0.40	0.60	0.90	1.40	2.00	0.30	0.50	0.80	1.30	1.80
AAS 3105	0.50	0.80	1.40	2.10	3.00	0.50	0.80	1.20	1.90	2.70
AAS 3125	0.50	0.80	1.40	2.10	3.00	0.50	0.80	1.20	1.90	2.70
AAS 3126	0.72	1.10	1.80	2.80	4.00	0.60	1.00	1.60	2.50	3.50
AAS 3145	0.50	0.80	1.40	2.10	3.00	0.60	0.80	1.20	1.90	2.70
AAS 3146	0.72	1.10	1.80	2.80	4.00	0.60	1.00	1.60	2.50	3.50
AAS 464	0.40	0.60	0.90	1.40	2.00	0.30	0.50	0.80	1.30	1.80
AAS 465	0.50	0.80	1.40	2.10	3.00	0.50	0.80	1.20	1.90	2.70
AAS 4105	0.50	0.80	1.40	2.10	3.00	0.50	0.80	1.20	1.90	2.70
AAS 4106	0.72	1.10	1.80	2.80	4.00	0.60	1.00	1.60	2.50	3.50
AAS 596	0.72	1.10	1.80	2.80	4.00	0.60	1.00	1.60	2.50	3.50
AAS 597	1.30	2.00	3.30	5.10	7.30	1.10	1.70	2.80	4.30	6.20
AAS 5126	0.72	1.10	1.80	2.80	4.00	0.60	1.00	1.60	2.50	3.50
AAS 5127	1.30	2.00	3.30	5.10	7.30	1.10	1.70	2.80	4.30	6.20
AAS 5137	1.30	2.00	3.30	5.10	7.30	1.10	1.70	2.80	4.30	6.20
AAS 5139	2.10	3.30	5.30	8.30	11.80	1.90	2.90	4.60	7.10	10.20
AAS 5179	2.10	3.30	5.30	8.30	11.80	1.90	2.90	4.60	7.10	10.20
AAS 51711	3.40	5.30	8.50	13.20	18.80	3.00	4.60	7.40	11.60	16.50
AAS 6117	1.30	2.00	3.30	5.10	7.30	1.10	1.70	2.80	4.30	6.20
AAS 6137	1.30	2.00	3.30	5.10	7.30	1.10	1.70	2.80	4.30	6.20
AAS 6139	2.10	3.30	5.30	8.30	11.80	1.90	2.90	4.60	7.10	10.20
AAS 61411	3.40	5.30	8.50	13.20	18.80	3.00	4.60	7.40	11.60	16.50
AAS 61711	5.10	8.00	12.80	20.00	28.50	4.40	6.90	11.00	17.20	24.50
AAS 61713	5.10	8.00	12.80	20.00	28.50	4.40	6.90	11.00	17.20	24.50
AAS 62013	5.10	8.00	12.80	20.00	28.50	4.40	6.90	11.00	17.20	24.50
AAS 62513			12.80	20.80	28.50	4.40	6.90	11.00	17.20	24.50

The maximum capacity in tons recommended is based on a pressure drop through the accumulator equivalent to 1.0°F.

Note: 1) The minimum system capacity in tons must be no less than 15% of the stated 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

# Oil controls

## DCFm charge calculations

### How to calculate DCFm charge

Example:

System	Evaporator temperature	Condensing temperature
9.5 tons, R-404A	25°F	115°F

In the table for R-404A, search for the value corresponding to the temperatures of evaporation and condensation. This is the DCFm/ton factor. At 25°F evaporator temperature and 115°F condensing temperature, the DCFm/ton is .618. Multiply this by the system tonnage. Use the resulting value to select the proper oil separator. DCFm values can be found on the oil separator catalog pages. Select an oil separator with a capacity greater than or equal to the value obtained.

Note: The connection of the separator must never be less than the diameter of the discharge line.

		R-22								
		Oil separator DCFm/Ton factor								
		Condensing temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating temperature (°F)	-40	0.633	0.659	0.687	0.717	0.750	0.786	0.824	0.865	0.910
	-35	0.626	0.652	0.680	0.710	0.743	0.778	0.816	0.857	0.902
	-30	0.619	0.645	0.673	0.704	0.736	0.771	0.809	0.850	0.894
	-25	0.613	0.639	0.667	0.697	0.729	0.764	0.802	0.843	0.887
	-20	0.607	0.633	0.660	0.690	0.723	0.758	0.795	0.836	0.880
	-15	0.601	0.626	0.654	0.684	0.716	0.751	0.788	0.829	0.873
	-10	0.595	0.621	0.648	0.678	0.710	0.745	0.782	0.822	0.866
	-5	0.589	0.615	0.642	0.672	0.704	0.739	0.776	0.816	0.859
	0	0.584	0.609	0.637	0.666	0.698	0.733	0.770	0.809	0.853
	5	0.578	0.604	0.631	0.661	0.693	0.727	0.764	0.803	0.846
	10	0.573	0.599	0.626	0.656	0.687	0.721	0.758	0.797	0.840
	15	0.568	0.594	0.621	0.650	0.682	0.716	0.752	0.792	0.834
	20	0.564	0.589	0.616	0.645	0.677	0.710	0.747	0.786	0.828
	25	0.559	0.584	0.611	0.640	0.672	0.705	0.742	0.781	0.823
	30	0.555	0.580	0.607	0.636	0.667	0.700	0.736	0.775	0.817
	35	0.550	0.575	0.602	0.631	0.662	0.696	0.732	0.770	0.812
	40	0.546	0.571	0.598	0.627	0.658	0.691	0.727	0.765	0.807
45	0.542	0.567	0.594	0.623	0.653	0.687	0.722	0.761	0.802	

		R-404A								
		Oil separator DCFm/Ton factor								
		Condensing temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating temperature (°F)	-40	0.751	0.759	0.771	0.787	0.807	0.830	0.856	0.885	0.918
	-35	0.731	0.740	0.753	0.770	0.790	0.814	0.840	0.870	0.903
	-30	0.712	0.722	0.736	0.754	0.775	0.798	0.825	0.855	0.888
	-25	0.694	0.705	0.720	0.738	0.760	0.784	0.811	0.841	0.874
	-20	0.677	0.689	0.705	0.724	0.745	0.770	0.797	0.827	0.860
	-15	0.661	0.674	0.691	0.710	0.731	0.756	0.783	0.814	0.847
	-10	0.646	0.660	0.677	0.696	0.718	0.743	0.771	0.801	0.834
	-5	0.632	0.646	0.664	0.683	0.706	0.731	0.758	0.789	0.822
	0	0.618	0.633	0.651	0.671	0.694	0.719	0.747	0.777	0.810
	5	0.605	0.621	0.639	0.659	0.682	0.708	0.735	0.766	0.799
	10	0.593	0.609	0.628	0.648	0.671	0.697	0.725	0.755	0.788
	15	0.581	0.598	0.617	0.638	0.661	0.686	0.714	0.745	0.778
	20	0.570	0.587	0.606	0.628	0.651	0.676	0.704	0.735	0.768
	25	0.560	0.577	0.596	0.618	0.641	0.667	0.695	0.725	0.758
	30	0.550	0.568	0.587	0.609	0.632	0.658	0.686	0.716	0.749
	35	0.540	0.558	0.578	0.600	0.623	0.649	0.677	0.707	0.740
	40	0.532	0.550	0.570	0.591	0.615	0.641	0.669	0.699	0.732
45	0.523	0.542	0.562	0.583	0.607	0.633	0.661	0.691	0.723	



R-407C										
		Oil separator DCFM/Ton factor								
		Condensing temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating temperature (°F)	-40	0.669	0.695	0.722	0.753	0.786	0.822	0.862	0.905	0.952
	-35	0.659	0.684	0.712	0.743	0.776	0.812	0.851	0.894	0.941
	-30	0.649	0.674	0.702	0.733	0.766	0.802	0.841	0.884	0.930
	-25	0.640	0.665	0.693	0.723	0.756	0.792	0.831	0.874	0.920
	-20	0.630	0.656	0.684	0.714	0.747	0.782	0.821	0.864	0.910
	-15	0.621	0.647	0.675	0.705	0.738	0.773	0.812	0.854	0.900
	-10	0.613	0.638	0.666	0.696	0.729	0.764	0.803	0.845	0.891
	-5	0.605	0.630	0.658	0.688	0.720	0.756	0.794	0.836	0.882
	0	0.597	0.622	0.650	0.680	0.712	0.748	0.786	0.828	0.873
	5	0.589	0.614	0.642	0.672	0.704	0.740	0.778	0.819	0.864
	10	0.582	0.607	0.635	0.664	0.697	0.732	0.770	0.811	0.856
	15	0.575	0.600	0.627	0.657	0.689	0.724	0.762	0.803	0.848
	20	0.568	0.593	0.620	0.650	0.682	0.717	0.755	0.796	0.840
	25	0.561	0.586	0.614	0.643	0.675	0.710	0.748	0.788	0.833
	30	0.555	0.580	0.607	0.637	0.669	0.703	0.741	0.781	0.825
	35	0.549	0.574	0.601	0.631	0.662	0.697	0.734	0.774	0.818
	40	0.543	0.568	0.595	0.625	0.656	0.691	0.728	0.768	0.812
45	0.537	0.563	0.590	0.619	0.650	0.685	0.722	0.762	0.805	

R-448A										
		Oil separator DCFM/Ton factor								
		Condensing temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating temperature (°F)	-40	0.662	0.684	0.709	0.736	0.766	0.799	0.835	0.875	0.917
	-35	0.651	0.673	0.698	0.725	0.756	0.788	0.824	0.863	0.906
	-30	0.640	0.663	0.688	0.715	0.745	0.778	0.814	0.853	0.895
	-25	0.630	0.652	0.677	0.705	0.735	0.768	0.803	0.842	0.885
	-20	0.620	0.642	0.668	0.695	0.725	0.758	0.793	0.832	0.874
	-15	0.610	0.633	0.658	0.686	0.716	0.748	0.784	0.822	0.864
	-10	0.601	0.624	0.649	0.677	0.706	0.739	0.774	0.813	0.855
	-5	0.592	0.615	0.640	0.668	0.698	0.730	0.765	0.804	0.845
	0	0.583	0.607	0.632	0.659	0.689	0.722	0.757	0.795	0.836
	5	0.575	0.599	0.624	0.651	0.681	0.713	0.748	0.786	0.828
	10	0.568	0.591	0.616	0.643	0.673	0.705	0.740	0.778	0.819
	15	0.560	0.583	0.609	0.636	0.666	0.698	0.732	0.770	0.811
	20	0.553	0.576	0.601	0.629	0.658	0.690	0.725	0.762	0.803
	25	0.546	0.569	0.594	0.622	0.651	0.683	0.718	0.755	0.796
	30	0.539	0.563	0.588	0.615	0.644	0.676	0.711	0.748	0.788
	35	0.533	0.556	0.581	0.609	0.638	0.670	0.704	0.741	0.781
	40	0.527	0.550	0.575	0.602	0.632	0.663	0.697	0.734	0.774
45	0.521	0.544	0.569	0.596	0.626	0.657	0.691	0.728	0.768	

R-507A										
		Oil separator DCFM/Ton factor								
		Condensing temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating temperature (°F)	-40	0.747	0.753	0.763	0.777	0.795	0.816	0.841	0.869	0.900
	-35	0.726	0.733	0.745	0.760	0.778	0.800	0.825	0.853	0.884
	-30	0.707	0.715	0.727	0.743	0.762	0.784	0.810	0.838	0.869
	-25	0.688	0.698	0.711	0.727	0.747	0.770	0.795	0.824	0.855
	-20	0.671	0.681	0.695	0.712	0.733	0.755	0.781	0.810	0.841
	-15	0.654	0.666	0.680	0.698	0.719	0.742	0.768	0.797	0.828
	-10	0.638	0.651	0.666	0.685	0.705	0.729	0.755	0.784	0.816
	-5	0.624	0.637	0.653	0.672	0.693	0.716	0.743	0.772	0.803
	0	0.610	0.624	0.640	0.659	0.681	0.705	0.731	0.760	0.792
	5	0.596	0.611	0.628	0.647	0.669	0.693	0.720	0.749	0.780
	10	0.584	0.599	0.617	0.636	0.658	0.682	0.709	0.738	0.770
	15	0.572	0.588	0.606	0.625	0.647	0.672	0.698	0.727	0.759
	20	0.561	0.577	0.595	0.615	0.637	0.662	0.688	0.718	0.749
	25	0.550	0.567	0.585	0.605	0.628	0.652	0.679	0.708	0.740
	30	0.540	0.557	0.576	0.596	0.619	0.643	0.670	0.699	0.731
	35	0.531	0.548	0.567	0.587	0.610	0.634	0.661	0.690	0.722
	40	0.528	0.545	0.564	0.585	0.607	0.632	0.659	0.688	0.719
45	0.513	0.531	0.550	0.571	0.594	0.618	0.645	0.674	0.705	

R-410A										
		Oil separator DCFM/Ton factor								
		Condensing temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating temperature (°F)	-40	0.397	0.415	0.433	0.453	0.475	0.498	0.523	0.549	0.578
	-35	0.392	0.410	0.429	0.449	0.470	0.493	0.518	0.544	0.573
	-30	0.388	0.405	0.424	0.444	0.465	0.488	0.513	0.539	0.568
	-25	0.383	0.401	0.419	0.439	0.461	0.484	0.508	0.535	0.563
	-20	0.379	0.397	0.415	0.435	0.456	0.479	0.504	0.530	0.559
	-15	0.375	0.392	0.411	0.431	0.452	0.475	0.500	0.526	0.554
	-10	0.371	0.388	0.407	0.427	0.448	0.471	0.495	0.522	0.550
	-5	0.367	0.385	0.403	0.423	0.444	0.467	0.491	0.518	0.546
	0	0.364	0.381	0.400	0.420	0.441	0.463	0.488	0.514	0.542
	5	0.360	0.378	0.396	0.416	0.437	0.460	0.484	0.510	0.538
	10	0.357	0.374	0.393	0.413	0.434	0.456	0.480	0.506	0.534
	15	0.354	0.371	0.390	0.410	0.431	0.453	0.477	0.503	0.531
	20	0.351	0.368	0.387	0.406	0.427	0.450	0.474	0.500	0.527
	25	0.348	0.365	0.384	0.404	0.425	0.447	0.471	0.496	0.524
	30	0.345	0.363	0.381	0.401	0.422	0.444	0.468	0.494	0.521
	35	0.343	0.360	0.379	0.398	0.419	0.441	0.465	0.491	0.518
	40	0.340	0.358	0.376	0.396	0.417	0.439	0.463	0.488	0.516
45	0.338	0.356	0.374	0.394	0.414	0.437	0.460	0.486	0.513	

R-449A										
		Oil separator DCFM/Ton factor								
		Condensing temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating temperature (°F)	-40	0.622	0.648	0.676	0.707	0.739	0.774	0.812	0.853	0.898
	-35	0.614	0.640	0.668	0.698	0.730	0.765	0.803	0.844	0.888
	-30	0.606	0.632	0.659	0.689	0.722	0.757	0.794	0.835	0.879
	-25	0.598	0.624	0.651	0.681	0.713	0.748	0.785	0.826	0.869
	-20	0.590	0.616	0.644	0.673	0.705	0.740	0.777	0.817	0.860
	-15	0.583	0.608	0.636	0.666	0.697	0.732	0.769	0.808	0.851
	-10	0.576	0.601	0.629	0.658	0.690	0.724	0.760	0.800	0.843
	-5	0.569	0.594	0.621	0.651	0.682	0.716	0.753	0.792	0.835
	0	0.562	0.587	0.615	0.644	0.675	0.709	0.745	0.784	0.827
	5	0.556	0.581	0.608	0.637	0.668	0.702	0.738	0.777	0.819
	10	0.549	0.575	0.601	0.630	0.661	0.695	0.731	0.769	0.811
	15	0.543	0.568	0.595	0.624	0.655	0.688	0.724	0.762	0.804
	20	0.538	0.563	0.589	0.618	0.648	0.682	0.717	0.755	0.797
	25	0.532	0.557	0.583	0.612	0.642	0.675	0.711	0.749	0.790
	30	0.527	0.551	0.578	0.606	0.636	0.669	0.704	0.742	0.783
	35	0.521	0.546	0.572	0.600	0.631	0.663	0.698	0.736	0.777
	40	0.516	0.541	0.567	0.595	0.625	0.658	0.692	0.730	0.771
45	0.512	0.536	0.562	0.590	0.620	0.652	0.687	0.724	0.765	

R-134A										
		Oil separator DCFM/Ton factor								
		Condensing temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating temperature (°F)	-40	0.998	1.032	1.070	1.113	1.159	1.210	1.266	1.328	1.395
	-35	0.980	1.015	1.053	1.095	1.141	1.192	1.248	1.310	1.377
	-30	0.963	0.998	1.036	1.078	1.124	1.175	1.231	1.292	1.359
	-25	0.946	0.981	1.019	1.062	1.108	1.158	1.214	1.275	1.341
	-20	0.930	0.965	1.004	1.046	1.092	1.142	1.197	1.258	1.324
	-15	0.915	0.950	0.988	1.030	1.076	1.126	1.181	1.241	1.307
	-10	0.900	0.935	0.973	1.015	1.061	1.111	1.166	1.226	1.291
	-5	0.886	0.921	0.959	1.001	1.047	1.096	1.151	1.210	1.275
	0	0.872	0.907	0.945	0.987	1.032	1.082	1.136	1.195	1.260
	5	0.859	0.894	0.932	0.973	1.019	1.068	1.122	1.181	1.245
	10	0.846	0.881	0.919	0.960	1.006	1.055	1.108	1.167	1.231
	15	0.834	0.869	0.906	0.948	0.993	1.042	1.095	1.153	1.217
	20	0.822	0.857	0.894	0.936	0.980	1.029	1.082	1.140	1.203
	25	0.810	0.845	0.883	0.924	0.968	1.017	1.070	1.127	1.190
	30	0.799	0.834	0.871	0.912	0.957	1.005	1.057	1.115	1.177
	35	0.789	0.823	0.861	0.901	0.945	0.993	1.046	1.103	1.165
	40	0.778	0.813	0.850	0.890	0.934	0.982	1.034	1.091	1.153
45	0.768	0.803	0.840	0.880						



## A-FC series high efficiency centrifugal oil separator

The High Efficiency Centrifugal Oil Separator is used in ultra-low temperature systems with long refrigerant lines or inherent oil return problems. It is also used on multiple compressor racks for supermarkets and air conditioning systems for use with CFCs, HCFCs, HFCs, and their lubricants. Suitable for use with R-410A.



