Emerson Climate Technologies

Flow Controls Catalog




EMERSON™
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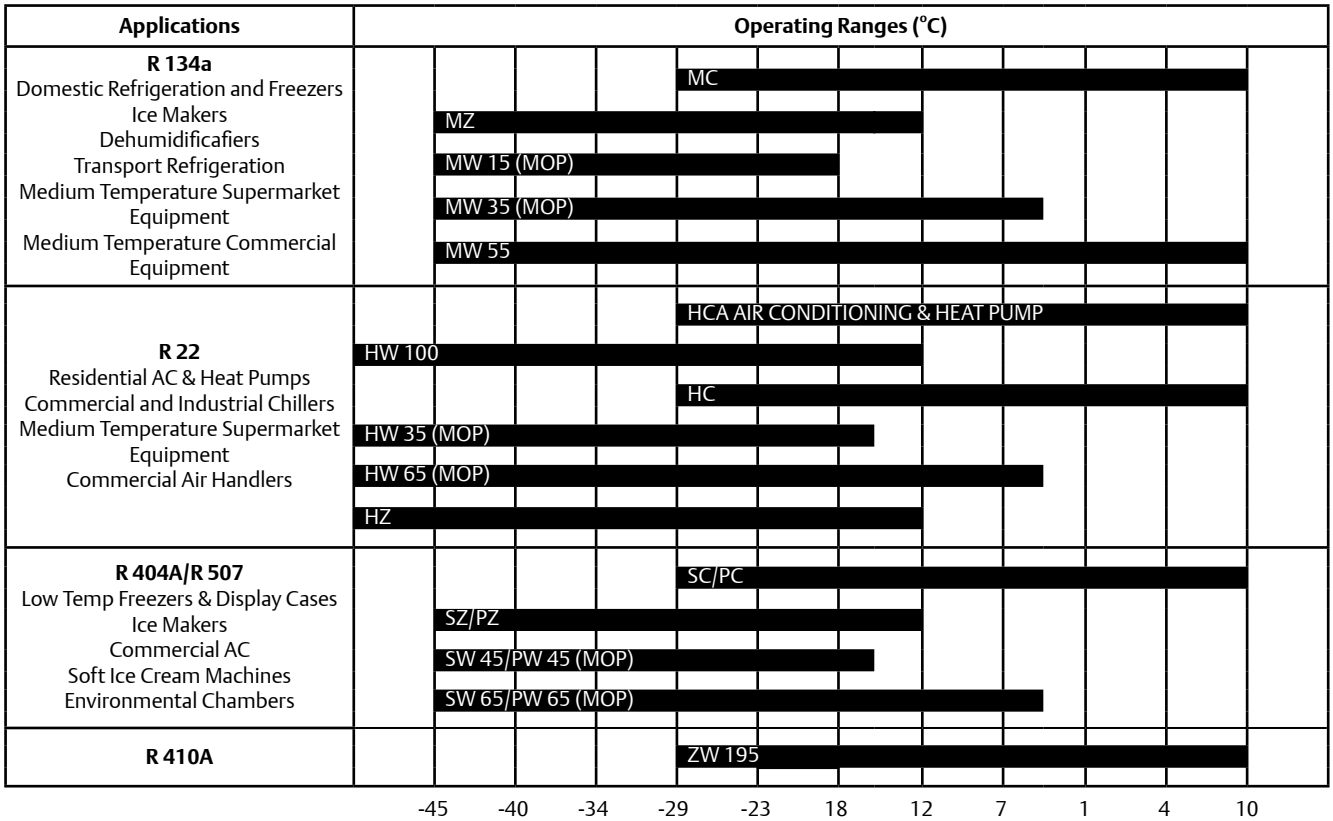
Thermal Expansion Valves Quick Selector Guide:

Thermal Expansion Valves														
Application	Nominal Capacity Table in Tons		Valve Family	Adjustable Superheat	Internal Check	Style			Connections		Configuration		Port	
	R 22	R 410				Hermetic	Replaceable Power Element	Field Serviceable	SAE	ODF	Angle	Straight	Conven-tional	Balanced
Air-conditioning and Refrigeration	1/4 ~ 5	1 1/4 ~ 5	AA	Yes		Yes				Yes		Yes	Yes	
	1/4 ~ 5	1 1/4 ~ 5	AN			Yes				Yes	Yes	Yes	Yes	
	1/2 ~ 6	1/2 ~ 7 1/2	BA	Yes		Yes				Yes		Yes		Yes
	1/2 ~ 6	1/2 ~ 7 1/2	BN			Yes				Yes	Yes	Yes		Yes
		1 ~ 7	C	Yes	Yes	Yes			Yes	Yes	Yes	Yes		Yes
	8 ~ 20		HFES	Yes			Yes			Yes	Yes	Yes		Yes
	1/7 ~ 5 1/2		TI	Yes				Yes	Yes		Yes		Yes	
		12 ~ 20	TF	Yes			Yes			Yes		Yes		Yes
	1/2 ~ 12		TCL	Yes				Yes	Yes	Yes	Yes	Yes	Yes	
	11 & 14		TJL	Yes				Yes		Yes	Yes	Yes	Yes	
	14 & 18		TJR	Yes				Yes		Yes	Yes	Yes		Yes
	22 ~ 45		TER	Yes				Yes		Yes	Yes	Yes		Yes
	55		TIR	Yes				Yes		Yes	Yes	Yes		Yes
	70 & 85		THR	Yes				Yes		Yes	Yes	Yes		Yes
	100		TMR	Yes				Yes		Yes	Yes	Yes		Yes
	10 ~ 40		TRAE+	Yes			Yes			Yes		Yes		Yes
	50 ~ 70		TRAE	Yes		Yes				Yes		Yes		Yes
Ultra-low Temperature	1/2 ~ 24		ZZ	Yes				Yes	Yes	Yes	Yes	Yes	Yes	
Liquid Injection Valve			LCL	Yes				Yes	Yes	Yes	Yes	Yes	Yes	

Charge Code Selector:



A-Series Thermal Expansion Valve

The A-series is used for heat pump, air conditioning, food services and commercial applications.

A-Series

Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- Hermetic, leak-free construction
- Compact size allows installation in limited spaces
- Mass spectrometer tested to ensure less than 0.10 oz/year
- Maximum working pressure: 700psig (48 bar)
- UL/CUL file number: SA5312

Nomenclature:

A	A	E	2	H	C	5FT	3/8 x 1/2	ODF	S/T
Valve Series Hermetic Design	Superheat Adjustment A = Adjustable N = Non-Adjustable	Equalizer E=External (Omit for Internal)	Nominal Capacity (Tons)	Refrigerant Code H = R 22 M =R 134a N =R 407C S = R 404A	Charge Code C = medium temp CA = heat pump W(MOP) = press. limiting Z = low temp	Capillary Tube Length 30 IN & 5 FT (std)	Inlet x Outlet Connection Sizes 1/4 x 3/8 3/8 x 1/2 1/2 x 5/8	Connection Type SAE=flare ODF = solder Chatleff (optional) Aeroquip (optional)	S/T = straight-thru

Nominal Capacity Table in Tons (kW):

R 134a	R 22	R 407C	R 404A/507
1/8 (0.4)	1/5 (0.7)	1/5 (0.7)	1/8 (0.4)
1/4 (0.9)	1/4 (0.9)	1/4 (0.9)	1/4 (0.9)
1/2 (1.8)	1/2 (1.8)	1/2 (1.8)	1/2 (1.8)
3/4 (2.7)	1 (3.5)	1 (3.5)	3/4 (2.7)
1 (3.5)	1-1/2 (5.3)	1-1/4 (4.4)	1 (3.5)
1-1/2 (5.3)	2 (7.0)	2 (7.0)	1-1/4 (4.4)
2 (7.0)	2-1/2 (9.0)	2-1/2 (9.0)	2 (7.0)
2-1/2 (9.0)	3 (11.0)	3-1/4 (11.5)	2-1/4 (8.0)
3 (11.0)	4 (14.0)	4 (14.0)	2-1/2 (8.8)
4 (14.0)	5 (17.0)	5-1/4 (19.0)	3-1/2 (12.0)

Nominal Capacity Condition:

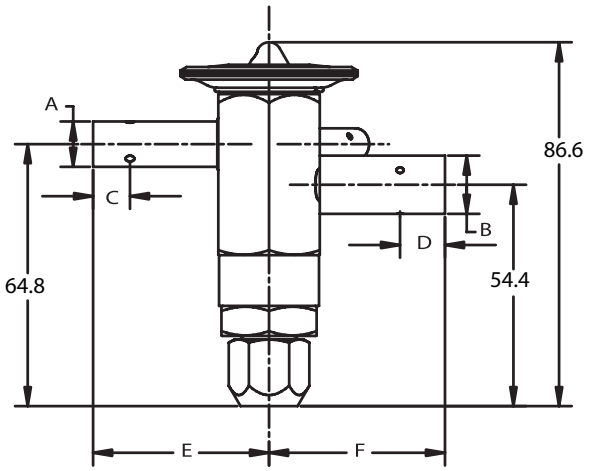
Refrigerant	Evaporating Temperature	Condensing Temperature	Sub-Cooling
R 22, R 134a, R 404A, R 507, R 407C	+4°C	+38°C	0K

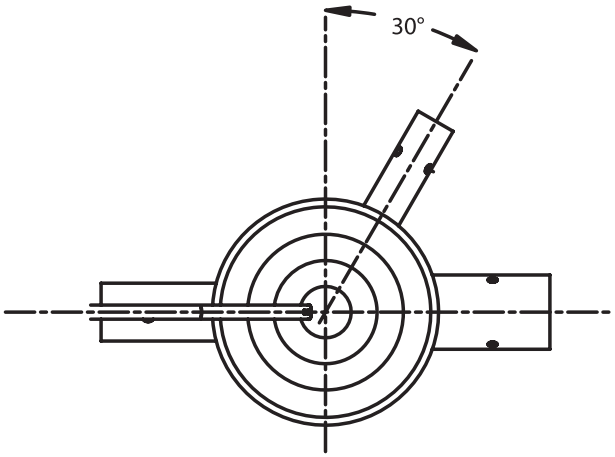
Ordering Information:

Refrigerant	Series	Tons	Charge	Cap Tube	Static Superheat	Connection Size Connections	PCN
R 22 R 407C	AAE	1/2	HC (-30°C ~ +10)	5 feet/1.5 meters	6A (3.3K)	3/8 ODF x 1/2 ODF S/T	065633
		1		30 inch/0.75 meters		3/8 ODF x 1/2 ODF S/T	062050
		1-1/2				3/8 ODF x 1/2 ODF S/T	062841
		2				3/8 ODF x 1/2 ODF S/T	049632
		3				1/2 ODF x 5/8 ODF S/T	060643
		4	HCA (-30°C ~ +10)			1/2 ODF x 5/8 ODF S/T	057270
		5	HC (-30°C ~ +10)			1/2 ODF x 5/8 ODF S/T	059683
R 404A R 507	AAE	1/2	SC (-30°C ~ +10)	5 feet/1.5 meters	6A (3.3K)	3/8 ODF x 1/2 ODF S/T	066085
		3/4				3/8 ODF x 1/2 ODF S/T	066086
		1				3/8 ODF x 1/2 ODF S/T	066087
		1-1/4		30 inch/0.75 meters		3/8 ODF x 1/2 ODF S/T	066081
		2		5 feet/1.5 meters		3/8 ODF x 1/2 ODF S/T	065330
		2 -1/4				3/8 ODF x 1/2 ODF S/T	066084
		3-1/2				1/2 ODF x 5/8 ODF S/T	065332

Refrigerant	Series	Tons	Charge	Cap Tube	Static Superheat	Connection Size Connections	PCN
R 134a	AA	1/4	MC (-30°C ~ +10)	30 inch/0.75 meters	6A (3.3K)	1/4 ODF x 3/8 ODF S/T	062051
						1/4 ODF x 3/8 ODF S/T	065341
	AAE	1		5 inch/1.5 meters		3/8 ODF x 1/2 ODF S/T	065631
		1-1/2		30 inch/0.75 meters		3/8 ODF x 1/2 ODF S/T	064096
		2				3/8 ODF x 1/2 ODF S/T	064097
		3		30 inch/0.75 meters		3/8 ODF x 1/2 ODF S/T	064225
		4		5 inch/1.5 meters		1/2 ODF x 5/8 ODF S/T	065333

A Series Dimensional Data (AAE Series) (mm):





Connection (inch)		Inlet (mm)		Outlet (mm)		E	F
Inlet	Outlet	A	C MIN	B	D MIN		
1/4 ODF	3/8ODF	6.4	8.1	9.7	8.1	43.2	43.9
3/8 ODF	1/2ODF	9.7	8.1	12.7	9.7	43.9	43.9
1/2 ODF	5/8 ODF	16	9.7	15.5	12.7	44.5	44.5

B-Series Thermal Expansion Valve

The B series is a balanced ported valve. Typical applications include: AC systems and heat pump systems that operate over widely varying operating conditions.

B-Series

Features

- Stainless steel power element eliminates corrosion and prevents 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
- Maximum Working Pressure: 700 psig (48 bar)
- UL/CUL file number: SA5312

Nomenclature:

B	A	E	2	Z	W195	5 FT	3/8 x 1/2	ODF	S/T
Valve Series	A=Adjustable N= Adjustable	E= External Equalizer Internal	Nominal Capacity (Tons)	Refrigerant Code H=R 22 N=R 407C M=R 134a Z=R 410A	Charge Code C=Medium Temp CA=Heat Pump W195=MOP 195 psig Z=Low Temp	Capillary Tube Length 5 inch/1.5 inch	Connection Type Inlet X Outlet	ODF= solder	S/T= Straight-thru

Nominal Capacity Table in Tons (kW):

R 134a	R 22/R 407C	R 410A
1/2 (1.8)	1/2 (1.8)	1/2 (1.8)
3/4 (2.7)	1 (3.5)	1 (3.5)
1 (3.5)	1-1/2 (5.3)	1-1/2 (5.3)
1-1/2 (5.3)	2 (7.0)	2 (7.0)
2 (7.0)	2-1/2 (9.0)	2-1/2 (9.0)
2-1/4 (8.0)	3 (11.0)	3-1/2 (12.0)
3 (11.0)	4 (14.0)	4-1/2 (16.0)
3-1/2 (12.0)	5 (17.0)	6 (21.0)
4-1/4 (15.0)	6 (21.0)	7-1/2 (26.0)

Nominal Capacity Condition:

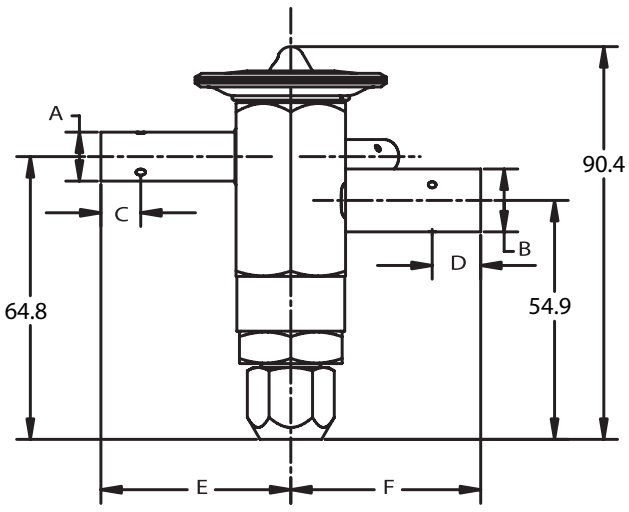
Refrigerant	Evaporating Temperature	Condensing Temperature	Cooling Temperature
R 22, R 134a, R 407C	+4°C	+38°C	0K

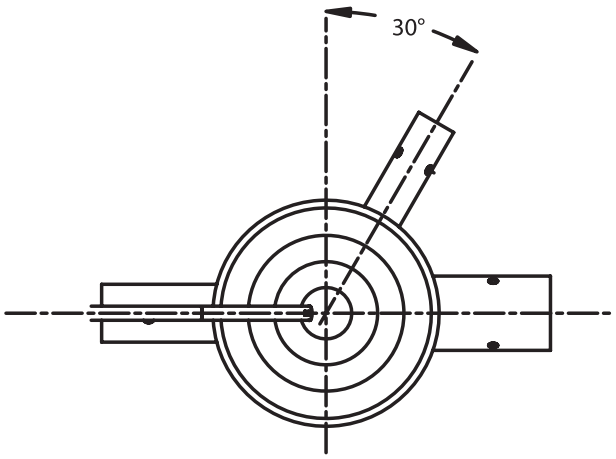
Ordering Information:

Refrigerant	Series	Ton	Charge Type	Capillary Tube Length	Static Superheat	Connection	PCN
R 22	BAE	1	HCA	30 inch/ 0.75 meters	6A (3.3K)	3/8 ODF x 1/2 ODF S/T	063200
		1-1/2	HCA			3/8 ODF x 1/2 ODF S/T	061954
		2	HCA			3/8 ODF x 1/2 ODF S/T	061955
		2-1/2	HCA			3/8 ODF x 1/2 ODF S/T	061956
		3	HCA			3/8 ODF x 1/2 ODF S/T	061957

Refrigerant	Series	Ton	Charge Type	Capillary Tube Length	Static Superheat	Connection	PCN
R 22	BAE	3	HCA	5 feet/ 1.5 meters	6A (3.3K)	1/2 ODF x 5/8 ODF S/T	063019
			HW100			1/2 ODF x 7/8 ODF S/T	064051
		4	HCA			1/2 ODF x 5/8 ODF S/T	065335
		5	HCA			1/2 ODF x 5/8 ODF S/T	061964
		6	HCA			1/2 ODF x 5/8 ODF S/T	062736
R 407C	BAE	1	NW100	30 feet/0.75 meters	6A (3.3K)	3/8 ODF x 1/2 ODF S/T	065551
		2				3/8 ODF x 1/2 ODF S/T	065552
		3		5 feet/ 1.5 meters		1/2 ODF x 5/8 ODF S/T	065553
		4				1/2 ODF x 5/8 ODF S/T	065554
		5				1/2 ODF x 5/8 ODF S/T	065556
		6				1/2 ODF x 5/8 ODF S/T	065557
R 134a	BAE	1	MC	30 feet/0.75 meters	6A (3.3K)	1/2 ODF x 3/8 ODF S/T	061967
		2				1/2 ODF x 3/8 ODF S/T	062830
		3				1/2 ODF x 3/8 ODF S/T	063201
		4-1/4				1/2 ODF x 7/8 ODF S/T	063202
R 410A	BAE	1	ZW195	30 feet/ 0.75 meters	6A (3.3K)	3/8 ODF x 1/2 ODF S/T	066013
		1-1/2				3/8 ODF x 1/2 ODF S/T	065808
				5 feet/ 1.5 meters	4A (2.2K)	3/8 ODF x 1/2 ODF S/T	065876
		2				3/8 ODF x 1/2 ODF S/T	065877
		3		30 feet/0.75 meters	6A (3.3K)	3/8 ODF x 1/2 ODF S/T	065583
				5 feet/1.5 meters	4A (2.2K)	3/8 ODF x 1/2 ODF S/T	065878
		3-1/2		30 feet/0.75 meters	6A (3.3K)	3/8 ODF x 1/2 ODF S/T	065809
				5 feet/1.5 meters	4A (2.2K)	3/8 ODF x 1/2 ODF S/T	065879
		4-1/2		30 feet/0.75 meters	6A (3.3K)	3/8 ODF x 1/2 ODF S/T	065810
				5 feet/1.5 meters	4A (2.2K)	3/8 ODF x 1/2 ODF S/T	065880
		6			6A (3.3K)	1/2 ODF x 5/8 ODF S/T	065586
		7-1/2			4A (2.2K)	1/2 ODF x 7/8 ODF S/T	065882
						5/8 ODF x 7/8 ODF S/T	066088

B-Series Thermal Expansion Valve Dimensional Data (mm):





Connection (inch)		Inlet (mm)		Outlet (mm)		E	F
Inlet size	Outlet size	A	C MIN	B	D MIN		
3/8 ODF	1/2 ODF	9.7	8.1	12.7	10.4	44.0	45.0
1/2 ODF	5/8 ODF	12.7	10.4	16.0	12.7	44.0	44.5
5/8 ODF	7/8 ODF	16.0	12.7	22.4	15.7	44.5	44.0

C-Series Thermal Expansion Valve

The C series is a balanced ported valve designed for high efficiency R 410A air-conditioning and heat pump applications. C valves operate over widely varying operating conditions.

C-Series

Features

- Precision superheat control optimized for R 410 A systems
- Stainless steel power element eliminates corrosion and prevents valve failure
- 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
- Balance 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
- Maximum working pressure (MWP): 700psig (48 bar)
- R 410A evaporating temperature range: -30ºC ~ +10ºC
- UL/CUL file number: SA5312

Options

- High flow internal check valve 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, Aeroquip, or SAE connections are available
- External equalizer 1/8" tube with 45° end cut is standard - terminations are available

Nomenclature:

C	A	24K	ZAA	B15%	ODF	S/T
Valve Series	Body Type A = Adjustable, With Check, Straight-Through B = Adjustable, No Check, Straight-Through C = Non-Adjustable, With Check, Straight-Through D = Non-Adjustable, No Check, Straight-Through	Capacity (kW) 12K = 3.5 18K = 5 24K = 7 36K = 11 48K = 14 60K = 18 72K = 21 84K = 25	Charge R 410A	Bleed% (optional)	ODF= solder	S/T= Straight-thru

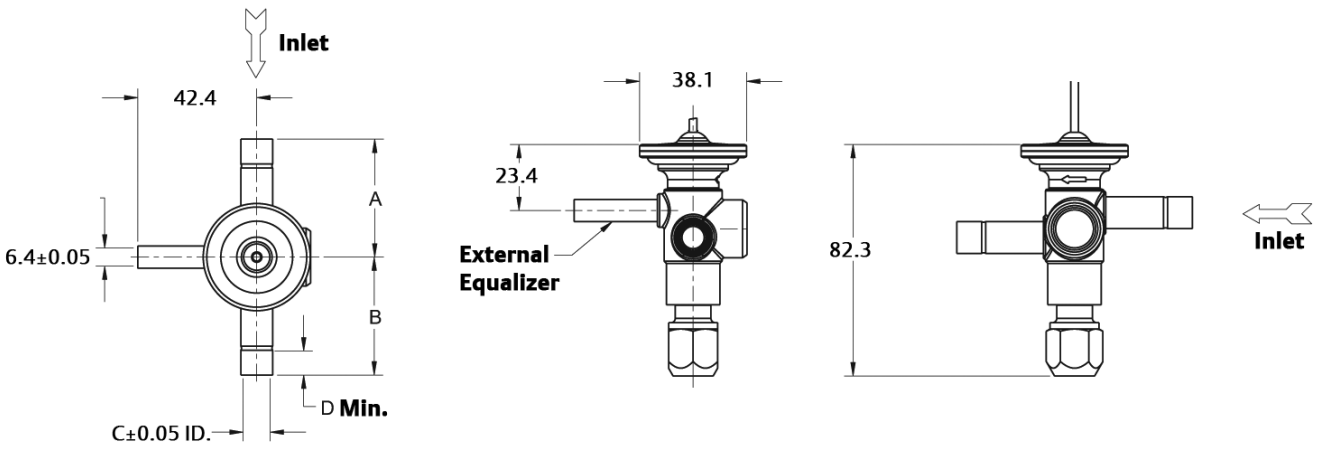
Ordering Information:

Adjustable, straight-through body style, individually packaged, 5 ft. remote bulb capillary tube

Refrigerant	kW	Check Valve	Bleed	Inlet x Outlet	External Equalizer	PCN
R 410A	3.5	Yes	-	3/8 ODF x 1/2 ODF	1/4 ODF	093086
	5	Yes	-	3/8 ODF x 1/2 ODF	1/4 ODF	093078
		Yes	15%	3/8 ODF x 1/2 ODF	1/4 ODF	093007
		-	-	3/8 ODF x 1/2 ODF	1/4 ODF	093021
		-	15%	3/8 ODF x 1/2 ODF	1/4 ODF	093082
	7	Yes	-	3/8 ODF x 1/2 ODF	1/4 ODF	093072
		Yes	15%	3/8 ODF x 1/2 ODF	1/4 ODF	093008
		-	-	3/8 ODF x /2 ODF	1/4 ODF	093022
		-	15%	3/8 ODF x 1/2 ODF	1/4 ODF	093083

Refrigerant	kW	Check Valve	Bleed	Inlet x Outlet	External Equalizer	PCN
R 410A	11	Yes	-	3/8 ODF x 1/2 ODF	1/4 ODF	093073
		Yes	15%	3/8 ODF x 1/2 ODF	1/4 ODF	093009
		-	-	3/8 ODF x 1/2 ODF	1/4 ODF	093023
		-	15%	3/8 ODF x 1/2 ODF	1/4 ODF	093084
	14	Yes	-	3/8 ODF x 1/2 ODF	1/4 ODF	093074
		Yes	15%	3/8 ODF x 1/2 ODF	1/4 ODF	093010
		-	-	3/8 ODF x 1/2 ODF	1/4 ODF	093024
		-	15%	3/8 ODF x 1/2 ODF	1/4 ODF	093081
	18	Yes	-	1/2 ODF x 5/8 ODF	1/4 ODF	093075
		Yes	15%	1/2 ODF x 5/8 ODF	1/4 ODF	093011
		-	-	1/2 ODF x 5/8 ODF	1/4 ODF	093025
		-	15%	1/2 ODF x 5/8 ODF	1/4 ODF	093085
	21	Yes	-	1/2 ODF x 5/8 ODF	1/4 ODF	093076
		Yes	15%	1/2 ODF x 5/8 ODF	1/4 ODF	093012
		-	-	1/2 ODF x 5/8 ODF	1/4 ODF	093026
		-	15%	1/2 ODF x 5/8 ODF	1/4 ODF	093079
	25	Yes	-	5/8 ODF x 7/8 ODF	1/4 ODF	093077
		Yes	15%	5/8 ODF x 7/8 ODF	1/4 ODF	093013
		-	-	5/8 ODF x 7/8 ODF	1/4 ODF	093027
		-	15%	5/8 ODF x 7/8 ODF	1/4 ODF	093080

C-Series Thermal Expansion Valve Dimensional Data (mm):



Adjustable - ODF Connections with ¼" ODF Equalizer Shown

Connections Size (inch)	Dimension (mm)			
	A	B	C	D
3/8 ODF	41.9	41.9	9.6	8.6
1/2 ODF	41.9	41.9	12.8	12.2
5/8 ODF	54.6	54.6	16.0	19.1
7/8 ODF	54.6	54.6	22.3	19.1
Aeroquip	43.4	33.0	-	-

HFES Series Thermal Expansion Valve

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

Features

- Precise superheat control
- Stainless steel replaceable power element eliminates corrosion and prevents valve failure
- Four sizes, maximum nominal capacity is 20 tons (R 22)
- Compact size allows installation in limited spaces
- Balance port construction compensates for changes in operating pressures due to varying ambients, gas defrost, heat reclaim, or widely varying evaporator loads
- External overheat adjustable
- Maximum operation pressure: 450psig (31 bar)

HFES Series

Nomenclature:

HF	E	S	15	H	C	5FT	5/8 x 7/8	ODF	S/T
Valve Series Balanced Ported Valve Replaceable Power Element	Equalizer E=External Equalizer	Connection Type S=Solder	Nominal Capacity (Tons)	Refrigerant Code H=R 22 N=R 407C M=R 134a	Injection Code C=Medium Temp CA=Heat Pump W100=MOP	5 feet	Connections Inlet X Outlet	ODF=Solder	S/T=Straight Thru

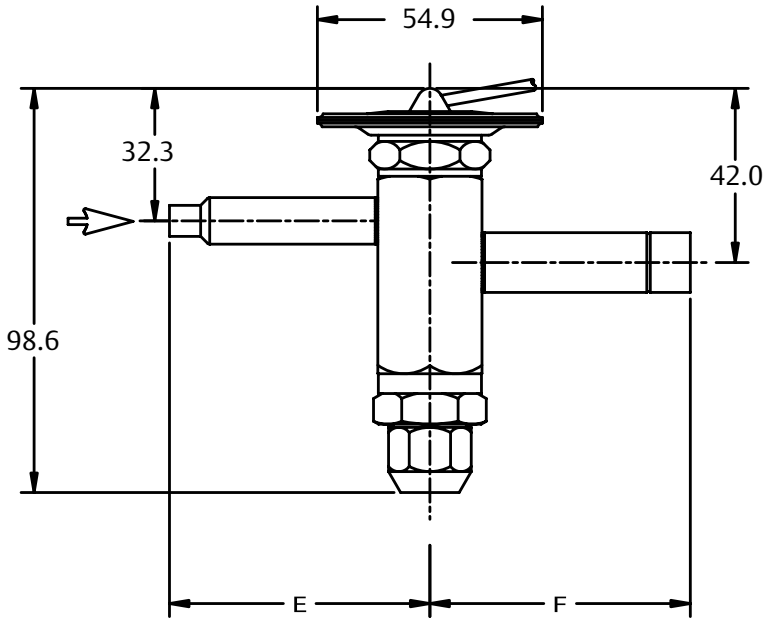
Nominal Capacity Table In Ton (kW):

R 134a	R 22/R 407C
6(21.0)	8 (28.0)
7 1/2 (27.0)	10 (35.0)
-	12 (42.0)
11 (39.0)	15 (53.0)
14 (50.0)	20 (70.0)

Ordering Information:

Refrigerant	Nominal Capacity Ton (kW)	Injection Type	Connection Type and Size	Capillary Tube Length	PCN
R 22	8 (28)	HC	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	057313
		HCA	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	056819
	10 (35)	HC	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	057256
		HCA	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	056820
	12 (42)	HC	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	062737
		HCA	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	065762
	15 (53)	HC	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	057317
		HC	7/8 ODF x 1-1/8 ODF	5 feet/1.5 meters	057318
		HCA	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	056823
		HCA	7/8 ODF x 1-1/8 ODF	5 feet/1.5 meters	056825
	20 (70)	HC	7/8 ODF x 1-1/8 ODF	5 feet/1.5 meters	062055
		HCA	7/8 ODF x 1-1/8 ODF	5 feet/1.5 meters	058490

HFES Series Thermal Expansion Valve Dimensional Data (mm):



	mm
E	63.5
F	63.5

TFES Series Thermal Expansion Valve

The TFES 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-flow capability for heat pump applications
- External equaliser
- ZAA charge for R 410A systems
- Maximum working pressure: 630 psig (43 bar)

TFES Series

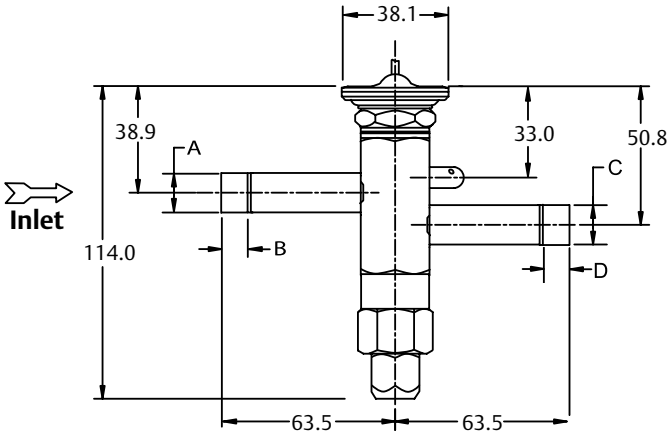
Nomenclature:

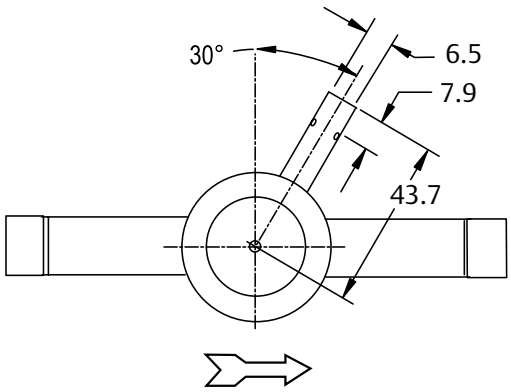
TF	E	S	16	Z	AA	5FT	5/8 x 7/8	ODF	S/T
Valve Series Balanced Port, Replaceable Power Assembly	Equalizer E=External 1/4" ODF	Connection Type S = solder	Capacity Nominal Rating (Tons)	Refrigerant Code Z = R 410A	Charge Code AA= Wide Range	Cap Tube Length 5 fee-t/1.5 meters	Connection Sizes Inlet X Outlet	ODF=Solder	S/T= Straight-thru

Ordering Information:

Refrigerant	Nominal Capacity in Ton (kW)	Bleed	Connection Type and Size	Sensing Bulb Capillary Tube Length	PCN
R 410A	12(42)	-	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	066146
		15%	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	066147
		-	7/8 ODF x 1-1/8 ODF	10 feet/3 meters	066148
	16(56)	-	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	066149
		15%	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	066150
		-	7/8 ODF x 1-1/8 ODF	10 feet/3 meters	066151
	20(70)	-	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	066152
		15%	5/8 ODF x 7/8 ODF	5 feet/1.5 meters	066153
		-	7/8 ODF x 1-1/8 ODF	10 feet/3 meters	066154

TFES Series Thermal Expansion Valve Dimensional Data (mm):





Inlet/Outlet Connection Size (mm):

Connection (inch)		Inlet		Outlet	
Inlet Size	**Outlet Size**	**A**	**B MIN**	**C**	**D MIN**
1/2 ODF	1/2 ODF	12.7	9.4	12.7	9.4
	5/8 ODF	12.7	9.4	16.0	12.7
	7/8 ODF	12.7	9.4	22.4	19.3
5/8 ODF	5/8 ODF	16.0	12.7	16.0	12.7
	7/8 ODF	16.0	12.7	22.4	19.3
	1-1/8 ODF	16.0	12.7	28.7	23.1
7/8 ODF	7/8 ODF	22.4	19.3	22.4	19.3
	1-1/8 ODF	22.4	19.3	28.7	23.1

LCL Series Liquid Injection Valves

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.