### Features

- Internal oil collection screen
- Hermetic welded or accessible bolted flange construction
- Corrosion resistant epoxy powder paint
- High efficiency (99%) centrifugal separation
- R-410A pressure rated

### Specifications

- Maximum working pressure : 450 psi - flanged models\*  
600 psi - welded models\*
- UL/CUL file number : SA8547

### Nomenclature example: A-FC 8241717H

A	F	C	8	24	17	17	H
Series	F = Flanged W = Welded	Centrifugal	Diameter (in)	Length (in)	Inlet Connection in 1/8"	Outlet Connection in 1/8"	5" Legs Standard H = 10" Legs

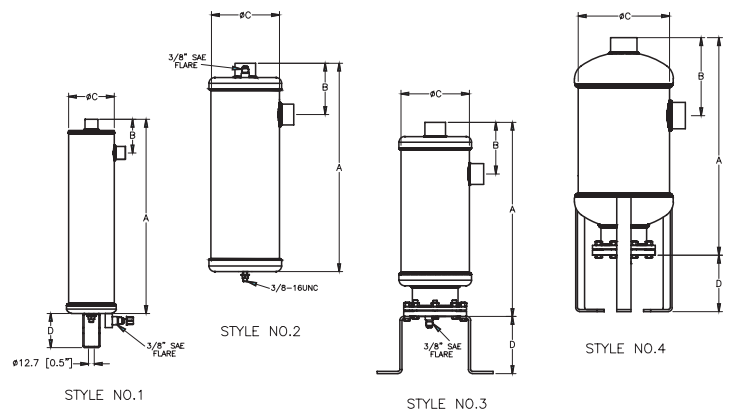
### Replacement parts

PCN	Part	Contains
065847	Float Assembly Kit*	Flange w/intergral float ass'y and flange gasket
065849	Gasket Kit	Flange gasket

\*Repairs AC & R series S1900 Standard and 5200 Helical Oil Separators

### Ordering information

PCN	Description	Solder connection size	Dimensions			
			A	B	C	D
065895*	A-WC 41777	7/8	17.01	2.95	4.00	2.95
065896*	A-WC 41999	1 1/8	19.02	3.07		
066094*	A-WC 6181111	1 3/8	18.26	4.05	6.0	
066095*	A-WC 6181313	1 5/8		4.63		
066096*	A-WC 6181717	2 1/8	18.38	4.76		
065930	A-FC 6221111	1 3/8	17.00	3.94	6.0	5.00
065931	A-FC 6221111H			10.00		
065362	A-FC 6221313	1 5/8	17.00	4.53	6.0	5.00
065932	A-FC 6221313H			10.00		
065933	A-FC 6221717	2 1/8	17.13	4.65	8.0	5.00
065934	A-FC 6221717H					10.00
065276	A-FC 8241717	2 5/8	22.10	6.11	10.00	5.00
065935	A-FC 8241717H					10.00
065936	A-FC 10272121	3 1/8	25.10	7.05	12.00	5.00
065937	A-FC 10272121H					10.00
065938	A-FC 12302525H					10.00



### Capacity table

Description	Solder connection size (ODF)	Style no.	Shell O.D.	Maximum capacity of refrigeration at evaporator temperature										Discharge maximum CFM	Oil pre-charge amount (oz.)	Replaceable float PCN						
				R-134a /R-450A/R-513A				R-22/407C/ R-448A/R-449A				R404A/507					R-410A					
				-40F		+40F		-40F		+40F		-40F	+40F				-40F	+40F				
				Tons	kW	Tons	kW	Tons	kW	Tons	kW	Tons	kW				Tons	kW				
A-WC 41777	7/8"	1	4"	5.1	18.1	6.3	22.1	7.4	26.2	8.9	31.2	7.1	25.0	9.4	32.9	12.2	42.8	13.8	48.3	6.74	17	N/A
A-WC 41999	1 1/8"			8.8	31.0	10.8	38.0	12.8	44.9	15.2	53.6	12.2	42.8	16.1	56.4	20.9	73.4	23.7	83.3	11.55		
A-WC 6181111	1 3/8"	2	6"	12.2	42.8	14.9	52.4	17.6	61.9	21.0	73.9	16.8	15.1	22.1	77.9	28.8	101.2	32.7	114.9	15.94	21	065847
A-WC 6181313	1 5/8"			18.7	65.6	22.8	80.3	27.0	94.8	32.2	113.2	25.8	90.6	33.9	119.3	44.1	155.1	50.1	176.0	24.42		
A-WC 6181717	2 1/8"	3	6"	23.9	84.0	29.2	102.8	34.5	121.4	41.2	145.0	33.0	116.0	43.5	152.8	56.5	198.6	64.1	225.4	31.26	21	065847
A-FC 6221111	1 3/8"			12.2	42.8	14.9	52.4	17.6	61.9	21.0	73.9	16.8	59.1	22.1	77.9	Not Available				15.94		
A-FC 6221111H	1 3/8"	3	6"													15.94	21	065847				
A-FC 6221313	1 5/8"			18.7	65.6	22.8	80.3	27.0	94.8	32.2	113.2	25.8	90.6	33.9	119.3	Not Available				24.42		
A-FC 6221313H	1 5/8"	3	6"													24.42	21	065847				
A-FC 6221717	2 1/8"			23.9	84.0	29.2	102.8	34.5	121.4	41.2	145.0	33.3	116.0	43.5	152.8	Not Available				31.26		
A-FC 6221717H	2 1/8"	3	6"													31.26	21	065847				
A-FC 8241717	2 1/8"			29.1	102.3	35.6	125.1	42.0	147.8	50.2	176.5	40.1	141.2	52.9	186.1	Not Available				38.06		
A-FC 8241717H	2 1/8"	3	6"													38.06	21	065847				
A-FC10272121	2 5/8"			50.5	177.5	61.7	217.1	72.9	256.5	87.1	306.3	69.7	245.0	91.8	322.8	Not Available				66.05		
A-FC 10272121H	2 5/8"	4	10"													66.05	21	065847				
A-FC 12302525H	3 1/8"			67.9	238.9	83.1	292.1	98.1	345.2	117.2	412.2	93.7	329.7	123.5	434.4	Not Available				88.87		

## A-W & A-F oil separators

The A-W and A-F are used for multiple compressor racks in supermarkets and air conditioning systems for use with HCFCs, HFCs and their lubricants.

### Features

- Hermetic welded or accessible bolted flange construction
- Solid copper connections
- Corrosion resistant epoxy powder paint



### Nomenclature example: AW 5582 4

A	W	5582	4
Series	W = Welded F = Flanged	Model Number	Connection Size (in 1/8")

### Specifications

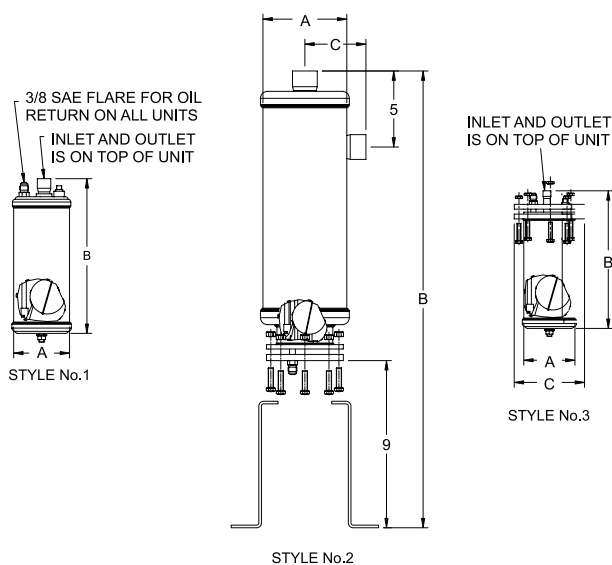
- Maximum working pressure : 450 psi
- UL/CUL file number : SA10468

### Ordering information\* and capacity table

Description				R-12				R-22/R-407C /R-450A/ R-513A				R-502				R-134a /R-448A/ R-449A				R-404A/R-507			
FLANGED	PCN	SEALED	PCN	-40 F/C		40F (4C)		-40F/C		40F (4C)		-40F/C		40F (4C)		-40F/C		40F (4C)		-40F/C		40F (4C)	
				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	3.5	1.5	5.3	1.5	5.3	2	7.1	1.5	5.3	2	7.08	1	3.5	1.8	6.2	1.5	5.3	2	7.0
A-F 58855	060878	A-W 55855	060934	3	10.6	4	14.2	4.5	15.9	5.5	19.5	4.8	16.8	5.8	20.4	3.3	11.5	4.5	15.9	4	14.2	5.5	19.0
A-F 58877	060879	A-W 55877	060931	4.5	15.9	5.5	19.5	7	24.8	8	28.3	7.5	26.6	8.5	30.1	4.8	16.8	6.5	23	6.5	23	8.5	30.0
A-F 58889	060759	A-W 55889	060974	6	21.2	7.5	26.6	9	31.9	11	37.2	9.5	33.6	11.5	40.7	6.5	23	8.5	30.1	8.5	30.1	11	38.0
A-F 589011	060760	A-W 559011	060930	7.5	26.6	10	35.4	11.5	40.7	14	47.8	12	42.5	14.5	51.3	8	28.3	11.5	40.7	10.5	37.2	14	49.0
A-F 589213	060761	A-W 559213	060975	9	31.9	11.5	40.7	14	49.6	18	62	16	56.6	17.5	62	9.5	33.6	13.3	46.9	14	49.6	17	60.0
-	-	A-W 569011	060978	9	31.7	12	42.3	13	45.8	14	49.8	15	52.8	20	70.4	9.5	33.4	13.7	48.2	11	38.7	19	66.9
A-F 579213	060875	A-W 569213	060979	11	38.9	14	49.6	16	56.6	18	63.7	20	70.8	24	85	11.8	41.6	16	56.6	17.5	62	23	81
A-F 579417	060876	A-W 569417	060980	17	60.2	22	77.9	25	88.5	30	106	30	106	35	124	18	63.7	25.6	89.4	26	92.	34	121

\*See replacement parts page. Repair kits for style 2 only.

### Dimensional data



### Seal units: A-W

Description	Style No.	Connection size	Dimensions (in)		Replaceable float PCN	Discharge maximum CFM	Oil pre-charge amount (oz)
			A	B			
A-W 55824	1	1/2 ODF	4.0	10.75	N/A	1.49	17
A-W 55855		5/8 ODF		13.2		3.42	
A-W 55877		7/8 ODF		15.0		6.05	
A-W 55889		1-1/8 ODF		16.25		8.28	
A-W 559011		1-3/8 ODF		19.5		9.99	
A-W 559213		1-5/8 ODF		19.88		10.66	
A-W 569011		1-3/8 ODF		15.75		12.27	
A-W 569213	2	1-5/8 ODF	6.0	19.0	N/A	14.51	20
A-W 569417		2-1/8 ODF		19.5		21.29	

### Flanged units: A-F

Description	Style No.	Connection size	Dimensions (in)			Replaceable float PCN	Discharge maximum CFM	Oil pre-charge amount (oz)
			A	B	C			
A-F 58824	3	1/2 ODF	4.0	10.5	5.5	N/A	1.49	17
A-F 58855		5/8 ODF		15.0			3.42	
A-F 58877		7/8 ODF		18.0			6.05	
A-F 58889		1 1/8 ODF		21.25			8.28	
A-F 589011		1 3/8 ODF		21.37			9.99	
A-F 589213		1 5/8 ODF		21.75			10.66	
A-F 579213	2	1 5/8 ODF	6.0	20.12	4.37	065847	23.93	21
A-F 579417		2 1/8 ODF		20.31			4.63	

## A-WZ oil separators

The A-WZ is used for multiple compressor racks in supermarkets and air conditioning systems for use with HCFCs, HFCs and their lubricants. Suitable for use with R-410A.

### Features

- Hermetic welded construction
- Copper plated steel connections
- Corrosion resistant epoxy powder paint

### Specifications

- Maximum working pressure: 600 psi
- UL/CUL file number: SA8547
- CE marked per PED 97/23EC



### Nomenclature example: A-WZ 55824

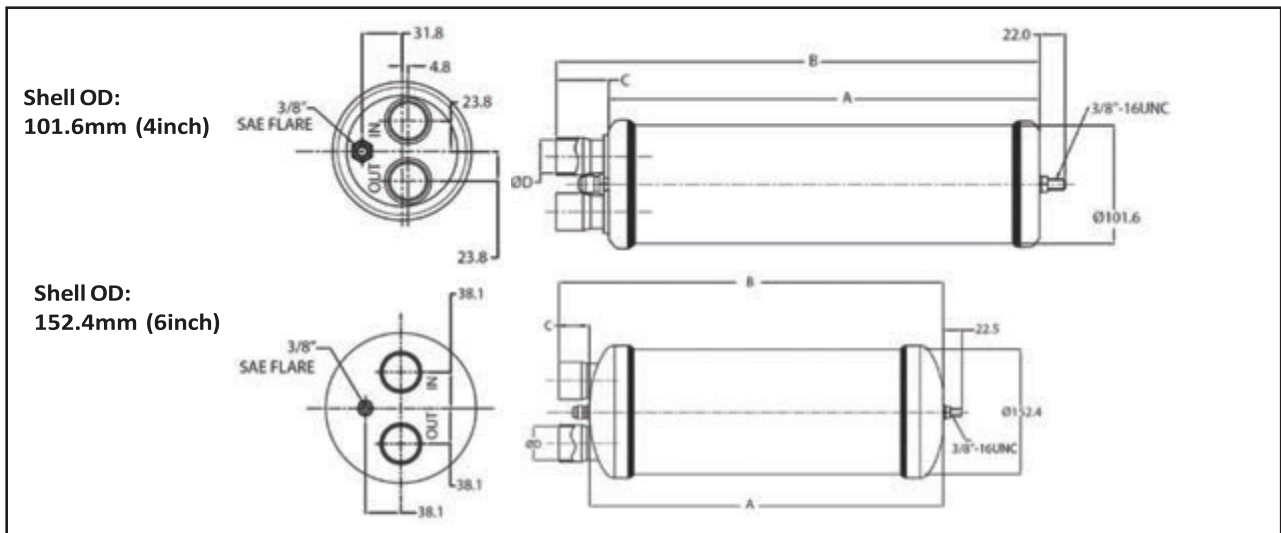
A	WZ	5582	4
Series	W = Welded	Model number	Connection size (in 1/8")

### Ordering information and capacity table

PCN	Description	Solder connection size (ODF) (in)	Shell OD mm (in)	Length (in)	Maximum capacity of refrigeration at evaporator temperature																Oil pre-charge amount (ml)
					R-134a				R-22/R-407C				R-404A				R-410A				
					-40F/C		40F (4C)		-40F/C		40F (4C)		-40F/C		40F (4C)		-40F/C		40F (4C)		
					Tons	kW	Tons	kW	Tons	kW	Tons	kW	Tons	kW	Tons	kW	Tons	kW	Tons	kW	
066666	A-WZ 55824*	1/2	"101.6 (4)"	10.88	1.0	3.5	1.8	6.2	1.5	5.3	2.0	7.1	1.5	5.3	2.0	7.0	2.7	9.0	3.1	11.0	500
066667	A-WZ 55855	5/8		13.31	3.3	11.5	4.5	15.9	4.5	15.9	5.5	19.5	4.0	14.2	5.5	19.0	7.4	26.0	8.4	29.0	
066668	A-WZ 55877	7/8		15.13	4.8	16.8	6.5	23.0	7.0	24.8	8.0	28.3	6.5	23.0	8.5	30.0	11.0	38.0	12.0	43.0	
066669	A-WZ 55889	1 1/8		16.38	6.5	23.0	8.5	30.1	9.0	31.9	11.0	37.2	8.5	30.1	11.0	38.0	15.0	52.0	17.0	59.0	
066670	A-WZ 559011	1 3/8		19.63	8.0	28.3	11.5	40.7	11.5	40.7	14.0	47.8	10.5	37.2	14.0	49.0	19.0	66.0	21.0	75.0	
066140	A-WZ 56909	1 1/8	"152.4 (6)"	15.50	7.7	27.0	9.4	33.0	11.1	39.0	13.3	46.6	10.6	37.3	14.0	49.1	18.2	63.9	20.6	72.5	750
066671	A-WZ 569011	1 3/8		15.75	9.4	33.0	11.5	40.3	13.5	47.6	16.2	56.9	12.9	45.5	17.0	60.0	22.2	77.9	25.1	88.4	
066142	A-WZ 56929	1 1/8		18.50	7.7	27.0	9.4	33.0	11.1	4.0	13.3	46.6	10.6	37.3	14.0	49.7	18.2	63.9	20.6	72.5	
066672	A-WZ 569213	1 5/8		18.50	11.1	39.0	13.6	47.7	16.0	56.3	19.1	67.3	15.3	53.8	20.2	70.9	27.4	96.4	30.9	108.8	

\*Remark: This model inlet/outlet connector is pure copper tube.