LCL Series

Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- Take-Apart construction for easy field service
- Maximum working pressure, MWP: 31bar
- Very good stability is attained because of the large forces generated by the large diaphragm diameter

Nomenclature:

LCL	E	2	B	5FT	3/8 X 5/8	ODF	S/T
Valve Series De-Superheating Liquid Injection Take-Apart	Equalizer E=External	Nominal Capacity NOTE: This is not system capacity	Charge Code A = CL B = GL C = UL	Capillary Tube Length 5 FT (std)/3 Meters	Inlet x Outlet Connection Sizes	Connection Type ODF=solder	ANG = 90° angle S/T = straight-thru

Standard Ordering Form:

Valve Type	Nominal Capacity (kW)				Power Element	Cage		Flange	
	R 134a	R 22	R 404A	R 407C	Type	Type	PCN	Type	PCN
LCLE 1	1.5	1.9	1.3	2.1	Refer to below table	X-22440-B1B	037035	C-501-5 3/8X5/8 ODF ANG	065748
LCLE 2	2.9	3.7	2.6	4.0		X-22440-B2B	037037		
LCLE 3	6.1	7.9	5.6	8.5		X-22440-B3B	037039		
LCLE 4	13.5	17.3	12.2	18.7		X-22440-B4B	037041		
LCLE 6	17.3	22.2	15.7	24.0		X-22440-B5B	037043	C-501-7 1/2X5/8 ODF ANG	065861
LCLE 7	23.6	30.4	21.5	32.9		X-22440-B6B	037045		
LCLE 9	32.0	41.1	29.0	44.4		X-22440-B7B	037047	A-576 5/8X7/8 ODF ANG	027764
LCLE 10	37.2	47.8	33.8	51.7		X-22440-B8B	037049		
LJRE 11	45	58	40	62		X11873-B4B	088837	10331 5/8X7/8 ODF ANG	029411
LJRE 12	57	74	51	80		X11873-B5B	089058		

Power Assembly Standard Ordering Information:

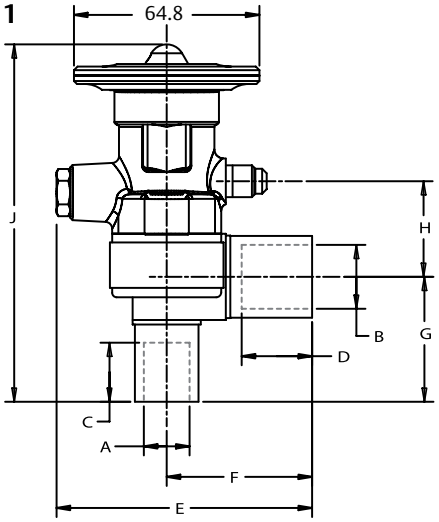
Power Assembly	Cap Tube Length (ft)	PCN	Refrigerant			
			R 134a	R 22	R 404A	R 407C
XB-1019CL-1B	5	034803	-	15K	22K	13K
XB-1019GL-1B		032207	15K	30K	35K	25K
XB-1019UL-1B		035162	30K	45K	-	40K

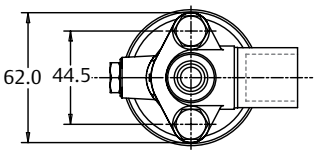
Above Nominal Working Condition Means:

Refrigerant	Evaporating Temp (°C)	Liquid Temp (°C)	Sub-Cooling
R 407C	+4	+38 Bubble Point/+43 Dew Point	1
R 22, R 134a, R 404A	+4	+38	1

Dimensional Data(mm):

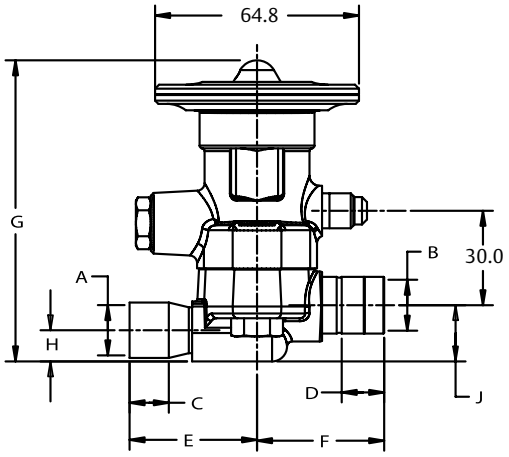
Figure 1

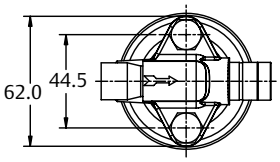




90° Angle

Figure 2





Straight-thru

90° Angle Structure Dimensional Data (mm): see figure 1

Connection Size (inch)		A	B	C MIN	D MIN	E	F	G	H	J
Inlet	Outlet									
1/4 ODF	3/8 ODF	6.4	9.7	7.9	7.9	73.9	34.0	23.9	30.5	100.3
3/8 ODF	1/2 ODF	9.7	12.7	7.9	9.7	77.0	37.3	26.9	30.5	104.4
3/8 ODF	5/8 ODF	9.7	16	7.9	12.7	80.3	40.4	26.9	30.5	104.4
1/2 ODF	5/8 ODF	12.7	16	9.7	12.7	80.3	40.4	48.3	30.5	106.7
5/8 ODF	7/8 ODF	16	22.4	12.7	19.1	90.4	50.8	42.9	30.5	122.7

Straight-thru Dimensional Data (mm): see figure 2

Connection Size (inch)		A	B	C MIN	D MIN	E	F	G	H	J
Inlet	Outlet									
3/8 ODF	1/2 ODF	9.7	12.7	7.9	9.7	35.8	40.1	93.7	9.7	17.5
3/8 ODF	5/8 ODF	9.7	16.0	7.9	12.7	35.8	41.4	93.7	9.1	17.0
1/2 ODF	1/2 ODF	12.7	12.7	9.7	9.7	35.8	39.6	94.0	9.7	17.5
1/2 ODF	5/8 ODF	12.7	16.0	9.7	12.7	40.4	41.4	94.0	9.1	17.0
5/8 ODF	5/8 ODF	16.0	16.0	12.7	12.7	40.4	41.4	94.0	9.7	17.5
5/8 ODF	7/8 ODF	16.0	22.4	12.7	19.1	40.4	49.3	94.0	9.7	17.5
5/8 ODF	1-1/8 ODF	22.4	28.7	12.7	23.1	40.4	60.5	94.0	9.7	17.5
7/8 ODF	1-1/8 ODF	22.4	28.7	19.1	23.1	49.3	60.5	96.8	9.7	17.5

Notes: 1. Metric Units (mm).
2. Allow 54 mm above valve for removal of power assembly.
3. Remote valve diameter is 16.0 mm and length is 77.8 mm.

TI Series Thermal Expansion Valve

The TI series has interchangeable cages capable of changing valve capacity in the field.

TI Series

Features

- Laser welded diaphragm with large diameter for high reliability and maximum life time
- Constant superheat across wide application ranges
- Easy and precise superheat setting by modified threads
- TILE with stainless steel fittings allow brazing without wet rags
- With capacities between 0.4 kW and 14.2 kW (R 404A) ideally suited for service work
- Bi-flow capability for heat pump applications
- Internal or external equaliser
- Brazing and flare connections avalaible
- Capillary tube length 1.5 m
- Max. working pressure, PS: 45 bar, Refrigerant temperature range, TS: -45 ~ +75°C
- No CE marking according art. 3.3 PED 97/23 EC

Nomenclature:

TI	S	E	M	W
Valve Series	L : Brazing, stainless steel ODF fittings (outlet/equaliser) S: Brazing, copper ODF fittings : Flare	Equalizer E = External = Internal	Refrigerant M : R 134a S : R 404A/R 507 N : R 407C H : R 22	Charge Type W: Liquid (without MOP feature) Wxxx: Vapour (with MOP feature) ADxxx: Adsorption (similar MOP feature)

Orifice Assembly

Nominal Capacity Table In Ton (kW):

Type Part No.	TIO-00X 800 532	TIO-000 800 533	TIO-001 800 534	TIO-002 800 535	TIO-003 800 536	TIO-004 800 537	TIO-005 800 538	TIO-006 800 539
R 134a	0.3	0.8	1.9	3.1	5.0	8.3	10.1	11.7
R 22	0.5	1.3	3.2	5.3	8.5	13.9	16.9	19.5
R 404A	0.4	1.0	2.3	3.9	6.2	10.1	12.3	14.2
R 407C	0.5	1.4	3.5	5.7	9.2	15.0	18.3	21.1
R 410C	0.6	1.5	3.7	6.2	9.9	16.2	19.7	22.8
R 507	0.4	1.0	2.3	3.9	6.2	10.1	12.3	14.2

Nominal Capacity Is Based On The Following Conditions:

Refrigerant	Evaporating temperature	Condensing temperature	Sub-cooling
R 407C	+4°C dew point	+38°C bubble p. +43°C dew point	1K
R 22, R 134a, R 404A, R 410A, R 507	+4°C	+38°C	1K

Brazing Adapter For TILE And TIS (E):

Type	Part No.	Connection, ODF	
		mm	inch
TIA-M06	802500	6.0	-
TIA-M10	802501	10.0	-
TIA-014	802502	-	1/4"
TIA-038	802503	-	3/8"
Gasket Set	803780	100 pieces	

TI Valve Bodies

Refrigerant	Outlet/ Equilizer Connection	Type	Part No.	Type	Part No.	MOP °C	Evaporating Temperature Range °C
		External Equilizer		Internal Equilizer			
R 404A/ R 507	Brazing stainless steel	TILE-SW (12mm)	802465			-	-45 ~ +20
		TILE-SW (1/2")	802466			-	-45 ~ +20
	Brazing copper	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	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 ~ -3
R 134a	Brazing stainless steel	TILE-MW (12mm)	802451			-	-45 ~ +20
		TILE-MW (1/2")	802452			-	-45 ~ +20
	Brazing copper	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
		TISE-MW55 (1/2")	802458			+14	-45 ~ +11
	Flare	TIE-MW	802446	TI-MW	802445	-	-45 ~ +20
		TIE-MW55	802456	TI-MW55	802455	+14	-45 ~ +11
R 407C	Brazing stainless steel	TILE-NW (12mm)	802486			-	-45 ~ +20
		TILE-NW (1/2")	802485			-	-45 ~ +20
	Brazing copper	TISE-NW (12mm)	802438	TIS-NW (12mm)	802437	-	-45 ~ +20
		TISE-NW (1/2")	802440	TIS-NW (1/2")	802439	-	-45 ~ +20
	Flare	TIE-NW	802436	TI-NW	802435	-	-45 ~ +20
R 22	Brazing stainless steel	TILE-HW (12mm)	802426			-	-45 ~ +20
		TILE-HW (1/2")	802427			-	-45 ~ +20
	Brazing copper	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
		TISE-HW100 (1/2")	802432			+15	-45 ~ +13
	Flare	TIE-HW	802421	TI-HW	802420	-	-45 ~ +20
		TIE-HAD10	802430			+10	-45 ~ 0
R 410A	Brazing stainless steel	TILE-ZW (1/2")	802489			-	-35 ~ +20
		TILE-ZW175 (1/2")	802491			+16.4	-35 ~ +15

Notes: 1. **Inlet:** Flare 5/8"-18UNF for 6mm, 8mm, 10mm, 1/4", 5/16" and 3/8" tubes

2. **Outlet:** Flare 3/4"-16UNF for 12mm and 1/2" tubes
   Solder metric: ODF for 12mm tubes, Solder inch: ODF for 1/2" tubes

3. **Ext. Equalizer:** Flare 7/16"-20UNF for 6mm and 1/4" tubes,
   Solder metric: ODF for 6mm tubes, Solder inch: ODF for 1/4" tubes

TRAE+ Series Thermal Expansion Valve

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

TRAE+ Series

Features

- Stainless steel power element eliminates corrosion and prevents valve failure
- Suitable for Bi-flow applications
- Replaceable power element and cage assembly for full serviceability
- Double balanced port design improves operation and stability over wide loads and evaporator temperature ranges
- Square body with straight-thru connections
- Solid copper connections
- External superheat adjustment
- Large diaphragm provides superior stability
- Permanent inlet strainer
- Maximum working pressure: 450 psig (31bar)
- Torque power assembly: 42 - 48 NM

Nomenclature:

TRA	E	+	30	H	C	10FT	7/8 x 1-1/8	ODF	S/T
Valve Series Double Balanced Port Design	Equalizer E=External 1/4" SAE	Replaceable Components Cage and Power Assembly	Nominal Capacity (Tons)	Refrigerant Code H= R 22 N= R 407C M= R 134a S= R 404A	Charge Code C=Medium Temp CA=Heat Pump W100=MOP Z= Low Tem	Tube Length 10ft / 3 meters	Connections Inlet X Outlet	ODF=Solder	S/T=Straight-thru

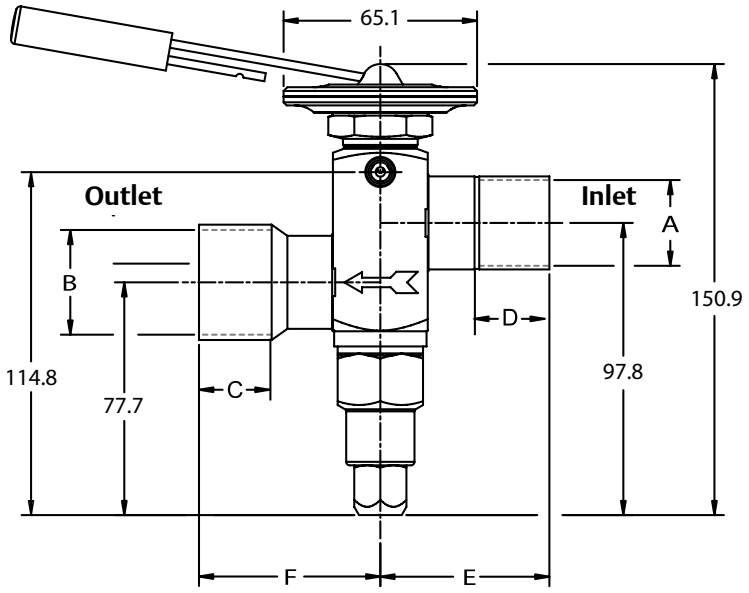
Nominal Capacity Table in Ton (kW):

R 134a	R 22/R 407C
9 (32)	10 (35)
13 (46)	15 (53)
14 (50)	20 (70)
22 (78)	30 (106)
30 (106)	40 (142)

Ordering Information:

Refrigerant	Nominal Capacity in Ton (kW)	Charge Type	Connection Size (inch)	Capillary Tube Length	PCN
R 22	15 (53)	HCA	7/8 ODF x 1-1/8 ODF	10 feet/3 meters	062722
	20 (70)	HCA	7/8 ODF x 1-1/8 ODF	10 feet/3 meters	062725
	30 (106)	HCA	7/8 ODF x 1-1/8 ODF	10 feet/3 meters	062729
		HCA	1-1/8 ODFx 1-3/8 ODF	10 feet/3 meters	062730
	40 (142)	HCA	7/8 ODF x 1-1/8 ODF	15 feet/4.5 meters	063157
		HCA	1-1/8 ODFx 1-3/8 ODF	10 feet/3 meters	062734

TRAE+ Series Thermal Expansion Valves Dimensional Data (mm):



Type	Connections Inlet (A) (inch)	Connections Outlet (B) (inch)	Inlet		Outlet	
			E	D	F	C
TRAE+ 10-40	5/8	7/8	39.9	12.7	53.1	19.1
	5/8	1-1/8	39.9	12.7	56.1	23.1
	7/8	7/8	53.1	19.1	53.1	19.1
	7/8	1-3/8	53.1	19.1	56.1	23.1
	7/8	1-3/8	53.1	19.1	60.7	24.6
	1-1/8	1-1/8	56.1	23.1	56.1	24.6
	1-1/8	1-3/8	56.1	23.1	60.7	24.6

TRAE Series Thermal Expansion Valve

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

TRAE Series

Features

- Suitable for Bi-flow applications
- External superheat adjustment
- Integral body with straight-thru connections
- Balanced port design improves valve operation and stability over wide loads and evaporator temperature range
- Solid copper connections
- Large diaphragm provides superior stability
- Maximum Working Pressure: 450 psig (31 bar)

Nomenclature:

TRA	E	30	H	C	10FT	7/8 x 1-1/8	ODF	S/T
Valve Series Double Balanced Port Design	Equalizer E=External 1/4" SAE	Nominal Capacity (Ton)	Refrigerant Code H=R 22 N=R 407C M=R 134a S=R 404A	Charge Code C=Medium Temp CA=Heat Pump W100=MOP Z= Low Tem	Tube Length 10 ft/3 meters	Connections Inlet X Outlet	ODF=Solder	S/T=Straight-thru

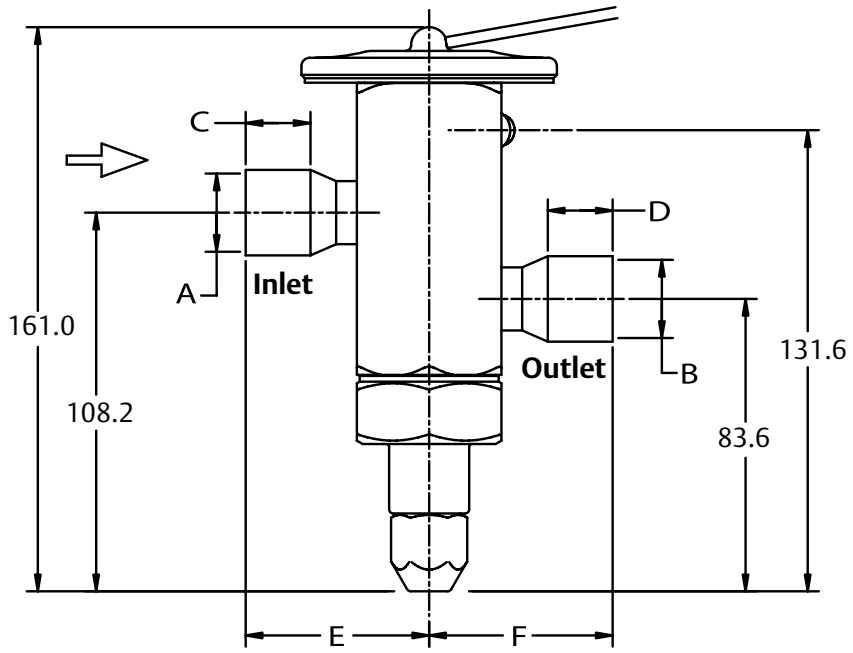
Nominal Capacity Table in Ton (kW):

R 134a	R 22 / R 407C
40 (142)	50 (177)
45 (159)	60 (212)
50 (177)	70 (248)

Ordering Information:

Refrigerant	Nominal Capacity in Ton (kW)	Charge Type	Connection Type and Size (inch)	Capillary Tube Length	PCN
R 22	50 (177)	HC	7/8 ODF x 1-1/8 ODF	10 feet/3 meters	062587
		HC	1-1/8 ODF x 1-3/8 ODF	10 feet/3 meters	061700
		HCA	1-1/8 ODF x 1-3/8 ODF	10 feet/3 meters	059356
	60 (212)	HC	1-1/8 ODF x 1-3/8 ODF	10 feet/3 meters	061865
		HCA	1-1/8 ODF x 1-3/8 ODF	10 feet/3 meters	059355
	70 (248)	HC	1-1/8 ODF x 1-3/8 ODF	10 feet/3 meters	061866
		HCA	1-1/8 ODF x 1-3/8 ODF	10 feet/3 meters	059357
R 407C	50 (177)	NW100	1-1/8 ODF x 1-3/8 ODF	10 feet/3 meters	065558
	60 (212)	NW100	1-1/8 ODF x 1-3/8 ODF	10 feet/3 meters	065559
	70 (248)	NW100	1-1/8 ODF x 1-3/8 ODF	10 feet/3 meters	065560
R 134a	40 (142)	MC	1-1/8 ODF x 1-3/8 ODF	15 feet/4.5 meters	063941
		MC	1-1/8 ODF x 1-1/8 ODF	10 feet/3 meters	063971
	45 (159)	MC	1-1/8 ODF x 1-3/8 ODF	10 feet/3 meters	064597
	50 (177)	MC	1-1/8 ODF x 1-3/8 ODF	15 feet/4.5 meters	063160
		MC	1-3/8 ODF x 1-3/8 ODF	15 feet/4.5 meters	061734

TRAE Series Thermal Expansion Valve Dimensional Data (mm):



Connection Size (inch)		A	B	C Min.	D Min.	E	F
Inlet	Outlet						
7/8 ODF	7/8 ODF	22.4	22.4	19.1	19.1	53.1	53.1
7/8 ODF	1-1/8 ODF	22.4	28.7	19.1	23.1	73.7	56.1
7/8 ODF	1-3/8 ODF	22.4	35.1	19.1	24.6	73.7	60.7
1-1/8 ODF	1-1/8 ODF	28.7	28.7	23.1	23.1	56.1	56.1
1-1/8 ODF	1-3/8 ODF	28.7	35.1	23.1	24.6	56.1	60.7
1-3/8 ODF	1-3/8 ODF	35.1	35.1	23.1	24.6	60.7	60.7

T-Series Thermal Expansion Valve

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.

T-Series

Features

- Take-Apart construction for easy field service
- External superheat adjustment
- Bi-flow capability
- Stainless steel power assembly up to 18 tons
- Maximum working pressure: 450 psig (31 bar)
- Torque Bolts: 34 NM

Nomenclature:

TCL	E	5	H	C	5FT	3/8 x 5/8	ODF	S/T
Valve Series Take-Apart Adjustable	Equalizer E=External (Omit for Internal)	Capacity Nominal Rating (Tons) (See Cage Assembly Interchangeability Tables)	Refrigerant Code H=R 22 N=R 407C M=R 134a S=R 404A P=R 507	Charge Code C=medium temp CA=heat pump W(MOP)=press. limiting Z=low temp	Capillary Tube Length 5 ft/1.5 meters	Connection Size Inlet X Outlet	ODF= Solder	S/T=Straight Thru ANG=90° angle

Small Capacity T-Series Thermal Expansion Valve (1.8~63 kW, R 22 Nominal Capacity)

1. Select Cage from Capacity Table:

Valve Type	Nominal Capacity in kW				Cage	
	R 134a	R 22	R 404A/R 507	R 407C	Type	PCN
TCLE	0.9	1.8	0.9	1.8	X22440B1A	037034
	0.9	1.8	0.9	1.8	X22440B1B	037035
	2.6	3.5	1.8	3.5	X22440B2A	037036
	2.6	3.5	1.8	3.5	X22440B2B	037037
	5.3	7.0	3.5	7.0	X22440B3A	037038
	5.3	7.0	3.5	7.0	X22440B3B	037039
	8.8	10.5	7.0	10.5	X22440B4A	037040
	8.8	10.5	7.0	10.5	X22440B4B	037041
	12.3	17.5	10.5	17.5	X22440B5B	037043
	19.3	26.3	1.8	26.3	X22440B6B	037045
	26.3	35.0	24.5	35.0	X22440B7B	037047
	31.5	42.0	28.0	42.0	X22440B8B	037049
TJLE	31.5	38.5	24.5	38.5	XC724B4B	093343
	38.5	49.0	31.5	49.0	XC724B5B	038699
TJR	38.5	49.0	31.5	49.0	X11873B4B	088837
	45.5	63.0	42.0	63.0	X11873B5B	089058

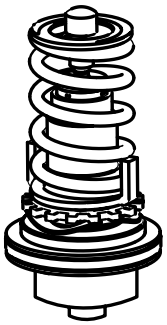
Note: Gaskets included on cage. Gasket strip X13455-1 (PCN: 027579) replaces all older T-Series Gasket kits.

2. Select Flange:

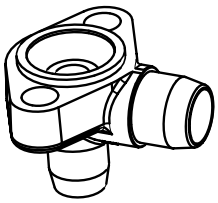
Valve Type	Structure	Size & Style Connections (inch)		Flange	
		Inlet	Outlet	Type	PCN
TCL/TCLE	Angle	3/8 ODF	1/2 ODF	C501-4	065527
		3/8 ODF	5/8 ODF	C501-5	065748
		1/2 ODF	5/8 ODF	C501-7	065861
		5/8 ODF or 7/8 ODM	7/8 ODF or 1-1/8 ODM	A576	027764

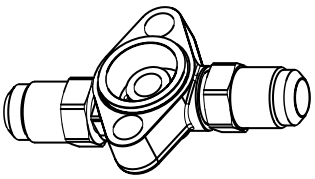
Valve Type	Structure	Size & Style Connections (inch)		Flange	
		Inlet	Outlet	Type	PCN
TCL/TCLE	Angle	3/8 ODF	1/2 ODF	9761-5	027769
		3/8 ODF	5/8 ODF	9761-3	027771
		1/2 ODF	5/8 ODF	9761-4	027268
		5/8 ODF	5/8 ODF	X6346-16	044733
		5/8 ODF	7/8 ODF	X6346-17	044846
		5/8 ODF	1-1/8 ODF	X6346-18	094038
		7/8 ODF	1-1/8 ODF	X6346-34	071757
TJLE	Angle	5/8 ODF or 7/8 ODM	7/8 ODF or 1-1/8 ODM	B504	044984
	Straight-Thru	5/8 ODF	1-1/8 ODF	X6347-2	094289
		7/8 ODF	1-1/8 ODF	X6347-6	057210
		7/8 ODF	1-3/8 ODF	X6347-7	057323
TJR	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

Note: TJR Flange includes extended length capscrews.