## Dimensional data



Unit: mm

No	Shell OD	Model	PCN	A	B	C	D
1	4inch	A-WZ 55824	066666	251.5	276.9	24.8	1/2"
2		A-WZ 55855	066667	300.0	338.0	38.3	5/8"
3		A-WZ 55877	066668	347.5	384.2	36.7	7/8"
4		A-WZ 55889	066669	371.5	415.8	44.9	1 1/8"
5		A-WZ 559011	066670	451.7	498.3	47.8	1 3/8"
6	6inch	A-WZ 569011	066671	355.6	399.0	44.5	1 3/8"
7		A-WZ 569213	066672	431.8	469.2	38.1	1 5/8"

## AOR oil reservoirs

The AOR oil reservoir is a holding vessel for stand-by oil necessary for the operation of commercial refrigeration systems. It is a direct replacement of popular competitive models.

### Features

- Two sight glasses with floating ball indicators - 2 gallon model
- Three sight glasses with floating ball indicators - 4 gallon model
- 3/8" flare rotolock valves on top and bottom
- Corrosion resistant epoxy powder paint finish
- Standard mounting stud 3/8 x 16 TPI



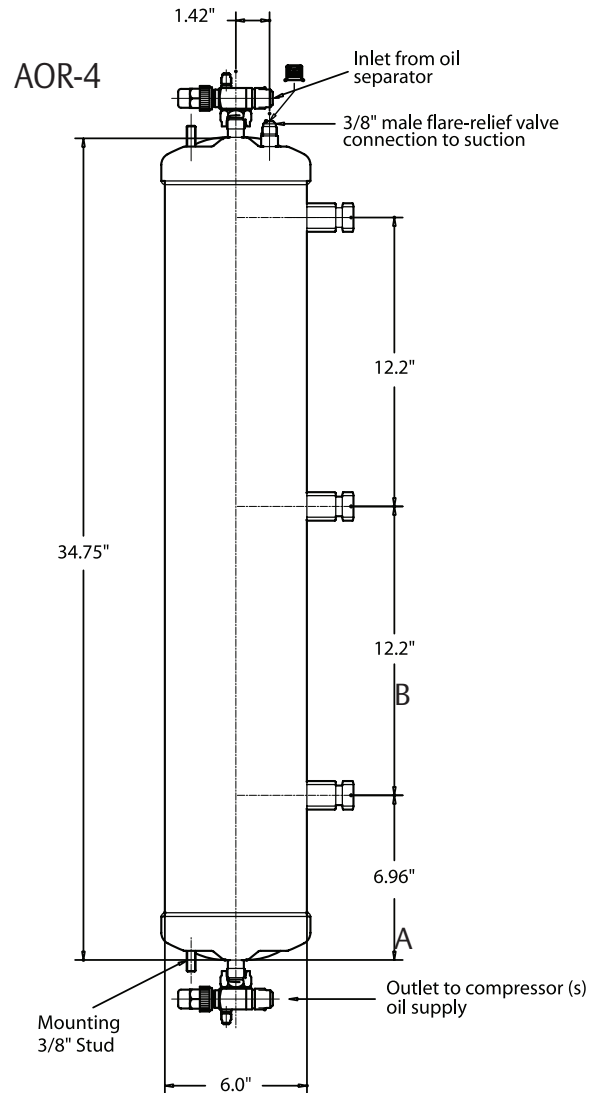
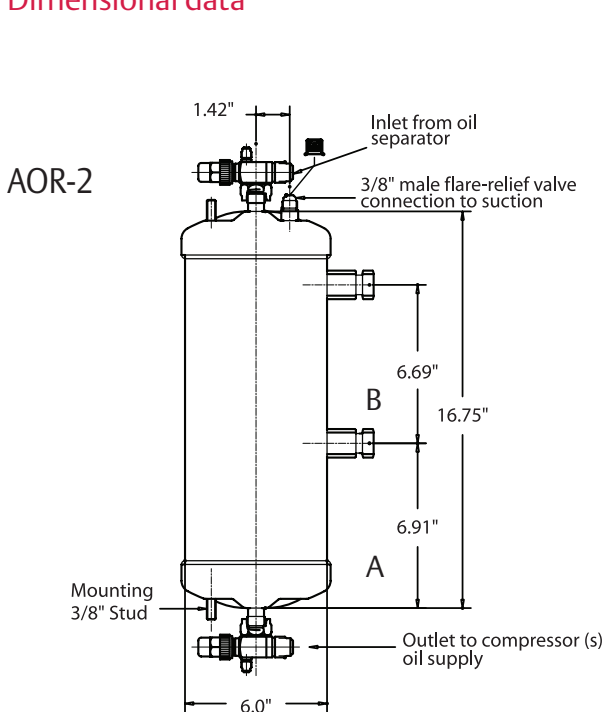
### Nomenclature example: AOR-3

AOR	3
Series	Gallons

### Specifications

- Maximum working pressure : 450 psi
- UL/CUL file number : SA8547

### Dimensional data



### Ordering information

PCN	Description	Total volume gallons	A level volume (gals)	B level volume (gals)	Length (in)	Number of sight glasses
064950	AOR-2	2	3/4	1-2/3	20"	2
065981	AOR-3	3	2/3	2-2/3	31"	3
064951	AOR-4	4	1-1/2	3-3/4	38"	

### Replacement parts for AOR oil reservoirs

PCN	Part	Contains
066002	Mounting kit	Mounting brackets, self-tapping bolts and mounting stud nuts

## AOF high efficiency oil filter

### Highly recommended for scroll compressors

The AOF is designed to protect the compressor from dirt and all solid contaminants including metallic magnetic particles. It is ideal for use with compressors that require a 4 micron or higher filtration rating.

#### Features

- Corrosion resistant epoxy powder paint finish
- 3/8" SAE connections for easy installation in oil lines
- 100% efficient to 4 micron particles; 99% efficient to 3 micron particles
- Compatible with all oils
- High debris capacity with low pressure drop



#### Specifications

- Maximum working pressure: 680 psig
- UL/CUL file number: SA 3124

#### Ordering information

PCN	Description	Lay-in	Diameter
064952	AOF 303	9.63	3.06

## AOF high efficiency take-apart oil filter

The AOF is designed to protect the compressor from dirt and all solid contaminants including metallic magnetic particles. It is ideal for burnout/clean-up situations.

#### Features

- Compatible with all oils
- Solid copper connections
- Quick change filter cartridge
- Corrosion resistant epoxy powder paint finish
- 100% efficient to 4 micron particles; 99% efficient to 3 micron particles
- 3/8 ODF connections
- Quick removal cover design simplifies filter replacement
- High debris capacity with low pressure drop

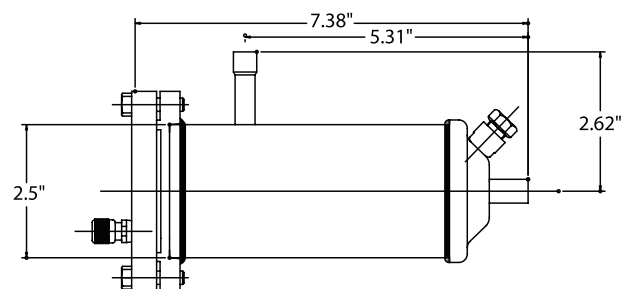


#### Specifications

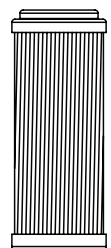
- Maximum working pressure : 450 psig
- UL/CUL file number : SA 7175

#### Ordering information

PCN	Description
062784	AOF 023S*
064799	FO23 Cartridge
*Cartridge not included	



AOF 023S  
Take-Apart OIL  
FILTER



F 023  
REPLACEABLE  
FILTER CARTRIDGE

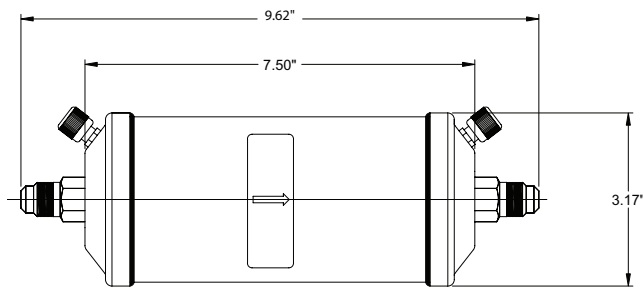
## AOFD 553 oil filter drier

The 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

- Designed to clean and dry POE Oil
- 3/8" male flare connections for easy replacement
- 3 micron filtration for optimum oil cleaning
- Large filter surface area to provide maximum filtration
- Contains desiccant for moisture removal
- Designed to operate at a very low pressure drop
- Dual access valves for pressure drop monitoring

### Dimensional data



### Specifications

- UL/CUL file number : SA7175
- Maximum working pressure : 680 psig

### AOFD water capacity table

Refrigerant type	Drops @ 125°F
R-22	497
R-134A	518
R-404A	518
R-407C/R-410A	435
R-744	563

### Ordering information

PCN	Description
062829	AOFD 553 oil filter drier

## OMB oil controls

The OMB maintains a proper oil level in the compressor crankcase and is available for low voltage applications. It is ideal for use with Copeland Scroll™ compressors as well as all brands of semi-hermetic compressors.

### Features

- Prevents Compressor burnout and system downtime
- Five time compressor lockout feature alerts repeated low oil for early system diagnosis and resolution
- Self-contained unit with oil level sensor and integral solenoid to manage oil level supply
- Adapters available for various compressor types(not required for reciprocating compressors)
- Oil level float ball in sight glass allows quick visual indication
- Easy monitoring with visual alarm and multi-color status lights
- SPDT output contact for compressor shut-down and alarming
- System debris retention magnet for reliable operation
- Hall-effect sensing technology unlike optical sensors, eliminates false detection of possible oil foaming
- Approved oil management control for Copeland Scroll Compressors

### Nomenclature example: OMB MO24K5

OMB	MO	24	K5
Series	Configuration	Coil voltage	Applications
OMB	JB - Junction Box MO - Grommet With Leads	24V 50/60 Hz	K5 - For Copeland K5 Compressor With Adapter (Omit for Standard)

### Ordering information

Model	Description	PCN
OMB JB24	24V oil management control with junction box	065365
OMB MO24	24V oil management control with grommet and leads	065366
OMB MO24K5	24V oil management control with grommet and leads for Copeland K5 compressor, includes adapter	066803
Service parts description		
PS-01525-2	Sight glass O-ring	020877
KS-30368-1	Mounting O-rings (3 pieces)	064812
KS-30112	Solenoid repair kit	049191
See adapter catalog page for ordering information		

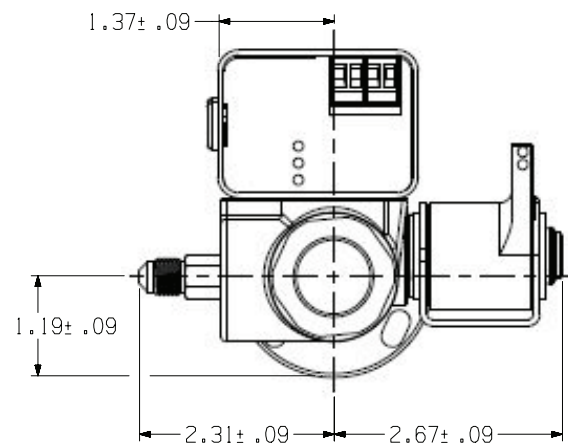


### Specifications

- Maximum working pressure : 870 psi
- Solenoid MOPD : 350 psi
- Supply voltage : 24 V AC, 50/60 Hz
- Current consumption : 0.6A
- Time delay for low level signalling : 5-10 seconds
- Time delay for after setpoint recovery : 5-10 seconds
- Alarm delay time : 120 seconds
- Alarm switch : SPDT
- Alarm contact rating : 10A @ 125;  
5A @ 220V AC 50/60 Hz
- Refrigerant compatibility : HFC, HCFC, CFC
- Oil temperature : 180°F Max.
- Ambient Temperature - Storage 120°F Max.
- Ambient Temperature - Intermittent Duty 120°F Max.
- Oil supply fitting : 1/4" Male SAE
- UL/CUL file number : MP604
- Transformer requirements\* : 25 VA

\*NOTE: Field supplied transformer should always be of the same primary voltage as the electrical supply system.

### Dimensional data





## OMC oil controls

The OMC maintains a proper oil level in the compressor crankcase and is available for high voltage applications for various refrigerants. It is ideal for use with Copeland Scroll™ compressors as well as all brands of semi-hermetic compressors.

### Features

- Prevents compressor burnout and system downtime
- Five time compressor lockout feature alerts repeated low oil for early system diagnosis and resolution
- Self-contained unit with oil level sensor and integral solenoid to manage oil level supply
- Multiple voltage ratings eliminate need for stepdown transformer
- Adapters available for various compressor types(not required for reciprocating compressors)
- Optional side sight glass provides oil level viewing from multiple directions
- Oil level float ball in sight glass allows quick visual indication
- Easy monitoring with visual alarm and multi-color LED status lights
- SPDT output contact for compressor shut-down and alarming
- System debris retention magnet for reliable operation
- Hall-effect sensing technology unlike optical sensors, eliminates false detection of possible oil foaming
- Approved oil management control for Copeland Scroll Compressors



### Specifications

	OMC	OMC NH3	OMC CO2
Maximum working Pressure (MWP)	870 psig		1885 psig
Solenoid min/max OPD	0/350 psig		0/1450 psig
Supply voltage	120V or 220-240V, 50/60 Hz		
Solenoid coil	EMF		
Current consumption	0.15 Amp (120V), 0.07 Amp (220-240V)		
Time delay for low level signal	10 seconds		
Time delay after Setpoint recovery	5 seconds		
Alarm delay time (Including alarm contact)	120 seconds		
Alarm switch	SPDT		
Alarm contact rating	10A @ 120VAC 50/60 Hz, 5A @ 250VAC 50/60 Hz, 3A @ 30VDC		
Refrigerant compatibility	Class A1 Refrigerants	Ammonia	CO2
Refrigerant temperature	-40° to 180°F Maximum		
Ambient temperature - storage	-40° to 120°F Maximum		
Ambient temperature - Intermittent duty	-40° to 120°F Maximum		
Oil supply fitting	1/4" Male SAE		
	(Brass)	(Stainless Steel)	(Brass)

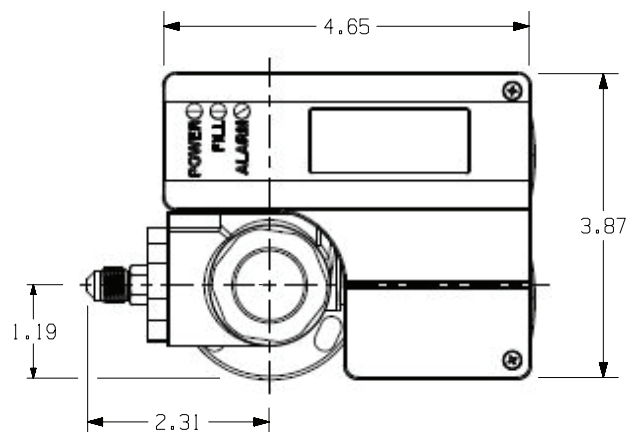
### Nomenclature example: OMC D120CO2

OMC	D	120	CO2
Series	Configuration	Coil Voltage	Application
OMC	S - Single Sight Glass D - Dual Sight Glass	120 - 120V 50/60 Hz 240 - 220-240V 50/60 Hz	CO2 - Transcritical CO2 NH3 - Ammonia (Omit For Standard)

### Ordering information

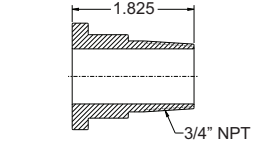
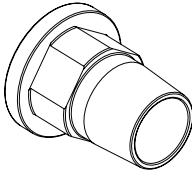
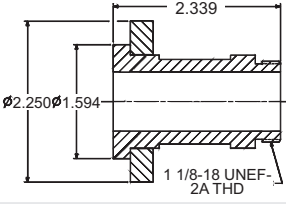
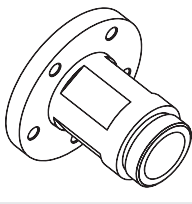
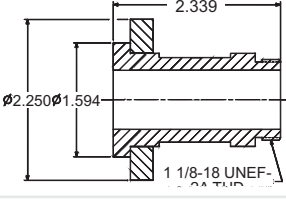
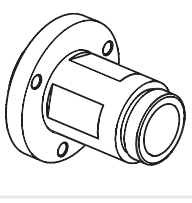
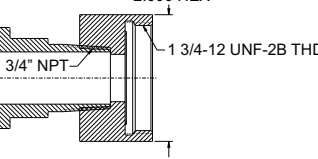
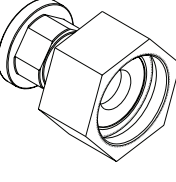
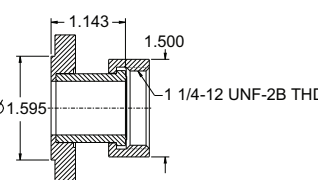
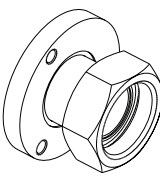
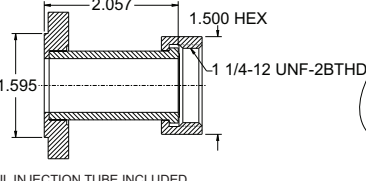
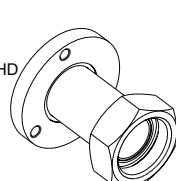
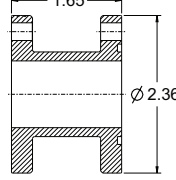
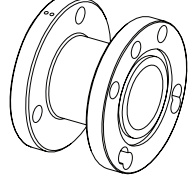
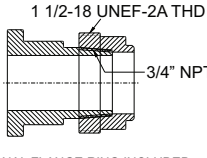
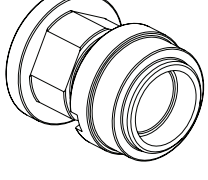
Model	Description	PCN
OMC S120	Single (front) sight glass with solenoid coil 120V 50/60 Hz	066823
OMC S240	Single (front) sight glass with solenoid coil 220-240V 50/60 Hz	066824
OMC D120	Dual (front & side) sight glass with solenoid coil 120V 50/60 Hz	066817
OMC D240	Dual (front & side) sight glass with solenoid coil 220-240V 50/60 Hz	066818
OMC D120CO2	Dual (front & side) sight glass with solenoid coil 120V 50/60 Hz for transcritical CO2	066936
OMC D240CO2	Dual (front & side) sight glass with solenoid coil 220-240V 50/60 Hz for transcritical CO2	066937
OMC D120NH3	Dual (front & side) sight glass with solenoid coil 120V 50/60 Hz for ammonia	066938
OMC D240NH3	Dual (front & side) sight glass with solenoid coil 220-240V 50/60 Hz for ammonia	066939
Service Parts Description		
PS-01525-2	Sight glass O-ring	020877
KS-30368-1	Mounting O-rings (3 pieces)	064812
KS-30112	Solenoid Repair Parts Kit for OMC	049191
KS-30401	Solenoid Repair Parts Kit for OMC CO2	066946
KS-30402	Solenoid Repair Parts Kit for OMC NH3	066947
See adapter catalog page for ordering information		

### Dimensional data



## OMB/C & OLC adapters

Refer to compressor sight glass connection to determine appropriate adapter required.

Description	PCN	Recommended torque adapter to compressor	Drawing
Screw Adapter 3/4" x 14 NPTF	065668 OMB-ACA	30 - 40 ft - lbs	  <p>1.825 3/4" NPT ADDITIONAL FLANGE RING INCLUDED</p>
Screw Adapter 1 1/8" x 18 UNEF-2A THD *5 Hole Flange Required For Transcritical CO2	066910 OMC-CO2T	37-44 ft-lbs	  <p>2.339 Ø2.250 1.594 1 1/8-18 UNEF-2A THD</p>
Screw Adapter 1 1/8" x 18 UNEF-2A THD	066692 OMB-CO2	37-44 ft - lbs	  <p>2.339 Ø2.250 1.594 1 1/8-18 UNEF-2A THD</p>
Screw Adapter, Female Nut 1 3/4" x 12 UNF - 2B THD	066078 OMB - ACE	30 - 40 ft - lbs	  <p>2.000 HEX 3/4" NPT 1 3/4-12 UNF-2B THD ADDITIONAL FLANGE RING INCLUDED</p>
Rotalock Adapter 1 1/4" x 12 UNF-2B THD	066650 OMB-ACF	80 ft - lbs	  <p>1.143 1.500 Ø1.595 1 1/4-12 UNF-2B THD</p>
Rotalock Adapter 1 1/4" x 12 UNF-2B THD OMB - ACG replacement for 066077 OMB-ACD	066652 OMB - ACG replacement for 066077 OMB-ACD	80 ft - lbs	  <p>2.057 1.500 HEX Ø1.595 1 1/4-12 UNF-2BTHD OIL INJECTION TUBE INCLUDED</p>
Adapter for Copeland Semi-Hermetic	063521 OMB - AUA	120 in - lbs	  <p>1.65 Ø2.36</p>
Screw Adapter 1 1/2" x 18 UNEF - 2A THD	065982 OMB - ASA	30 - 40 ft - lbs	  <p>1 1/2-18 UNEF-2A THD 3/4" NPT ADDITIONAL FLANGE RING INCLUDED</p>

\*Install OMB to adapter flange (1/4" x 20 UNC x 1" Hex bolt) at 120 in - lbs

## W-OLC mechanical oil level regulator

The W-OLC controls the oil level in the compressor crankcase with a float operated valve and keeps the oil level at the compressor manufacturer's recommended level. It is a direct replacement of popular competitive models.

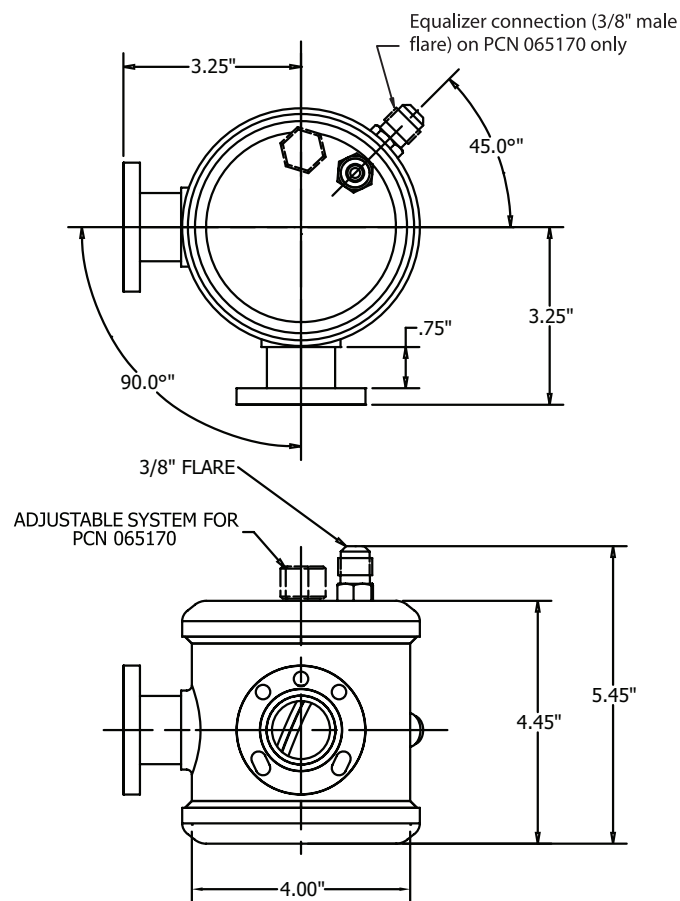
### Features

- Corrosion resistant epoxy powder paint finish
- Universal mounting pattern for standard semi-hermetic compressors

### Nomenclature example: W-OLC-2

W-OLC	2
Series	Sight Glass*
* 2 = 1/2, 4 = 1/4, 2-4 = adjustable	

### Dimensional data



See adapters page.

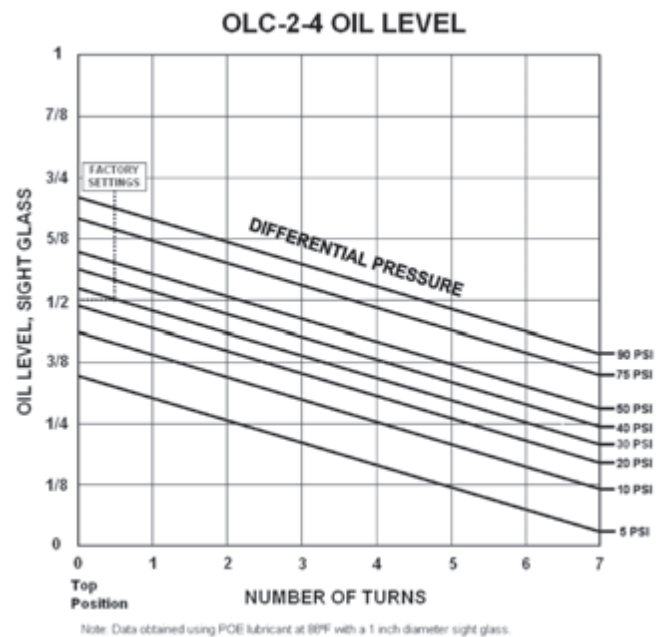


### Specifications

- Maximum working pressure: 450 psi
- UL/CUL file number: SA8547
- Max. OPD: 90 psi

### Ordering information

PCN	Description	Sight glass level
064953	W-OLC-2	1/2 sight glass
064954	W-OLC-4	1/4 sight glass
065170	W-OLC-2-4	1/4 to 1/2 level (adjustable)



The Oil Level factory setting is in the middle of the Sight Glass at 30 PSI for the Oil Level Control. Located on the top of the control is the seal cap. Remove this to adjust the oil level. To adjust the stem, turn it clockwise and counterclockwise, respectively, to lower and raise the stem. One can determine the adjustment needed from the OLC-2-4 Oil Level Chart. One eighth of an inch increments are used to illustrate the oil level at a selection of differential pressure conditions.

Unlike our Competitors Controls no damage will occur when attempting to adjust beyond 7 turns. Our Design has a hard Stop to prevent damage.

In the case of an unexpected system defrost or load increase, large amounts of oil will return through the suction line. Consequently, the oil control will not be able to keep the oil level from rising beyond the control point.

## OM3, OM4 and OM5 TraxOil oil management

The Emerson TraxOil oil management is a self-contained and reliable electronically controlled system with an integrated solenoid valve, which feeds missing oil directly into the compressor sump. The sight glass function remains fully available, status and level information is indicated by LED's. The integrated alarm function with compressor shut down completes the overall proven solution for compressor protection.

While OM3 is the well-proven solution for HFC refrigerants, OM4 can also be used for subcritical CO<sub>2</sub> systems.

OM5 TraxOil has been specially developed for transcritical CO<sub>2</sub> applications, the new adapters are equipped with special types of O-rings to guarantee safe long-term and reliable operation.

### Features

- OM3 for selected HFC and HFO/HFO blends refrigerants
    - max. working pressure PS: 46 bar (double point)
  - OM4 for liquid R744 (CO<sub>2</sub>) subcritical and selected HFC and HFO/HFO blends refrigerants
    - max. working pressure double point PS 60 bar
  - OM5 for liquid R744 (CO<sub>2</sub>) transcritical
    - max. working pressure double point PS 130 bar
    - max. operating pressure double point differential 100 bar
    - CO<sub>2</sub> optimized gasket material
    - Adapters with CO<sub>2</sub> optimized gasket material
    - High wattage ESC-W coil to achieve high pressure differential MOPD of 100 bar
  - Self-contained unit with oil level sensor and integral solenoid to manage oil level supply
  - 3 Zone Level Control by using precise Hall-Sensor measurement, not prone to errors by foaming or light like optical sensors
  - Alarm, status and level indication by LED's
  - Supply 24 VAC or 230 VAC
  - SPDT output contact for compressor shut down or alarming, rating 230 VAC / 3 A
- Easy installation by sight-glass replacement and front side mounting without nuts
  - Adapters suitable for various types of compressors
  - Recommended by leading compressor manufacturers
  - **CE** marking under LVC and EMC Directive



OM5 + ESC-W Coil 24V



OM4 + ESC Coil 230V + OM-230V

## Selection table OM3 and OM4 (Select one item of each group)

### 1. Base units (supplied without adapter and coil)

Type	Part No.	Max. Working Pressure PS (bar)	Time Delay Alarm
OM3-020	805 133	46 Bar	20 Sec
OM3-120	805 134		120 Sec
OM4-020	805135	60 Bar	20 Sec
OM4-120	805136		120 Sec



### 2. Adapter

OM0-CUA	805 037	Flange adapter 3- / 4-Hole
OM0-CBB	805 038	Screw adapter 1- <sup>1</sup> / <sub>8</sub> "-18 UNEF
OM0-CCA	805 039	Screw adapter <sup>3</sup> / <sub>4</sub> "-14 NPTF
OM0-CCB	805 040	Screw adapter 1- <sup>1</sup> / <sub>8</sub> "-12 UNF
OM0-CCC	805 041	Flange adapter 3-Hole
OM0-CCD	805 042	Rotalock adapter 1- <sup>3</sup> / <sub>4</sub> "-12UNF
OM0-CCE	805 043	Rotalock adapter 1- <sup>1</sup> / <sub>4</sub> "-12UNF

### 3. Cables alarm relay

OM3-N30	805 141	Connection to relay 3 m
OM3-N60	805 142	Connection to relay 6 m
OM3-N100	805 146	Connection to relay 10 m

Supply voltage 24V

### 4. Solenoid coil

Type	Part no.	
ESC-24VAC	801033	50 Hz, 17VA

### 5. Cable assembly power supply and solenoid

OM3-P30	805 151	24V, 3 m
OM3-P60	805 152	24V, 6 m
OM3-P100	805 153	24V, 10 m

Supply voltage 230V

### 4. Solenoid coil

Type	Part no.	
ESC-230 VAC	801031	50 Hz, 17VA

### 5. Cable assembly with 230V module

OM-230V-3	805 163	230V, 3.0m
OM-230V-6	805 164	230V, 6.0m

## Oil management kits including adapter and 24V coil: Cross reference

Kit inc. adapter	Part no.	Base unit	Part no.	Adapter	Part no.	Coil	Part no.
OM3-CUA	805 301	OM3-020	805133	OM0-CUA	805037	ESC-24 VAC	801033
OM3-CBB	805 303			OM0-CBB	805038		
OM3-CCA	805 304			OM0-CCA	805039		
OM3-CCB	805 305			OM0-CCB	805040		
OM3-CCC	805 306			OM0-CCC	805041		
OM3-CCD	805 302			OM0-CCD	805042		
OM3-CCE	805 300			OM0-CCE	805043		
OM4-CUA	805 307			OM4-020	805 135		
OM4-CBB	805 309	OM0-CBB	805 338				
OM4-CCA	805 310	OM0-CCA	805 339				
OM4-CCB	805 311	OM0-CCB	805 340				
OM4-CCC	805 312	OM0-CCC	805 341				
OM4-CCD	805 308	OM0-CCD	805 342				
OM4-CCE	805 313	OM0-CCE	805 343				

## Selection table OM5 (Select one item of each group)

### 1. Base units (Supplied without adapter and coil)

Type	Part no.	Max. working pressure ps (bar)	Time delay alarm
OM5-020	805230	130 Bar	20 Sec
OM5-120	805231		120 Sec



### 2. Adapter

OM0-CUA CO2	805337	Flange adapter 3- / 4-Hole
OM0-CCC CO2	805341	Flange adapter 3-Hole
OM0-CUD CO2	805049	Flange adapter 6- / 6-Hole
OM0-CBB CO2	805338	Screw adapter 1-1/8"-18 UNEF
OM0-CCA CO2	805339	Screw adapter 3/4"-14 NPTF
OM0-CCB CO2	805340	Screw adapter 1-1/8"-12 UNF
OM0-CCD CO2	805342	Rotalock adapter 1-3/4"-12UNF
OM0-CCE CO2	805343	Rotalock adapter 1-1/4"-12UNF

### 3. Cables alarm relay

OM3-N30	805 141	Connection to Relay 3 m
OM3-N60	805 142	Connection to Relay 6 m
OM3-N100	805 146	Connection to Relay 10 m