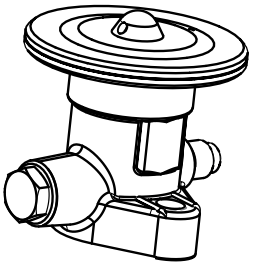


Cage





Flange



Power Element

3. Select Power Assembly:

TER-TIR-THR-TMR Power Assemblies						
Refrigerant	Equalizer Type (inch)	Cap Tube Length	Application	MOP[2]	Power Element	
		feet/meters	Temp. Range (°C)	(Psi/Bar)	Type	PCN
R 22	1/4 SAE	5 FT/1.5 m	-30 ~ +10	-	XB-1019HC1B	053416
	1/4 SAE	10 FT/3 m	-30 ~ +10	-	XB-1019HC2B	054390
	1/4 SAE	5 FT/1.5 m	-30 ~ +10	-	XB-1019HCA1B	056039
	1/4 SAE	5 FT/1.5 m	-15 ~ -45	35/2.4	XB-1019HW351B	089975
	1/4 SAE	5 FT/1.5 m	-7 ~ -45	55/3.8	XB-1019HW551B	039152
	1/4 SAE	5 FT/1.5 m	-1 ~ -45	65/4.5	XB-1019HW651B	089445
	1/4 SAE	5 FT/1.5 m	-45 ~ +10	100/6.9	XB-1019HW1001B	062437
	1/4 SAE	10 FT/3 m	-45 ~ +10	100/6.9	XB-1019HW1002B	062658
	1/4 SAE	5 FT/1.5 m	-12 ~ -45	-	XB-1019HZ1B	040568
	1/4 SAE	10 FT/3 m	-12 ~ -45	-	XB-1019HZ2B	054105
R 407C	1/4 SAE	5 FT/1.5 m	-30 ~ +10	-	XB-1019NC1B	064837
	1/4 SAE	5 FT/1.5 m	-30 ~ +10	100/6.9	XB-1019NW1001B	063069
R 507	1/4 SAE	5 FT/1.5 m	-30 ~ +10	-	XB-1019PC1B	061949
	1/4 SAE	5 FT/1.5 m	-18 ~ -45	40/2.8	XB-1019PW401B	064200
	1/4 SAE	5 FT/1.5 m	-12 ~ -45	-	XB-1019PZ1B	061951
R 134a	1/4 SAE	5 FT/1.5 m	-30 ~ +10	-	XB-1019MC1B	057878
	1/4 SAE	10 FT/3 m	-30 ~ +10	-	XB-1019MC2B	059548
	1/4 SAE	5 FT/1.5 m	-30 ~ +10	55/3.8	XB-1019MW551B	057370
	1/4 SAE	5 FT/1.5 m	-12 ~ -45	-	XB-1019MZ1B	061946

TCL-TCLE-TJLE-TJR Power Element[1]						
Refrigerant	Balanced Connection Type (inch)	Cap Tube Length	Application	MOP[2]	Power Element	PCN
		ft/meter	Temp. Range (°C)	(Psi/Bar)	Type	
R 404A	1/4 SAE	5 FT/1.5 m	-30 ~ +10	NONE	XB-1019SC-1B	059189
	1/4 SAE	5 FT/1.5 m	-45 ~ -18	40/2.8	XB-1019SW401B	059130
	1/4 SAE	5 FT/1.5 m	-45 ~ -4	65/4.5	XB-1019SW651B	063541
	1/4 SAE	10 FT/3 m	-45 ~ -12	NONE	XB-1019SZ2B	061948

Notes: 1. Capscrews included with Power Assembly
2. Maximum Operating Pressure Limit to prevent motor overload

Large Capacity T-Series Thermal Expansion Valve (77~350kW, R 22 Nominal Capacity)

1. Select Cage from Capacity Table:

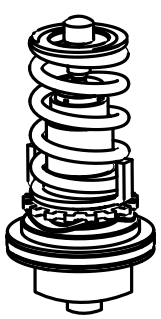
Valve Type	Nominal Capacity in kW				Cage	
	R 134a	R 22	R 404A / R 507	R 407C	Type	PCN
TER	56	77	49	77	X9117B6B	077896
	66.5	91	56	91	X9117B7B	078117
	87.5	122.5	73.5	122.5	X9117B8B	071155
	108.5	157.5	94.5	157.5	X9117B9B	029429
TIR	157.5	192.5	129.5	192.5	X9166B10B	070738
THR	157.5	192.5	129.5	192.5	X9144B10B	071238
	192.5	245	168	245	X9144B11B	020846
	238	297.5	210	297.5	X9144B13B	021067
TMR	238	350	210	350	X9144B14B	065123

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

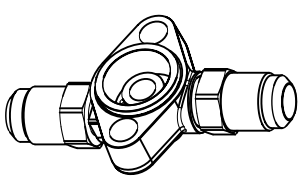
2. Select Flange:

Valve Type	Structure	Connection Size (inch)		Flange[1]	
		Inlet	Outlet	Type	PCN
TER	Angle	7/8 ODF or 1-1/8 ODM	7/8 ODF or 1-1/8 ODM	9153	027919
	Straight	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	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	1-1/8 ODM	1-1/8 ODM	9148	028032
TMR	Angle	1-1/8 ODM	1-1/8 ODM	9149-1	065124
	Straight	1-1/8 ODM	1-1/8 ODM	9148-1	065125

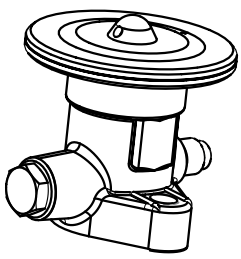
Note: 1. TER/TMR include extended length capscrews.



Cage



Flange



Power Element

3. Select Power Assembly:

TER/TIR/THR/TMR Power Assembly[1]						
Refrigerant	Equalizer Type	Cap Tube Length	Application	MOP[2]	Power Element	
		feet/meter	Temp Range (°C)	(Psi/Bar)	Type	PCN
R 22	1/4 SAE	10 ft/3 m	-30 ~ +10	NONE	XC-726HC2B	056421
	1/4 SAE	10 ft/3 m	-45 ~ -15	35/2.4	XC-726HW352B	024511
	1/4 SAE	10 ft/3 m	-45 ~ -1	65/4.5	XC-726HW652B	025011
	1/4 SAE	10 ft/3 m	-30 ~ +10	NONE	XC-726HCA2B	059333
	1/4 SAE	10 ft/3 m	-45 ~ +10	100/6.9	XC-726HW1002B	036750
	1/4 SAE	10 ft/3 m	-45 ~ -12	NONE	XC-726HZ2B	040569
R 134a	1/4 SAE	10 ft/3 m	-30 ~ +10	NONE	XC-726MC2B	057235
	1/4 SAE	10 ft/3 m	-45 ~ +10	55/3.8	XC-726MW552B	057372
	1/4 SAE	10 ft/3 m	-45 ~ -12	NONE	XC-726MZ2B	063075
R 404A	1/4 SAE	10 ft/3 m	-30 ~ +10	NONE	XC-726SC2B	062303
	1/4 SAE	10 ft/3 m	-45 ~ -12	40/2.8	XC-726SW402B	063127
	1/4 SAE	10 ft/3 m	-45 ~ -4	65/4.5	XC-726SW652B	061692
	1/4 SAE	10 ft/3 m	-45 ~ -12	NONE	XC-726SZ2B	063974

Notes: 1. Capscrews included with Power Assembly
2. Maximum Operating Pressure Limit to prevent motor overload

Nominal Capacity:
Nominal capacities shown here are based on 4°C evaporator temperature and 38°C vapor-free liquid refrigerant entering the valve.

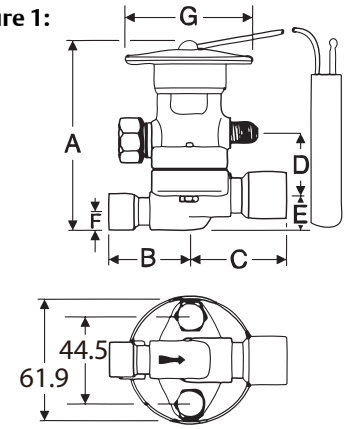
TCL(E) Series Valve Dimensional Data (mm): see figure 1

Straight-Thru Style									
Standard Connection Inlet x Outlet (inch)	Dimensions Size							Socket Depth	
	A	B	C	D	E	F	G	Inlet	Outlet
3/8 x 1/2 ODF	93.7	35.7	40.1	30.6	17.5	9.5	65.1	7.9	9.5
3/8 x 5/8 ODF			41.3		17.1	9.1			12.7
1/2 x 1/2 ODF	94.1		39.7		17.5	9.5		9.5	9.5
1/2 x 5/8 ODF	93.7		41.3		17.1	9.1			12.7
5/8 x 5/8 ODF	94.1	40.5	41.3		17.5	9.5		12.7	12.7
5/8 x 7/8 ODF			49.2						19.1
5/8 x 1-1/8 ODF			60.3						23.0
7/8 x 1-1/8 ODF	96.8	49.2	60.3					19.1	23.0

TCL(E) Series Valve Dimensional Data(mm): see figure 2

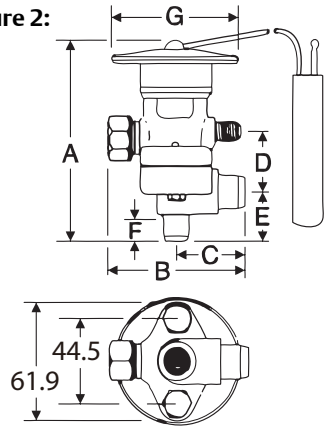
Angle									
Standard Connection Inlet x Outlet (inch)	Dimensions Size							Socket depth	
	A	B	C	D	E	F	G	Inlet	Outlet
1/4 x 3/8 ODF	100.4	73.8	34.1	30.6	23.8	11.1	65.1	-	14.3
3/8 x 1/2 ODF	104.4	77.0	37.3		27.0	14.3			1.6
3/8 x 5/8 ODF		80.2	40.5						20.6
1/2 x 5/8 ODF	106.8				30.2	17.5			
5/8 x 7/8 ODF	122.6	90.5	50.8	34.1	42.9	20.6		27.0	25.4

Figure 1:



TCL(E) Straight-thru

Figure 2:



TCL(E) Angle

TCL(E) Bulb Dimensions (mm):

Cap Tube Length (m)	Standard Remote Bulb	
	Diameter	Length
1.5	15.9	77.8
3.0		90.5
4.6 or 6.1		122.2
9.1		154.0
12.2 or 15.2	19.1	157.2

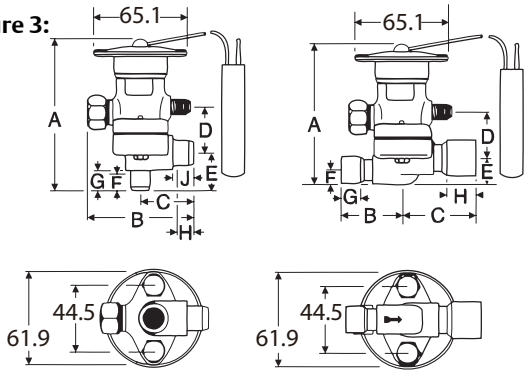
TJL(E) Series Thermal Expansion Valve Dimensional Data (mm): see figure 3

Straight-thru										
Standard Connection (inch)		Size								
Inlet	Outlet	A	B	C	D	E	F	G	H	J
5/8	1-1/8	123.4	41.3	63.5	34.1	43.7	17.9	13.5	23.0	-
7/8	1-1/8		49.2					19.1		
7/8	1-3/8			68.3					24.6	
Angle										
ODF : ODM 5/8 : 7/8	ODF : ODM 7/8 : 1-1/8	127.8	88.1	50.8	34.1	46.8	20.6	27.0	25.4	28.6

TJR Series Valve Thermal Expansion Dimensional Data (mm): see figure 4

Straight-thru										
Standard Connection (inch)		Size								
Inlet	Outlet	A	B	C	D	E	F	G	H	J
ODF:ODM 7/8:1-1/8	ODF:ODM 7/8:1-1/8	136.1	50.8	45.2	74.6	15.1	56.0	19.1	19.1	28.6
Angle										
ODF:ODM 7/8:1-1/8	ODF:ODM 7/8:1-1/8	139.7	85.7	50.8	92.9	58.7	19.1	28.6	19.1	28.6

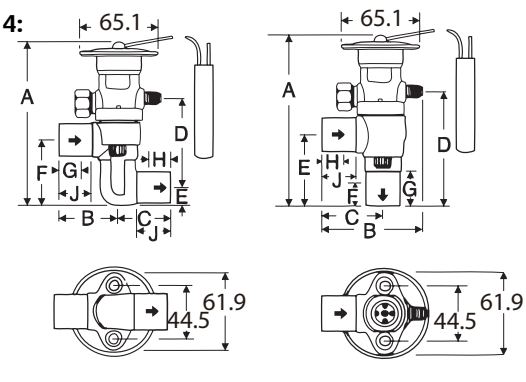
Figure 3:



TJLE Angle

TJLE Straight-thru

Figure 4:



TJR Angle

TJR Straight-thru

TJL(E) and TJR Bulb Dimensions (mm):

Cap Tube Length (m)	Standard Remote Bulb	
	Length	Diameter
1.5	15.9	77.8
3.0		90.5
4.6 or 6.1		122.2
9.1		154.0
12.2 or 15.2	19.1	157.2

TER Series Valve Dimensional Data (mm): see figure 5

Straight-thru										
Standard Connection (inch)		Size								
Inlet	Outlet	A	B	C	D	E	F	G	H	J
ODF:ODM 7/8:1-1/8	ODF:ODM 7/8:1-1/8	136.1	50.8	45.2	74.6	15.1	56.0	28.6	19.1	73.0
Angle										
ODF:ODM 7/8:1-1/8	ODF:ODM 7/8:1-1/8	139.7	85.7	50.8	92.9	58.7	19.1	28.6	19.1	73.0

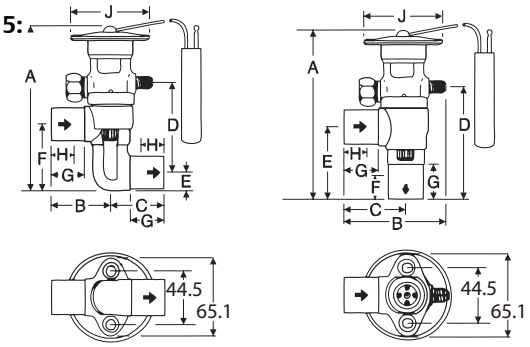
TIR Series Valve Dimensional Data (mm): see figure 5

Straight-thru										
Standard Connection (inch)		Size								
Inlet	Outlet	A	B	C	D	E	F	G	H	J
ODF:ODM 7/8:1-1/8	ODF:ODM 7/8:1-1/8	138.5	50.8	45.2	76.2	15.1	57.5	28.6	19.1	73.0
Angle										
ODF:ODM 7/8:1-1/8	ODF:ODM 7/8:1-1/8	152.4	85.7	50.8	105.6	71.4	19.1	28.6	19.1	73.0

THR Series Valve Dimensional Data (mm): see figure 5

Straight-thru										
Standard Connection (inch)		Size								
Inlet	Outlet	A	B	C	D	E	F	G	H	J
1-1/8 ODM	1-1/8 ODM	138.5	50.8	45.2	76.2	15.1	57.5	-	-	73.0
Angle										
1-1/8 ODM	1-1/8 ODM	152.4	85.7	50.8	105.6	71.4	-	28.6	-	73.0

Figure 5:



Straight-thru **Angle**

TER, TIR, THR Bulb Dimensions (mm):

Cap Tube Length (m)	Standard Remote Bulb	
	Length	Diameter
1.5	19.1	123.8
3.0		
4.6 or 6.1		
9.1		
12.2 or 15.2		157.2

ZZ Series Thermal Expansion Valve

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°C.

ZZ Series

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
- Maximum working pressure: 450 psig (31 bar)

Nomenclature:

ZZC	6	B	G125	SAE EE	10FT	3/8 X 5/8	ODF	S/T
Valve Series	Capacity (Tons)	Refrigerant H: R 22 B: R 23 S: R 404A/ R 507C	Charge Code Z = low temp G(MOP) = press.limiting	External Equalizer 1/4" SAE	Capillary Tube Length 10 FT (std)/ 3 meters	Inlet x Outlet Connection Sizes	ODF=Solder	ANG = 90° angle S/T = straight-thru

R 22 Standard Ordering Information:

Nominal Capacity in kW	Valve Type	Power Element		Cage		Flange	
		Type	PCN	Type	PCN	Type	PCN
1.8	ZZC3/4	XC-726HZ-2B POWER ASSY 10FT SAE EE or XC-726HW35-2BPOWER ASSY 10FT SAE EE	040569 or 024511	X-10110-B1B	021288	C-501-5 3/8X5/8 ODF ANG	065748
3.8	ZZC1-1/2			X-10110-B2B	020871		
6.4	ZZC2-1/2			X-10110-B3B	096091		
10.2	ZZC4			X-10110-B4B	096312	C-501-7 1/2X5/8 ODF ANG	065861
15.4	ZZC6			X-10110-B5B	096425		
20.5	ZZC8			X-10110-B6B	096646	A-576 5/8X7/8 ODF ANG	027764
25.6	ZZJR10			X-10111-B5B	089306	10331 7/8 ODFX1-1/8 ODM ANG	029411
30.7	ZZER12			X-10059-B6B	030071	9153 7/8 ODFX1-1/8 ODM ANG	027919
33.3	ZZER13			X-10059-B7B	025100		
46.1	ZZER18			X-10059-B8B	025101		
53.7	ZZER 21			X-10059-B9B	025099		
76.8	ZZIR 30			X-10060-B10B	025090	9151 7/8 ODFX1-1/8 ODM ANG	027926

Cage Assemblies & Gaskets:

PCN	Type
027579	X-13455-1

Note: Gasket Set includes necessary body flange gasket & seat gasket

R 23 Standard Ordering Information:

Capacity kW	Valve Type	Power Element		Cage		Flange	
		Type	PCN	Type	PCN	Type	PCN
1.9	ZZC1	XC-726 BG 125-2B POWER ASSY 10FT SAE EE	039130	X-10110-B1B	021288	C-501-5 3/8X5/8 ODF ANG	065748
4.0	ZZC2-1/2			X-10110-B2B	020871		
6.8	ZZC4			X-10110-B3B	096091		
10.8	ZZC6			X-10110-B4B	096312	C-501-7 1/2X5/8 ODF ANG	065861
16.3	ZZC9			X-10110-B5B	096425		
21.7	ZZC13			X-10110-B6B	096646	A-576 5/8X7/8 ODF ANG	027764
27.1	ZZJR16			X-10111-B5B	089306	10331 7/8 ODFX1-1/8 ODM ANG	029411
32.5	ZZER 20			X-10059-B6B	030071	9153 7/8 ODFX1-1/8 ODM ANG	027919
35.2	ZZER 21			X-10059-B7B	025100		
48.8	ZZER 29			X-10059-B8B	025101		
56.8	ZZER 34			X-10059-B9B	025099		
81.3	ZZIR 48			X-10060-B10B	025090	9151 7/8 ODFX1-1/8 ODM ANG	027926

R 404A/R 507 Standard Ordering Information:

Nominal Capacity kW	Valve Type	Power Element		Cage		Flange	
		Type	PCN	Type	PCN	Type	PCN
1.2	ZZC3/4	XC-726 SZ -2B POWER ASSY 10FT SAE EE or XC-726 SW 40-2B POWER ASSY 10FT SAE EE	063974 or 063127	X-10110-B1B	021288	C-501-5 3/8X5/8 ODF ANG	065748
2.6	ZZC1-1/2			X-10110-B2B	020871		
4.4	ZZC2-1/2			X-10110-B3B	096091		
7.0	ZZC3-1/2			X-10110-B4B	096312	C-501-7 1/2X5/8 ODF ANG	065861
10.6	ZZC5			X-10110-B5B	096425		
14.1	ZZC8			X-10110-B6B	096646	A-576 5/8X7/8 ODF ANG	027764
17.6	ZZJR9			X-10111-B5B	089306	10331 7/8 ODFX1-1/8 ODM ANG	029411
21.2	ZZER11			X-10059-B6B	030071	9153 7/8 ODFX1-1/8 ODM ANG	027919
22.9	ZZER13			X-10059-B7B	025100		
31.7	ZZER18			X-10059-B8B	025101		
37.0	ZZER 20			X-10059-B9B	025099		
52.9	ZZIR 29			X-10060-B10B	025090	9151 7/8 ODFX1-1/8 ODM ANG	027926

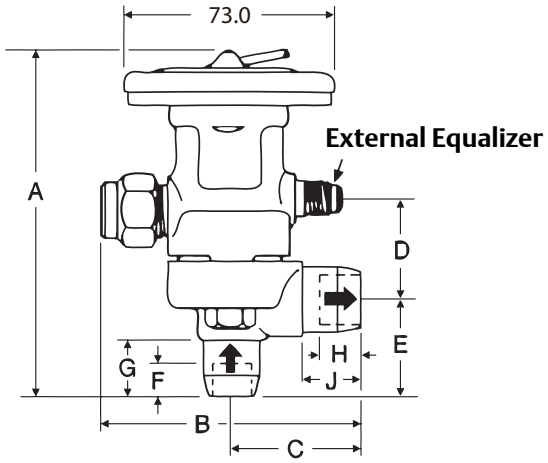
Nominal Capacity Conditions:

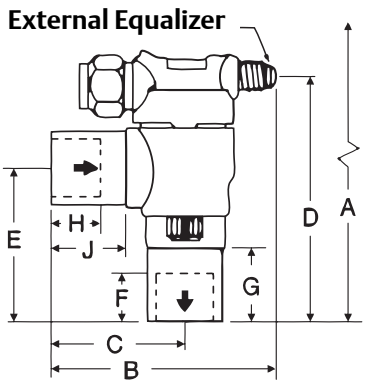
Refrigerant	Evaporating Temp ºC	Condensation Temp ºC	Sub-cooling K
R 22	-40	25	1
R 23	-60	-25	1
R 404A/R 507	-40	25	1

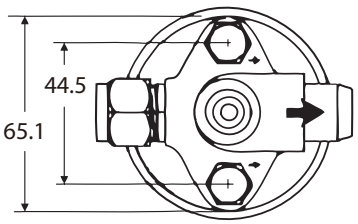
Preferred MOPs:

Refrigerant	Charge Type	Max Evaporating Temp ºC	Evaporating Temp Range ºC
R 22	W35	-11	-70 ~ -15
R 23	G125	-32	-100 ~ -33
R 404A/R 507	W40	-14	-75 ~ -18

Angle Structure Dimensional Data (mm):

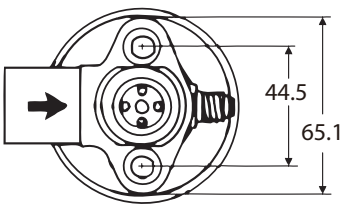






Bottom View

ZZC Angle Valve

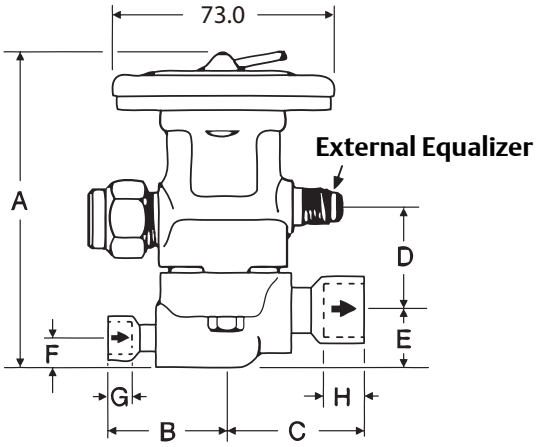


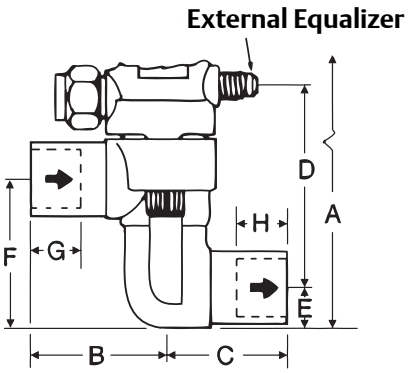
Bottom View

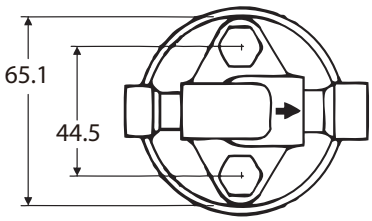
ZZJR, ZZER, ZZIR Angle Valve

ZZ Angle Valve	Connection Type Inlet X Outlet (inch)	A	B	C	D	E	F	G	H	J
ZZC	1/4 x 3/8 ODF	101.6	74.6	34.9	31.8	23.8	11.1	-	14.3	-
	1/4 x 1/2 ODF	101.6	77.8	38.1		23.8	11.1		17.5	
	3/8 x 1/2 ODF	104.8	77.8	38.1		27.0	14.3		17.5	
	3/8 x 5/8 ODF	104.8	81.0	41.3		27.0	14.3		20.6	
	1/2 x 5/8 ODF	108.0	81.0	41.3		30.2	17.5		20.6	
	5/8 ODF - 7/8 ODM x 7/8 ODF - 1-1/8 ODM	123.8	90.5	50.8	34.9	42.9	20.6	27.0	25.4	28.6
ZZJR	7/8 ODF - 1-1/8 ODM x 7/8 ODF - 1-1/8 ODM	139.7	87.3	50.8	93.7	58.7	19.1	28.6	19.1	28.6
ZZER	7/8 ODF - 1-1/8 ODM x 7/8 ODF - 1-1/8 ODM									
ZZIR	7/8 ODF - 1-1/8 ODM x 7/8 ODF - 1-1/8 ODM	152.4			106.4	71.4	19.1		19.1	

Straight-thru Dimensional Data (mm):

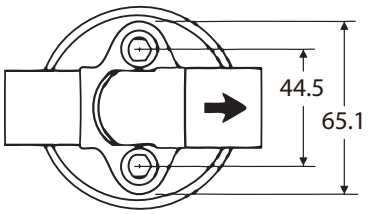






Bottom View

ZZC Straight-thru Valve



Bottom View

ZZJR, ZZER, ZZIR Straight-thru Valve

ZZ Straight-thru Valve	Connection Type Inlet X Outlet (inch)	A	B	C	D	E	F	G	H
ZZC	1/4 x 5/8 ODF	95.3	36.5	41.3	31.8	17.5	9.5	7.9	12.7
	3/8 x 3/8 ODF			39.7					7.9
	3/8 x 1/2 ODF			39.7					9.5
	3/8 x 5/8 ODF			41.3					12.7
	3/8 x 7/8 ODF	96.8		49.2	33.3				19.1
	1/2 x 1/2 ODF	95.3	36.5	39.7	31.8	17.5	9.5	9.5	9.5
	1/2 x 5/8 ODF	95.3		41.3	31.8				12.7
	1/2 x 7/8 ODF	96.8		49.2	33.3				19.1
	1/2 x 1-1/8 ODF	95.3		60.3	31.8				23.8
	5/8 x 5/8 ODF	95.3	41.3	41.3	31.8	17.5	9.5	12.7	12.7
	5/8 x 7/8 ODF			49.2					19.1
	5/8 x 1-1/8 ODF			60.3					23.8
	5/8 x 1-3/8 ODF	96.8	41.3	65.1	31.8	19.1	9.5	12.7	25.4
	7/8 x 1-1/8 ODF	95.3	49.2	60.3	31.8	17.5	12.7	19.1	23.8
ZZJR	7/8 ODF - 1-1/8 ODM x 7/8 ODF - 1-1/8 ODM	138.1	50.8	46.0	74.6	14.3	55.6	19.1	19.1
ZZER	7/8 ODF - 1-1/8 ODM x 7/8 ODF - 1-1/8 ODM								
ZZIR	7/8 ODF - 1-1/8 ODM x 7/8 ODF - 1-1/8 ODM	139.7			76.2		57.2		

Notes: 1. Allow 54 mm above valve for removal of power assembly.
2. Remore bulb diamer is 16.0 mm and length is 123.8 mm.

Correction Tables For Series ZZ:

Valve selection for operating conditions other than mentioned on page 25:

$$Q_n = Q_o \times K_t \times K_{\Delta p}$$

Q_n: Nominal valve capacity
Q_o: Required cooling capacity
K_t: Correction factor for evaporating and liquid temperature
$K_{\Delta p}$: Correction factor for pressure drop at valve

Liquid Temperature Entering Valve °C	Correction Factor K_t Evaporating Temperature °C R 22					
	-45	-50	-55	-60	-65	-70
+10	1.02	1.21	1.42	1.66	1.97	2.30
0	0.94	1.12	1.30	1.53	1.75	2.02
-10	0.88	1.04	1.21	1.42	1.61	1.83
-20	0.82	0.98	1.13	1.32	1.50	1.71
-30	0.77	0.92	1.05	1.23	1.39	1.56
-40		0.86	1.00	1.15	1.30	1.47
-50				1.09	1.25	1.42

Correction Factor $K_{\Delta p}$

Δp (bar)	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0
$K_{\Delta p}$	4.40	3.10	2.50	2.20	2.00	1.80	1.70	1.60	1.50	1.40	1.30	1.20
Δp (bar)	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0
$K_{\Delta p}$	1.10	1.04	0.98	0.94	0.90	0.87	0.83	0.81	0.78	0.76	0.74	0.72

Note: For the proper sizing of thermo expansion valves in cases of subcooling of more than 15K please use the correction factors on page 6 of this brochure.

Liquid Temperature Entering Valve °C	Correction Factor K_t Evaporating Temperature °C R 23											
	-45	-50	-55	-60	-65	-70	-75	-80	-85	-90	-95	-100
-10	1.18	1.18	1.19	1.21	1.28	1.48	1.86	2.21	2.73	3.36	4.15	5.06
-15	1.11	1.11	1.12	1.13	1.20	1.39	1.74	2.07	2.56	3.14	3.88	4.72
-20	1.04	1.05	1.06	1.07	1.13	1.31	1.64	1.95	2.41	2.95	3.64	4.43
-25	0.99	0.99	1.00	1.01	1.07	1.24	1.55	1.84	2.27	2.78	3.43	4.17
-30	0.94	0.94	0.95	0.96	1.02	1.17	1.47	1.75	2.15	2.63	3.24	3.94
-35	0.89	0.90	0.91	0.91	0.97	1.12	1.40	1.66	2.04	2.50	3.08	3.74
-40	0.85	0.86	0.86	0.87	0.92	1.06	1.33	1.58	1.94	2.38	2.92	3.55
-45		0.82	0.83	0.83	0.88	1.02	1.27	1.51	1.85	2.27	2.79	3.38
-50			0.79	0.80	0.84	0.97	1.22	1.44	1.77	2.17	2.86	3.23
-55				0.76	0.81	0.93	1.17	1.38	1.70	2.07	2.55	3.09
-60					0.78	0.90	1.12	1.33	1.63	1.99	2.44	2.96
-65						0.86	1.08	1.27	1.57	1.91	2.35	2.84
-70							1.04	1.23	1.51	1.84	2.26	2.73
-75								1.18	1.45	1.77	2.18	2.63
-80									1.40	1.71	2.10	2.54

Correction Factor $K_{\Delta p}$

Δp (bar)	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0
$K_{\Delta p}$	4.20	2.97	2.43	2.10	1.88	1.72	1.59	1.49	1.40	1.33	1.21	1.12
Δp (bar)	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0
$K_{\Delta p}$	1.05	0.99	0.94	0.90	0.86	0.82	0.79	0.77	0.74	0.72	0.70	0.68

Liquid Temperature Entering Valve °C	Correction Factor K_t Evaporating Temperature R 507 °C					
	-45	-50	-55	-60	-65	-70
+30	1.26	1.67	2.10	2.68	3.48	4.58
+20	1.07	1.41	1.77	2.25	2.89	3.78
+10	0.94	1.22	1.52	1.92	2.46	3.23
0	0.83	1.08	1.33	1.68	2.16	2.82
-10	0.75	0.95	1.19	1.49	1.92	2.48
-20	0.67	0.86	1.07	1.34	1.70	2.20
-30	0.61	0.78	0.96	1.21	1.54	2.00
-40	0.55	0.71	0.86	1.08	1.38	1.79
-50			0.79	0.99	1.24	1.62

Correction Factor $K_{\Delta p}$

Δp (bar)	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0
$K_{\Delta p}$	4.77	3.37	2.75	2.38	2.13	1.95	1.80	1.69	1.59	1.51	1.38	1.27
Δp (bar)	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0
$K_{\Delta p}$	1.19	1.12	1.07	1.02	0.97	0.94	0.90	0.87	0.84	0.82	0.79	0.77

Note: For the proper sizing of thermo expansion valves in cases of subcooling of more than 15K please use the correction factors on page 6 of this brochure.

Liquid Temperature Entering Valve °C	Correction Factor K_t Evaporating Temperature R 404A °C							
	-40	-45	-50	-55	-60	-65	-70	-75
+40	1.40	1.76	2.21	2.77	3.56	4.30	4.87	5.61
+35	1.24	1.55	1.94	2.42	3.09	3.71	4.17	4.77
+30	1.12	1.39	1.73	2.15	2.74	3.27	3.66	4.17
+25	1.02	1.26	1.57	1.94	2.46	2.93	3.27	3.70
+20	0.94	1.16	1.44	1.77	2.24	1.66	2.96	3.34
+15	0.87	1.07	1.33	1.63	2.06	2.44	2.71	3.05
+10	0.81	1.00	1.23	1.52	1.91	2.26	2.49	2.80
+5	0.76	0.94	1.15	1.42	1.78	2.10	2.32	2.60
0	0.71	0.88	1.08	1.33	1.67	1.97	2.17	2.43
-5	0.68	0.83	1.02	1.25	1.57	1.85	2.04	2.28
-10	0.64	0.79	0.97	1.19	1.49	1.75	1.92	2.14
-15	0.61	0.75	0.92	1.13	1.41	1.66	1.82	2.03
-20	0.58	0.72	0.88	1.07	1.34	1.57	1.73	1.92
-25	0.56	0.69	0.84	1.03	1.28	1.50	1.65	1.83
-30	0.54	0.66	0.80	0.98	1.22	1.43	1.57	1.75
-35	0.51	0.63	0.77	0.94	1.17	1.36	1.49	1.66
-40		0.60	0.74	0.90	1.12	1.31	1.43	1.59
-45			0.71	0.86	1.07	1.25	1.37	1.52
-50				0.83	1.03	1.21	1.32	1.46

Correction Factor $K_{\Delta p}$

Δp (bar)	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	6	7
$K_{\Delta p}$	4.73	3.34	2.73	2.36	2.11	1.93	1.79	1.67	1.58	1.5	1.37	1.26
Δp (bar)	8	9	10	11	12	13	14	15	16	17	18	19
$K_{\Delta p}$	1.18	1.11	1.06	1.01	0.97	0.93	0.89	0.86	0.84	0.8	0.79	0.77

Note: For the proper sizing of thermo expansion valves in cases of subcooling of more than 15K please use the correction factors on page 6 of this brochure.

Thermal Expansion Valve Extended Capacity Table

R 22 Capacity (kW) – A-Series And T-Series:

Type	Nominal Capacity in Ton	Evaporating Temp																	
		10°C						4°C						-7°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0
AA/AN	1/5	0.53	0.60	0.67	0.77	0.84	0.91	0.53	0.60	0.67	0.74	0.81	0.88	0.49	0.56	0.63	0.70	0.77	0.84
AA/AN	1/4	0.91	1.05	1.19	1.33	1.44	1.54	0.91	1.05	1.16	1.30	1.40	1.54	0.88	1.02	1.12	1.26	1.40	1.51
AA/AN	1/2	1.61	1.86	2.07	2.31	2.56	2.77	1.58	1.82	2.03	2.28	2.49	2.70	1.54	1.79	2.00	2.24	2.45	2.63
AA/AN	1	2.56	2.94	3.29	3.68	4.03	4.38	2.52	2.91	3.26	3.64	3.99	4.31	2.45	2.84	3.15	3.54	3.89	4.20
AA/AN	1-1/2	3.68	4.24	4.76	5.32	5.81	6.27	3.61	4.17	4.66	5.22	5.71	6.16	3.54	4.10	4.55	5.11	5.60	6.02
AA/AN	2	5.39	6.23	6.97	7.77	8.51	9.21	5.32	6.13	6.86	7.67	8.40	9.07	5.18	5.99	6.69	7.49	8.19	8.86
AA/AN	2-1/2	7.56	8.72	9.77	10.92	11.97	12.92	7.46	8.61	9.63	10.75	11.80	12.74	7.28	8.40	9.42	10.50	11.52	12.43
AA/AN	3	9.28	10.71	11.97	13.37	14.67	15.86	9.14	10.54	11.80	13.20	14.46	15.61	8.93	10.29	11.52	12.88	14.11	15.23
AA/AN	4	10.99	12.71	14.18	15.86	17.36	18.76	10.85	12.53	14.00	15.65	17.15	18.52	10.61	12.25	13.69	15.30	16.77	18.10
AA/AN	5	15.05	17.40	19.43	21.74	23.80	25.69	14.84	17.12	19.15	21.42	23.45	25.34	14.49	16.73	18.69	20.93	22.93	24.75
TCLE	1/2	1.37	1.58	1.75	1.96	2.17	2.35	1.37	1.58	1.75	1.96	2.14	2.31	1.33	1.54	1.72	1.93	2.10	2.28
TCLE	1	2.59	2.98	3.36	3.75	4.10	4.41	2.56	2.94	3.29	3.68	4.03	4.34	2.49	2.87	3.22	3.57	3.92	4.24
TCLE	2	5.22	6.02	6.72	7.53	8.26	8.89	5.15	5.95	6.65	7.42	8.16	8.79	5.04	5.81	6.51	7.28	7.98	8.61
TCLE	3	9.63	11.13	12.43	13.90	15.23	16.45	9.49	10.96	12.25	13.69	15.02	16.21	9.28	10.71	11.97	13.37	14.67	15.86
TCLE	5	14.04	16.21	18.13	20.27	22.19	23.98	13.83	15.96	17.85	19.95	21.88	23.63	13.51	15.61	17.43	19.50	21.35	23.07
TCLE	7-1/2	20.37	23.52	26.29	29.40	32.20	34.79	20.13	23.24	25.97	29.05	31.82	34.37	19.60	22.65	25.31	28.28	30.98	33.46
TCLE	10	28.07	32.41	36.23	40.53	44.38	47.95	27.72	32.03	35.81	40.04	43.86	47.36	27.02	31.19	34.90	38.99	42.74	46.13
TCLE	12	33.85	39.10	43.68	48.86	53.52	57.79	33.43	38.61	43.16	48.27	52.85	57.09	32.59	37.63	42.07	47.04	51.52	55.65
TJL	11	30.00	34.65	38.71	43.30	47.43	51.24	29.65	34.23	38.26	42.77	46.87	50.61	28.88	33.36	37.28	41.69	45.64	49.32
TJL	14	38.22	44.14	49.35	55.16	60.45	65.28	37.80	43.65	48.79	54.57	59.75	64.54	36.82	42.53	47.53	53.13	58.21	62.90

Note: Nominal capacity is based on ARI 750-2001; 38 °C liquid temperature, 4°C evaporating temperature, pressure drop across valve 7 bar

Type	Nominal Capacity in Ton	Evaporating Temp																	
		-18°C						-29°C						-40°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	5.5	7.0	8.5	10.0	12.0	14.0	5.5	7.0	8.5	10.0	12.0	14.0
AA/AN	1/5	0.46	0.53	0.60	0.67	0.74	0.77	0.35	0.39	0.46	0.49	0.53	0.56	0.25	0.28	0.32	0.35	0.35	0.39
AA/AN	1/4	0.81	0.95	1.05	1.16	1.26	1.37	0.63	0.70	0.81	0.88	0.95	0.98	0.42	0.46	0.53	0.56	0.63	0.67
AA/AN	1/2	1.40	1.61	1.82	2.03	2.21	2.38	1.12	1.26	1.40	1.54	1.65	1.79	0.74	0.81	0.91	1.02	1.09	1.16
AA/AN	1	2.24	2.59	2.91	3.22	3.54	3.82	1.79	2.00	2.24	2.45	2.63	2.84	1.19	1.33	1.51	1.65	1.75	1.89
AA/AN	1-1/2	3.19	3.68	4.10	4.59	5.04	5.43	2.56	2.87	3.19	3.50	3.78	4.03	1.68	1.89	2.10	2.31	2.49	2.66
AA/AN	2	4.73	5.46	6.09	6.83	7.46	8.09	3.75	4.20	4.69	5.15	5.53	5.92	2.49	2.77	3.12	3.40	3.68	3.92
AA/AN	2-1/2	6.62	7.63	8.54	9.56	10.47	11.31	5.29	5.92	6.62	7.25	7.81	8.37	3.47	3.89	4.34	4.76	5.11	5.50
AA/AN	3	8.09	9.35	10.43	11.66	12.78	13.83	6.48	7.25	8.09	8.86	9.59	10.26	4.27	4.76	5.36	5.85	6.30	6.76
AA/AN	4	9.63	11.13	12.43	13.90	15.23	16.45	7.67	8.58	9.59	10.50	11.34	12.11	5.04	5.64	6.30	6.90	7.46	7.98
AA/AN	5	13.13	15.16	16.94	18.94	20.76	22.40	10.50	11.73	13.13	14.39	15.54	16.59	6.90	7.70	8.61	9.45	10.19	10.89
TCLE	1/2	1.19	1.37	1.54	1.72	1.89	2.03	0.95	1.05	1.19	1.30	1.40	1.51	0.63	0.70	0.81	0.88	0.95	0.98
TCLE	1	2.28	2.63	2.94	3.29	3.61	3.89	1.82	2.03	2.28	2.49	2.70	2.87	1.19	1.33	1.51	1.65	1.75	1.89
TCLE	2	4.55	5.25	5.88	6.58	7.21	7.77	3.64	4.06	4.55	4.97	5.39	5.74	2.42	2.70	3.01	3.29	3.57	3.82
TCLE	3	8.40	9.70	10.85	12.11	13.27	14.35	6.72	7.53	8.40	9.21	9.94	10.64	4.41	4.94	5.53	6.06	6.51	6.97
TCLE	5	12.25	14.14	15.82	17.68	19.36	20.93	9.77	10.92	12.22	13.37	14.46	15.44	6.44	7.21	8.05	8.82	9.52	10.19
TCLE	7-1/2	17.78	20.55	22.96	25.66	28.11	30.38	14.18	15.86	17.71	19.43	20.97	22.40	9.35	10.47	11.69	12.81	13.83	14.77
TCLE	10	24.50	28.28	31.64	35.35	38.75	41.83	19.57	21.88	24.47	26.78	28.95	30.94	12.88	14.39	16.10	17.64	19.04	20.37
TCLE	12	29.54	34.13	38.15	42.63	46.69	50.44	23.59	26.39	29.51	32.31	34.90	37.31	15.54	17.36	19.43	21.28	23.00	24.57
TJL	11	26.18	30.24	33.81	37.80	41.41	44.70	20.90	23.35	26.11	28.60	30.91	33.04	13.76	15.37	17.19	18.83	20.34	21.74
TJL	14	33.39	38.57	43.12	48.20	52.78	57.02	26.67	29.82	33.36	36.51	39.45	42.18	17.57	19.64	21.98	24.05	25.97	27.79

R 134a Capacity In Ton (kW) - A-Series And T-Series:

Type	Nominal Capacity in Ton	Evaporating Temp																	
		10°C						4°C						-7°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0
AA/AN	1/8	0.49	0.56	0.63	0.70	0.77	0.84	0.49	0.56	0.63	0.70	0.77	0.84	0.46	0.53	0.60	0.67	0.74	0.77
AA/AN	1/4	0.88	1.02	1.12	1.26	1.40	1.51	0.84	0.98	1.09	1.23	1.33	1.44	0.81	0.95	1.05	1.16	1.26	1.37
AA/AN	1/2	1.51	1.75	1.96	2.17	2.38	2.56	1.51	1.75	1.96	2.17	2.38	2.56	1.44	1.65	1.86	2.07	2.28	2.45
AA/AN	3/4	2.45	2.84	3.15	3.54	3.89	4.20	2.38	2.77	3.08	3.43	3.78	4.06	2.28	2.63	2.94	3.29	3.61	3.89
AA/AN	1	3.50	4.03	4.52	5.04	5.53	5.99	3.43	3.96	4.45	4.94	5.43	5.85	3.26	3.75	4.20	4.69	5.15	5.57
AA/AN	1-1/2	5.15	5.95	6.65	7.42	8.12	8.79	5.04	5.81	6.51	7.28	7.98	8.61	4.83	5.57	6.23	6.97	7.63	8.26
AA/AN	2	7.21	8.33	9.31	10.40	11.41	12.32	7.07	8.16	9.14	10.22	11.17	12.08	6.76	7.81	8.72	9.77	10.68	11.55
AA/AN	2-1/2	8.86	10.22	11.45	12.78	14.00	15.12	8.65	9.98	11.17	12.50	13.69	14.77	8.30	9.59	10.71	11.97	13.13	14.18
AA/AN	3	10.50	12.11	13.55	15.16	16.59	17.92	10.29	11.87	13.30	14.84	16.28	17.57	9.84	11.34	12.71	14.21	15.54	16.80
AA/AN	4	14.35	16.56	18.52	20.72	22.68	24.50	14.07	16.24	18.17	20.30	22.26	24.05	13.44	15.51	17.36	19.39	21.25	22.96
TCLE	1/4	1.30	1.51	1.68	1.86	2.07	2.21	1.30	1.51	1.68	1.86	2.07	2.21	1.23	1.40	1.58	1.79	1.93	2.10
TCLE	3/4	2.45	2.84	3.15	3.54	3.89	4.20	2.42	2.80	3.12	3.50	3.82	4.13	2.31	2.66	2.98	3.33	3.64	3.96
TCLE	1-1/2	4.97	5.74	6.41	7.18	7.88	8.51	4.87	5.64	6.27	7.04	7.70	8.30	4.66	5.39	6.02	6.72	7.35	7.95
TCLE	2-1/2	9.17	10.61	11.83	13.23	14.49	15.65	9.00	10.40	11.62	12.99	14.21	15.37	8.61	9.94	11.13	12.43	13.62	14.70
TCLE	3-1/2	13.37	15.44	17.26	19.29	21.14	22.82	13.09	15.12	16.91	18.90	20.69	22.37	12.53	14.46	16.17	18.10	19.81	21.39
TCLE	5-1/2	19.43	22.44	25.10	28.04	30.73	33.18	19.01	21.95	24.54	27.44	30.07	32.45	18.20	21.00	23.49	26.29	28.77	31.08
TCLE	7-1/2	26.78	30.91	34.58	38.64	42.35	45.71	26.22	30.28	33.85	37.84	41.44	44.77	25.06	28.95	32.34	36.16	39.62	42.81
TCLE	9	32.27	37.28	41.65	46.59	51.03	55.13	31.61	36.51	40.81	45.61	49.98	53.97	30.24	34.93	39.03	43.65	47.81	51.66
TJL	9	28.60	33.01	36.93	41.27	45.22	48.83	28.00	32.34	36.16	40.43	44.28	47.81	26.78	30.91	34.58	38.64	42.35	45.71
TJL	11	36.47	42.11	47.08	52.64	57.68	62.30	35.70	41.23	46.10	51.52	56.46	60.97	34.16	39.45	44.10	49.32	54.01	58.35

Note: Nominal capacity is based on ARI 750-2001; 38°C liquid temperature, 4°C evaporating temperature, Pressure drop across valve 7bar

Type	Nominal Capacity in Ton	Evaporating Temp																	
		-18°C						-29°C						-40°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	5.5	7.0	8.5	10.0	12.0	14.0	5.5	7.0	8.5	10.0	12.0	14.0
AA/AN	1/8	0.39	0.46	0.49	0.56	0.60	0.67	0.28	0.32	0.35	0.39	0.42	0.46	0.18	0.21	0.21	0.25	0.25	0.28
AA/AN	1/4	0.67	0.77	0.88	0.95	1.05	1.12	0.49	0.56	0.63	0.67	0.74	0.77	0.32	0.35	0.39	0.42	0.46	0.49
AA/AN	1/2	1.19	1.37	1.54	1.72	1.89	2.03	0.88	0.98	1.09	1.19	1.30	1.40	0.53	0.60	0.67	0.74	0.77	0.84
AA/AN	3/4	1.89	2.17	2.45	2.73	2.98	3.22	1.40	1.58	1.75	1.93	2.07	2.21	0.88	0.98	1.09	1.19	1.30	1.40
AA/AN	1	2.70	3.12	3.47	3.89	4.27	4.62	2.00	2.24	2.49	2.73	2.94	3.15	1.23	1.37	1.54	1.68	1.82	1.93
AA/AN	1-1/2	3.96	4.55	5.11	5.71	6.27	6.76	2.98	3.33	3.71	4.06	4.41	4.69	1.82	2.03	2.28	2.49	2.70	2.87
AA/AN	2	5.57	6.44	7.18	8.02	8.79	9.52	4.17	4.66	5.22	5.71	6.16	6.58	2.56	2.87	3.19	3.50	3.78	4.03
AA/AN	2-1/2	6.83	7.88	8.82	9.84	10.78	11.66	5.08	5.67	6.34	6.97	7.49	8.02	3.12	3.50	3.89	4.27	4.62	4.94
AA/AN	3	8.09	9.35	10.43	11.66	12.78	13.83	6.02	6.72	7.53	8.26	8.89	9.52	3.71	4.17	4.66	5.08	5.50	5.88
AA/AN	4	11.06	12.78	14.28	15.96	17.50	18.90	8.26	9.24	10.33	11.31	12.22	13.06	5.08	5.67	6.34	6.97	7.49	8.02
TCLE	1/4	1.02	1.16	1.30	1.47	1.61	1.75	0.77	0.88	0.98	1.05	1.16	1.23	0.46	0.53	0.56	0.63	0.67	0.74
TCLE	3/4	1.89	2.17	2.45	2.73	2.98	3.22	1.44	1.61	1.79	1.96	2.14	2.28	0.88	0.98	1.09	1.19	1.30	1.40
TCLE	1-1/2	3.85	4.45	4.97	5.57	6.09	6.58	2.87	3.22	3.61	3.92	4.24	4.55	1.75	1.96	2.21	2.38	2.59	2.77
TCLE	2-1/2	7.07	8.16	9.14	10.22	11.17	12.08	5.29	5.92	6.62	7.25	7.81	8.37	3.26	3.64	4.06	4.45	4.83	5.15
TCLE	3-1/2	10.33	11.94	13.34	14.91	16.31	17.64	7.70	8.61	9.63	10.54	11.38	12.18	4.73	5.29	5.92	6.48	7.00	7.46
TCLE	5-1/2	14.98	17.29	19.36	21.63	23.70	25.59	11.17	12.50	13.97	15.30	16.52	17.64	6.86	7.67	8.58	9.38	10.15	10.85
TCLE	7-1/2	20.65	23.84	26.67	29.82	32.66	35.28	15.40	17.22	19.25	21.07	22.79	24.36	9.45	10.57	11.83	12.95	13.97	14.95
TCLE	9	24.89	28.74	32.13	35.91	39.34	42.49	18.55	20.76	23.21	25.41	27.44	29.33	11.41	12.74	14.28	15.61	16.87	18.03
TJL	9	22.05	25.45	28.46	31.82	34.86	37.66	16.45	18.38	20.58	22.54	24.33	26.01	10.12	11.31	12.64	13.86	14.95	16.00
TJL	11	28.11	32.45	36.30	40.57	44.45	47.99	20.97	23.45	26.22	28.70	31.01	33.15	12.88	14.39	16.10	17.64	19.04	20.37

Liquid Refrigerant Temperature Adjusting Index:

	Liquid Refrigerant Temp °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
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

Note: 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 in the actual factors across this range is insignificant.

R 404A/R 507 Capacity (kW)- A-Series And T-Series:

Type	Nominal Capacity in Ton	Evaporating Temp																	
		10°C						4°C						-7°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0
AA/AN	1/8	0.39	0.46	0.49	0.56	0.60	0.67	0.39	0.46	0.49	0.56	0.60	0.67	0.35	0.42	0.46	0.49	0.56	0.60
AA/AN	1/4	0.67	0.77	0.88	0.95	1.05	1.12	0.67	0.77	0.88	0.95	1.05	1.12	0.63	0.74	0.81	0.91	0.98	1.09
AA/AN	1/2	1.16	1.33	1.51	1.68	1.82	1.96	1.16	1.33	1.51	1.68	1.82	1.96	1.09	1.26	1.40	1.58	1.72	1.86
AA/AN	3/4	1.89	2.17	2.45	2.73	2.98	3.22	1.82	2.10	2.35	2.63	2.87	3.12	1.75	2.03	2.28	2.52	2.77	2.98
AA/AN	1	2.70	3.12	3.47	3.89	4.27	4.62	2.63	3.05	3.40	3.78	4.17	4.48	2.49	2.87	3.22	3.57	3.92	4.24
AA/AN	1-1/4	3.96	4.55	5.11	5.71	6.27	6.76	3.85	4.45	4.97	5.57	6.09	6.58	3.68	4.24	4.76	5.32	5.81	6.27
AA/AN	2	5.53	6.37	7.14	7.98	8.75	9.45	5.43	6.27	7.00	7.84	8.58	9.28	5.15	5.95	6.65	7.42	8.12	8.79
AA/AN	2-1/4	6.79	7.84	8.75	9.80	10.75	11.59	6.62	7.63	8.54	9.56	10.47	11.31	6.30	7.28	8.12	9.10	9.98	10.75
AA/AN	2-1/2	8.05	9.31	10.40	11.62	12.74	13.76	7.88	9.10	10.15	11.38	12.46	13.44	7.49	8.65	9.66	10.82	11.83	12.78
AA/AN	3-1/2	11.03	12.74	14.25	15.93	17.43	18.83	10.78	12.46	13.93	15.58	17.05	18.41	10.22	11.80	13.20	14.74	16.17	17.47
TCLE	1/4	1.02	1.16	1.30	1.47	1.61	1.75	0.98	1.12	1.26	1.40	1.54	1.68	0.95	1.09	1.23	1.37	1.51	1.61
TCLE	1/2	1.89	2.17	2.45	2.73	2.98	3.22	1.86	2.14	2.38	2.66	2.94	3.19	1.75	2.03	2.28	2.52	2.77	2.98
TCLE	1	3.82	4.41	4.94	5.50	6.02	6.51	3.75	4.34	4.83	5.39	5.92	6.41	3.54	4.10	4.55	5.11	5.60	6.02
TCLE	2	7.04	8.12	9.07	10.15	11.13	12.01	6.90	7.95	8.89	9.94	10.89	11.76	6.55	7.56	8.44	9.45	10.36	11.17
TCLE	3	10.29	11.87	13.30	14.84	16.28	17.57	10.05	11.59	12.99	14.49	15.89	17.15	9.52	10.99	12.29	13.76	15.05	16.28
TCLE	4-1/2	14.91	17.22	19.25	21.53	23.59	25.48	14.56	16.80	18.80	21.00	23.03	24.85	13.83	15.96	17.85	19.95	21.88	23.63
TCLE	7	20.55	23.73	26.53	29.65	32.48	35.07	20.06	23.17	25.90	28.95	31.71	34.27	19.08	22.02	24.64	27.55	30.17	32.59
TCLE	8	24.78	28.63	31.99	35.77	39.17	42.32	24.19	27.93	31.22	34.90	38.26	41.30	23.00	26.57	29.68	33.18	36.37	39.27
TJL	7	21.95	25.34	28.32	31.68	34.69	37.49	21.46	24.78	27.69	30.98	33.92	36.65	20.37	23.52	26.29	29.40	32.20	34.79
TJL	9	28.00	32.34	36.16	40.43	44.28	47.81	27.34	31.57	35.28	39.45	43.23	46.69	25.97	30.00	33.53	37.49	41.06	44.35

Note: Nominal capacity is based on ARI 750-2001; 38 °C liquid temperature, 4°C evaporating temperature.

Type	Nominal Capacity in Ton	Evaporating Temp																	
		-18°C						-29°C						-40°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	5.5	7.0	8.5	10.0	12.0	14.0	5.5	7.0	8.5	10.0	12.0	14.0
AA/AN	1/8	0.32	0.35	0.42	0.46	0.49	0.53	0.25	0.28	0.32	0.35	0.35	0.39	0.18	0.21	0.21	0.25	0.25	0.28
AA/AN	1/4	0.56	0.63	0.74	0.81	0.88	0.95	0.42	0.46	0.53	0.56	0.63	0.67	0.28	0.32	0.35	0.39	0.42	0.46
AA/AN	1/2	0.98	1.12	1.26	1.40	1.54	1.68	0.77	0.88	0.98	1.05	1.16	1.23	0.49	0.56	0.63	0.67	0.74	0.77
AA/AN	3/4	1.54	1.79	2.00	2.24	2.45	2.63	1.23	1.37	1.54	1.68	1.82	1.93	0.81	0.91	1.02	1.09	1.19	1.26
AA/AN	1	2.21	2.56	2.84	3.19	3.50	3.78	1.75	1.96	2.21	2.38	2.59	2.77	1.12	1.26	1.40	1.54	1.65	1.79
AA/AN	1-1/4	3.26	3.75	4.20	4.69	5.15	5.57	2.56	2.87	3.19	3.50	3.78	4.03	1.68	1.89	2.10	2.31	2.49	2.66
AA/AN	2	4.59	5.29	5.92	6.62	7.25	7.84	3.61	4.03	4.52	4.94	5.32	5.71	2.35	2.63	2.94	3.22	3.47	3.71
AA/AN	2-1/4	5.64	6.51	7.28	8.12	8.93	9.63	4.41	4.94	5.53	6.06	6.51	6.97	2.87	3.22	3.61	3.92	4.24	4.55
AA/AN	2-1/2	6.69	7.74	8.65	9.66	10.57	11.41	5.25	5.88	6.58	7.18	7.77	8.30	3.43	3.85	4.31	4.69	5.08	5.43
AA/AN	3-1/2	9.14	10.54	11.80	13.20	14.46	15.61	7.14	7.98	8.93	9.77	10.57	11.31	4.69	5.25	5.88	6.41	6.93	7.42
TCLE	1/4	0.84	0.98	1.09	1.23	1.33	1.44	0.67	0.74	0.84	0.91	0.98	1.05	0.42	0.46	0.53	0.56	0.63	0.67
TCLE	1/2	1.58	1.82	2.03	2.28	2.49	2.70	1.23	1.37	1.54	1.68	1.82	1.93	0.81	0.91	1.02	1.09	1.19	1.26
TCLE	1	3.19	3.68	4.10	4.59	5.04	5.43	2.49	2.77	3.12	3.40	3.68	3.92	1.61	1.79	2.03	2.21	2.38	2.56
TCLE	2	5.85	6.76	7.56	8.44	9.24	9.98	4.59	5.11	5.74	6.27	6.79	7.25	3.01	3.36	3.78	4.13	4.45	4.76
TCLE	3	8.51	9.84	10.99	12.29	13.44	14.53	6.69	7.49	8.37	9.17	9.87	10.57	4.38	4.90	5.46	5.99	6.48	6.93
TCLE	4-1/2	12.36	14.28	15.96	17.85	19.53	21.11	9.70	10.85	12.11	13.27	14.35	15.33	6.34	7.07	7.91	8.68	9.38	10.01
TCLE	7	17.01	19.64	21.95	24.54	26.88	29.05	13.34	14.91	16.66	18.27	19.74	21.07	8.72	9.73	10.89	11.94	12.88	13.79
TCLE	8	20.51	23.70	26.50	29.61	32.45	35.04	16.10	17.99	20.13	22.05	23.80	25.45	10.54	11.80	13.16	14.42	15.58	16.66
TJL	7	18.17	20.97	23.45	26.22	28.74	31.01	14.25	15.93	17.82	19.50	21.07	22.54	9.31	10.40	11.66	12.74	13.76	14.74
TJL	9	23.17	26.74	29.93	33.46	36.65	39.59	18.20	20.34	22.75	24.92	26.92	28.77	11.90	13.30	14.88	16.31	17.61	18.83

Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors:

	Liquid Refrigerant Temp °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
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

Note: 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 in the actual factors across this range is insignificant.