#### Supply voltage 24V

### 4. Solenoid coil

Type	Part no.	
ESC-W24VAC	801028	50 Hz, 38 VA

### 5. Cable assembly power supply and solenoid

OM3-P30	805 151	24V, 3 m
OM3-P60	805 152	24V, 6 m
OM3-P100	805 153	24V, 10 m

#### Supply voltage 230V

### 4. Solenoid coil

Type	Part no.	
ESC-W230VAC	801029	50 Hz, 38 VA

### 5. Cable assembly with 230V module

OM-230V-3	805 163	230V, 3 m
OM-230V-6	805 164	230V, 6 m

## Accessories and spare parts

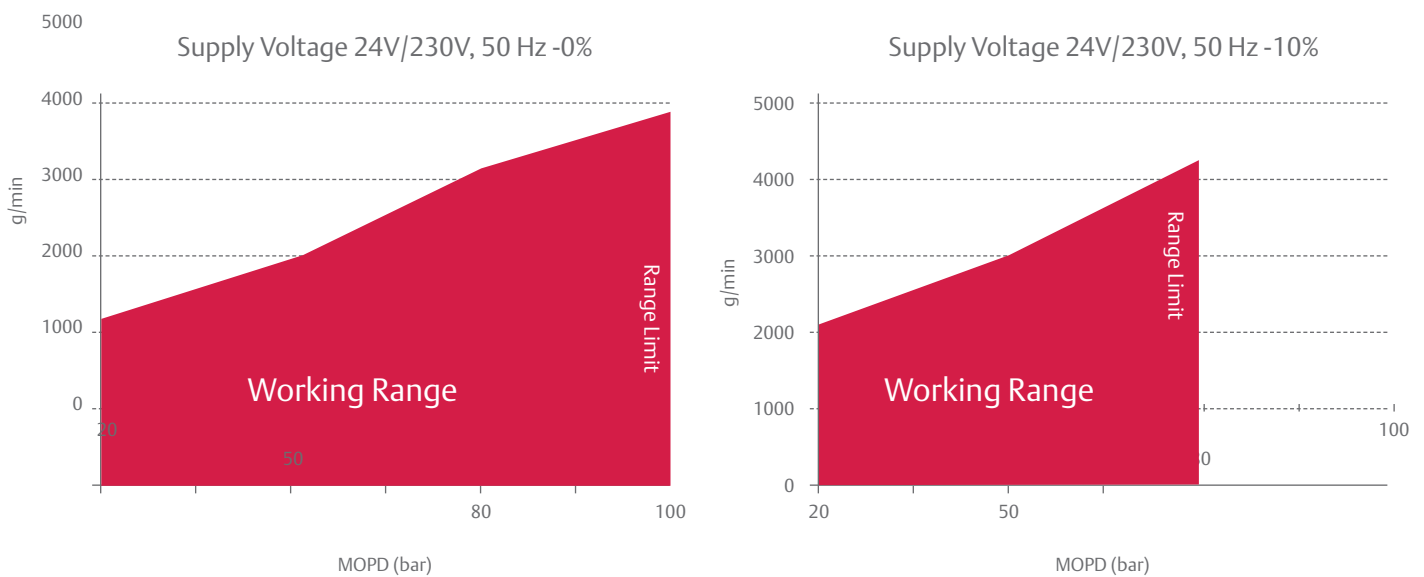
Type	Part no.	Description
ECT-623	804 421	Transformer 230 VAC / 24VAC, 60 VA (Supply of 3 Pieces Base Unit)
ASC3-K01	801 080	Retainer Kit ASC3 Including O-Rings
ODP-33A	800 366	Differential Oil Check Valve 3.5 bar, PS: 46 bar (Inlet 5/8"-UNF Female, Outlet 5/8"- UNF Male)
OM3-K01	805 036	Repair Kit OM3/OM4 (Consists of Sight Glass with O-Ring and Screws, Oil Adapter with Strainer, O-Ring Back Side)
OM5-K01	805 067	Repair Kit OM5 for CO2 (Consists of Sight Glass with O-Ring and Screws, Oil Adapter with Strainer, O-Ring Back Side)
OM-HFC-K01	805 081	Sealing Kit OM3/OM4 (Consists of all O-Rings for OM3/OM4 and for All Types of Adapters)
OM-HFC-K02	805 083	Enclosing Tube for OM3/OM4 (Including O-Ring), Only for Replacement of New Version with Hexagonal Nut!
OM-CO2-K01	805 079	Sealing Kit CO2 for OM5 (Consists of All O-Rings for Om5 and for All Types of Adapters)
OM-CO2-K02	805 082	Enclosing Tube for OM5 (Including O-Ring), Only for Replacement of New Version with Hexagonal Nut!

## Technical data

Markings:	<b>CE</b> Under: - Low voltage directive - EMC Directive
Max. working pressure PS:	OM3: 46 Bar OM4: 60 Bar OM5: HP Side (Inlet): 130 Bar LP Side (Outlet): 100 Bar
Max. test pressure PT:	OM3: 51 Bar OM4: 66 Bar OM5: 143 Bar
Supply voltage / total power:	OM3/OM4: 24VAC, 50 Hz, $\pm 10\%$ , 17VA 230VAC, 50 Hz, $\pm 10\%$ , 17VA  only OM5: 24VAC, 50 Hz, $\pm 10\%$ , 38VA 230VAC, 50 Hz, $\pm 10\%$ , 38VA
• With ESC-24VAC Coil • With ESC-230VAC Coil and OM-230V-x Module	
• With ESC-W24VAC Coil • With ESC-W230VAC Coil and OM-230V-x Module	
Solenoid valve MOPD	OM3/OM4: 30 Bar OM5: 100 Bar (50Hz) See Fig. 1
Medium temperature Ambient/storage temperature	-20...+80°C -20...+50°C
Medium compatibility	OM3/OM4: R410A, R134a, R22, R404A, R507, R407C, R407A, R407F, R1234ze, R448A, R449A, R450A, R513A, R452A  OM4/OM5: CO <sub>2</sub>  Mineral, Synthetic and Ester Lubricants

Flow rate	OM3/OM4 at $\Delta P = 3$ Bar: 340g/Min. (22°C oil temperature, oil type HM46) OM5: See Fig. 1
Orientation of base unit:	horizontal, +/- 1°
Level control:	40% to 60% of sight glass height
Alarm contact:	Max. 3A, 230VAC SPDT dry contact
Time delay alarm:	20 Sec.: OM3/4/5-020, All OM3/4 Kits 120 Sec.: OM3/4/5-120
Time delay filling:	10 Sec.
Protection class	IP 65 with plug/cable assembly acc. EN 60529 test conditions
Oil connection	7/16"-20 UNF male, with strainer and O-Ring (Replaceable, See Acc.)
Enclosing tube	Replaceable for cleaning, hexagon wrench size 18, see spare parts

Fig. 1: OM5: Performance related to supply voltage: Flow rate and differential pressure between inlet and outlet (Oil type reniso C85E, oil temperature 54°C)





## OW4 and OW5 TraxOil™ electronic oil level monitoring

OW4 and OW5 TraxOil are intended for systems which require oil level monitoring and alarming instead of active oil level balancing.

### Features

- OW4 for CO2 subcritical and selected HFC and HFO/HFO blends refrigerants  
max. working pressure PS: 60 bar
- OW5 for CO2 transcritical
  - max. working pressure PS: 100 bar
  - CO2 optimized gasket material, not released for HCFC and HFCs
  - Adapters with CO2 optimized gasket material
- 3 Zone Level Control by using precise Hall-sensor measurement, not prone to errors by foaming or light like optical sensors
- Alarm, status and 3 zone indication by LED's
- SPDT output contact for compressor shut down or alarming, rating 230VAC / 3A
- Easy installation by sight-glass replacement and front side mounting without nuts
- Supply 24V AC, 50/60Hz
- Recommended by leading compressor manufacturers
- CE marking under Low Voltage and EMC Directive



OW4 TraxOil



OW5 TraxOil

### Selection table (Select one item of each group)

#### 1. Base units (Supplied without adapter)

Type	Part no.	Max. working pressure	Time delay alarm
OW4-020	805 116	60 Bar	20 Sec

#### 2. Adapter

OM0-CUA	805037	Flange adapter 3-/4-Hole
OM0-CCC	805041	Flange adapter 3-Hole
OM0-CBB	805038	Screw adapter 1-1/8"-18 UNEF
OM0-CCA	805039	Screw adapter 3/4"-14 NPTF
OM0-CCB	805040	Screw adapter 1-1/8"-12 UNF
OM0-CCD	805042	Rotalock adapter 1-3/4"-12UNF
OM0-CCE	805043	Rotalock adapter 1-1/4"-12UNF

Compressor Models See OM3 Series.

#### 3. Relay cables

OM3-N30	805 141	Connection to relay 3.0 m
OM3-N60	805 142	Connection to relay 6.0 m
OM3-N100	805 146	Connection to relay 10.0 m

#### 4. Power cables

Type	Part No.	Description	Cable Length
OW-24V-3	804 672	Connection to power supply 24VAC	3.0m



## Product selection (Select one item of each group)

### 1. Base units (Supplied without adapter)

Type	Part no.	Max. working pressure PS (bar)	Time delay alarm
OW4-020	805 116	60 Bar	20 Sec

### 2. Adapter

OM0-CUA CO <sub>2</sub>	805 337	Flange adapter 3-/4-Hole
OM0-CCC CO <sub>2</sub>	805 341	Flange adapter 3-Hole
OM0-CUD CO <sub>2</sub>	805 049	Flange adapter 6-/6-Hole
OM0-CBB CO <sub>2</sub>	805 338	Screw adapter 1-1/8"-18 UNEF
OM0-CCA CO <sub>2</sub>	805 339	Screw adapter 3/4"-14 NPTF
OM0-CCB CO <sub>2</sub>	805 340	Screw adapter 1-1/8"-12 UNF
OM0-CCD CO <sub>2</sub>	805 342	Rotalock adapter 1-3/4"-12UNF
OM0-CCE CO <sub>2</sub>	805 343	Rotalock adapter 1-1/4"-12UNF

Compressor models see OM3 series.

### 3. Relay cables

OM3-N30	805 141	Connection to relay 3.0 m
OM3-N60	805 142	Connection to relay 6.0 m
OM3-N100	805 146	Connection to relay 10.0 m

### 4. Power cables

Type	Part no.	Description	Cable length
OW-24V-3	804 672	Connection to power supply 24VAC	3.0 m

## Accessories and spare parts

Type	Part no.	Description
ECT-623	804 421	Transformer 230 VAC / 24 VAC, 60 VA (Supply of 3 Pieces Base Unit)
OM-HFC-K01	805 081	Sealing Kit OW4 (Consists of All O-Rings, Incl. Adapter Gaskets)
OM-CO2-K01	805 079	Sealing Kit OW5 (Consists of All O-Rings, Incl. Adapter Gaskets)

## Technical data

Markings:	<b>CE</b> Under: -Low Voltage Directive -EMC Directive
Max. Working pressure PS: Max. Test pressure PT:	OW4: 60 Bar    OW5: 100 Bar OW4: 66 Bar    OW5: 110 Bar
Supply voltage current	24VAC, 50/60Hz, ±10%, 0.05A
Medium temperature Ambient/storage temperature	-20...80°C -20...50°C
Medium compatibility	OW4: R410A, R134a, R22, R404A, R507, R407C, R407A, R407F, R1234ze, R448A, R449A, R450A, R513A, R452A, R744  OW5: CO <sub>2</sub>  Mineral, synthetic and ester lubricants

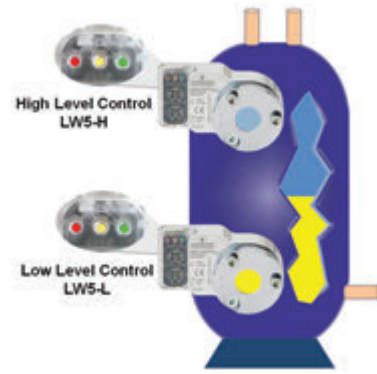
Orientation of base unit: Level control:	Horizontal, +/- 1° 40%...60% Sight Glass Height
Alarm contact:	Max. 3 A, 230 VAC SPDT Dry Contact
Time delay alarm:	20 Sec or 120 Sec
Protection class	IP 65 with plug/cable assembly acc. EN 60529 test conditions

## LW4 and LW5 liquid level control level watch

LW4 and LW5 are self-contained units intended for liquid level monitoring and control at the sight glass connection of vessels, maintaining a permanent visibility of the liquid level versus other liquid level sensors.

### Features

- LW4 for liquid CO<sub>2</sub>, selected HFC and HFO/HFO blends refrigerants and oil
  - Max. working pressure PS: 60 bar
- LW5 for liquid CO<sub>2</sub> and oil
  - Max. working pressure PS: 130 bar
  - CO<sub>2</sub> optimized gasket material, not released for HFCs
  - Adapters with CO<sub>2</sub> optimized gasket material
- Two Versions of each model:
  - LW4/5-H for high liquid level monitoring
  - LW4/5-L for low liquid level monitoring
- 3 Zone Level Control by using precise Hall-sensor measurement, not prone to errors by foaming or light like optical sensors
- Alarm, status and 3 zone indication by LED's
- Dual monitoring and protection:
- 24 V output signal for critical liquid levels
- SPDT output contact for alarming, rating 230 VAC / 3 A
- Easy installation by sight-glass replacement and front side mounting without nuts
- Supply 24 VAC, 50/60 Hz
- **CE** marking under LVD and EMC Directive



LW4



LW5

### Selection table (Select one item of each group)

#### 1. Base units (Supplied without adapter)

Type	Part no.	Max. working pressure	Medium
LW4-H120	805491	60 Bar	HFC, CO <sub>2</sub> , Oil
LW4-L120	805490	60 Bar	CO <sub>2</sub> , Oil

#### 2. Adapter

OM0-CUA	805037	Flange adapter 3-/4-Hole
OM0-CCC	805041	Flange adapter 3-Hole
OM0-CBB	805038	Screw adapter 1-1/8"-18 UNEF
OM0-CCA	805039	Screw adapter 3/4"-14 NPTF
OM0-CCB	805040	Screw adapter 1-1/8"-12 UNF
OM0-CCD	805042	Rotalock adapter 1-3/4"-12UNF
OM0-CCE	805043	Rotalock adapter 1-1/4"-12UNF
LW0-1/2	805256	Screw adapter 1/2"-14 NPTF

#### 3. Cables alarm relay

OM3-N30	805141	Connection to relay 3.0m
OM3-N60	805142	Connection to relay 6.0m
OM3-N100	805146	Connection to relay 10.0m

#### 4. Cable power supply

LW-24V-3	805500	Connection to power supply 24V AC 3.0m
LW-24V-6	805501	Connection to power supply 24V AC 6.0m
LW-24V-10	805502	Connection to power supply 24V AC 10.0m

## Selection table (Select one item of each group)

### 1. Base units (Supplied without adapter)

Type	Part no.	Max. working pressure	Medium
LW5-H120	805481	130 bar	CO <sub>2</sub> , Oil
LW5-L120	805480	130 bar	CO <sub>2</sub> , Oil

### 2. Adapter

LW0-CCA CO <sub>2</sub>	805254	Screw Adapter 3/4"-14 NPTF Steel
LW0-1/2 CO <sub>2</sub>	805257	Screw adapter 1/2"-14 NPTF

### 3. Cables alarm relay

OM3-N30	805141	Connection to Relay 3.0m
OM3-N60	805142	Connection to Relay 6.0m
OM3-N100	805146	Connection to Relay 10.0m

### 4. Cable power supply

LW-24V-3	805500	Connection to Power Supply 24V AC 3.0m
LW-24V-6	805501	Connection to Power Supply 24V AC 6.0m
LW-24V-10	805502	Connection to Power Supply 24V AC 10.0m

## Accessories and spare parts

Type	Part no.	Description
ECT-623	804 421	Transformer 230 VAC / 24VAC, 60 VA
OM-HFC-K01	805 081	Sealing-Kit LW4 (Contains All Gaskets Incl. Adapter Gaskets)
OM-CO2-K01	805 079	Sealing-Kit LW5 for CO <sub>2</sub> (Contains All Gaskets Incl. Adapter Gaskets)

## Function

LW Liquid Level Monitoring Systems use a Hall-Sensor to measure the liquid levels. Unaffected from foaming oil or light a magnetic float changes its position according to the oil level. The hall sensor

converts these magnetic field changes into an equivalent signal, which is used by the integrated electronic controller to monitor the actual liquid level by LEDs.

## Technical data

Marking	<b>CE</b> Under: - Low Voltage Directive - EMC Directive
Max. Working pressure PS: Max. Test pressure PT:	LW4: 60 Bar    LW5: 130 Bar LW4: 66 Bar    LW5: 143 Bar
Supply voltage current	24 VAC, 50/60Hz, ±10%, 0.05A
Medium temperature Ambient/storage temperature	-20...80°C -20...50°C
Medium compatibility	LW4: R410A, R134a, R22, R404A, R507, R407C, R407A, R407F, R1234ze, R448A, R449A, R450A, R513A, R452A, R744  LW5: CO <sub>2</sub>  Mineral, synthetic and ester lubricants

Orientation of base unit: Level control:	Horizontal, +/- 1° 30%...60% Sight Glass Height
Alarm contact:	Max. 3 A, 230 VAC SPDT Dry Contact
Output signal	24 VAC Inductive Load: 35 VA
Time delay alarm:	120 Sec
Protection class	IP 65 (IEC529/EN 60529)

# Pressure controls and thermostats

## How to calculate DCFM charge

### Standards and regulations

BGV D4 (VBG20)	Accident prevention regulations for refrigeration plant.
DIN 8901	Heat pumps with fluorocarbon refrigerants. Protection of soil, underground and surface water.
EN 60947-1/ EN 60947-5-1	Specifications for low-voltage switch gear.
EN 378	Refrigerating systems and heat pumps - safety and environmental requirements.
EN 12263	Refrigerating systems and heat pumps - safety switching devices for limiting the pressure requirements and tests.

### Selection guide for pressure controls

Series	Selection criteria					
	Design	Number of contacts (SPDT)	Adjustable	Protection Din 40050 IEC 529	Rated operational current At 230 V AC	
					Inductive amp. AC 15	Motor rating UI
PS1	Pressure control (Single packaging) model	1	Yes	IP 44	10 A	24 A
PS2	Dual pressure control (Single packaging)	1+1	Yes	IP 44	10 A	24 A
PS3	Pressure controls Standard types (Single packaging)	1	Factory set to fixed values	IP 30 / IP 65	3 A	6 A
	Pressure control Special types (100 Pieces packaging)	1	Other fixed values acc. To agreed specification	IP 30 / IP 65	3 A	6 A
CS3 (for CO2 Applications)	Pressure controls Standard types (60 Pieces packaging)	1	Factory set to fixed values	IP 30 / IP 65	3 A	6 A
	Pressure control Special types (60 Pieces packaging)	1	Other fixed values acc. To agreed specification	IP 30 / IP 65	3 A	6 A
PS4	Pressure controls standard types (100 Pieces packaging)	1	Factory set to fixed values	IP67 (cable) IP20 (terminals)	6 A	6 A
FD 113	Differential pressure control	1	Yes pressure diff. + Time delay	IP 30	3 A / 6 A	-

## PS1 series single pressure controls

PS1 Single Pressure Controls are designed for use on high and low pressure applications in refrigeration, airconditioning and heat pump systems, providing single-device control of the compressor or other electrical device.