R 407C Capacity (kW)- A-Series And T-series:

Type	Nominal Capacity in Ton	Evaporating Temp																	
		10°C						4°C						-7°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0
AA/AN	1/5	0.49	0.56	0.63	0.70	0.77	0.84	0.49	0.56	0.63	0.70	0.77	0.84	0.49	0.56	0.63	0.70	0.77	0.84
AA/AN	1/4	0.88	1.02	1.12	1.26	1.40	1.51	0.84	0.98	1.09	1.23	1.33	1.44	0.81	0.95	1.05	1.16	1.26	1.37
AA/AN	1/2	1.54	1.79	2.00	2.24	2.45	2.63	1.51	1.75	1.96	2.17	2.38	2.56	1.44	1.65	1.86	2.07	2.28	2.45
AA/AN	1	2.45	2.84	3.15	3.54	3.89	4.20	2.42	2.80	3.12	3.50	3.82	4.13	2.31	2.66	2.98	3.33	3.64	3.96
AA/AN	1-1/4	3.50	4.03	4.52	5.04	5.53	5.99	3.43	3.96	4.45	4.94	5.43	5.85	3.33	3.85	4.31	4.80	5.25	5.67
AA/AN	2	5.18	5.99	6.69	7.49	8.19	8.86	5.08	5.85	6.55	7.32	8.02	8.68	4.87	5.64	6.27	7.04	7.70	8.30
AA/AN	2-1/2	7.25	8.37	9.35	10.47	11.45	12.39	7.14	8.26	9.21	10.29	11.31	12.18	6.83	7.88	8.82	9.84	10.78	11.66
AA/AN	3-1/4	8.89	10.26	11.48	12.85	14.07	15.19	8.72	10.08	11.24	12.57	13.79	14.88	8.37	9.66	10.82	12.08	13.23	14.28
AA/AN	4	10.57	12.22	13.65	15.26	16.73	18.06	10.36	11.97	13.37	14.95	16.38	17.71	9.94	11.48	12.85	14.35	15.72	16.98
AA/AN	5-1/4	14.42	16.66	18.62	20.83	22.79	24.64	14.18	16.38	18.31	20.48	22.40	24.22	13.62	15.72	17.57	19.64	21.53	23.24
TCLE	1/2	1.33	1.54	1.72	1.93	2.10	2.28	1.30	1.51	1.68	1.86	2.07	2.21	1.26	1.47	1.61	1.82	2.00	2.14
TCLE	1	2.49	2.87	3.22	3.57	3.92	4.24	2.45	2.84	3.15	3.54	3.89	4.20	2.35	2.70	3.01	3.40	3.71	3.99
TCLE	2	5.01	5.78	6.48	7.21	7.91	8.54	4.94	5.71	6.37	7.14	7.81	8.44	4.73	5.46	6.09	6.83	7.46	8.09
TCLE	3	9.24	10.68	11.94	13.34	14.60	15.79	9.07	10.47	11.69	13.09	14.35	15.47	8.72	10.08	11.24	12.57	13.79	14.88
TCLE	5	13.48	15.58	17.40	19.46	21.32	23.03	13.20	15.23	17.05	19.04	20.86	22.54	12.67	14.63	16.35	18.31	20.02	21.63
TCLE	7-1/2	19.53	22.54	25.20	28.18	30.87	33.36	19.18	22.16	24.75	27.69	30.31	32.76	18.41	21.25	23.77	26.57	29.12	31.43
TCLE	10	26.92	31.08	34.76	38.85	42.56	45.96	26.43	30.52	34.13	38.15	41.79	45.12	25.38	29.30	32.76	36.61	40.11	43.33
TCLE	12	32.45	37.45	41.90	46.83	51.31	55.41	31.85	36.79	41.13	45.96	50.37	54.39	30.59	35.32	39.48	44.17	48.37	52.26
TJL	11	28.77	33.22	37.14	41.51	45.50	49.14	28.25	32.62	36.47	40.78	44.66	48.23	27.13	31.33	35.04	39.17	42.88	46.34
TJL	14	36.68	42.35	47.36	52.96	58.00	62.65	36.02	41.58	46.48	51.98	56.95	61.50	34.58	39.94	44.66	49.91	54.67	59.05

Note: Nominal capacity is based on ARI 750-2001; 38 °C liquid temperature, 4°C evaporating temperature, pressure drop across valve 7bar

Type	Nominal Capacity in Ton	Evaporating Temp																	
		-18°C						-29°C						-40°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	5.5	7.0	8.5	10.0	12.0	14.0	5.5	7.0	8.5	10.0	12.0	14.0
AA/AN	1/5	0.39	0.46	0.49	0.56	0.60	0.67	0.32	0.35	0.39	0.42	0.46	0.49	0.18	0.21	0.21	0.25	0.25	0.28
AA/AN	1/4	0.70	0.81	0.91	1.02	1.12	1.19	0.53	0.60	0.67	0.74	0.77	0.84	0.32	0.35	0.39	0.42	0.46	0.49
AA/AN	1/2	1.23	1.40	1.58	1.79	1.93	2.10	0.91	1.02	1.16	1.26	1.33	1.44	0.60	0.67	0.74	0.81	0.88	0.95
AA/AN	1	1.96	2.28	2.52	2.84	3.12	3.36	1.47	1.65	1.86	2.03	2.17	2.31	0.95	1.05	1.19	1.30	1.40	1.51
AA/AN	1-1/4	2.80	3.22	3.61	4.03	4.41	4.80	2.14	2.38	2.66	2.94	3.15	3.36	1.33	1.47	1.68	1.82	1.96	2.10
AA/AN	2	4.13	4.76	5.32	5.95	6.55	7.07	3.15	3.54	3.96	4.31	4.66	4.97	1.96	2.21	2.45	2.70	2.91	3.12
AA/AN	2-1/2	5.78	6.69	7.46	8.33	9.14	9.87	4.41	4.94	5.53	6.06	6.51	6.97	2.77	3.08	3.47	3.78	4.10	4.38
AA/AN	3-1/4	7.07	8.16	9.14	10.22	11.17	12.08	5.39	6.02	6.76	7.39	7.98	8.51	3.40	3.78	4.24	4.66	5.01	5.36
AA/AN	4	8.40	9.70	10.85	12.11	13.27	14.35	6.41	7.18	8.02	8.79	9.49	10.12	4.03	4.52	5.04	5.50	5.95	6.37
AA/AN	5-1/4	11.48	13.27	14.81	16.56	18.17	19.60	8.75	9.80	10.96	11.97	12.95	13.83	5.50	6.16	6.86	7.53	8.12	8.68
TCLE	1/2	1.05	1.23	1.37	1.51	1.65	1.79	0.81	0.91	1.02	1.09	1.19	1.26	0.49	0.56	0.63	0.67	0.74	0.77
TCLE	1	1.96	2.28	2.52	2.84	3.12	3.36	1.51	1.68	1.89	2.07	2.24	2.38	0.95	1.05	1.19	1.30	1.40	1.51
TCLE	2	3.99	4.62	5.15	5.78	6.30	6.83	3.05	3.40	3.82	4.17	4.52	4.83	1.93	2.14	2.42	2.63	2.84	3.05
TCLE	3	7.35	8.47	9.49	10.61	11.62	12.57	5.60	6.27	7.00	7.67	8.30	8.86	3.54	3.96	4.41	4.83	5.22	5.60
TCLE	5	10.71	12.36	13.83	15.47	16.94	18.31	8.16	9.14	10.19	11.17	12.08	12.88	5.15	5.74	6.44	7.04	7.60	8.12
TCLE	7-1/2	15.54	17.96	20.06	22.44	24.57	26.53	11.83	13.23	14.81	16.21	17.50	18.69	7.46	8.33	9.31	10.22	11.03	11.80
TCLE	10	21.42	24.75	27.65	30.91	33.88	36.58	16.31	18.24	20.41	22.33	24.12	25.80	10.26	11.48	12.81	14.04	15.16	16.21
TCLE	12	25.83	29.82	33.36	37.28	40.85	44.10	19.67	21.98	24.61	26.95	29.09	31.12	12.39	13.86	15.51	16.98	18.34	19.60
TJL	11	22.89	26.43	29.54	33.04	36.19	39.10	17.43	19.50	21.81	23.87	25.80	27.55	10.96	12.25	13.69	15.02	16.21	17.33
TJL	14	29.19	33.71	37.70	42.14	46.17	49.84	22.23	24.85	27.79	30.45	32.87	35.14	14.00	15.65	17.50	19.18	20.72	22.12

Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors:

	Liquid Refrigerant Temp °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
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

Note: 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 in the actual factors across this range is insignificant.

R 22 Capacity (kW)- B, HF, TFE, TRAE And T-Series:

Type	Nominal Capacity in Ton	Evaporating Temp																	
		10°C						4°C						-7°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0
BA/BN	1/2	1.37	1.58	1.75	1.96	2.17	2.35	1.37	1.58	1.75	1.96	2.14	2.31	1.33	1.54	1.72	1.93	2.10	2.28
BA/BN	1	2.63	3.05	3.40	3.78	4.17	4.48	2.59	2.98	3.33	3.71	4.06	4.41	2.52	2.91	3.26	3.64	3.99	4.31
BA/BN	1-1/2	4.06	4.69	5.25	5.85	6.41	6.93	4.03	4.62	5.18	5.78	6.34	6.86	3.92	4.52	5.08	5.67	6.20	6.69
BA/BN	2	5.46	6.30	7.04	7.88	8.65	9.31	5.36	6.20	6.93	7.74	8.47	9.17	5.25	6.06	6.79	7.60	8.30	8.96
BA/BN	2-1/2	6.86	7.91	8.86	9.91	10.85	11.73	6.79	7.84	8.75	9.80	10.71	11.59	6.62	7.63	8.54	9.56	10.47	11.31
BA/BN	3	8.33	9.63	10.75	12.04	13.16	14.21	8.23	9.49	10.61	11.87	12.99	14.04	8.02	9.24	10.36	11.59	12.67	13.69
BA/BN	4	10.78	12.46	13.93	15.58	17.05	18.41	10.64	12.29	13.72	15.33	16.80	18.17	10.40	12.01	13.41	15.02	16.45	17.75
BA/BN	5	13.65	15.75	17.61	19.71	21.60	23.31	13.48	15.58	17.40	19.46	21.32	23.00	13.13	15.16	16.94	18.94	20.76	22.40
BA/BN	6	16.98	19.60	21.91	24.50	26.85	28.98	16.73	19.32	21.60	24.15	26.46	28.56	16.35	18.87	21.11	23.59	25.83	27.93
HF	1/4	0.77	0.88	0.98	1.12	1.23	1.33	0.77	0.88	0.98	1.09	1.19	1.30	0.74	0.84	0.95	1.05	1.16	1.26
HF	1/2	1.47	1.68	1.89	2.14	2.31	2.52	1.44	1.65	1.86	2.07	2.28	2.45	1.40	1.61	1.82	2.03	2.21	2.38
HF	1	2.63	3.05	3.40	3.78	4.17	4.48	2.59	2.98	3.33	3.71	4.06	4.41	2.52	2.91	3.26	3.64	3.99	4.31
HF	1-1/2	3.99	4.62	5.15	5.78	6.30	6.83	3.92	4.55	5.08	5.67	6.23	6.72	3.85	4.45	4.97	5.57	6.09	6.58
HF	2	5.36	6.20	6.93	7.74	8.47	9.14	5.32	6.13	6.86	7.67	8.40	9.07	5.18	5.99	6.69	7.49	8.19	8.86
HF	2-1/2	6.86	7.91	8.86	9.91	10.85	11.73	6.79	7.88	8.79	9.84	10.75	11.62	6.62	7.63	8.54	9.56	10.47	11.31
HF	3	9.07	10.47	11.69	13.09	14.35	15.47	8.96	10.36	11.59	12.95	14.18	15.33	8.75	10.12	11.31	12.64	13.83	14.95
HF	5-1/2	16.14	18.62	20.83	23.28	25.52	27.55	15.96	18.45	20.62	23.07	25.24	27.27	15.54	17.96	20.06	22.44	24.57	26.53
HF	8	22.47	25.94	29.02	32.45	35.53	38.36	22.19	25.66	28.67	32.06	35.11	37.91	21.63	24.99	27.93	31.22	34.20	36.93
HF	10	28.46	32.87	36.75	41.06	44.98	48.58	28.21	32.55	36.40	40.71	44.59	48.16	27.41	31.64	35.39	39.55	43.33	46.80
HF	15	42.18	48.69	54.46	60.87	66.68	72.03	41.69	48.20	53.90	60.27	66.01	71.30	40.64	46.94	52.47	58.66	64.26	69.41
HF	20	55.55	64.16	71.72	80.19	87.82	94.85	54.88	63.25	70.70	79.03	86.59	93.52	53.48	61.74	69.06	77.18	84.56	91.35
TFE	8	22.05	25.45	28.46	31.82	34.86	37.66	21.81	25.17	28.14	31.47	34.48	37.24	21.25	24.54	27.44	30.66	33.60	36.30
TFE	10	30.21	34.90	38.99	43.61	47.78	51.59	29.86	34.48	38.54	43.09	47.18	50.96	29.09	33.60	37.56	41.97	45.99	49.67
TFE	12	37.49	43.30	48.41	54.11	59.26	64.02	37.07	42.81	47.85	53.48	58.59	63.28	36.12	41.72	46.62	52.15	57.12	61.67
TFE	20	57.23	66.08	73.89	82.60	90.48	97.72	56.60	65.35	73.05	81.66	89.46	96.64	55.13	63.67	71.16	79.56	87.15	94.15
TRAE+	10	32.45	37.45	41.90	46.83	51.31	55.41	32.06	37.03	41.41	46.31	50.72	54.78	31.26	36.09	40.36	45.12	49.42	53.38
TRAE+	15	47.32	54.64	61.08	68.29	74.83	80.82	46.76	54.01	60.38	67.52	73.96	79.87	45.57	52.61	58.84	65.77	72.07	77.84
TRAE+	20	52.82	60.97	68.18	76.23	83.51	90.20	52.19	60.27	67.38	75.32	82.53	89.15	50.86	58.73	65.66	73.40	80.40	86.84
TRAE+	30	80.05	92.44	103.36	115.54	126.56	136.71	79.10	91.35	102.13	114.17	125.09	135.10	77.07	89.01	99.51	111.23	121.87	131.64
TRAE+	40	110.01	127.02	142.03	158.80	173.95	187.88	108.75	125.58	140.39	156.94	171.92	185.71	105.95	122.33	136.78	152.92	167.51	180.95
TRAE	50	148.51	171.47	191.73	214.34	234.82	253.61	146.79	169.47	189.49	211.86	232.09	250.67	143.05	165.17	184.66	206.47	226.17	244.30
TRAE	60	161.98	187.04	209.13	233.80	256.13	276.64	160.13	184.87	206.71	231.11	253.16	273.46	156.03	180.18	201.43	225.23	246.72	266.46
TRAE	70	192.82	222.64	248.92	278.32	304.85	329.28	190.58	220.05	246.02	275.07	301.32	325.43	185.71	214.45	239.75	268.07	293.65	317.17
TJR	14	40.43	46.69	52.19	58.35	63.91	69.06	39.97	46.13	51.59	57.68	63.18	68.25	38.96	44.98	50.30	56.21	61.60	66.54
TJR	18	48.41	55.90	62.48	69.86	76.55	82.67	47.85	55.27	61.78	69.06	75.67	81.73	46.62	53.83	60.20	67.31	73.71	79.63
TER	22	60.52	69.86	78.12	87.36	95.69	103.36	59.82	69.06	77.21	86.31	94.57	102.13	58.28	67.31	75.25	84.11	92.16	99.54
TER	26	71.51	82.57	92.33	103.22	113.05	122.12	70.67	81.62	91.25	102.03	111.76	120.72	68.88	79.52	88.94	99.44	108.92	117.64
TER	35	96.25	111.13	124.25	138.92	152.18	164.40	95.13	109.87	122.82	137.31	150.43	162.47	92.72	107.07	119.70	133.84	146.58	158.34
TER	45	123.76	142.91	159.78	178.64	195.69	211.37	122.33	141.26	157.92	176.58	193.41	208.92	119.21	137.66	153.90	172.06	188.48	203.60
TIR	55	151.27	174.69	195.30	218.33	239.19	258.34	149.52	172.66	193.03	215.81	236.39	255.36	145.71	168.25	188.09	210.32	230.37	248.85
THR	75	192.54	222.32	248.57	277.90	304.43	328.83	190.30	219.73	245.67	274.65	300.86	324.98	185.43	214.13	239.40	267.65	293.20	316.68
THR	85	233.77	269.92	301.81	337.40	369.60	399.25	231.07	266.81	298.31	333.52	365.37	394.63	225.16	259.98	290.68	324.98	355.99	384.51
TMR	100	275.03	317.59	355.08	396.97	434.88	469.70	271.85	313.88	350.95	392.39	429.84	464.24	264.92	305.90	342.02	382.38	418.88	452.45

Note: Nominal capacity is based on ARI 750-2001; 38 °C liquid temperature, 4°C evaporating temperature.

Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors:

	Liquid Refrigerant Temp °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
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

Note: 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 in the actual factors across this range is insignificant.

R 22 Capacity (kW)- B, HF, TFE, TRAE And T-Series:

Type	Nominal Capacity in Ton	Evaporating Temp																	
		-18°C						-29°C						-40°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	5.5	7.0	8.5	10.0	12.0	14.0	5.5	7.0	8.5	10.0	12.0	14.0
BA/BN	1/2	1.19	1.37	1.54	1.72	1.89	2.03	0.95	1.05	1.19	1.30	1.40	1.51	0.63	0.70	0.81	0.88	0.95	0.98
BA/BN	1	2.28	2.63	2.94	3.29	3.61	3.89	1.82	2.03	2.28	2.49	2.70	2.87	1.19	1.33	1.51	1.65	1.75	1.89
BA/BN	1-1/2	3.57	4.13	4.62	5.15	5.64	6.09	2.84	3.19	3.54	3.89	4.20	4.48	1.86	2.07	2.31	2.56	2.73	2.94
BA/BN	2	4.76	5.50	6.16	6.86	7.53	8.12	3.78	4.24	4.73	5.18	5.60	5.99	2.49	2.77	3.12	3.40	3.68	3.92
BA/BN	2-1/2	6.02	6.97	7.77	8.68	9.52	10.29	4.80	5.36	5.99	6.58	7.11	7.60	3.15	3.54	3.96	4.31	4.66	4.97
BA/BN	3	7.28	8.40	9.42	10.50	11.52	12.43	5.81	6.51	7.28	7.95	8.61	9.17	3.82	4.27	4.76	5.22	5.64	6.02
BA/BN	4	9.42	10.89	12.15	13.58	14.88	16.07	7.53	8.40	9.42	10.29	11.13	11.90	4.94	5.53	6.16	6.76	7.32	7.81
BA/BN	5	11.90	13.76	15.37	17.19	18.83	20.34	9.52	10.64	11.90	13.02	14.07	15.05	6.27	7.00	7.84	8.58	9.28	9.91
BA/BN	6	14.81	17.08	19.11	21.39	23.42	25.27	11.83	13.23	14.81	16.21	17.50	18.69	7.81	8.72	9.77	10.68	11.55	12.36
HF	1/4	0.67	0.77	0.88	0.95	1.05	1.12	0.53	0.60	0.67	0.74	0.77	0.84	0.35	0.39	0.46	0.49	0.53	0.56
HF	1/2	1.26	1.47	1.61	1.82	2.00	2.14	1.02	1.12	1.26	1.40	1.51	1.61	0.67	0.74	0.84	0.91	0.98	1.05
HF	1	2.28	2.63	2.94	3.29	3.61	3.89	1.82	2.03	2.28	2.49	2.70	2.87	1.19	1.33	1.51	1.65	1.75	1.89
HF	1-1/2	3.50	4.03	4.52	5.04	5.53	5.99	2.77	3.08	3.47	3.78	4.10	4.38	1.82	2.03	2.28	2.49	2.70	2.87
HF	2	4.69	5.43	6.06	6.76	7.42	8.02	3.75	4.20	4.69	5.15	5.53	5.92	2.45	2.73	3.08	3.36	3.64	3.89
HF	2-1/2	6.02	6.97	7.77	8.68	9.52	10.29	4.80	5.36	5.99	6.58	7.11	7.60	3.15	3.54	3.96	4.31	4.66	4.97
HF	3	7.91	9.14	10.22	11.41	12.50	13.51	6.34	7.07	7.91	8.68	9.38	10.01	4.17	4.66	5.22	5.71	6.16	6.58
HF	5-1/2	14.11	16.28	18.20	20.37	22.30	24.08	11.27	12.60	14.11	15.44	16.66	17.82	7.42	8.30	9.28	10.15	10.99	11.73
HF	8	19.64	22.68	25.34	28.35	31.05	33.53	15.68	17.54	19.60	21.46	23.21	24.78	10.33	11.55	12.92	14.14	15.26	16.31
HF	10	24.85	28.70	32.10	35.88	39.31	42.46	19.85	22.19	24.82	27.16	29.37	31.40	13.06	14.60	16.31	17.89	19.32	20.65
HF	15	36.86	42.56	47.57	53.20	58.28	62.93	29.40	32.87	36.75	40.25	43.47	46.48	19.36	21.63	24.19	26.50	28.63	30.59
HF	20	48.51	56.00	62.62	70.04	76.69	82.85	38.71	43.30	48.41	52.99	57.26	61.22	25.48	28.49	31.85	34.90	37.70	40.29
TFE	8	19.25	22.23	24.85	27.79	30.45	32.87	15.37	17.19	19.22	21.04	22.72	24.29	10.12	11.31	12.64	13.86	14.95	16.00
TFE	10	26.39	30.49	34.06	38.08	41.72	45.08	21.07	23.56	26.36	28.84	31.15	33.32	13.86	15.51	17.33	18.97	20.51	21.91
TFE	12	32.73	37.80	42.25	47.25	51.73	55.90	26.15	29.23	32.69	35.81	38.68	41.34	17.22	19.25	21.53	23.59	25.48	27.23
TFE	20	49.98	57.72	64.54	72.14	79.03	85.37	39.90	44.63	49.88	54.64	59.01	63.07	26.29	29.40	32.87	35.98	38.89	41.55
TRAE+	10	28.35	32.73	36.61	40.92	44.84	48.41	22.65	25.31	28.32	31.01	33.50	35.81	14.91	16.66	18.66	20.41	22.05	23.59
TRAE+	15	41.30	47.71	53.31	59.61	65.31	70.53	32.97	36.86	41.23	45.15	48.76	52.12	21.74	24.29	27.16	29.75	32.13	34.37
TRAE+	20	46.13	53.27	59.57	66.57	72.94	78.79	36.82	41.16	46.03	50.44	54.46	58.21	24.26	27.13	30.31	33.22	35.88	38.36
TRAE+	30	69.90	80.71	90.23	100.87	110.53	119.39	55.79	62.37	69.76	76.41	82.53	88.20	36.75	41.09	45.96	50.33	54.36	58.10
TRAE+	40	96.08	110.95	124.04	138.67	151.90	164.08	76.72	85.79	95.90	105.07	113.47	121.31	50.51	56.46	63.14	69.16	74.69	79.87
TRAE	50	129.71	149.77	167.44	187.22	205.10	221.52	103.57	115.78	129.47	141.82	153.16	163.77	68.18	76.23	85.23	93.35	100.84	107.80
TRAE	60	141.47	163.35	182.63	204.19	223.69	241.61	112.95	126.28	141.19	154.67	167.06	178.57	74.38	83.16	92.96	101.85	110.01	117.60
TRAE	70	168.39	194.43	217.39	243.04	266.25	287.56	134.44	150.29	168.04	184.10	198.84	212.56	88.52	98.98	110.64	121.21	130.90	139.97
TJR	14	35.32	40.78	45.61	50.96	55.83	60.31	28.18	31.50	35.21	38.57	41.69	44.56	18.55	20.76	23.21	25.41	27.44	29.33
TJR	18	42.28	48.83	54.60	61.04	66.85	72.21	33.74	37.73	42.18	46.20	49.91	53.34	22.23	24.85	27.79	30.45	32.87	35.14
TER	22	52.85	61.04	68.22	76.27	83.58	90.27	42.18	47.15	52.71	57.75	62.37	66.68	27.79	31.08	34.76	38.05	41.09	43.93
TER	26	62.44	72.10	80.61	90.13	98.74	106.65	49.88	55.76	62.34	68.29	73.78	78.86	32.83	36.72	41.06	44.94	48.55	51.91
TER	35	84.07	97.09	108.54	121.35	132.93	143.57	67.13	75.04	83.93	91.91	99.30	106.16	44.21	49.42	55.27	60.52	65.38	69.90
TER	45	108.08	124.81	139.55	156.00	170.91	184.59	86.31	96.50	107.91	118.20	127.65	136.47	56.84	63.56	71.05	77.84	84.07	89.88
TIR	55	132.13	152.57	170.59	190.72	208.92	225.65	105.46	117.92	131.81	144.41	155.96	166.74	69.44	77.63	86.80	95.10	102.69	109.80
THR	75	168.14	194.15	217.07	242.69	265.86	287.14	134.23	150.08	167.79	183.79	198.52	212.24	88.41	98.84	110.53	121.07	130.76	139.79
THR	85	204.16	235.73	263.55	294.67	322.81	348.67	163.00	182.25	203.74	223.20	241.08	257.71	107.35	120.02	134.19	147.00	158.76	169.72
TMR	100	240.21	277.38	310.10	346.71	379.79	410.24	191.77	214.41	239.72	262.57	283.64	303.21	126.28	141.19	157.85	172.90	186.76	199.68

Note: Nominal capacity is based on ARI 750-2001; 38°C liquid temperature, 4°C evaporating temperature, pressure drop across valve 7 bar

Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors:

	Liquid Refrigerant Temp °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
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

Note: 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 in the actual factors across this range is insignificant.

R 134a Capacity (kW)- B, HF, TFE, TRAE And T-Series:

Type	Nominal Capacity in Ton	Evaporating Temp																	
		10°C						4°C						-7°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0
BA/BN	1/2	1.30	1.51	1.68	1.86	2.07	2.21	1.30	1.51	1.68	1.86	2.07	2.21	1.23	1.40	1.58	1.79	1.93	2.10
BA/BN	3/4	2.49	2.87	3.22	3.57	3.92	4.24	2.45	2.84	3.15	3.54	3.89	4.20	2.35	2.70	3.01	3.40	3.71	3.99
BA/BN	1	3.89	4.48	5.01	5.60	6.16	6.65	3.82	4.41	4.94	5.50	6.02	6.51	3.64	4.20	4.69	5.25	5.74	6.23
BA/BN	1-1/2	5.18	5.99	6.69	7.49	8.19	8.86	5.08	5.85	6.55	7.32	8.02	8.68	4.87	5.64	6.27	7.04	7.70	8.30
BA/BN	2	6.55	7.56	8.44	9.45	10.36	11.17	6.44	7.42	8.33	9.31	10.19	10.99	6.16	7.11	7.95	8.89	9.73	10.54
BA/BN	2-1/4	7.95	9.17	10.26	11.48	12.57	13.58	7.77	8.96	10.05	11.20	12.29	13.27	7.46	8.61	9.63	10.75	11.80	12.74
BA/BN	3	10.29	11.87	13.30	14.84	16.28	17.57	10.08	11.66	13.02	14.56	15.93	17.22	9.63	11.13	12.43	13.90	15.23	16.45
BA/BN	3-1/2	13.02	15.05	16.80	18.80	20.58	22.23	12.74	14.70	16.45	18.38	20.16	21.77	12.18	14.07	15.72	17.57	19.25	20.79
BA/BN	4-1/4	16.17	18.66	20.86	23.35	25.55	27.62	15.86	18.31	20.48	22.89	25.06	27.09	15.16	17.50	19.57	21.88	23.98	25.87
HF	1/4	0.74	0.84	0.95	1.05	1.16	1.26	0.74	0.84	0.95	1.05	1.16	1.26	0.70	0.81	0.91	1.02	1.12	1.19
HF	1/2	1.40	1.61	1.82	2.03	2.21	2.38	1.37	1.58	1.75	1.96	2.17	2.35	1.30	1.51	1.68	1.86	2.07	2.21
HF	3/4	2.49	2.87	3.22	3.57	3.92	4.24	2.45	2.84	3.15	3.54	3.89	4.20	2.35	2.70	3.01	3.40	3.71	3.99
HF	1	3.82	4.41	4.94	5.50	6.02	6.51	3.71	4.27	4.80	5.36	5.88	6.34	3.57	4.13	4.62	5.15	5.64	6.09
HF	1-1/2	5.11	5.92	6.58	7.39	8.09	8.72	5.01	5.78	6.48	7.21	7.91	8.54	4.80	5.53	6.20	6.93	7.60	8.19
HF	1-3/4	6.55	7.56	8.44	9.45	10.36	11.17	6.44	7.42	8.33	9.31	10.19	10.99	6.16	7.11	7.95	8.89	9.73	10.54
HF	2-1/2	8.65	9.98	11.17	12.50	13.69	14.77	8.47	9.77	10.92	12.22	13.41	14.46	8.12	9.38	10.50	11.73	12.85	13.86
HF	4	15.40	17.78	19.88	22.23	24.36	26.29	15.09	17.43	19.46	21.77	23.84	25.76	14.42	16.66	18.62	20.83	22.79	24.64
HF	6	21.42	24.75	27.65	30.91	33.88	36.58	21.00	24.26	27.13	30.31	33.22	35.88	20.09	23.21	25.94	28.98	31.78	34.30
HF	7-1/2	27.13	31.33	35.04	39.17	42.88	46.34	26.57	30.66	34.30	38.36	42.00	45.36	25.41	29.33	32.80	36.68	40.18	43.40
HF	11	40.25	46.48	51.98	58.10	63.63	68.74	39.41	45.50	50.89	56.88	62.30	67.31	37.70	43.54	48.65	54.43	59.61	64.37
HF	14	52.96	61.15	68.36	76.44	83.72	90.44	51.87	59.89	66.96	74.87	82.01	88.59	49.63	57.30	64.09	71.65	78.47	84.77
TFE	6	21.04	24.29	27.16	30.35	33.25	35.91	20.62	23.80	26.60	29.75	32.59	35.21	19.71	22.75	25.45	28.46	31.15	33.67
TFE	8	28.81	33.25	37.17	41.58	45.54	49.21	28.21	32.59	36.44	40.71	44.59	48.20	26.99	31.15	34.83	38.96	42.67	46.10
TFE	10	35.77	41.30	46.17	51.63	56.56	61.08	35.04	40.46	45.22	50.58	55.41	59.85	33.50	38.68	43.23	48.34	52.96	57.19
TFE	15	54.60	63.04	70.49	78.82	86.35	93.24	53.48	61.74	69.06	77.18	84.56	91.35	51.14	59.05	66.01	73.82	80.85	87.33
TRAE+	9	30.94	35.74	39.94	44.66	48.93	52.85	30.31	35.00	39.13	43.75	47.92	51.77	29.02	33.50	37.45	41.90	45.89	49.56
TRAE+	13	45.12	52.08	58.24	65.14	71.33	77.04	44.21	51.03	57.09	63.81	69.90	75.50	42.28	48.83	54.60	61.04	66.85	72.21
TRAE+	14	50.37	58.17	65.03	72.70	79.63	86.03	49.32	56.95	63.67	71.19	77.98	84.21	47.18	54.50	60.90	68.11	74.59	80.57
TRAE+	22	76.34	88.13	98.56	110.18	120.68	130.38	74.76	86.31	96.53	107.91	118.20	127.68	71.51	82.57	92.33	103.22	113.05	122.12
TRAE+	30	104.93	121.17	135.45	151.45	165.90	179.20	102.76	118.65	132.65	148.33	162.47	175.49	98.32	113.54	126.91	141.89	155.44	167.90
TRAE	40	141.68	163.59	182.91	204.51	224.00	241.96	138.74	160.20	179.13	200.27	219.38	236.95	132.72	153.27	171.33	191.56	209.86	226.66
TRAE	45	154.53	178.43	199.50	223.06	244.34	263.90	151.34	174.76	195.37	218.44	239.30	258.48	144.76	167.16	186.90	208.95	228.90	247.24
TRAE	50	183.89	212.35	237.41	265.41	290.75	314.06	180.11	207.97	232.51	259.98	284.80	307.58	172.27	198.91	222.39	248.64	272.37	294.21
TJR	11	38.57	44.52	49.81	55.69	60.97	65.87	37.77	43.61	48.76	54.50	59.71	64.51	36.12	41.72	46.62	52.15	57.12	61.67
TJR	13	46.17	53.31	59.61	66.64	73.01	78.86	45.22	52.22	58.38	65.28	71.51	77.25	43.26	49.95	55.86	62.44	68.39	73.89
TER	16	57.72	66.64	74.52	83.30	91.25	98.56	56.53	65.28	72.98	81.59	89.39	96.53	54.08	62.44	69.83	78.05	85.51	92.37
TER	19	68.22	78.79	88.06	98.46	107.87	116.52	66.82	77.14	86.28	96.43	105.63	114.10	63.91	73.78	82.50	92.26	101.05	109.13
TER	25	91.81	106.02	118.51	132.51	145.15	156.80	89.92	103.81	116.10	129.78	142.17	153.55	86.03	99.33	111.06	124.18	136.01	146.93
TER	31	118.06	136.33	152.43	170.42	186.66	201.60	115.61	133.49	149.24	166.85	182.81	197.44	110.60	127.72	142.80	159.64	174.86	188.90
TIR	45	144.31	166.64	186.31	208.29	228.17	246.44	141.30	163.17	182.42	203.95	223.41	241.29	135.17	156.07	174.51	195.09	213.71	230.86
THR	55	183.65	212.07	237.09	265.06	290.36	313.64	179.83	207.66	232.16	259.56	284.34	307.13	172.03	198.63	222.08	248.29	271.99	293.79
THR	68	222.99	257.50	287.88	321.86	352.56	380.84	218.40	252.18	281.96	315.25	345.31	373.00	208.92	241.22	269.71	301.56	330.33	356.79
TMR	68	262.33	302.89	338.66	378.63	414.79	448.00	256.94	296.70	331.70	370.86	406.25	438.80	245.77	283.78	317.28	354.73	388.61	419.72

Note: Nominal capacity is based on ARI 750-2001; 38 °C liquid temperature, 4°C evaporating temperature, pressure drop across valve 7 bar

Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors:

	Liquid Refrigerant Temp °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
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

Note: 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 in the actual factors across this range is insignificant.

R 134a Capacity (kW)- B, HF, TFE, TRAE And T-Series:

Type	Nominal Capacity in Ton	Evaporating Temp																	
		-18ºC						-29ºC						-40ºC					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	5.5	7.0	8.5	10.0	12.0	14.0	5.5	7.0	8.5	10.0	12.0	14.0
BA/BN	1/2	1.02	1.16	1.30	1.47	1.61	1.75	0.77	0.88	0.98	1.05	1.16	1.23	0.46	0.53	0.56	0.63	0.67	0.74
BA/BN	3/4	1.93	2.24	2.49	2.77	3.05	3.29	1.44	1.61	1.79	1.96	2.14	2.28	0.88	0.98	1.09	1.19	1.30	1.40
BA/BN	1	3.01	3.47	3.89	4.34	4.76	5.15	2.24	2.52	2.80	3.08	3.33	3.54	1.37	1.54	1.72	1.86	2.03	2.17
BA/BN	1-1/2	3.99	4.62	5.15	5.78	6.30	6.83	2.98	3.33	3.71	4.06	4.41	4.69	1.82	2.03	2.28	2.49	2.70	2.87
BA/BN	2	5.04	5.81	6.51	7.28	7.98	8.61	3.78	4.24	4.73	5.18	5.60	5.99	2.31	2.59	2.91	3.15	3.43	3.64
BA/BN	2-1/4	6.13	7.07	7.91	8.86	9.70	10.47	4.59	5.11	5.74	6.27	6.79	7.25	2.80	3.12	3.50	3.85	4.13	4.41
BA/BN	3	7.95	9.17	10.26	11.48	12.57	13.58	5.92	6.62	7.39	8.09	8.75	9.35	3.64	4.06	4.55	4.97	5.39	5.74
BA/BN	3-1/2	10.05	11.59	12.99	14.49	15.89	17.15	7.49	8.37	9.38	10.26	11.10	11.83	4.59	5.11	5.74	6.27	6.79	7.25
BA/BN	4-1/4	12.50	14.42	16.14	18.03	19.74	21.35	9.31	10.40	11.66	12.74	13.76	14.74	5.71	6.37	7.14	7.81	8.44	9.03
HF	1/4	0.56	0.63	0.74	0.81	0.88	0.95	0.42	0.46	0.53	0.56	0.63	0.67	0.25	0.28	0.32	0.35	0.35	0.39
HF	1/2	1.09	1.26	1.40	1.58	1.72	1.86	0.81	0.91	1.02	1.09	1.19	1.26	0.49	0.56	0.63	0.67	0.74	0.77
HF	3/4	1.93	2.24	2.49	2.77	3.05	3.29	1.44	1.61	1.79	1.96	2.14	2.28	0.88	0.98	1.09	1.19	1.30	1.40
HF	1	2.94	3.40	3.78	4.24	4.66	5.01	2.21	2.45	2.77	3.01	3.26	3.50	1.33	1.47	1.68	1.82	1.96	2.10
HF	1-1/2	3.96	4.55	5.11	5.71	6.27	6.76	2.94	3.29	3.68	4.03	4.34	4.66	1.82	2.03	2.28	2.49	2.70	2.87
HF	1-3/4	5.04	5.81	6.51	7.28	7.98	8.61	3.78	4.24	4.73	5.18	5.60	5.99	2.31	2.59	2.91	3.15	3.43	3.64
HF	2-1/2	6.69	7.74	8.65	9.66	10.57	11.41	4.97	5.57	6.23	6.79	7.35	7.88	3.05	3.40	3.82	4.17	4.52	4.83
HF	4	11.87	13.69	15.33	17.12	18.76	20.27	8.86	9.91	11.06	12.11	13.09	14.00	5.43	6.06	6.79	7.42	8.02	8.58
HF	6	16.52	19.08	21.32	23.84	26.11	28.21	12.32	13.79	15.40	16.87	18.24	19.50	7.56	8.44	9.45	10.36	11.17	11.97
HF	7-1/2	20.93	24.19	27.02	30.21	33.11	35.74	15.61	17.47	19.53	21.39	23.10	24.68	9.59	10.71	12.01	13.13	14.18	15.16
HF	11	31.05	35.84	40.08	44.80	49.07	53.03	23.17	25.90	28.98	31.71	34.27	36.65	14.21	15.89	17.78	19.46	21.00	22.47
HF	14	40.85	47.18	52.75	58.94	64.58	69.76	30.49	34.09	38.12	41.76	45.08	48.20	18.69	20.90	23.38	25.59	27.65	29.54
TFE	6	16.24	18.76	20.97	23.45	25.69	27.72	12.11	13.55	15.16	16.59	17.92	19.15	7.42	8.30	9.28	10.15	10.99	11.73
TFE	8	22.23	25.66	28.70	32.10	35.14	37.94	16.59	18.55	20.76	22.72	24.54	26.22	10.19	11.38	12.74	13.93	15.05	16.10
TFE	10	27.58	31.85	35.60	39.80	43.61	47.11	20.58	23.00	25.73	28.18	30.45	32.55	12.64	14.14	15.79	17.29	18.69	19.99
TFE	15	42.11	48.62	54.36	60.76	66.57	71.93	31.40	35.11	39.24	42.98	46.45	49.63	19.29	21.56	24.12	26.39	28.53	30.49
TRAE+	9	23.87	27.58	30.80	34.44	37.73	40.78	17.82	19.92	22.26	24.40	26.36	28.18	10.92	12.22	13.65	14.95	16.14	17.26
TRAE+	13	34.79	40.18	44.91	50.23	55.02	59.43	25.97	29.05	32.48	35.56	38.40	41.06	15.93	17.82	19.92	21.81	23.56	25.17
TRAE+	14	38.85	44.87	50.16	56.07	61.43	66.36	28.98	32.41	36.23	39.69	42.88	45.82	17.78	19.88	22.23	24.36	26.29	28.11
TRAE+	22	58.87	67.97	75.99	84.98	93.07	100.56	43.93	49.11	54.92	60.13	64.96	69.44	26.95	30.14	33.71	36.89	39.87	42.60
TRAE+	30	80.92	93.45	104.48	116.80	127.96	138.18	60.38	67.52	75.46	82.67	89.29	95.45	37.07	41.44	46.34	50.75	54.81	58.59
TRAE	40	109.24	126.14	141.02	157.68	172.73	186.55	81.52	91.14	101.89	111.62	120.58	128.87	50.02	55.93	62.51	68.50	73.99	79.07
TRAE	45	119.14	137.59	153.83	171.96	188.37	203.46	88.90	99.40	111.13	121.73	131.50	140.56	54.57	61.01	68.22	74.73	80.71	86.28
TRAE	50	141.82	163.77	183.09	204.72	224.25	242.20	105.81	118.30	132.27	144.87	156.49	167.30	64.93	72.59	81.17	88.90	96.04	102.66
TJR	11	29.75	34.34	38.40	42.95	47.04	50.82	22.19	24.82	27.76	30.38	32.83	35.07	13.62	15.23	17.01	18.66	20.13	21.53
TJR	13	35.60	41.09	45.96	51.38	56.28	60.80	26.57	29.72	33.22	36.37	39.31	42.00	16.31	18.24	20.41	22.33	24.12	25.80
TER	16	44.52	51.42	57.47	64.26	70.39	76.02	33.22	37.14	41.51	45.47	49.14	52.54	20.37	22.79	25.48	27.90	30.14	32.20
TER	19	52.61	60.76	67.90	75.92	83.16	89.85	39.24	43.86	49.04	53.73	58.03	62.02	24.08	26.92	30.10	32.97	35.63	38.08
TER	25	70.81	81.76	91.42	102.20	111.97	120.93	52.82	59.05	66.01	72.31	78.12	83.51	32.41	36.23	40.53	44.38	47.95	51.24
TER	31	91.04	105.11	117.53	131.39	143.96	155.47	67.94	75.95	84.91	93.03	100.49	107.42	41.69	46.62	52.12	57.09	61.67	65.91
TIR	45	111.27	128.49	143.64	160.58	175.91	190.02	83.02	92.82	103.78	113.68	122.78	131.25	50.96	56.98	63.70	69.79	75.36	80.57
THR	55	141.61	163.52	182.81	204.40	223.90	241.85	105.67	118.13	132.09	144.69	156.28	167.06	64.86	72.52	81.06	88.80	95.94	102.55
THR	68	171.96	198.56	222.01	248.19	271.88	293.69	128.31	143.47	160.41	175.70	189.77	202.86	78.75	88.06	98.46	107.84	116.48	124.53
TMR	68	202.30	233.59	261.17	292.01	319.87	345.49	150.92	168.74	188.65	206.64	223.23	238.63	92.65	103.57	115.82	126.88	137.03	146.48

Note: Nominal capacity is based on ARI 750-2001; 38ºC liquid temperature, 4ºC evaporating temperature, pressure drop across valve 7 bar

Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors:

	Liquid Refrigerant Temp ºC														
	-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
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

Note: 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 in the actual factors across this range is insignificant.

R 404A/R 507 Capacity (kW)- B, HF, TFE, TRAE And T-Series:

Type	Nominal Capacity in Ton	Evaporating Temp																	
		10°C						4°C						-7°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0
BA/BN	1/4	1.02	1.16	1.30	1.47	1.61	1.75	0.98	1.12	1.26	1.40	1.54	1.68	0.95	1.09	1.23	1.37	1.51	1.61
BA/BN	1/2	1.93	2.24	2.49	2.77	3.05	3.29	1.86	2.14	2.38	2.66	2.94	3.19	1.79	2.07	2.31	2.59	2.84	3.05
BA/BN	1	2.98	3.43	3.85	4.31	4.69	5.08	2.91	3.36	3.75	4.20	4.59	4.97	2.77	3.19	3.57	3.99	4.38	4.73
BA/BN	1-1/4	3.99	4.62	5.15	5.78	6.30	6.83	3.89	4.48	5.01	5.60	6.16	6.65	3.71	4.27	4.80	5.36	5.88	6.34
BA/BN	1-1/2	5.04	5.81	6.51	7.28	7.98	8.61	4.94	5.71	6.37	7.14	7.81	8.44	4.69	5.43	6.06	6.76	7.42	8.02
BA/BN	2	6.09	7.04	7.88	8.79	9.63	10.40	5.95	6.86	7.67	8.58	9.42	10.15	5.67	6.55	7.32	8.19	8.96	9.70
BA/BN	2-1/2	7.91	9.14	10.22	11.41	12.50	13.51	7.70	8.89	9.94	11.13	12.18	13.16	7.32	8.44	9.45	10.57	11.55	12.50
BA/BN	3	9.98	11.52	12.88	14.39	15.79	17.05	9.77	11.27	12.60	14.11	15.44	16.66	9.28	10.71	11.97	13.37	14.67	15.86
BA/BN	4	12.43	14.35	16.03	17.92	19.64	21.21	12.15	14.04	15.68	17.54	19.22	20.76	11.52	13.30	14.88	16.63	18.20	19.67
HF	1/8	0.56	0.63	0.74	0.81	0.88	0.95	0.56	0.63	0.74	0.81	0.88	0.95	0.53	0.60	0.67	0.77	0.84	0.91
HF	1/4	1.09	1.26	1.40	1.58	1.72	1.86	1.05	1.23	1.37	1.51	1.65	1.79	0.98	1.12	1.26	1.40	1.54	1.68
HF	1/2	1.93	2.24	2.49	2.77	3.05	3.29	1.86	2.14	2.38	2.66	2.94	3.19	1.79	2.07	2.31	2.59	2.84	3.05
HF	1	2.91	3.36	3.75	4.20	4.59	4.97	2.87	3.33	3.71	4.13	4.55	4.90	2.70	3.12	3.47	3.89	4.27	4.62
HF	1-1/4	3.92	4.52	5.08	5.67	6.20	6.69	3.85	4.45	4.97	5.57	6.09	6.58	3.64	4.20	4.69	5.25	5.74	6.23
HF	1-1/2	5.04	5.81	6.51	7.28	7.98	8.61	4.94	5.71	6.37	7.14	7.81	8.44	4.69	5.43	6.06	6.76	7.42	8.02
HF	2	6.65	7.67	8.58	9.59	10.50	11.34	6.51	7.53	8.40	9.38	10.29	11.13	6.16	7.11	7.95	8.89	9.73	10.54
HF	3-1/2	11.83	13.65	15.26	17.08	18.69	20.20	11.55	13.34	14.91	16.66	18.27	19.74	10.96	12.64	14.14	15.82	17.33	18.73
HF	5	16.45	19.01	21.25	23.73	26.01	28.11	16.07	18.55	20.76	23.21	25.41	27.44	15.26	17.61	19.71	22.02	24.12	26.08
HF	7	20.83	24.05	26.88	30.07	32.94	35.56	20.34	23.49	26.25	29.37	32.17	34.72	19.32	22.30	24.96	27.90	30.56	33.01
HF	10	30.91	35.70	39.90	44.63	48.86	52.78	30.17	34.83	38.96	43.54	47.71	51.52	28.67	33.11	37.00	41.37	45.33	48.97
HF	13	40.67	46.97	52.50	58.70	64.30	69.44	39.73	45.89	51.28	57.33	62.83	67.83	37.73	43.58	48.72	54.46	59.64	64.44
TFE	5	16.17	18.66	20.86	23.35	25.55	27.62	15.79	18.24	20.37	22.79	24.96	26.95	14.98	17.29	19.36	21.63	23.70	25.59
TFE	7	22.12	25.55	28.56	31.92	34.97	37.77	21.60	24.92	27.90	31.19	34.16	36.89	20.51	23.70	26.50	29.61	32.45	35.04
TFE	9	27.44	31.68	35.42	39.62	43.40	46.87	26.81	30.98	34.62	38.71	42.39	45.78	25.48	29.44	32.90	36.79	40.29	43.51
TFE	14	41.93	48.41	54.15	60.52	66.29	71.61	40.95	47.29	52.85	59.12	64.75	69.93	38.89	44.91	50.19	56.14	61.50	66.40
TRAE+	8	23.77	27.44	30.70	34.30	37.59	40.60	23.21	26.81	29.96	33.50	36.68	39.62	22.05	25.45	28.46	31.82	34.86	37.66
TRAE+	12	34.65	40.01	44.73	50.02	54.78	59.19	33.85	39.10	43.68	48.86	53.52	57.79	32.17	37.14	41.51	46.41	50.86	54.92
TRAE+	14	38.68	44.66	49.95	55.83	61.15	66.05	37.77	43.61	48.76	54.50	59.71	64.51	35.88	41.44	46.31	51.77	56.74	61.29
TRAE+	20	58.63	67.69	75.67	84.63	92.68	100.14	57.26	66.12	73.92	82.64	90.55	97.79	54.39	62.79	70.21	78.51	86.00	92.89
TRAE+	30	80.57	93.03	104.02	116.31	127.40	137.59	78.72	90.90	101.61	113.61	124.46	134.44	74.76	86.31	96.53	107.91	118.20	127.68
TRAE	35	108.78	125.62	140.42	157.01	171.99	185.78	106.26	122.71	137.17	153.37	168.00	181.48	100.94	116.55	130.31	145.71	159.60	172.38
TRAE	40	118.65	136.99	153.16	171.26	187.60	202.65	115.89	133.81	149.59	167.27	183.23	197.93	110.08	127.12	142.10	158.87	174.06	187.99
TRAE	50	141.19	163.03	182.28	203.81	223.23	241.12	137.94	159.29	178.08	199.08	218.09	235.59	131.04	151.31	169.16	189.14	207.20	223.79
TJR	9	29.61	34.20	38.22	42.74	46.83	50.58	28.91	33.39	37.31	41.72	45.71	49.39	27.48	31.71	35.46	39.66	43.44	46.94
TJR	12	35.46	40.95	45.78	51.17	56.07	60.55	34.62	39.97	44.70	49.95	54.74	59.12	32.90	37.98	42.49	47.50	52.01	56.18
TER	14	44.31	51.17	57.19	63.95	70.07	75.67	43.30	49.98	55.90	62.48	68.46	73.96	41.13	47.50	53.10	59.36	65.03	70.25
TER	16	52.36	60.45	67.59	75.57	82.78	89.43	51.17	59.08	66.05	73.85	80.92	87.40	48.58	56.11	62.72	70.11	76.83	82.95
TER	21	70.49	81.41	91.00	101.75	111.44	120.40	68.88	79.52	88.94	99.44	108.92	117.64	65.42	75.53	84.46	94.43	103.43	111.72
TER	27	90.65	104.69	117.04	130.83	143.33	154.81	88.55	102.24	114.31	127.82	140.00	151.24	84.11	97.13	108.57	121.38	132.97	143.64
TIR	37	110.78	127.93	143.01	159.88	175.14	189.18	108.22	124.95	139.72	156.21	171.12	184.84	102.80	118.69	132.72	148.37	162.54	175.56
THR	48	141.02	162.82	182.04	203.53	222.95	240.84	137.73	159.04	177.80	198.80	217.77	235.20	130.83	151.06	168.91	188.83	206.85	223.44
THR	60	171.22	197.72	221.06	247.14	270.73	292.43	167.23	193.10	215.88	241.36	264.43	285.60	158.87	183.44	205.10	229.29	251.20	271.32
TMR	60	201.43	232.58	260.05	290.75	318.47	344.02	196.77	227.22	254.03	284.03	311.12	336.04	186.90	215.81	241.29	269.78	295.51	319.20

Note: Nominal capacity is based on ARI 750-2001; 38°C liquid temperature, 4°C evaporating temperature, pressure drop across valve 7 bar

Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors:

	Liquid Refrigerant Temp °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
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

Note: 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 in the actual factors across this range is insignificant.

R 404A/R 507 Capacity (kW)- B, HF, TFE, TRAE And T-Series:

Type	Nominal Capacity in Ton	Evaporating Temp																	
		-18°C						-29°C						-40°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	5.5	7.0	8.5	10.0	12.0	14.0	5.5	7.0	8.5	10.0	12.0	14.0
BA/BN	1/4	0.84	0.98	1.09	1.23	1.33	1.44	0.67	0.74	0.84	0.91	0.98	1.05	0.42	0.46	0.53	0.56	0.63	0.67
BA/BN	1/2	1.58	1.82	2.03	2.28	2.49	2.70	1.26	1.40	1.58	1.72	1.86	2.00	0.81	0.91	1.02	1.09	1.19	1.26
BA/BN	1	2.49	2.87	3.22	3.57	3.92	4.24	1.93	2.14	2.42	2.63	2.84	3.05	1.26	1.40	1.58	1.72	1.86	2.00
BA/BN	1-1/4	3.29	3.82	4.24	4.76	5.22	5.64	2.59	2.91	3.26	3.54	3.82	4.10	1.68	1.89	2.10	2.31	2.49	2.66
BA/BN	1-1/2	4.17	4.80	5.39	6.02	6.58	7.11	3.26	3.64	4.06	4.45	4.83	5.15	2.14	2.38	2.66	2.94	3.15	3.36
BA/BN	2	5.04	5.81	6.51	7.28	7.98	8.61	3.96	4.41	4.94	5.43	5.85	6.27	2.59	2.91	3.26	3.54	3.82	4.10
BA/BN	2-1/2	6.55	7.56	8.44	9.45	10.36	11.17	5.15	5.74	6.44	7.04	7.60	8.12	3.36	3.75	4.20	4.59	4.97	5.32
BA/BN	3	8.26	9.56	10.68	11.94	13.06	14.11	6.48	7.25	8.09	8.86	9.59	10.26	4.24	4.73	5.29	5.81	6.27	6.69
BA/BN	4	10.29	11.87	13.30	14.84	16.28	17.57	8.09	9.03	10.12	11.06	11.97	12.78	5.29	5.92	6.62	7.25	7.81	8.37
HF	1/8	0.46	0.53	0.60	0.67	0.74	0.77	0.35	0.39	0.46	0.49	0.53	0.56	0.25	0.28	0.32	0.35	0.35	0.39
HF	1/4	0.88	1.02	1.12	1.26	1.40	1.51	0.70	0.77	0.88	0.95	1.05	1.12	0.46	0.53	0.56	0.63	0.67	0.74
HF	1/2	1.58	1.82	2.03	2.28	2.49	2.70	1.26	1.40	1.58	1.72	1.86	2.00	0.81	0.91	1.02	1.09	1.19	1.26
HF	1	2.42	2.80	3.12	3.50	3.82	4.13	1.89	2.10	2.38	2.59	2.80	2.98	1.23	1.37	1.54	1.68	1.82	1.93
HF	1-1/4	3.26	3.75	4.20	4.69	5.15	5.57	2.56	2.87	3.19	3.50	3.78	4.03	1.68	1.89	2.10	2.31	2.49	2.66
HF	1-1/2	4.17	4.80	5.39	6.02	6.58	7.11	3.26	3.64	4.06	4.45	4.83	5.15	2.14	2.38	2.66	2.94	3.15	3.36
HF	2	5.50	6.34	7.11	7.95	8.68	9.38	4.31	4.83	5.39	5.88	6.37	6.79	2.84	3.19	3.54	3.89	4.20	4.48
HF	3-1/2	9.80	11.31	12.64	14.14	15.51	16.73	7.67	8.58	9.59	10.50	11.34	12.11	5.01	5.60	6.27	6.86	7.39	7.91
HF	5	13.62	15.72	17.57	19.64	21.53	23.24	10.68	11.94	13.34	14.63	15.79	16.87	7.00	7.84	8.75	9.59	10.36	11.06
HF	7	17.26	19.92	22.26	24.92	27.30	29.47	13.55	15.16	16.94	18.55	20.02	21.42	8.86	9.91	11.06	12.11	13.09	14.00
HF	10	25.59	29.54	33.04	36.93	40.46	43.68	20.06	22.44	25.06	27.48	29.65	31.71	13.13	14.67	16.42	17.96	19.43	20.76
HF	13	33.67	38.89	43.47	48.62	53.24	57.51	26.43	29.54	33.04	36.19	39.10	41.79	17.26	19.29	21.56	23.63	25.52	27.30
TFE	5	13.37	15.44	17.26	19.29	21.14	22.82	10.50	11.73	13.13	14.39	15.54	16.59	6.86	7.67	8.58	9.38	10.15	10.85
TFE	7	18.31	21.14	23.63	26.43	28.95	31.26	14.35	16.03	17.96	19.64	21.21	22.68	9.38	10.50	11.73	12.85	13.86	14.84
TFE	9	22.75	26.29	29.37	32.83	35.98	38.85	17.85	19.95	22.33	24.43	26.39	28.21	11.66	13.02	14.56	15.96	17.26	18.45
TFE	14	34.72	40.08	44.84	50.12	54.88	59.29	27.23	30.45	34.06	37.28	40.29	43.05	17.78	19.88	22.23	24.36	26.29	28.11
TRAE+	8	19.67	22.72	25.41	28.39	31.12	33.60	15.44	17.26	19.29	21.14	22.82	24.40	10.08	11.27	12.60	13.79	14.91	15.93
TRAE+	12	28.70	33.15	37.07	41.44	45.40	49.00	22.51	25.17	28.14	30.80	33.29	35.60	14.70	16.45	18.38	20.13	21.74	23.24
TRAE+	14	32.03	37.00	41.34	46.24	50.65	54.71	25.13	28.11	31.43	34.41	37.17	39.73	16.42	18.34	20.51	22.47	24.29	25.97
TRAE+	20	48.55	56.07	62.69	70.07	76.76	82.92	38.08	42.56	47.60	52.15	56.32	60.20	24.89	27.83	31.12	34.09	36.82	39.34
TRAE+	30	66.71	77.04	86.14	96.29	105.49	113.93	52.33	58.49	65.42	71.65	77.39	82.74	34.20	38.22	42.74	46.83	50.58	54.08
TRAE	35	90.06	103.99	116.27	129.99	142.38	153.79	70.67	79.00	88.34	96.78	104.51	111.72	46.17	51.63	57.72	63.21	68.29	73.01
TRAE	40	98.25	113.44	126.84	141.82	155.33	167.79	77.07	86.17	96.36	105.53	114.00	121.87	50.37	56.32	62.97	68.95	74.48	79.63
TRAE	50	116.94	135.03	150.96	168.77	184.91	199.71	91.70	102.52	114.63	125.58	135.63	145.01	59.96	67.03	74.94	82.11	88.69	94.78
TJR	9	24.54	28.32	31.68	35.42	38.78	41.90	19.25	21.53	24.08	26.36	28.46	30.45	12.57	14.04	15.72	17.22	18.59	19.88
TJR	12	29.37	33.92	37.91	42.39	46.45	50.16	23.03	25.76	28.81	31.54	34.06	36.40	15.05	16.84	18.83	20.62	22.26	23.80
TER	14	36.68	42.35	47.36	52.96	58.00	62.65	28.77	32.17	35.98	39.41	42.56	45.50	18.55	20.76	23.21	25.41	27.44	29.33
TER	16	43.37	50.09	56.00	62.58	68.57	74.06	34.02	38.05	42.53	46.59	50.33	53.80	22.23	24.85	27.79	30.45	32.87	35.14
TER	21	58.38	67.41	75.36	84.28	92.30	99.72	45.78	51.17	57.23	62.69	67.73	72.38	29.93	33.46	37.42	40.99	44.28	47.32
TER	27	75.08	86.70	96.92	108.36	118.72	128.21	58.87	65.84	73.61	80.61	87.08	93.07	38.50	43.05	48.13	52.71	56.95	60.87
TIR	37	91.74	105.91	118.44	132.41	145.04	156.66	71.96	80.47	89.95	98.53	106.44	113.79	47.04	52.61	58.80	64.40	69.58	74.38
THR	48	116.76	134.82	150.75	168.53	184.63	199.40	91.60	102.41	114.49	125.41	135.49	144.83	59.85	66.92	74.83	81.97	88.52	94.64
THR	60	141.79	163.73	183.05	204.65	224.18	242.13	111.20	124.32	138.99	152.25	164.47	175.81	72.70	81.27	90.86	99.54	107.52	114.94
TMR	60	166.81	192.61	215.36	240.77	263.76	284.87	130.83	146.27	163.56	179.13	193.52	206.85	85.51	95.59	106.89	117.08	126.46	135.21

Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors:

	Liquid Refrigerant Temp °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
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

Note: 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 in the actual factors across this range is insignificant.