### Features

- Adjustable pressures and differentials
- Narrow adjustable differential depending on model
- Range and differential pointer in units bar and psig
- Range and differential individually lockable by tab
- High rated SPDT contacts for all versions
- Captive terminal and cover screws
- Manual toggle for system checkout and override

### Options

- Different pressure connections
- Automatic and manual reset versions
- Factory set to customer specification

### Nomenclature

Type code

PS1 -

**Product name**  
PS1 = Adjustable Single Pressostat

**Function**  
A = Pressure control, automatic  
B = Pressure cut out, external manual reset EN 12263  
R = Pressure control, external manual reset  
W = Pressure limiter, automatic, DIN/EN 12263

**Pressure connector**  
A = 7/16" -20 UNF male (1/4" SAE male flare)  
K = 1m cap tube and schrader valve opener, 7/16" -20UNF flare nut  
U = 6mm ODF solder, 80mm length  
R = 1/4" male, brass (1/4" BSPP Fitting)

**Pressure range**  
3 = -0.3 to 7 bar  
4 = 2 to 20 bar  
5 = 6 to 31 bar



### Specifications

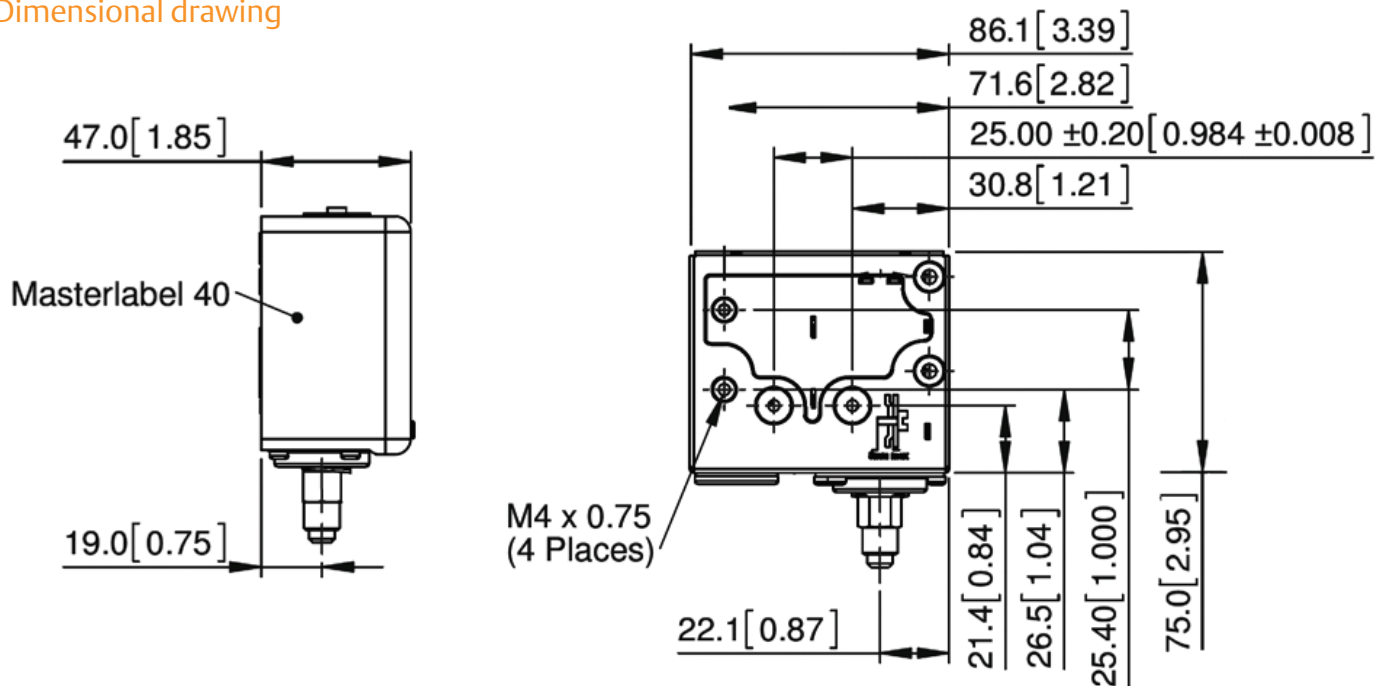
- SPDT switch rated for 12FLA and 72LRA at 240VAC and 16FLA and 96LRA at 120VAC
- Agency approvals include: UL/CUL file number E85974 CE per (LVD) low voltage directive

## Ordering information

Single pressure control	PCN	Pressure range (bar)	Differential (bar)	Factory setting (bar)	Function	Pressure connection
PS1-A3A	099035	-0.3 to 7	1 to 5	3.4	Automatic	1/4" SAE male flare
PS1-A3K	099041	-0.3 to 7	1 to 5	3.4	Automatic	1m cap tube with nut
PS1-A3R	099014	-0.3 to 7	1 to 5	3.4	Automatic	1/4" BSPP fitting
PS1-A3U	099015	-0.3 to 7	1 to 5	3.4	Automatic	6mm tube, 80mm length
PS1-A4A	099016	2 to 20	3 to 15	10	Automatic	1/4" SAE male flare
PS1-X4A	099043	2 to 20	3 to 15	10	Automatic	1/4" SAE male flare
PS1-A5A	099036	6 to 31	3 to 15	20	Automatic	1/4" SAE male flare
PS1-A5K	099039	6 to 31	3 to 15	20	Automatic	1m cap tube with nut
PS1-B5U	099020	6 to 31	3 to 15	20	External Manual Reset	6mm tube, 80mm length
PS1-R5A	099037	6 to 31	Fixed	20	External Manual Reset	1/4" SAE male flare
PS1-W5U	099033	6 to 31	3 to 15	20	Automatic	6mm tube, 80mm length
Bracket	099019					

Note: Bracket not included with controls. Sold separately. 100 brackets per box.

## Dimensional drawing



## PS2 Series Dual Pressure Controls

PS2 Dual Pressure Controls are designed for use on high and low pressure applications in refrigeration, airconditioning, and heat pump systems. This control react to changes in either low or high side pressures, providing single-device control of the compressor or other electrical device.



### Features

- Adjustable pressures and differentials
- Narrow adjustable differential depending on model
- Range and differential pointer in units bar and psig
- Range and differential individually lockable by tab
- High rated SPDT contacts for all versions
- Captive terminal and cover screws
- Manual toggle for system checkout and override
- Factory installed wire bridge for reduced installation effort
- High side convertible from manual to auto reset

### Options

- Different pressure connections
- Automatic and manual reset versions
- Factory set to customer specification

### Specifications

- SPDT switch rated for 12FLA and 72LRA at 240VAC and 16FLA and 96LRA at 120VAC
- Agency approvals include: UL/CUL file number E85974, CE per (LVD) low voltage directive

### Nomenclature

Type code

PS2 -

#### Product name

PS2 = Adjustable Dual Pressostat

#### Function

A = Both sides, automatic pressure controls  
 G = Left side: cut out, external manual reset EN 12263  
     Right side: cut out, external manual reset EN 12263  
 L = Left side: automatic pressure control  
     Right side: external manual reset  
 M = Left side: automatic pressure control  
     Right side: convertible R to A  
 R = Both sides: external manual reset

#### Pressure connector

A = 7/16" -20 UNF male (1/4" SAE male flare)  
 K = 1m cap tube and schrader valve opener, 7/16" -20UNF flare nut  
 R = 1/4" ODF solder, 80mm length

#### Pressure range

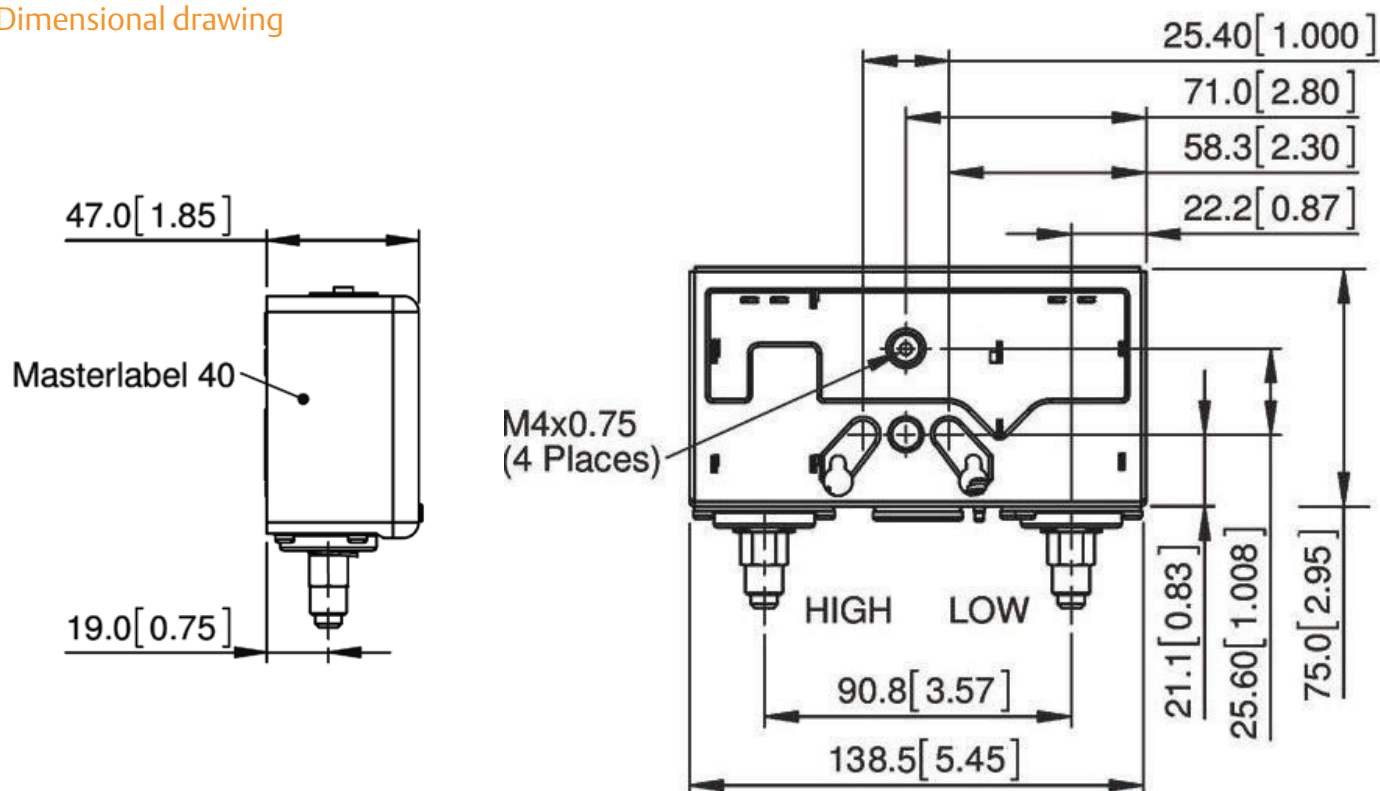
7 = -0.3 to 7 bar	6 to 31 bar
8 = 6 to 31 bar	6 to 31 bar

## Ordering information

Dual pressure control	PCN	Pressure range (bar)			Differential (bar)			Function	Pressure Connection
		Left side	Right side	Factory setting	Left side	Right side	Factory setting	Left / right	
PS2-A7A	099038	-0.3 to 7	6 to 31	3.4	1 to 5	Fixed	20	Automatic / Automatic	1/4" SAE male flare
PS2-A7K	099001	-0.3 to 7	6 to 31	3.4	1 to 5	Fixed	20	Automatic / Automatic	1m cap tube with nut
PS2-G8A	099002	-0.3 to 7	6 to 31	20	1 to 5	Fixed	21	External Manual Reset / Internal Manual reset	1/4" SAE male flare
PS2-L7A	099040	-0.3 to 7	6 to 31	3.4	1 to 5	Fixed	20	Automatic / External Manual Reset	1/4" SAE male flare
PS2-L7X	099004	-0.3 to 7	6 to 31	3.4	1 to 5	Fixed	20	Automatic / External Manual Reset	ODF fitting
PS2-M7A	099042	-0.3 to 7	6 to 31	3.4	1 to 5	Fixed	20	Automatic / Convertible from Automatic to Manual	1/4" SAE male flare
PS2-R7A	099007	-0.3 to 7	6 to 31	3.4	1 to 5	Fixed	20	External Manual Reset / External Manual reset	1/4" SAE male flare
Bracket	099019								

Note: Bracket not included with controls. Sold separately. 100 brackets per box.

## Dimensional drawing





## PS1 and PS2 C series pressure controls

PS1\_C Single and PS2\_C Dual Pressure Controls are cost-effective series for R22, R407C, R134a and R404a, and are designed for use on high and low pressure applications in refrigeration, airconditioning and heat pump systems, providing single-device control of the compressor or other electrical device.



PS1-A5AC



PS2-L7AC

### Features

- Either Adjustable pressures and differentials
- Narrow adjustable differential depending on model
- Range and differential pointer in unit bar and psig
- Range and differential individually lockable by tab
- Captive terminal and cover screws
- Manual toggle for system checkout and override
- PS2 series equipped with Factory installed wirebridge for reduced installation effort, and high side is convertible from manual to auto reset

### Options

- Different pressure connections
- Automatic and manual reset versions
- Factory set to customer specification

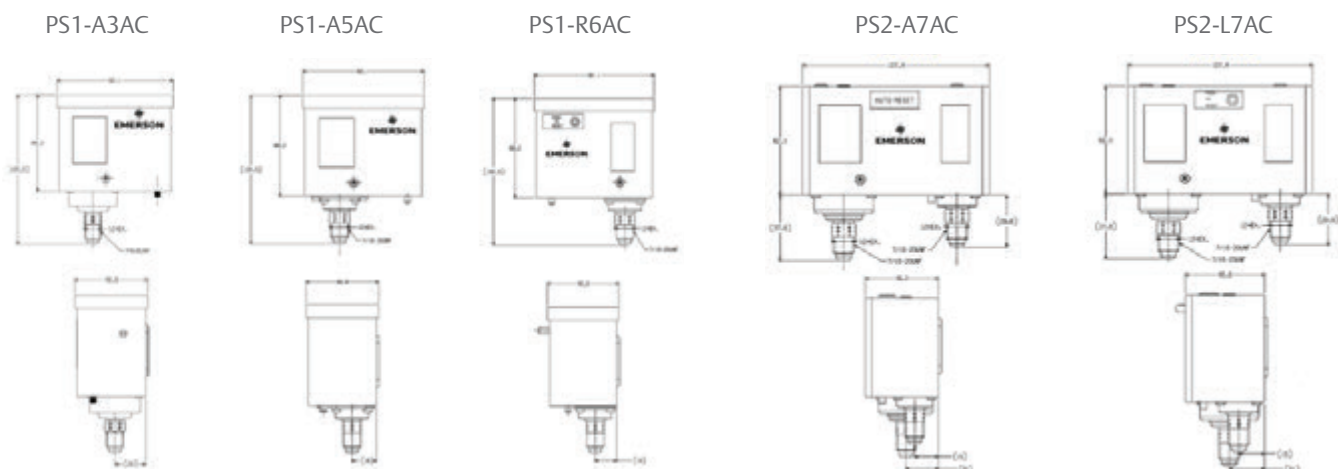
### Specification

- IP20 / IP44 protection for PS1
- IP20 / IP40 protection for PS2
- ¼" SAE male flare

### Ordering information

Pressure Control	PCN	Pressure range	Recommend Pressure Range	Differential	Max. Working Pressure	Leakage Test Pressure (≤24Hours)	Function	Pressure Connection	
Single	PS1-A3AC	099201	-0.5 to 6 bar (-7 to 87 psig)	2 to 5 bar (29 to 73 psig)	1 to 4 bar (15 to 58 psig)	10 bar (145 psig)	17 bar (247 psig)	Automatic	¼" SAE male flare
	PS1-A5AC	099204	5 to 30 bar (73 to 435 psig)	14 to 30 bar (203 to 435 psig)	5 to 10 bar (73 to 145 psig)	30 bar (435 psig)	30 bar (435 psig)	Automatic	
	PS1-R6AC	099205	10 to 30 bar (145 to 435 psig)	12.5 to 30 bar (181 to 435 psig)	Fixed	30 bar (435 psig)	30 bar (435 psig)	Manual	
Dual	PS2-A7AC	099206	LP: -0.5 to 6 bar (-7 to 87 psig)	LP: 2 to 5 bar (29 to 73 psig)	LP: 1 to 4 bar (15 to 58 psig)	LP: 10 bar (145 psig)	LP: 17 bar (247 psig)	Automatic/ Automatic	
	PS2-L7AC	099207	HP: 10 to 30 bar (145 to 435 psig)	HP: 12.5 to 30 bar (181 to 435 psig)	HP: Fixed	HP: 30 bar (435 psig)	HP: 30 bar (435 psig)	Automatic/ External Manual Reset	

### Dimensional drawing



## PS3 Series / standard types pressure controls

### Fixed settings in single packaging




#### Features

- Maximum allowable pressure up to 45 bar / test pressure up to 50 bar
- High and low pressure switches
- High temperature version with snubber for direct compressor mounting (range 6)
- Direct mounting reduces the number of joints and thus avoiding potential leakage
- Precise setting and repeatability
- IP 65 protection if used with PS3-Nxx cables with plug (acc. EN 175301-803), no additional gasket required (molded into plug)
- Cables with plug to be ordered separately



PS3

#### Standards

-  per Low Voltage Directive
-  per PED Directive, TÜV appr. versions only
-  Underwriter Laboratories (File No. E85974) (Released for 43 bar)

#### Selection table PS3- standard types

Pressure Control Type	Part no.	Fixed setting		Reset	Max. temperature		Leakage test pressure (bar)	Pressure connection
		Cut-out (bar)	Cut-in (bar)		Ambient (°C)	Pressure connection (°C)		
High pressure controls								
PS3-A6S	0 715 603	16.0	11.0	Auto	+70	+150	50	7/16"-20UNF Female Thread with Schrader Opener
PS3-A6S	0 715 604	19.0	15.0					
PS3-A6S	0 715 600	26.5	22.5					
Low pressure controls / pressure limiter for low pressure protection PSL TÜV / EN 12263								
PS3-W1S	0 714 760	-0.3	1.2	Auto	+70	+70	30	7/16"-20UNF Female Thread with Schrader Opener
PS3-W1S	0 714 761	0.3	1.8					
PS3-W1S	0 714 762	2.0	3.5					
Pressure limiter for high pressure protection PSH with snubber for direct compressor mounting TÜV / EN 12263								
PS3-W6S	0 715 831	14.0	10.0	Auto	+70	+150	50	7/16"-20UNF Female Thread with Schrader Opener and Snubber
PS3-W6S	0 715 556	21.0	16.0					
PS3-W6S	0 715 555	25.0	20.0					
PS3-W6S	0 715 567	29.0	23.0					
PS3-W6S	0 715 550	33.5	27.5					
PS3-W6S	0 715 553	40.0	33.0					
Pressure cut-out for high pressure protection PZH with snubber for direct compressor mounting TÜV / EN 12263								
PS3-B6S	0 715 568	19.2	Approx. 5 Bar Below Cut-out	External Manual Reset	+70	+150	50	7/16"-20UNF Female Thread with Schrader Opener and Snubber
PS3-B6S	0 715 564	22.7						
PS3-B6S	0 715 563	27.3						
PS3-B6S	0 715 569	29.5						
PS3-B6S	0 715 560	36.0						

## Accessories cable assemblies

Temperature Range	Type	Part No.	Length (mtr.)	Leads
-50...80°C / No UL	PS3-N15	804 580	1.5	3 x 0.75 mm <sup>2</sup>
	PS3-N30	804 581	3.0	
	PS3-N60	804 582	6.0	



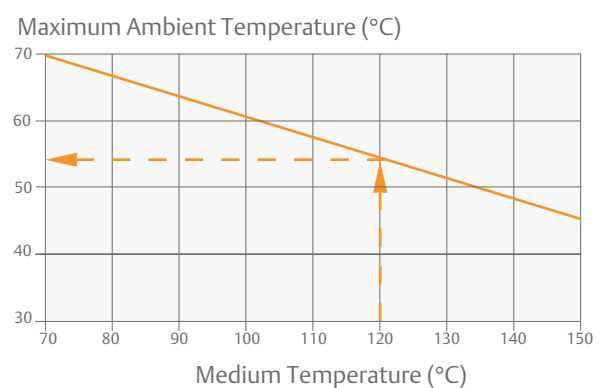
Plug According to EN 175301	Part No.
PG9	801 012
PG11	801 013

## Technical data

Protection according to EN 60529 / IEC 529	IP 00 IP 30 with Terminal Cover IP 65 with PS3-Nxx Cables with Plug or Plug DIN 43650
Inductive load (AC15)	3A / 230V AC
Inductive load (DC)	0.1A / 230V DC
Motor rating amps (FLA)	6A / 120/240V AC
Lock rotor amps (LRA)	36A / 120/240V AC

Temperature range TS * Ambient. storage and transportation medium	-40 °C .. 70 °C -40 °C .. 70 °C (150°C Range 6)
Pressure range PS	- 0.6 .. 43 Bar
Type of contacts	1 SPDT
Medium compatibility	HFC, HCFC, HFO/HFO Blends (refrigerant safety group A1)

\* Note: For high temperature applications, i. e., medium temperatures between 70 °C and 150 °C, the maximum ambient temperature must be derated as per drawing. E.g.: on medium temperature 120 °C the ambient temperature of 55 °C around the switch housing should not be exceeded.



## PS3/PSC series special types pressure controls

According to agreed specification, 100 pieces packaging

### Features

- Maximum allowable pressure up to 45 bar / test pressure up to 50 bar
- For direct mounting on a pressure connection (free standing) or with a capillary tube
- Direct mounting reduces the number of joints and thus avoids potential leakage
- Direct mounting saves cost for flexible hose and additional fittings
- Precise setting and repeatability
- High temperature version with snubber, for direct compressor mounting (range 6)
- Micro switch for narrow pressure differentials
- Gold plated contacts for low voltage / current applications
- Worldwide approvals
- Easy mounting
- Housing with integrated console for free-standing installation
- Low pressure switch with automatic or manual reset
- High pressure switch with automatic or manual reset, standard or high temperature version
- Pressure limiter PSH - standard or high temperature version
- Pressure cut-out PZH - external reset, standard or high temperature version
- Safety pressure cut-out PZHH - internal reset, standard or high temperature version
- Cables with plug in lengths of 1.5m, 3.0m and 6.0m available. No additional gasket required.
- Appliance socket DIN 43650
- Electrical contact single pole double throw
- Electrical micro switch single pole double throw (SPDT)
- Gold plated contacts upon request



### Standards

- per Low Voltage Directive
- per PED Directive TÜV appr. versions only
- Underwriter Laboratories (File No. E85974) (Released for 43 bar)

### Pressure connections

- S: 7/16"-20UNF, female with Schrader opener and snubber (snubber only with high temperature diaphragm)
- A: 7/16"- 20UNF, 1/4" SAE male
- U: 6 mm solder. 80 mm length. ODF
- X: 1/4" solder. 80 mm length. ODF
- K: 1 m capillary tube with 1/4" SAE flare nut and Schrader opener
- L: 1 m capillary tube and 1/4" ODM solder connector

### Technical data

Protection according to EN 60529 / IEC 529	IP 00 IP 30 with Terminal Cover IP 65 with PS3-Nxx Cables with Plug or Plug DIN 43650
Inductive load (AC15)	3 A / 230V AC 1.5 A with Microswitch Standard 0.1 A with Gold Plated Contacts
Inductive load (DC)	0.1 A / 230V DC
Motor rating amps (FLA)	6 A / 120/240V AC 2.5 A with Microswitch
Lock rotor amps (LRA)	36 A / 120/240V AC 15 A with Microswitch

Temperature range TS Ambient, storage and transportation medium	-40°C ... 70°C -40°C ... 70°C (150°C Range 6)
Pressure range PS	- 0.6 .. 43 bar
Type of contacts	1 SPDT
Medium compatibility	HFC, HCFC, HFO/HFO Blends (refrigerant safety group A1)

For more information see the technical bulletin of PS3



## PS4 series pressure controls

With fixed settings for OEM applications; minimum order quantity 100 pieces

### Features

- High- and low pressure switches
- Precise settings and repeatability
- Cable version with IP67 (IP20 for terminal version)
- Normally open/closed electrical contacts (under standard operating conditions)
- TUV approved versions (W & B)
- UL approved

### Standards

-  acc. Low Voltage Directive and EN60335 (VDE)
- CE0035 acc. Pressure Equipment Directive
-  cRUs Underwriter Laboratories file Nr. E258370



PS4

### Selection table - low pressure switches with automatic reset; open on falling pressure

Type	Part no.	Setting (bar)		Connector (QC) cable (m)	Test pressure	EN 12263	Contact function	Application	Pressure connection
		Cut-out	Cut-in						
PS4-W1	808269	0.3	1.5	3.0	25 bar	PSL	Open on falling pressure	Low pressure	6mm
PS4-A1	808266	0.4	1.4	1.5		none			7/16-20UNF*
PS4-W1	808208	0.6	1.8	1.5		PSL			6mm
PS4-W3	808235	0.6	1.8	QC					7/16-20UNF*
PS4-W1	808251	0.6	1.8	3.0		PSL			6mm
PS4-W1	808209	0.7	2.1	1.5					7/16-20UNF*
PS4-W1	808241	0.7	2.4	3.0		none			6mm
PS4-W3	808284	1.2	1.9	QC					7/16-20UNF*
PS4-A1	808247	1.5	2.5	2.5		PSL			6mm
PS4-A1	808229	1.5	3.0	1.5					7/16-20UNF*
PS4-W1	808210	1.7	3.4	1.5		None			6mm
PS4-W1	808249	1.7	3.4	1.5					7/16-20UNF*
PS4-W1	808271	1.8	3.2	1.5					6mm
PS4-A1	808276	3.3	4.8	1.5					

Note: \*) 7/16-20UNF female with Schrader valve opener

## Selection table - high pressure switches with automatic reset; Open on rising pressure

Type	Part no.	Setting (bar)		Connector (QC) cable (m)	Test pressure	EN 12263	Contact Function	Application	Pressure connection
		Cut-out	Cut-in						
PS4-W1	808200	18	13	1.5	41 bar	PSH	Open on rising pressure	High pressure	7/16-20UNF*
PS4-W1	808265	18	13	3.0					6mm
PS4-W1	808201	26	20	1.5					7/16-20UNF*
PS4-W1	808224	26	20	3.0					6mm
PS4-W1	808 282	24	18	5.0					
PS4-W3	808236	26	20	QC					7/16-20UNF*
PS4-A1	808260	26	20	1.5	55 bar	None	Open on rising pressure	High pressure	1/4"
PS4-W1	808203	28	21	1.5		PSH			7/16-20UNF*
PS4-A1	808233	28	21	1.5		none			1/4"
PS4-A1	808244	28	21	1.5		PSH			7/16-20UNF Female with Schrader Opener
PS4-W3	808273	29	22.8	QC		None			
PS4-A1	808237	29.5	22.5	1.5		None			
PS4-A1	808238	31	24	1.5	55 bar	PSH	Open on rising pressure	High pressure	6mm
PS4-A1	808248	32	24	2.5					
PS4-W1	808205	42	33	1.5					
PS4-W3	808242	42	33	QC					
PS4-W5	808278	45	34	1.5					
PS4-W1	808261	45	35	1.5					

## Selection table - high pressure switches with automatic reset; Close on rising pressure

Type	Part no.	Setting (Bar)		Connector (QC) Cable (m)	Test pressure	EN 12263	Contact function	Application	Pressure connection
		Cut-Out	Cut-in						
PS4-A2	808212	13	18	1.5	41 bar	PSH	Close on rising pressure	Fan control	7/16-20UNF Female with Schrader Opener
PS4-W2	808274	14.6	20	1.5					
PS4-A2	808264	17	22.6	1.5					
PS4-W2	808227	22	28	1.5	55 bar	PSH			

## Selection table - high pressure switches with manual reset; Open on rising pressure

Type	Part no.	Setting (Bar)		Connector (QC) Cable (m)	Test pressure	EN 12263	Contact function	Application	Pressure connection
		Cut-Out	Cut-in						
PS4-BL	808202	26	-	1.5	41 bar	PZH	Open on rising pressure	High pres- sure EN 378	7/16-20UNF Female with Schrader Opener
PS4-BL	808204	28	-	1.5	55 bar				
PS4-BL	808206	42	-	1.5	69 bar				

## Technical data

Type	PS4-A	PS4-W	PS4-BL
Electrical data	0.1 – 6A		0.1 – 6A
Inductive load 230 VAC	2A		2A
Inductive load (DC <28V)	6A		6A
Motor rating FLA 230 VAC	36A		36A
Motor rating LRA 230 VAC	25-100mA		25-100mA
Gold plated contacts (option)			
Electrical connection	Cable or Terminal (QC) version		Cable version
Life time	> 100.000 Cycles		
Protection class IEC 529 / DIN 40050	IP67 (IP20 for Terminal version)		

## PRS / TS series pressure and temperature sensors

PRS pressure sensors and TS temperature sensors are cost-effective solutions for AC (except mobile application) and heat pumps applications.

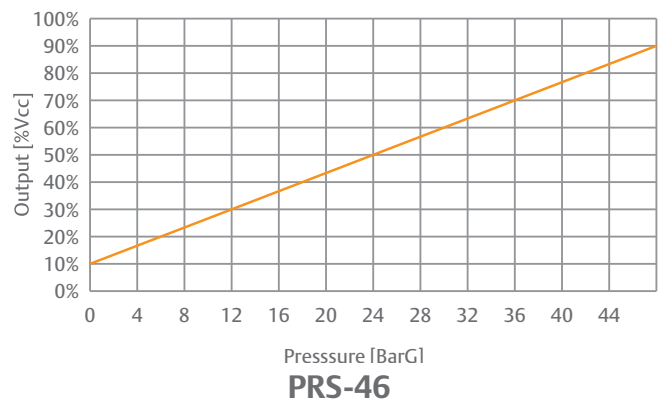
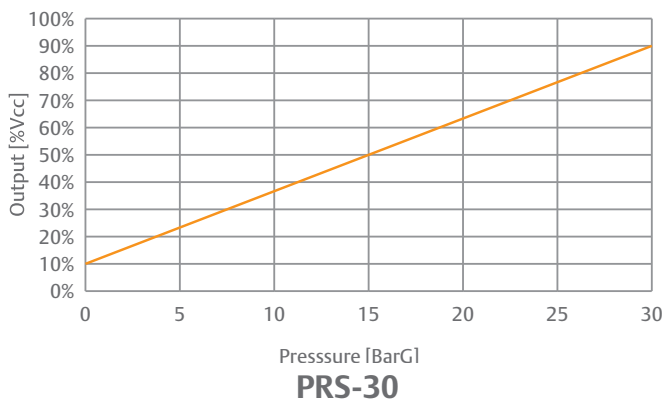
### PRS-30 and PRS-46 pressure sensors

	Low pressure sensor PRS-30	High pressure sensor PRS-46
PCN	099303	099304
Operating pressure range	0~30barG	0~46barG
Supply voltage	5.0±0.5 VDC	
Output voltage	0.5~ 4.5VDC	
Applicable refrigerants	r410a,R134a,R404a,R407c,R507	
Total error band	±2.5%FS	
Sensitive element protection index	IP67	
Cable length	2m	
Connector type	xH-3Y, White	



PRS-30 / PRS-46

### Output characteristics



### TS-110 and TS-150 temperature sensors

	Low temp. sensor TS-110	High temp. sensor TS-150
PCN	099301	099302
Operating temperature range	-40~110°C	-50~150°C
Standard resistance (at 25°C)	10KΩ ± 1%	50KΩ ± 1%
Sensitive element protection index	IP67	
Sensitive element housing material	Stainless steel	
Sensitive element housing dimension	Φ6 * 30 mm	
Cable type	24AWG, Black	22AWG, Blue
Cable length	2m	
Connector type	TJC3-2Y, White	



TS-110





TS-150

## FD 113 series differential pressure controls

### Features

- Immediate reset (no cooling down period)
- Precise timing
- Adjustable time delay from 30 ... 150 sec (ZU types)
- Separate output signals for operation and alarm
- Suitable for supply voltage 24...240 V AC / DC
- Pressure connection: Flare  $\frac{7}{16}$ "-20 UNF,  $\frac{1}{4}$ " SAE male

### Standards

-  per Low Voltage Directive
-  File No. E85974



FD 113

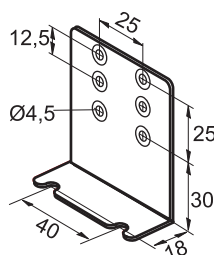
Type	Part no.	Time delay		Cut out		Cut in fixed setting (bar)	Max. differential pressure (bar)	Max. proof pressure (bar)
		Adjustable	Factory setting	Adjusting range $\Delta p$	Factory setting			
		(sec.)	(sec.)	(bar)	(bar)			
FD 113	0 710 173	-	-	0.3 ... 4.5	0.7	0.2 Above Cut-Out		
FD 113 ZU	3 465 300	30 ... 150	120*					
FD 113 ZU (A22-057) Copeland™ brand products	0 711 195	-	115* Fix	-	0.63 Fix	Appr. 0.9	-0.8 ... 12	25

Note: \*) Time Delay tolerance +/- 20%.

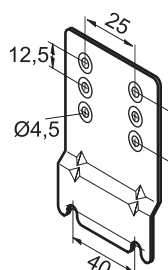
### Technical data

Inductive amp. (AC)	3.0 A / 230 V AC
Inductive amp. (DC)	0.1 A / 230 V DC
Protection acc. to EN 60 529	IP 30
Max. temperature at pressure connection	+70°C

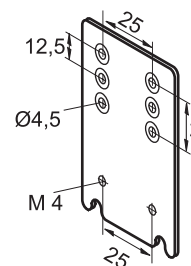
### Accessories



Mounting Bracket Angle  
Part No.: 803 799



Mounting Plate for Units with Hood  
Part No.: 803 801



Extension Bracket  
Part No.: 803 800

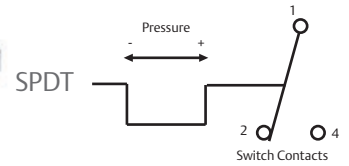


# FF444 industrial pressure control

The FF444 Industrial Pressure Controls are general purpose switches suitable for oil, water and air at pressures up to 465 psig.