R 407C Capacity (kW) - B, HF, TFE, TRAE And T-Series:

Type	Nominal Capacity in Ton	Evaporating Temp																	
		10°C						4°C						-7°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0	4.0	5.5	7.0	8.5	10.0	12.0
BA/BN	1/2	1.33	1.54	1.72	1.93	2.10	2.28	1.30	1.51	1.68	1.86	2.07	2.21	1.26	1.47	1.61	1.82	2.00	2.14
BA/BN	1	2.52	2.91	3.26	3.64	3.99	4.31	2.45	2.84	3.15	3.54	3.89	4.20	2.38	2.77	3.08	3.43	3.78	4.06
BA/BN	1-1/2	3.92	4.52	5.08	5.67	6.20	6.69	3.85	4.45	4.97	5.57	6.09	6.58	3.68	4.24	4.76	5.32	5.81	6.27
BA/BN	2	5.22	6.02	6.72	7.53	8.26	8.89	5.15	5.95	6.65	7.42	8.12	8.79	4.94	5.71	6.37	7.14	7.81	8.44
BA/BN	2-1/2	6.58	7.60	8.51	9.49	10.40	11.24	6.48	7.49	8.37	9.35	10.26	11.06	6.23	7.21	8.05	9.00	9.84	10.64
BA/BN	3	7.98	9.21	10.29	11.52	12.60	13.62	7.84	9.07	10.12	11.31	12.39	13.41	7.53	8.68	9.73	10.85	11.90	12.85
BA/BN	4	10.36	11.97	13.37	14.95	16.38	17.71	10.15	11.73	13.09	14.67	16.07	17.33	9.77	11.27	12.60	14.11	15.44	16.66
BA/BN	5	13.09	15.12	16.91	18.90	20.69	22.37	12.85	14.84	16.59	18.55	20.30	21.95	12.32	14.21	15.89	17.78	19.50	21.04
BA/BN	6	16.28	18.80	21.00	23.49	25.73	27.79	16.00	18.48	20.65	23.10	25.31	27.30	15.33	17.71	19.78	22.12	24.26	26.18
HF	1/4	0.74	0.84	0.95	1.05	1.16	1.26	0.74	0.84	0.95	1.05	1.16	1.26	0.70	0.81	0.91	1.02	1.12	1.19
HF	1/2	1.40	1.61	1.82	2.03	2.21	2.38	1.37	1.58	1.75	1.96	2.17	2.35	1.33	1.54	1.72	1.93	2.10	2.28
HF	1	2.52	2.91	3.26	3.64	3.99	4.31	2.45	2.84	3.15	3.54	3.89	4.20	2.38	2.77	3.08	3.43	3.78	4.06
HF	1-1/2	3.82	4.41	4.94	5.50	6.02	6.51	3.75	4.34	4.83	5.39	5.92	6.41	3.61	4.17	4.66	5.22	5.71	6.16
HF	2	5.15	5.95	6.65	7.42	8.12	8.79	5.04	5.81	6.51	7.28	7.98	8.61	4.87	5.64	6.27	7.04	7.70	8.30
HF	2-1/2	6.58	7.60	8.51	9.49	10.40	11.24	6.48	7.49	8.37	9.35	10.26	11.06	6.23	7.21	8.05	9.00	9.84	10.64
HF	3	8.72	10.08	11.24	12.57	13.79	14.88	8.54	9.87	11.03	12.32	13.51	14.60	8.23	9.49	10.61	11.87	13.02	14.04
HF	5-1/2	15.51	17.92	20.02	22.37	24.50	26.50	15.19	17.54	19.60	21.91	24.01	25.94	14.60	16.87	18.83	21.07	23.07	24.92
HF	8	21.56	24.89	27.83	31.12	34.09	36.82	21.18	24.47	27.34	30.56	33.50	36.16	20.34	23.49	26.25	29.37	32.17	34.72
HF	10	27.30	31.54	35.25	39.41	43.16	46.62	26.78	30.91	34.58	38.64	42.35	45.71	25.73	29.72	33.22	37.14	40.67	43.93
HF	15	40.50	46.76	52.29	58.45	64.02	69.16	39.73	45.89	51.28	57.33	62.83	67.83	38.15	44.07	49.25	55.06	60.31	65.17
HF	20	53.27	61.50	68.78	76.90	84.21	90.97	52.29	60.38	67.52	75.46	82.67	89.29	50.23	58.00	64.86	72.49	79.42	85.79
TFE	8	21.18	24.47	27.34	30.56	33.50	36.16	20.79	24.01	26.85	30.00	32.87	35.49	19.95	23.03	25.76	28.81	31.54	34.06
TFE	10	28.98	33.46	37.42	41.83	45.82	49.49	28.46	32.87	36.75	41.06	44.98	48.58	27.30	31.54	35.25	39.41	43.16	46.62
TFE	12	35.98	41.55	46.45	51.94	56.88	61.46	35.32	40.78	45.61	50.96	55.83	60.31	33.92	39.17	43.79	48.97	53.62	57.93
TFE	20	54.92	63.42	70.91	79.28	86.84	93.80	53.90	62.23	69.58	77.81	85.23	92.05	51.77	59.78	66.82	74.73	81.87	88.41
TRAE+	10	31.15	35.98	40.22	44.98	49.25	53.20	30.56	35.28	39.45	44.10	48.30	52.19	29.37	33.92	37.91	42.39	46.45	50.16
TRAE+	15	45.40	52.43	58.59	65.52	71.79	77.53	44.56	51.45	57.51	64.30	70.46	76.09	42.77	49.39	55.23	61.74	67.62	73.05
TRAE+	20	50.68	58.52	65.42	73.15	80.12	86.56	49.74	57.44	64.23	71.79	78.65	84.95	47.74	55.13	61.64	68.92	75.50	81.52
TRAE+	30	76.79	88.66	99.12	110.85	121.42	131.15	75.08	86.70	96.92	108.36	118.72	128.21	72.38	83.58	93.45	104.48	114.45	123.62
TRAE+	40	105.56	121.91	136.29	152.36	166.92	180.29	103.60	119.63	133.74	149.52	163.80	176.93	99.51	114.91	128.45	143.64	157.33	169.93
TRAE	50	142.49	164.54	183.96	205.66	225.30	243.36	139.90	161.53	180.60	201.92	221.20	238.91	134.30	155.09	173.39	193.83	212.35	229.36
TRAE	60	155.44	179.48	200.66	224.35	245.77	265.44	152.57	176.16	196.95	220.22	241.22	260.54	146.51	169.19	189.14	211.47	231.67	250.22
TRAE	70	184.98	213.61	238.81	266.98	292.46	315.91	181.58	209.69	234.43	262.08	287.11	310.10	174.37	201.36	225.12	251.69	275.70	297.78
TJR	14	38.78	44.77	50.05	55.97	61.32	66.22	38.08	43.96	49.18	54.95	60.20	65.03	36.58	42.25	47.22	52.78	57.82	62.48
TJR	18	46.45	53.62	59.96	67.03	73.43	79.31	45.61	52.68	58.87	65.84	72.10	77.88	43.79	50.58	56.53	63.21	69.23	74.76
TER	22	58.07	67.06	74.97	83.83	91.81	99.16	56.98	65.80	73.57	82.25	90.09	97.30	54.71	63.18	70.63	78.96	86.49	93.42
TER	26	68.60	79.21	88.55	99.02	108.47	117.15	67.34	77.77	86.94	97.20	106.47	115.01	64.68	74.69	83.51	93.35	102.27	110.46
TER	35	92.37	106.65	119.25	133.32	146.06	157.75	90.65	104.69	117.04	130.83	143.33	154.81	87.05	100.52	112.39	125.65	137.62	148.65
TER	45	118.76	137.13	153.30	171.40	187.78	202.83	116.55	134.58	150.47	168.21	184.28	199.05	111.93	129.26	144.52	161.56	176.96	191.17
TIR	55	145.15	167.62	187.39	209.51	229.50	247.87	142.49	164.54	183.96	205.66	225.30	243.36	136.78	157.96	176.58	197.44	216.27	233.59
THR	75	184.73	213.33	238.49	266.63	292.08	315.49	181.34	209.41	234.12	261.73	286.72	309.68	174.09	201.01	224.74	251.27	275.28	297.33
THR	100	224.28	258.97	289.56	323.72	354.62	383.04	220.19	254.24	284.27	317.80	348.15	376.04	211.40	244.09	272.93	305.13	334.25	361.03
TMR	100	263.87	304.68	340.66	380.87	417.20	450.63	259.04	299.11	334.43	373.87	409.57	442.40	248.71	287.18	321.09	359.00	393.26	424.76

Note: Nominal capacity is based on ARI 750-2001; 38°C liquid temperature, 4°C evaporating temperature

Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors:

	Liquid Refrigerant Temp °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
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

Note: 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 in the actual factors across this range is insignificant.

R 407C Capacity (kW)- B, HF, TFE, TRAE And T-Series:

Type	Nominal Capacity in Ton	Evaporating Temp																	
		-18°C						-29°C						-40°C					
		Pressure drop across valve (bar)						Pressure drop across valve (bar)						Pressure drop across valve (bar)					
		4.0	5.5	7.0	8.5	10.0	12.0	5.5	7.0	8.5	10.0	12.0	14.0	5.5	7.0	8.5	10.0	12.0	14.0
BA/BN	1/2	1.05	1.23	1.37	1.51	1.65	1.79	0.81	0.91	1.02	1.09	1.19	1.26	0.49	0.56	0.63	0.67	0.74	0.77
BA/BN	1	2.00	2.31	2.59	2.87	3.15	3.40	1.51	1.68	1.89	2.07	2.24	2.38	0.95	1.05	1.19	1.30	1.40	1.51
BA/BN	1-1/2	3.12	3.61	4.03	4.48	4.94	5.32	2.38	2.66	2.98	3.26	3.54	3.78	1.51	1.68	1.89	2.07	2.24	2.38
BA/BN	2	4.17	4.80	5.39	6.02	6.58	7.11	3.15	3.54	3.96	4.31	4.66	4.97	2.00	2.24	2.49	2.73	2.94	3.15
BA/BN	2-1/2	5.25	6.06	6.79	7.60	8.30	8.96	3.99	4.45	5.01	5.46	5.92	6.30	2.52	2.80	3.15	3.47	3.71	3.99
BA/BN	3	6.37	7.35	8.23	9.21	10.08	10.89	4.83	5.39	6.06	6.62	7.14	7.63	3.05	3.40	3.82	4.17	4.52	4.83
BA/BN	4	8.23	9.49	10.61	11.87	13.02	14.04	6.27	7.00	7.84	8.58	9.28	9.91	3.96	4.41	4.94	5.43	5.85	6.27
BA/BN	5	10.43	12.04	13.48	15.05	16.49	17.82	7.95	8.89	9.94	10.89	11.76	12.57	5.01	5.60	6.27	6.86	7.39	7.91
BA/BN	6	12.95	14.95	16.73	18.69	20.48	22.12	9.87	11.03	12.36	13.51	14.60	15.61	6.20	6.93	7.74	8.47	9.17	9.80
HF	1/4	0.60	0.70	0.77	0.88	0.95	1.02	0.46	0.53	0.56	0.63	0.67	0.74	0.28	0.32	0.35	0.39	0.42	0.46
HF	1/2	1.12	1.30	1.44	1.61	1.79	1.93	0.84	0.95	1.05	1.16	1.23	1.33	0.53	0.60	0.67	0.74	0.77	0.84
HF	1	2.00	2.31	2.59	2.87	3.15	3.40	1.51	1.68	1.89	2.07	2.24	2.38	0.95	1.05	1.19	1.30	1.40	1.51
HF	1-1/2	3.05	3.50	3.92	4.41	4.83	5.22	2.31	2.59	2.91	3.15	3.43	3.64	1.47	1.65	1.86	2.03	2.17	2.31
HF	2	4.10	4.73	5.29	5.92	6.48	7.00	3.12	3.50	3.89	4.27	4.62	4.94	1.96	2.21	2.45	2.70	2.91	3.12
HF	2-1/2	5.25	6.06	6.79	7.60	8.30	8.96	3.99	4.45	5.01	5.46	5.92	6.30	2.52	2.80	3.15	3.47	3.71	3.99
HF	3	6.93	8.02	8.96	10.01	10.96	11.83	5.29	5.92	6.62	7.25	7.81	8.37	3.33	3.71	4.17	4.55	4.94	5.25
HF	5-1/2	12.32	14.21	15.89	17.78	19.50	21.04	9.38	10.50	11.73	12.85	13.86	14.84	5.92	6.62	7.39	8.09	8.75	9.35
HF	8	17.15	19.81	22.16	24.75	27.13	29.30	13.06	14.60	16.31	17.89	19.32	20.65	8.23	9.21	10.29	11.27	12.18	13.02
HF	10	21.70	25.06	28.00	31.33	34.30	37.07	16.52	18.48	20.65	22.61	24.43	26.11	10.40	11.62	12.99	14.25	15.37	16.45
HF	15	32.20	37.17	41.58	46.48	50.93	54.99	24.54	27.44	30.66	33.60	36.30	38.78	15.44	17.26	19.29	21.14	22.82	24.40
HF	20	42.39	48.93	54.71	61.18	67.03	72.38	32.27	36.09	40.36	44.21	47.74	51.03	20.34	22.75	25.41	27.86	30.07	32.17
TFE	8	16.84	19.43	21.74	24.29	26.64	28.74	12.81	14.32	16.03	17.54	18.94	20.27	8.09	9.03	10.12	11.06	11.97	12.78
TFE	10	23.07	26.64	29.79	33.29	36.47	39.38	17.57	19.64	21.98	24.05	25.97	27.79	11.06	12.36	13.83	15.16	16.35	17.50
TFE	12	28.63	33.08	36.96	41.34	45.26	48.90	21.81	24.40	27.27	29.86	32.24	34.48	13.72	15.33	17.15	18.80	20.30	21.70
TFE	20	43.72	50.47	56.42	63.11	69.13	74.66	33.29	37.21	41.62	45.57	49.25	52.64	20.93	23.42	26.18	28.67	30.94	33.11
TRAE+	10	24.78	28.63	31.99	35.77	39.17	42.32	18.87	21.11	23.59	25.83	27.90	29.82	11.87	13.27	14.84	16.24	17.54	18.76
TRAE+	15	36.12	41.72	46.62	52.15	57.12	61.67	27.51	30.77	34.41	37.66	40.71	43.51	17.33	19.36	21.67	23.73	25.62	27.41
TRAE+	20	40.32	46.55	52.05	58.21	63.74	68.85	30.70	34.34	38.36	42.04	45.40	48.55	19.32	21.60	24.15	26.46	28.56	30.56
TRAE+	30	61.11	70.56	78.89	88.20	96.64	104.37	46.55	52.05	58.21	63.74	68.85	73.61	29.30	32.76	36.61	40.11	43.33	46.31
TRAE+	40	84.00	96.99	108.43	121.24	132.83	143.47	63.98	71.54	79.98	87.61	94.64	101.15	40.25	45.01	50.33	55.13	59.54	63.63
TRAE	50	113.40	130.94	146.41	163.70	179.31	193.66	86.35	96.53	107.94	118.23	127.72	136.54	54.36	60.76	67.94	74.45	80.40	85.96
TRAE	60	123.69	142.84	159.67	178.54	195.58	211.23	94.19	105.32	117.74	128.98	139.30	148.93	59.29	66.29	74.13	81.20	87.68	93.73
TRAE	70	147.21	170.00	190.05	212.49	232.75	251.41	112.11	125.34	140.14	153.51	165.80	177.24	70.56	78.89	88.20	96.64	104.37	111.58
TJR	14	30.87	35.63	39.87	44.56	48.83	52.71	23.52	26.29	29.40	32.20	34.79	37.21	14.81	16.56	18.52	20.27	21.91	23.42
TJR	18	36.96	42.67	47.71	53.34	58.45	63.11	28.14	31.47	35.18	38.54	41.62	44.49	17.71	19.81	22.16	24.26	26.18	28.00
TER	22	46.20	53.34	59.64	66.68	73.05	78.89	35.18	39.34	43.96	48.16	52.01	55.62	22.16	24.78	27.69	30.35	32.76	35.04
TER	26	54.60	63.04	70.49	78.82	86.35	93.24	41.58	46.48	51.98	56.95	61.50	65.73	26.18	29.26	32.73	35.84	38.71	41.41
TER	35	73.50	84.88	94.89	106.09	116.20	125.51	55.97	62.58	69.97	76.65	82.78	88.48	35.21	39.38	44.03	48.23	52.08	55.69
TER	45	94.50	109.13	122.01	136.40	149.42	161.39	71.96	80.47	89.95	98.53	106.44	113.79	45.29	50.65	56.63	62.02	66.99	71.61
TIR	55	115.50	133.39	149.10	166.71	182.63	197.26	87.96	98.35	109.94	120.44	130.10	139.06	55.37	61.92	69.23	75.81	81.90	87.54
THR	75	147.00	169.75	189.77	212.17	232.44	251.06	111.93	125.13	139.93	153.27	165.55	176.96	70.46	78.79	88.06	96.46	104.20	111.41
THR	100	178.50	206.12	230.44	257.64	282.24	304.85	135.94	151.97	169.93	186.13	201.08	214.94	85.54	95.62	106.93	117.15	126.53	135.24
TMR	100	210.00	242.48	271.11	303.10	332.05	358.65	159.92	178.78	199.89	218.96	236.53	252.84	100.66	112.53	125.83	137.83	148.89	159.15

Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors:

	Liquid Refrigerant Temp °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
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

Note: 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 in the actual factors across this range is insignificant.

R 410A Capacity (kW)- B-Series:

Nominal Capacity (Tons)	Evaporating Temp																			
	10°C							4°C							-7°C					
	Pressure drop across valve (bar)							Pressure drop across valve (bar)							Pressure drop across valve (bar)					
	5.0	7.5	10.0	11.0	14.5	16.5	20.0	5.0	7.5	10.0	11.0	14.5	16.5	20.0	5.0	7.5	10.0	11.0	14.5	16.5	20.0
1	2.80	3.50	3.85	4.20	4.55	4.90	5.60	2.80	3.50	3.85	4.20	4.55	4.90	5.25	2.80	3.15	3.85	3.85	4.55	4.90	5.25
1-1/2	4.55	5.60	6.30	6.65	7.70	4.90	5.60	4.55	5.60	5.95	6.65	7.35	8.05	8.75	4.55	5.25	5.95	6.30	7.35	7.70	8.40
2	6.30	7.70	8.75	9.10	10.50	11.20	12.25	6.30	7.70	8.40	9.10	10.50	11.20	12.25	5.95	7.35	8.40	9.10	10.15	10.85	11.90
3	8.05	9.80	10.85	11.55	13.30	14.35	15.75	8.05	9.80	10.85	11.55	13.30	14.35	15.40	7.70	9.45	10.50	11.20	12.95	14.00	15.05
3-1/2	10.50	12.60	14.00	15.05	17.50	18.55	20.30	10.15	12.60	14.00	15.05	17.15	18.55	19.95	10.15	12.25	13.65	14.70	16.80	17.85	19.60
4-1/2	14.35	17.50	19.60	21.00	24.15	25.90	28.00	14.35	17.50	19.60	21.00	24.15	25.55	28.00	14.00	17.15	19.25	20.65	23.45	25.20	27.30
6	17.85	21.35	24.15	25.90	29.75	31.50	34.65	17.50	21.35	23.80	25.55	29.40	31.50	34.30	17.15	20.65	23.45	25.20	28.70	30.80	33.60
7-1/2	21.70	26.25	29.75	31.85	36.40	38.85	42.35	21.70	26.25	29.40	31.50	36.05	38.50	42.00	21.00	25.55	28.70	30.80	35.35	37.80	41.30

Nominal Capacity (Tons)	Evaporating Temp																			
	-18°C							-29°C							-40°C					
	Pressure drop across valve (bar)							Pressure drop across valve (bar)							Pressure drop across valve (bar)					
	5.0	7.5	10.0	11.0	14.5	16.5	20.0	5.0	7.5	10.0	11.0	14.5	16.5	20.0	5.0	7.5	10.0	11.0	14.5	16.5	20.0
1	2.80	3.15	3.50	3.85	4.55	4.90	5.25	2.45	3.15	3.50	3.85	4.20	4.55	4.90	2.45	3.15	3.50	3.50	4.20	4.55	4.90
1-1/2	4.20	5.25	5.95	6.30	7.00	7.70	8.40	4.20	4.90	5.60	5.95	7.00	7.35	8.05	3.85	4.90	5.60	5.95	6.65	7.00	7.70
2	5.95	7.35	8.05	8.75	9.80	10.50	11.55	5.60	7.00	8.05	8.40	9.80	10.50	11.20	5.60	6.65	7.70	8.05	9.45	9.80	10.85
3	7.70	9.10	10.50	11.20	12.60	13.65	14.70	7.35	8.75	10.15	10.85	12.25	13.30	14.35	7.00	8.75	9.80	10.50	11.90	12.60	13.65
3-1/2	9.80	11.90	13.30	14.35	16.45	17.50	19.25	9.45	11.55	12.95	14.00	15.75	16.80	18.55	9.10	11.20	12.60	13.30	15.40	16.45	17.85
4-1/2	13.65	16.45	18.55	19.95	22.75	24.50	26.60	13.30	16.10	18.20	19.25	22.05	23.80	25.90	12.60	15.40	17.50	18.55	21.35	22.75	24.85
6	16.80	20.30	22.75	24.50	28.00	29.75	32.55	16.10	19.60	22.05	23.80	26.95	29.05	31.50	15.75	18.90	21.35	22.75	26.25	28.00	30.45
7-1/2	20.65	24.85	28.00	30.10	34.30	36.75	39.90	19.95	24.15	27.30	29.05	33.25	35.70	38.85	19.25	23.10	26.25	28.00	32.20	34.30	37.45

Note: Nominal capacity is based on ARI 750-2001; 38°C liquid temperature, 4°C evaporating temperature

R 410A Capacity (kW)- C-Series:

Nominal Capacity (Tons)	Evaporating Temp																			
	10°C							4°C							-7°C					
	Pressure drop across valve (bar)							Pressure drop across valve (bar)							Pressure drop across valve (bar)					
	5.0	7.5	10.0	11.0	14.5	16.5	20.0	5.0	7.5	10.0	11.0	14.5	16.5	20.0	5.0	7.5	10.0	11.0	14.5	16.5	20.0
1-1/2	3.5	4.55	4.9	5.25	5.95	6.65	7	3.5	4.2	4.9	5.25	5.95	6.3	7	3.5	4.2	4.9	5.25	5.95	6.3	7.0
2	4.9	5.95	6.65	7.0	8.05	8.75	9.45	4.9	5.95	6.65	7.0	8.05	8.4	9.45	4.55	5.6	6.3	7.0	7.7	8.4	9.1
3	7.35	8.75	9.8	10.5	12.25	12.95	14	7.35	8.75	9.8	10.5	11.9	12.95	14	7	8.4	9.45	10.15	11.9	12.6	13.65
4	9.8	11.55	13.3	14.0	16.1	17.15	18.9	9.45	11.55	12.95	14.0	16.1	17.15	18.55	9.45	11.2	12.95	13.65	15.75	16.8	18.2
5	12.25	14.7	16.45	17.5	20.3	21.7	23.45	11.9	14.35	16.45	17.5	19.95	21.35	23.45	11.55	14.35	16.1	17.15	19.6	21.0	22.75
6	14.35	17.5	19.95	21.35	24.15	25.9	28.35	14.35	17.5	19.6	21.0	24.15	25.55	28	14	17.15	19.25	20.65	23.45	25.2	27.3
7	16.8	20.65	23.1	24.85	28.35	30.1	32.9	16.8	20.3	22.75	24.5	28.0	30.1	32.55	16.45	19.95	22.4	23.8	27.3	29.4	31.85

Nominal Capacity (Tons)	Evaporating Temp																			
	-18°C							-29°C							-40°C					
	Pressure drop across valve (bar)							Pressure drop across valve (bar)							Pressure drop across valve (bar)					
	5.0	7.5	10.0	11.0	14.5	16.5	20.0	5.0	7.5	10.0	11.0	14.5	16.5	20.0	5.0	7.5	10.0	11.0	14.5	16.5	20.0
1-1/2	3.5	4.2	4.55	4.9	5.6	6.3	6.65	3.15	3.85	4.55	4.9	5.6	5.95	6.3	3.15	3.85	4.2	4.55	5.25	5.6	6.3
2	4.55	5.6	6.3	6.65	7.7	8.05	8.75	4.55	5.25	5.95	6.3	7.35	8.05	8.75	4.2	5.25	5.95	6.3	7.0	7.7	8.4
3	7.0	8.4	9.45	10.15	11.55	12.25	13.3	6.65	8.05	9.1	9.8	11.2	11.9	12.95	6.3	7.7	8.75	9.45	10.85	11.55	12.6
4	9.1	11.2	12.6	13.3	15.4	16.45	17.85	8.75	10.85	12.25	12.95	14.7	15.75	17.15	8.4	10.5	11.55	12.6	14.35	15.4	16.8
5	11.55	13.65	15.75	16.8	19.25	20.3	22.4	11.2	13.3	15.05	16.1	18.55	19.95	21.7	10.5	12.95	14.7	15.75	17.85	19.25	20.65
6	13.65	16.45	18.55	19.95	22.75	24.5	26.6	13.3	16.1	18.2	19.25	22.05	23.8	25.9	12.95	15.4	17.5	18.55	21.35	22.75	24.85
7	16.8	20.65	23.1	23.45	28.35	30.1	32.9	15.4	18.9	21.0	22.75	25.9	27.65	30.1	15.05	18.2	20.3	21.7	24.85	26.6	29.05

Note: Nominal capacity is based on ARI 750-2001; 38°C liquid temperature, 4°C evaporating temperature

Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors:

	Liquid Refrigerant Temp °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

Note: 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 in the actual factors across this range is insignificant.

R 410A Capacity (kW)- TFE Series:

Nominal Capacity (Tons)	Evaporating Temp																				
	10°C							4°C							-7°C						
	Pressure drop across valve (bar)							Pressure drop across valve (bar)							Pressure drop across valve (bar)						
	5.0	7.5	10.0	11.0	14.5	16.5	20.0	5.0	7.5	10.0	11.0	14.5	16.5	20.0	5.0	7.5	10.0	11.0	14.5	16.5	20.0
12	28.35	34.65	38.85	41.65	47.60	51.10	55.65	28.35	34.30	38.50	41.30	47.25	50.75	54.95	27.65	33.60	37.80	40.25	46.20	49.35	53.90
16	43.40	52.50	59.15	63.35	72.45	77.35	84.35	43.05	51.80	58.45	62.65	71.75	76.65	83.65	42.00	50.75	57.40	61.25	70.35	75.25	81.90
20	46.55	56.35	63.70	68.25	78.05	83.30	91.00	46.20	56.00	63.35	67.55	77.35	82.60	90.30	45.15	54.95	61.95	66.15	75.60	80.85	88.20

Nominal Capacity (Tons)	Evaporating Temp																				
	-18°C							-29°C							-40°C						
	Pressure drop across valve (bar)							Pressure drop across valve (bar)							Pressure drop across valve (bar)						
	5.0	7.5	10.0	11.0	14.5	16.5	20.0	5.0	7.5	10.0	11.0	14.5	16.5	20.0	5.0	7.5	10.0	11.0	14.5	16.5	20.0
12	26.95	32.55	36.75	39.20	45.15	48.30	52.50	26.25	31.50	35.70	38.15	43.75	46.55	50.75	25.20	30.45	34.30	36.75	42.00	45.15	49.00
16	40.95	49.35	56.00	59.85	68.25	73.15	79.80	39.55	47.95	54.25	57.75	66.15	70.70	77.35	38.15	46.20	52.15	55.65	64.05	68.25	74.55
20	44.10	53.20	60.20	64.40	73.85	78.75	85.75	42.70	51.80	58.45	62.30	71.40	76.30	83.30	41.30	50.05	56.35	60.20	68.95	73.85	80.15

Refrigerant Liquid Temperature Valve Capacity Multiplier Correction Factors:

	Liquid Refrigerant Temp °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

Note: 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 in the actual factors across this range is insignificant.