## Typical applications

- Industrial Pressure Control
- Pneumatic and Hydraulic Systems
- Oil Lubrication Systems
- Pump/Compressor Control



## Typical applications

- SPDT snap-action contacts
- Independent adjustable upper and lower switching pressures
- Diaphragm-type control for low pressure applications (Buna N diaphragm):
  - resistant to mineral oils
  - medium temperatures up to 160°F
- Transparent polyamide hood – U.V. resistant
- Surface mounted Type 4 enclosure
- Optional manual reset locking on pressure rise

## Specifications

- Control circuit rating: 5 A (B300)
- Rated voltage: 300 VAC maximum
- Ambient operating temperature: -10°F to +120°F
- Medium temp. at pressure element: + 160°F Max.
- Resistance to vibration: (4 Hz to 1000 Hz) 4g
- Weight: 1.1 lbs.
- UL/CUL file number: E85974

## Options

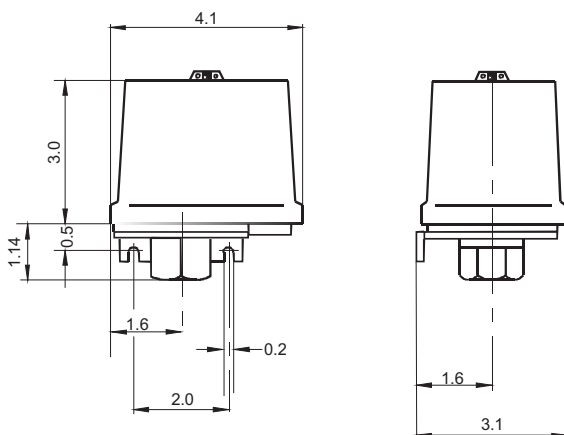
- Optional manual reset locking on pressure rise

Description	120VAC	240VAC
"Maximum motor rating single phase"	1/2 hp	1 -1/2 hp
Motor rated, FLA	10 A	10 A
Motor rated, LRA	60 A	60 A

## Nomenclature example: FF444-V2-DRF

FF444	V2					D	R	F
Industrial Pressure Control		Lower Switch Point Range	Upper Switch Point Range	Smallest Differential @ Lower-Higher end of Range	Standard Settings	Valve Design D = Diaphragm	Reset Type A = Auto R = Manual, Locking on Pressure Rise	Pressure Connection A = 7/16"-20 UNF male F = 1/4" - 18 NPTF
	V4	6-217 psig 0.4-15 bar	15-232 psig 1-16 bar	9-14 psig 0.6-1 bar	"58/174 psig 4/12 bar"			
V5	12-435 psig 0.8-30 bar	29-464 psig 2-32 bar	17-29 psig 1.2-2 bar	"145/290 psig 10/20 bar"				

## Dimensional data (in)



## Ordering information

PCN	Description
097311	FF444-V4-DAF
097379	FF444-V4-DRF
Motor rated, LRA	60 A

# TS1 series thermostats

## Features

- Adjustable temperatures and differentials
- Chatter resistant contacts (bounce-free)
- High operational current, locked rotor max. 144 A (LRA)
- Standard SPDT with same operational current rating for both contacts
- Captive terminal and cover screws
- Range and differential individually lockable by wire seal

## Technical data

Type of contacts	1 SPDT
Heating load (AC1)	24A / 230V AC
Inductive load (AC15)	10A / 230V AC
Inductive load (DC13)	0.1A / 230V DC
Motor rating (FLA):	24 A / 120/240V AC
Locked rotor (LRA):	144 A / 120/240V AC
Ambient Temperature Range	-50°C to +70°C
Cable Entry	Grommet PG 16
Protection Acc. to EN 60529 / IEC 529	IP 44 (IP 30 with Selector Switch)
Bellows Heater at Vapor Charge	82 K Ohm. 230 V AC / DC (12 and 24 V DC Upon Request)



TS1 Top Operated

TS1 Flush Mounted

TS1 Front Operated

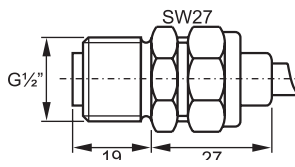
## Standards

- per Low Voltage Directive
- US LISTED Underwriter Laboratories File Nr: E85974

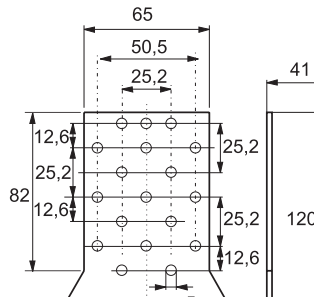
Type	Part no.	Adjustment range		Lowest setpoint	Factory setting	Max. bulb temp.	Temperature sensor	
		Upper setpoint	Differential setpoint $\Delta T$				Charge	Cap. tube length
		(°C)	(K)					
Thermostats top operated								
Thermostats without off-switch								
TS1-A2P	4 530 400	-30 ... +15	1.5 ... 16	-36	-1 / -6	+150	Vapor	2m Capillary
TS1-A3P	4 356 700	-10 ... +35	1.5 ... 16	-23	+3 / -2			
TS1-A1A	4 351 500	-45 ... -10	1.5 ... 16	-55	-18 / -20	+150	Vapor	2m Capillary and Bulb
TS1-A2A	4 351 600	-30 ... +15	1.5 ... 16	-36	-1 / -6			
TS1-A3A	4 352 500	-10 ... +35	1.5 ... 16	-23	+3 / -2			
TS1-A4F Defrost- and Universal Thermostat	4 351 800	-30 ... +35	2.8 ... 20	-35	+5 / 0	+100	Adsorption	2m Capillary and Bulb
TS1-A5F	4 458 400	+20 ... +60	3 ... 10	+10	+35 / +30			
Thermostats with off-switch								
TS1-B2A	4 366 800	-30 ... +15	1.5 ... 16	-36	-1 / -6	+100	Adsorption	
TS1-B3A	4 366 900	-10 ... +35	1.5 ... 16	-23	+3 / -2			
TS1-B4F	4 367 000	-30 ... +35	2.8 ... 20	-35	+5 / 0			
Frost monitors top operated								
Frost monitors without off-switch								
TS1-C0P	4 352 100	+4.5 ... +20	2.5 fix	+2	4,5 / +2	+150	Vapor	6m Capillary
TS1-D0P Low Temp. Cut Out	4 352 200	+4.5 ... +20	Man. Reset ca. 2.5 fix	+2	+2			

Type	Part no.	Adjustment range		Lowest setpoint	Factory setting	Max. bulb temp.	Temperature sensor	
		Upper setpoint	Differential setpoint $\Delta T$				Charge	Cap. tube length
		(°C)	(K)					
Room thermostats top operated Room thermostats without off-switch, including insulation console								
TS1-A3E	4 355 300	-10 ... +35	1.5 ... 16	-23	+20 / +18	+70	Vapor	0m coil
Room thermostats with off-switch, including insulation console								
TS1-B3E	4 344 500	-10 ... +35	1.5 ... 16	-23	+20 / +18	+70	Vapor	0m coil
Thermostats front operated Thermostats without off-switch								
TS1-E1A	4 361 000	-45 ... -10	2 ... 16	-55	-18 / -20	+150	Vapor	2m capillary and bulb
TS1-E2A	4 356 200	-30 ... +10	1.5 ... 15	-36	+4 / +2			
TS1-E3A	4 365 200	-10 ... +25	1.5 ... 15	-23	+3 / -2			
TS1-E4F Defrost- and universal thermostat	4 367 500	-25 ... +30	2.8 ... 20	-30	+5 / 0	+100	Adsorption	
TS1-E5F	4 338 100	+20 ... +60	3 ... 10	+10	+35 / +30			
Thermostats with off-switch								
TS1-F1A	4 367 100	-45 ... -10	2 ... 16	-55	-18 / -20	+150	Vapor	2m capillary and bulb
TS1-F2A	4 367 200	-30 ... +10	1.5 ... 15	-36	-1 / -6			
TS1-F3A	4 367 400	-10 ... +25	1.5 ... 15	-23	+3 / -2			
Room thermostats front operated Room thermostats without off-switch, including insulation console								
TS1-E1E	4 365 300	-45 ... -10	2 ... 16	-55	-18 / -20	+70	Vapor	0m coil
TS1-E2E	4 356 800	-30 ... +10	1.5 ... 15	-36	+4 / +2			
Room thermostats with off-switch, including insulation console								
TS1-F1E	4 368 000	-45 ... -10	2 ... 16	-55	-18 / -20	+70	Vapor	0m coil
TS1-F2E	4 368 100	-30 ... +10	1.5 ... 15	-36	+4 / +2			
TS1-F3E	4 368 200	-10 ... +25	1.5 ... 15	-23	+20 / +18			
Thermostats for flush mounting Thermostats for flush mounting without off-switch								
TS1-G2A	4 355 400	-30 ... +15	1.5 ... 15	-36	+4 / +2	+150	Vapor	2m capillary and bulb
TS1-G4F Defrost- and universal thermostat	4 355 600	-30 ... +35	2.8 ... 20	-35	+5 / 0	+100	Adsorption	
Thermostats for flush mounting with off-switch								
TS1-H2A	4 355 500	-30 ... +15	1.5 ... 15	-36	-1 / -6	+150	Vapor	2m capillary and bulb
TS1-H3A	4 367 900	-10 ... +35	1.5 ... 15	-23	+3 / +2			

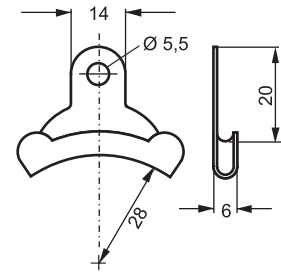
## Accessories



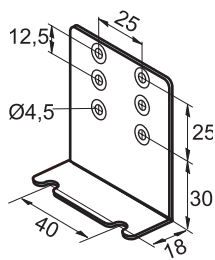
Capillary tube gland, brass  
for Bulb Style A / C  
Part No.: 803 807



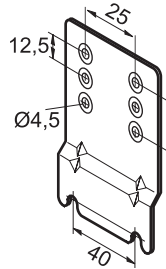
Universal mounting bracket  
Part No.: 803 798



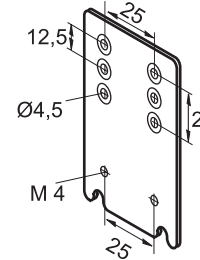
Capillary tube holder  
For frost monitors standard  
Part No.: 803 778



Mounting bracket angle  
Part no.: 803 799



Mounting plate  
for units with hood  
Part no.: 803 801



Extension bracket  
Part no.: 803 800



Locking plate  
Part No.: 803783 (20 pcs)



# Mechanical pressure regulators

## Selection guide for pressure regulators

Selection criteria	Series			
	ACP	CPHE	PRE	PRC
Capacity regulator	+	+		
Evaporator pressure regulator			+	
Crankcase pressure regulator				+

## CPHE series hot gas bypass regulators

### Features

- High-quality materials and processes for high reliability and long lifetime
- Superior partial load performance due to double seat orifice design (CPHE3 to CPHE6)
- Modular design for economical logistics and easy assembly and servicing
- External equalization

Specific connection sizes and flanges available on request.

For selection see last page of “Thermo-Expansion Valves” chapter.

### Technical data

Adjustment range	-0.4 ... 5 Bar
Factory setting	1.4 Bar
Max. allowable pressure PS	35 Bar
Medium temperature range TS	-40°C ... 120°C
Ambient temperature range	-40 ... 50°C
Transport temperature range	-40 ... 70°C

CPHE



### Capacity data CPHE

Type	Nominal bypass capacity $Q_n$ (kW)									Orifice	Standard flange solder/ODF		Power assembly
	R134a	R22	R407C	R404A / R507	R450A	R513A	R448A	R449A	R1234ze		mm	Inch	
CPHE - 1X	3.5	5	5.8	4.5	3.4	2.6	5.9	5.8	3.1	X 22440-B5B	C 501 - 7 mm 12 x 16	C 501 - 7 $1/2 \times 5/8$	X7818 - 1
CPHE - 2X	6.4	9	10.4	8.1	6.2	4.8	10.6	10.5	5.6	X 22440-B8B	A 576 mm 16 x 22 (22 x 280 ODM)	A 576 $5/8 \times 7/8$ ( $7/8 \times 1-1/8$ ODM)	
CPHE - 3X	12	17	20	15	12	9	20	20	10	X 11873-B5B	10331 22 x 22	10331 $7/8 \times 7/8$ ( $1-1/8 \times 1-1/8$ ODM)	
CPHE - 3.5X	13	19	22	17	13	10	22	22	12	X 9117-B7B	9153 mm 22 x 22	9153 $7/8 \times 7/8$	
CPHE - 4X	16	23	27	21	16	12	27	26	14	X 9117-B9B			
CPHE - 5X	21	29	34	26	20	15	35	34	18	X 9166-B10B			
CPHE - 6X	35	50	58	45	34	26	59	58	31	X 9144-B13B	9149 22 x 22	9149 $7/8 \times 7/8$	

Nominal capacities at +38°C condensing temperature, +4°C evaporating temperature (saturated temperatures / dew point) and 1 k liquid subcooling at the inlet of the expansion valve.

Specific connection sizes and flanges available on request. For selection, see last page of “thermo-expansion valves” chapter.

Note: see “controls navigator” for selection

## PRE and PRC series evaporator and crankcase pressure regulator

### Features

- Compact design permits minimal space requirements
- Schrader valve on inlet for ease of setting
- Direct operated regulator
- Balanced port design provides accurate pressure control
- Copper tubes for easy soldering



### Technical data

Refrigerants	HFC, HCFC
Oil compatibility	Mineral, Alkyl Benzene and Polyol-Ester (POE) Lubricants
Max. allowable pressure PS Max. test pressure PT	25 Bar 30 Bar
Material housing	CW509L (EN12420)
Temperature range	Storage -30°C to 80°C Medium TS -30°C to 80°C Ambient -30°C to 80°C

### PRE series evaporator pressure regulator

#### Selection

Type	Part no.	Tube connection ODF	Nominal capacity* Q <sub>n</sub> (kW)			
			R134a	R404A / R507	R407C	R22
PRE - 11A	800 380	16 mm - 5/8"	3.0	4.5	4.5	4.8
PRE - 11B	800 381	22 mm - 7/8"				
PRE - 21C	800 382	28 mm	7.4	11.1	11.1	11.9
PRE - 21D	800 383	1 - 1/8"				

\*Nominal capacities are based on evaporating temperature +4°C, condensing temperature +38°C and a pressure drop of 1K.

### PRC series crankcase pressure regulator

#### Selection

Type	Part no.	Tube connection ODF	Nominal capacity* Q <sub>n</sub> (kW)			
			R134a	R404A / R507	R407C	R22
PRC - 11A	800 384	16 mm - 5/8"	3.0	4.5	4.5	4.8
PRC - 11B	800 385	22 mm - 7/8"				
PRC - 21C	800 386	28 mm	7.4	11.1	11.1	11.9
PRC - 21D	800 387	1 - 1/8"				
PRC - 21E	800 388	35 mm - 1-3/8"				

\*Nominal capacities are based on evaporating temperature +4°C and condensing temperature +38°C and a pressure drop of 1 K.

## Capacity table

Selection for operating conditions other than +38°C / +4°C and 1 K liquid subcooling at the inlet of the valve:  
(Capacities are based on a pressure drop of 0.07 Bar).

Refrigerant	Evaporating temperature °C	Capacity (kW) valve setting °C													
		Valve Size 1: PRC-11x							Valve Size 2: PRC-21x						
		-20	-15	-10	-5	0	+5	+10	-20	-15	-10	-5	0	+5	+10
R22	-29	2.3	3.4	4.4	4.8	4.9			5.8	8.8	10.0	10.0	10.0		
	-21		2.4	4.1	5.4	5.8				6.5	12.1	12.1	12.1		
	-14			2.7	4.9	6.2					8.1	13.8	13.8		
	-8				3.5	5.3						9.0	15.4		
	-3					3.1							9.9		
R407C	-6				3.1	4.8						7.9	13.9		
	-1					2.9							9.2		
R134a	-6					2.1	3.9	5.3					5.2	10.3	12.9
	1						2.4	4.7						6.1	12.2
	7							3.3							8.1
R404A/ R507	-27	1.6	2.9	3.7	3.9				4.8	8.2	8.2	8.2			
	-20		1.9	3.5	4.5					5.7	9.8	9.8			
	-14			2.2	4.5						6.8	11.6			
	-10				3.1							8.1			





## General information

Technical data are correct at the time of printing. Updates may occur, and should you need confirmation of a specific value, please contact Emerson clearly stating the information required.

Emerson cannot be held responsible for errors in capacities, dimensions, etc., stated herein. Products, specifications and data in this literature are subject to change without notice.

The information given herein is based on data and tests which Emerson believes to be reliable and which are in accordance with today's technical knowledge. It is intended for use by persons having the appropriate technical knowledge and skill, at their own discretion and risk. Our products are designed and adapted for fixed locations. For mobile applications, failures may occur.

The suitability for this has to be assured from the plant manufacturer, which may include making appropriate tests.

### Note:

The components listed in this catalogue are not released for use with caustic, poisonous or flammable substances. Emerson cannot be held responsible for any damage caused by using these substances.

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