R 134a Capacity (kW)- TI-Series:

Condensing Temperature °C	Evaporating Temp °C											Cage Size
	+30	+20	+10	+5	0	-5	-10	-15	-20	-25	-30	
50	0.23	0.27	0.29	0.29	0.3	0.3	0.3	0.26	0.22	0.19	0.16	TIO-00X
	0.6	0.71	0.76	0.78	0.79	0.79	0.79	0.68	0.59	0.5	0.43	TIO-000
	1.42	1.68	1.81	1.85	1.87	1.88	1.87	1.63	1.39	1.2	1.01	TIO-001
	2.32	2.74	2.96	3.02	3.05	3.07	3.06	2.65	2.27	1.95	1.66	TIO-002
	3.74	4.42	4.77	7.87	4.92	4.94	4.93	4.28	3.66	3.15	2.67	TIO-003
	6.21	7.34	7.93	8.08	8.17	8.21	8.19	7.10	6.08	5.23	4.43	TIO-004
	7.56	8.93	9.64	9.84	9.95	9.99	9.97	8.64	7.4	6.36	5.39	TIO-005
	8.76	10.34	11.17	11.4	11.52	11.57	11.55	10.01	8.57	7.37	6.25	TIO-006
40	0.12	0.21	0.25	0.26	0.27	0.28	0.28	0.25	0.21	0.18	0.16	TIO-00X
	0.33	0.56	0.67	0.7	0.73	0.74	0.75	0.66	0.57	0.49	0.42	TIO-000
	0.79	1.34	1.6	1.67	1.73	1.76	1.78	1.56	1.35	1.17	1.00	TIO-001
	1.29	2.18	2.6	2.73	2.82	2.88	2.91	2.55	2.2	1.91	1.63	TIO-002
	2.08	3.52	4.20	4.40	4.55	4.64	4.69	4.11	3.56	3.08	2.63	TIO-003
	3.45	5.84	6.97	7.31	7.55	7.7	7.79	6.83	5.90	5.12	4.37	TIO-004
	4.19	7.10	8.48	8.9	9.19	9.38	9.48	8.31	7.18	6.23	5.32	TIO-005
	4.86	8.23	9.83	10.31	10.64	10.86	10.98	9.63	8.32	7.22	6.16	TIO-006
35		0.17	0.23	0.24	0.26	0.26	0.27	0.24	0.21	0.18	0.15	TIO-00X
		0.44	0.6	0.65	0.68	0.7	0.72	0.63	0.55	0.48	0.41	TIO-000
		1.06	10.43	1.54	1.61	1.67	1.7	1.5	1.31	1.14	0.98	TIO-001
		1.72	2.33	2.5	2.63	2.72	2.78	2.45	2.13	1.86	1.59	TIO-002
		2.78	3.75	4.04	4.24	4.39	4.48	3.95	3.44	3.00	2.57	TIO-003
		4.62	6.23	6.71	7.05	7.28	7.43	6.56	5.71	4.97	4.27	TIO-004
		5.62	7.58	8.16	8.57	8.86	9.05	7.99	6.95	6.05	5.19	TIO-005
		6.51	8.79	9.45	9.93	10.26	10.48	9.25	8.05	7.01	6.01	TIO-006
30		0.09	0.19	0.21	0.23	0.24	0.25	0.23	0.2	0.17	0.15	TIO-00X
		0.25	0.51	0.57	0.62	0.65	0.67	0.6	0.52	0.46	0.40	TIO-000
		0.60	1.20	1.35	1.46	1.54	1.59	1.42	1.25	1.09	0.94	TIO-001
		0.98	1.96	2.21	2.39	2.51	2.60	2.32	2.03	1.78	1.54	TIO-002
		1.58	3.16	3.57	3.85	4.05	4.19	3.74	3.28	2.87	2.48	TIO-003
		2.63	5.25	5.92	6.39	6.73	6.96	6.21	5.44	4.77	4.11	TIO-004
		3.20	6.39	7.20	7.78	8.19	8.47	7.56	6.62	5.81	5.00	TIO-005
		3.71	7.40	8.34	9.01	9.49	9.82	8.75	7.67	6.73	5.8	TIO-006
25			0.14	0.18	0.2	0.22	0.23	0.21	0.18	0.16	0.14	TIO-00X
			0.37	0.47	0.54	0.58	0.61	0.56	0.49	0.43	0.38	TIO-000
			0.89	1.12	1.27	1.38	1.46	1.32	1.17	1.03	0.90	TIO-001
			1.45	1.82	2.08	2.25	2.38	2.15	1.91	1.68	1.46	TIO-002
			2.33	2.94	3.35	3.64	3.84	3.47	3.07	2.72	2.36	TIO-003
			3.87	4.88	5.56	6.03	6.37	5.76	5.10	4.51	3.91	TIO-004
			4.71	5.94	6.76	7.34	7.75	7.01	6.21	5.49	4.76	TIO-005
			5.45	6.88	7.84	8.51	8.98	8.12	7.19	6.36	5.52	TIO-006
20			0.02	0.12	0.16	0.19	0.2	0.19	0.17	0.15	0.13	TIO-00X
			0.04	0.33	0.43	0.5	0.54	0.5	0.45	0.40	0.35	TIO-000
			0.10	0.77	1.02	1.18	1.29	1.19	1.07	0.96	0.84	TIO-001
			0.17	1.26	1.66	1.92	2.10	1.94	1.75	1.56	1.37	TIO-002
			0.27	2.04	2.68	3.10	3.39	3.13	2.82	2.52	2.20	TIO-003
			0.44	3.38	4.45	5.14	5.62	5.2	4.68	4.18	3.66	TIO-004
			0.54	4.11	5.41	6.25	6.84	6.33	5.69	5.09	4.45	TIO-005
			0.62	4.76	6.27	7.24	7.92	7.33	6.59	5.89	5.15	TIO-006

R 404A Capacity (kW)- TI-Series:

Condensing Temperature °C	Evaporating Temp °C														Cage Size
	+30	+20	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
50	0.27	0.32	0.34	0.35	0.35	0.35	0.34	0.30	0.25	0.22	0.18	0.15	0.13	0.10	TIO-00X
	0.71	0.82	0.88	0.89	0.89	0.89	0.88	0.77	0.65	0.56	0.47	0.39	0.33	0.27	TIO-000
	1.65	1.91	2.04	2.07	2.08	2.07	2.05	1.80	1.53	1.30	1.10	0.92	0.76	0.62	TIO-001
	2.82	3.28	3.50	3.55	3.57	3.55	3.52	3.08	2.62	2.24	1.88	1.58	1.30	1.07	TIO-002
	4.47	5.19	5.54	5.62	5.65	5.63	5.57	4.88	4.14	3.54	2.98	2.50	2.06	1.69	TIO-003
	7.29	8.47	9.05	9.17	9.21	9.18	9.09	7.96	6.76	5.78	4.86	4.07	3.37	2.76	TIO-004
	8.85	10.29	10.99	11.15	11.20	11.16	11.04	9.67	8.22	7.02	5.90	4.95	4.09	3.36	TIO-005
	10.26	11.93	12.74	12.92	12.98	12.93	12.80	11.21	9.53	8.13	6.84	5.74	4.75	3.89	TIO-006
40	0.2	0.29	0.34	0.35	0.36	0.37	0.37	0.33	0.28	0.24	0.21	0.18	0.15	0.12	TIO-00X
	0.51	0.75	0.87	0.91	0.93	0.95	0.95	0.84	0.73	0.63	0.54	0.46	0.38	0.32	TIO-000
	1.19	1.75	2.04	2.12	2.18	2.21	2.22	1.97	1.70	1.47	1.25	1.06	0.89	0.74	TIO-001
	2.03	3.00	3.49	3.64	3.73	3.78	3.80	3.38	2.91	2.52	2.14	1.82	1.53	1.27	TIO-002
	3.22	4.76	5.53	5.76	5.91	5.99	6.02	5.35	4.61	3.99	3.39	2.88	2.42	2.01	TIO-003
	5.25	7.76	9.02	9.40	9.64	9.78	9.83	8.73	7.52	6.50	5.54	4.70	3.94	3.28	TIO-004
	6.38	9.43	10.96	11.42	11.71	11.88	11.94	10.61	9.14	7.90	6.73	5.71	4.79	3.98	TIO-005
	7.4	10.93	12.71	13.23	13.58	13.77	13.84	12.30	10.59	9.16	7.80	6.62	5.55	4.62	TIO-006
35		0.25	0.32	0.34	0.36	0.37	0.37	0.33	0.29	0.25	0.21	0.18	0.15	0.13	TIO-00X
		0.65	0.83	0.88	0.92	0.94	0.95	0.85	0.74	0.64	0.55	0.47	0.40	0.33	TIO-000
		1.53	1.93	2.06	2.14	2.20	2.23	1.99	1.73	1.50	1.29	1.10	0.93	0.77	TIO-001
		2.62	3.32	3.52	3.67	3.76	3.82	3.42	2.96	2.58	2.21	1.88	1.59	1.33	TIO-002
		4.15	5.25	5.58	5.81	5.96	6.05	5.41	4.69	4.08	3.50	2.98	2.51	2.10	TIO-003
		6.77	8.56	9.10	9.48	9.72	9.86	8.83	7.65	6.66	5.70	4.87	4.10	3.43	TIO-004
		8.22	10.41	11.06	11.51	11.81	11.98	10.73	9.30	8.09	6.93	5.92	4.99	4.17	TIO-005
		9.53	12.06	12.82	13.35	13.69	13.89	12.44	10.78	9.38	8.03	6.86	5.78	4.83	TIO-006
30		0.19	0.29	0.32	0.34	0.36	0.36	0.33	0.29	0.25	0.22	0.19	0.16	0.13	TIO-00X
		0.49	0.75	0.83	0.88	0.91	0.94	0.85	0.74	0.65	0.56	0.48	0.41	0.34	TIO-000
		1.15	1.75	1.93	2.05	2.13	2.19	1.98	1.73	1.51	1.30	1.12	0.95	0.79	TIO-001
		1.97	3.01	3.30	3.51	3.66	3.75	3.39	2.96	2.59	2.23	1.92	1.62	1.36	TIO-002
		3.13	4.76	5.23	5.56	5.79	5.94	5.36	4.69	4.10	3.53	3.03	2.57	2.16	TIO-003
		5.10	7.77	8.53	9.07	9.44	9.69	8.75	7.65	6.70	5.77	4.95	4.19	3.52	TIO-004
		6.20	9.44	10.36	11.02	11.48	11.77	10.63	9.29	8.14	7.01	6.01	5.09	4.27	TIO-005
		7.18	10.94	12.01	12.77	13.30	13.65	12.33	10.77	9.43	8.12	6.97	5.90	4.95	TIO-006
25			0.25	0.29	0.32	0.34	0.35	0.32	0.28	0.25	0.22	0.19	0.16	0.13	TIO-00X
			0.63	0.74	0.81	0.86	0.90	0.82	0.73	0.64	0.55	0.48	0.41	0.34	TIO-000
			1.48	1.72	1.90	2.02	2.10	1.92	1.69	1.49	1.29	1.12	0.95	0.80	TIO-001
			2.53	2.95	3.25	3.46	3.60	3.29	2.90	2.56	2.22	1.91	1.63	1.37	TIO-002
			4.01	4.68	5.14	5.48	5.71	5.21	4.60	4.06	3.51	3.03	2.58	2.17	TIO-003
			6.54	7.63	8.39	8.94	9.31	8.51	7.50	6.62	5.73	4.95	4.21	3.55	TIO-004
			7.95	9.27	10.20	10.86	11.31	10.34	9.11	8.04	6.96	6.01	5.11	4.31	TIO-005
			9.22	10.75	11.82	12.59	13.11	11.98	10.56	9.32	8.07	6.97	5.93	5.00	TIO-006
20			0.17	0.24	0.28	0.31	0.33	0.30	0.27	0.24	0.21	0.18	0.16	0.13	TIO-00X
			0.44	0.61	0.72	0.79	0.84	0.78	0.70	0.62	0.54	0.47	0.40	0.34	TIO-000
			1.04	1.42	1.67	1.85	1.97	1.83	1.63	1.45	1.27	1.10	0.94	0.80	TIO-001
			1.78	2.44	2.87	3.16	3.37	3.13	2.79	2.49	2.17	1.88	1.61	1.36	TIO-002
			2.82	3.86	4.54	5.01	5.34	4.96	4.42	3.94	3.44	2.98	2.55	2.16	TIO-003
			4.59	6.30	7.41	8.17	8.71	8.09	7.21	6.42	5.61	4.87	4.16	3.53	TIO-004
			5.58	7.66	9.00	9.93	10.58	9.83	8.76	7.80	6.81	5.91	5.06	4.28	TIO-005
			6.47	8.88	10.43	11.51	12.27	11.39	10.16	9.05	7.90	6.86	5.86	4.97	TIO-006

R 407C Capacity (kW)- TI-Series:

Condensing dew point °C	Temperature bubble point °C	Evaporating Temp °C									Cage Size
		+20	+10	+5	0	-5	-10	-15	-20	-25	
54	50	0.49	0.52	0.52	0.53	0.53	0.53	0.46	0.38	0.32	TIO-00X
		1.27	1.34	1.36	1.37	1.37	1.36	1.19	1.00	0.83	TIO-000
		3.17	3.35	3.39	3.42	3.42	3.41	2.99	2.49	2.07	TIO-001
		5.16	5.45	5.53	5.57	5.57	5.55	4.86	4.06	3.37	TIO-002
		8.33	8.80	8.92	8.98	9.00	8.96	7.85	6.55	5.44	TIO-003
		13.58	14.35	14.55	14.65	14.67	14.61	12.80	10.69	8.87	TIO-004
		16.57	17.50	17.75	17.87	17.89	17.82	15.61	13.04	10.82	TIO-005
		19.11	20.18	20.46	20.60	20.63	20.55	18.00	15.03	12.47	TIO-006
45	40	0.44	0.49	0.51	0.52	0.53	0.53	0.47	0.39	0.33	TIO-00X
		1.14	1.28	1.32	1.34	1.36	1.37	1.21	1.02	0.85	TIO-000
		2.86	3.19	3.29	3.36	3.40	3.42	3.02	2.54	2.13	TIO-001
		4.66	5.19	5.36	5.47	5.54	5.58	4.93	4.14	3.46	TIO-002
		7.52	8.38	8.65	8.83	8.95	9.00	7.95	6.69	5.59	TIO-003
		12.25	13.66	14.10	14.40	14.58	14.67	12.96	10.91	9.11	TIO-004
		14.95	16.67	17.20	17.57	17.79	17.90	15.82	13.31	11.12	TIO-005
		17.24	19.22	19.83	20.25	20.52	20.64	18.24	15.34	12.82	TIO-006
40	35	0.40	0.47	0.49	0.50	0.51	0.52	0.46	0.39	0.33	TIO-00X
		1.03	1.21	1.26	1.30	1.33	1.34	1.19	1.01	0.85	TIO-000
		2.58	3.02	3.15	3.25	3.32	3.36	2.99	2.52	2.12	TIO-001
		4.20	4.91	5.14	5.30	5.41	5.47	4.86	4.11	3.45	TIO-002
		6.78	7.93	8.29	8.55	8.73	8.84	7.85	6.63	5.56	TIO-003
		11.06	12.93	13.52	13.94	14.23	14.41	12.79	10.81	9.07	TIO-004
		13.49	15.77	16.49	17.01	17.36	17.58	15.61	13.19	11.06	TIO-005
		15.56	18.19	19.02	19.61	20.02	20.27	18.00	15.21	12.75	TIO-006
35	30	0.34	0.43	0.46	0.48	0.49	0.50	0.45	0.38	0.32	TIO-00X
		0.88	1.11	1.18	1.24	1.28	1.30	1.16	0.99	0.83	TIO-000
		2.19	2.78	2.96	3.09	3.19	3.25	2.91	2.47	2.08	TIO-001
		3.57	4.53	4.82	5.04	5.20	5.30	4.74	4.02	3.39	TIO-002
		5.76	7.30	7.78	8.13	8.39	8.56	7.64	6.49	5.47	TIO-003
		9.39	11.91	12.69	13.26	13.67	13.95	12.46	10.58	8.92	TIO-004
		11.46	14.53	15.48	16.18	16.68	17.02	15.21	12.91	10.88	TIO-005
		13.22	16.75	17.85	18.66	19.23	19.62	17.53	14.89	12.54	TIO-006
30	25		0.38	0.42	0.44	0.46	0.48	0.43	0.37	0.31	TIO-00X
			0.98	1.08	1.15	1.21	1.24	1.12	0.96	0.81	TIO-000
			2.46	2.70	2.88	3.01	3.11	2.80	2.39	2.02	TIO-001
			4.01	4.40	4.70	4.91	5.06	4.55	3.89	3.29	TIO-002
			6.47	7.11	7.58	7.92	8.16	7.35	6.28	5.32	TIO-003
			10.55	11.59	12.36	12.91	13.31	11.98	10.24	8.67	TIO-004
			12.87	14.14	15.07	15.75	16.24	14.62	12.49	10.58	TIO-005
			14.84	16.31	17.38	18.17	18.72	16.86	14.40	12.19	TIO-006
26	20			0.37	0.40	0.43	0.45	0.41	0.35	0.30	TIO-00X
				0.95	1.04	1.11	1.16	1.06	0.91	0.78	TIO-000
				2.37	2.61	2.78	2.91	2.65	2.28	1.94	TIO-001
				3.86	4.25	4.54	4.74	4.31	3.71	3.16	TIO-002
				6.23	6.86	7.32	7.65	6.96	6.00	5.11	TIO-003
				10.16	11.19	11.93	12.47	11.35	9.77	8.33	TIO-004
				12.40	13.65	14.56	15.22	13.85	11.92	10.16	TIO-005
				14.30	15.74	16.79	17.55	15.97	13.75	11.71	TIO-006

R 410A Capacity (kW)- TI-Series:

Condensing Temperature °C	Evaporating Temp °C													Cage Size
	+15	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
50	0.53	0.55	0.57	0.58	0.59	0.60	0.53	0.47	0.40	0.33	0.28	0.23	0.20	TIO-00X
	1.38	1.44	1.49	1.52	1.54	1.56	1.39	1.21	1.03	0.87	0.73	0.61	0.51	TIO-000
	3.40	3.55	3.66	3.74	3.80	3.84	3.41	2.98	2.54	2.14	1.79	1.49	1.25	TIO-001
	5.64	5.87	6.06	6.20	6.29	6.36	5.65	4.94	4.21	3.54	2.96	2.48	2.08	TIO-002
	9.04	9.42	9.72	9.94	10.09	10.20	9.06	7.92	6.75	5.68	4.75	3.97	3.33	TIO-003
	14.79	15.41	15.89	16.25	16.51	16.67	14.82	12.94	11.03	9.28	7.76	6.49	5.44	TIO-004
	17.98	18.73	19.32	19.76	20.07	20.27	18.02	15.74	13.42	11.28	9.44	7.89	6.62	TIO-005
	20.75	21.61	22.29	22.79	23.16	23.39	20.79	18.16	15.48	13.02	10.89	9.11	7.63	TIO-006
40	0.49	0.53	0.55	0.58	0.59	0.61	0.54	0.48	0.41	0.35	0.29	0.25	0.21	TIO-00X
	1.28	1.37	1.44	1.50	1.54	1.58	1.41	1.24	1.07	0.90	0.76	0.64	0.54	TIO-000
	3.14	3.37	3.55	3.69	3.80	3.88	3.48	3.06	2.63	2.22	1.87	1.57	1.32	TIO-001
	5.20	5.58	5.88	6.11	6.29	6.42	5.76	5.07	4.35	3.68	3.10	2.60	2.19	TIO-002
	8.35	8.95	9.43	9.81	10.09	10.30	9.24	8.13	6.98	5.91	4.97	4.18	3.52	TIO-003
	13.65	14.64	15.42	16.04	16.50	16.85	15.11	13.30	11.41	9.66	8.13	6.83	5.76	TIO-004
	16.60	17.80	18.75	19.50	20.06	20.48	18.37	16.17	13.88	11.75	9.88	8.31	7.00	TIO-005
	19.15	20.54	21.64	22.50	23.15	23.64	21.20	18.66	16.01	13.55	11.40	9.58	8.07	TIO-006
35	0.45	0.49	0.53	0.56	0.58	0.60	0.54	0.47	0.41	0.35	0.29	0.25	0.21	TIO-00X
	1.17	1.28	1.38	1.45	1.51	1.55	1.40	1.23	1.06	0.90	0.76	0.64	0.54	TIO-000
	2.87	3.16	3.39	3.57	3.70	3.81	3.44	3.04	2.62	2.22	1.88	1.58	1.34	TIO-001
	4.75	5.23	5.61	5.91	6.14	6.31	5.69	5.03	4.34	3.68	3.11	2.62	2.21	TIO-002
	7.62	8.39	9.00	9.47	9.84	10.12	9.13	8.07	6.96	5.91	4.99	4.20	3.55	TIO-003
	12.46	13.73	14.72	15.49	16.09	16.55	14.93	13.20	11.38	9.66	8.15	6.87	5.80	TIO-004
	15.15	16.69	17.89	18.84	19.57	20.12	18.15	16.05	13.83	11.75	9.91	8.35	7.05	TIO-005
	17.48	19.26	20.65	21.73	22.58	23.22	20.94	18.52	15.96	13.55	11.44	9.64	8.14	TIO-006
30	0.39	0.45	0.49	0.53	0.55	0.58	0.52	0.47	0.40	0.34	0.29	0.25	0.21	TIO-00X
	1.00	1.16	1.28	1.37	1.44	1.50	1.36	1.21	1.05	0.89	0.76	0.64	0.54	TIO-000
	2.47	2.86	3.15	3.37	3.55	3.69	3.35	2.98	2.58	2.20	1.86	1.57	1.33	TIO-001
	4.10	4.73	5.21	5.59	5.88	6.10	5.55	4.93	4.27	3.64	3.08	2.61	2.21	TIO-002
	6.57	7.59	8.36	8.96	9.43	9.79	8.89	7.91	6.85	5.84	4.94	4.18	3.54	TIO-003
	10.74	12.41	13.67	14.66	15.42	16.01	14.54	12.94	11.20	9.55	8.09	6.83	5.79	TIO-004
	13.06	15.09	16.63	17.82	18.75	19.46	17.68	15.73	13.62	11.61	9.83	8.31	7.04	TIO-005
	15.07	17.41	19.18	20.56	21.63	22.46	20.40	18.15	15.71	13.40	11.34	9.59	8.12	TIO-006
25	0.30	0.38	0.44	0.49	0.52	0.55	0.50	0.45	0.39	0.34	0.29	0.24	0.21	TIO-00X
	0.77	0.99	1.15	1.26	1.35	1.42	1.31	1.17	1.02	0.87	0.74	0.63	0.53	TIO-000
	1.89	2.43	2.82	3.11	3.33	3.50	3.21	2.88	2.51	2.15	1.83	1.55	1.32	TIO-001
	3.13	4.03	4.67	5.15	5.52	5.80	5.32	4.77	4.16	3.56	3.03	2.57	2.18	TIO-002
	5.03	6.46	7.49	8.26	8.85	9.31	8.54	7.65	6.66	5.71	4.85	4.11	3.49	TIO-003
	8.22	10.57	12.24	13.50	14.47	15.22	13.97	12.51	10.90	9.34	7.93	6.73	5.71	TIO-004
	10.00	12.85	14.89	16.42	17.60	18.51	16.98	15.22	13.25	11.35	9.65	8.18	6.95	TIO-005
	11.53	14.83	17.18	18.95	20.31	21.36	19.59	17.56	15.29	13.10	11.13	9.44	8.01	TIO-006
20	0.13	0.28	0.37	0.43	0.48	0.51	0.47	0.43	0.38	0.32	0.28	0.24	0.20	TIO-00X
	0.33	0.74	0.96	1.12	1.24	1.33	1.23	1.12	0.98	0.84	0.72	0.61	0.52	TIO-000
	0.82	1.82	2.37	2.76	3.04	3.26	3.04	2.75	2.41	2.08	1.77	1.51	1.29	TIO-001
	1.35	3.02	3.93	4.57	5.04	5.41	5.03	4.55	3.99	3.44	2.94	2.50	2.13	TIO-002
	2.17	4.84	6.30	7.32	8.09	8.67	8.06	7.30	6.40	5.52	4.71	4.01	3.42	TIO-003
	3.55	7.91	10.30	11.98	13.23	14.18	13.18	11.93	10.47	9.02	7.70	6.56	5.59	TIO-004
	4.32	9.62	12.52	14.56	16.08	17.24	16.03	14.51	12.73	10.97	9.36	7.97	6.79	TIO-005
	4.98	11.10	14.45	16.80	18.55	19.89	18.50	16.74	14.68	12.65	10.81	9.20	7.84	TIO-006

R 507 Capacity (kW)- TI-Series:

Condensing Temperature °C	Evaporating Temp °C														Cage Size
	+30	+20	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
50	0.29	0.34	0.36	0.37	0.37	0.37	0.37	0.32	0.27	0.23	0.19	0.16	0.13	0.11	TIO-00X
	0.73	0.85	0.91	0.92	0.93	0.93	0.92	0.80	0.68	0.58	0.49	0.40	0.33	0.26	TIO-000
	1.68	1.95	2.09	2.12	2.13	2.13	2.11	1.83	1.57	1.33	1.12	0.92	0.76	0.61	TIO-001
	2.85	3.31	3.54	3.59	3.62	3.61	3.58	3.10	2.66	2.26	1.89	1.57	1.28	1.03	TIO-002
	4.54	5.26	5.63	5.71	5.75	5.74	5.69	4.93	4.23	3.59	3.01	2.49	2.04	1.64	TIO-003
	7.39	8.57	9.17	9.31	9.36	9.35	9.28	8.04	6.88	5.85	4.90	4.06	3.32	2.67	TIO-004
	9.00	10.44	11.16	11.33	11.40	11.39	11.30	9.79	8.38	7.12	5.97	4.94	4.04	3.26	TIO-005
	10.39	12.05	12.89	13.08	13.16	13.15	13.04	11.31	9.68	8.22	6.89	5.70	4.66	3.76	TIO-006
40	0.21	0.31	0.36	0.37	0.38	0.39	0.39	0.34	0.30	0.26	0.22	0.18	0.15	0.12	TIO-00X
	0.52	0.77	0.89	0.93	0.96	0.97	0.98	0.86	0.75	0.64	0.54	0.46	0.38	0.31	TIO-000
	1.20	1.77	2.05	2.14	2.20	2.23	2.25	1.98	1.71	1.47	1.25	1.05	0.87	0.71	TIO-001
	2.04	3.00	3.48	3.63	3.73	3.79	3.82	3.35	2.91	2.50	2.12	1.78	1.47	1.20	TIO-002
	3.24	4.76	5.54	5.77	5.93	6.02	6.07	5.33	4.62	3.97	3.37	2.82	2.34	1.91	TIO-003
	5.28	7.76	9.02	9.40	9.66	9.81	9.88	8.68	7.53	6.47	5.49	4.60	3.80	3.10	TIO-004
	6.43	9.45	10.99	11.45	11.76	11.95	12.04	10.57	9.17	7.88	6.68	5.60	4.63	3.78	TIO-005
	7.42	10.91	12.68	13.22	13.58	13.79	13.90	12.20	10.59	9.10	7.72	6.46	5.35	4.36	TIO-006
35		0.27	0.34	0.36	0.37	0.38	0.39	0.35	0.30	0.26	0.22	0.19	0.16	0.13	TIO-00X
		0.67	0.84	0.90	0.94	0.96	0.98	0.86	0.75	0.65	0.56	0.47	0.39	0.32	TIO-000
		1.53	1.94	2.06	2.15	2.21	2.25	1.99	1.74	1.50	1.28	1.08	0.90	0.73	TIO-001
		2.60	3.29	3.50	3.65	6.75	3.81	3.37	2.94	2.55	2.17	1.83	1.52	1.25	TIO-002
		4.14	5.23	5.56	5.80	5.96	6.06	5.36	4.68	4.05	3.45	2.90	2.41	1.98	TIO-003
		6.74	8.52	9.06	9.45	9.71	9.87	8.73	7.62	6.59	5.62	4.73	3.93	3.23	TIO-004
		8.21	10.38	11.04	11.50	11.82	12.02	10.63	9.28	8.03	6.84	5.76	4.79	3.93	TIO-005
		9.47	11.98	12.74	13.28	13.65	13.87	12.27	10.72	9.27	7.90	6.65	5.53	4.54	TIO-006
30		0.20	0.31	0.34	0.36	0.37	0.38	0.34	0.30	0.26	0.22	0.19	0.16	0.13	TIO-00X
		0.50	0.76	0.84	0.89	0.93	0.96	0.85	0.75	0.65	0.56	0.47	0.40	0.33	TIO-000
		1.16	1.75	1.93	2.05	2.14	2.20	1.96	1.73	1.50	1.29	1.09	0.91	0.75	TIO-001
		1.96	2.98	3.27	3.48	3.63	3.73	3.33	2.93	2.55	2.19	1.85	1.54	1.27	TIO-002
		3.12	4.73	5.19	5.53	5.77	5.93	5.29	4.66	4.05	3.47	2.94	2.45	2.02	TIO-003
		5.08	7.71	8.46	9.01	9.40	9.66	8.62	7.59	6.60	5.66	4.79	4.00	3.29	TIO-004
		6.18	9.38	10.30	10.97	11.44	11.76	10.50	9.24	8.04	6.89	5.83	4.87	4.01	TIO-005
		7.14	10.83	11.90	12.66	13.21	13.58	12.12	10.67	9.28	7.96	6.73	5.62	4.63	TIO-006
25			0.26	0.30	0.33	0.35	0.37	0.33	0.29	0.26	0.22	0.19	0.16	0.13	TIO-00X
			0.64	0.75	0.82	0.88	0.92	0.83	0.73	0.64	0.56	0.47	0.40	0.33	TIO-000
			1.48	1.72	1.90	2.02	2.11	1.90	1.69	1.48	1.28	1.09	0.91	0.75	TIO-001
			2.50	2.92	3.21	3.43	3.58	3.23	2.87	2.51	2.17	1.84	1.55	1.28	TIO-002
			3.98	4.64	5.11	5.45	5.68	5.13	4.56	3.99	3.45	2.93	2.46	2.03	TIO-003
			6.48	7.56	8.32	8.87	9.26	8.36	7.42	6.51	5.61	4.77	4.01	3.32	TIO-004
			7.89	9.20	10.13	10.80	11.28	10.18	9.04	7.92	6.84	5.82	4.88	4.04	TIO-005
			9.11	10.63	11.70	12.47	13.02	11.76	10.44	9.15	7.89	6.71	5.63	4.66	TIO-006
20			0.18	0.25	0.29	0.32	0.34	0.31	0.28	0.25	0.22	0.19	0.16	0.13	TIO-00X
			0.45	0.62	0.73	0.80	0.86	0.79	0.71	0.63	0.54	0.46	0.39	0.33	TIO-000
			1.04	1.42	1.67	1.85	1.97	1.81	1.63	1.44	1.25	1.07	0.90	0.75	TIO-001
			1.76	2.41	2.84	3.13	3.34	3.07	2.76	2.44	2.12	1.81	1.53	1.27	TIO-002
			2.80	3.84	4.51	4.98	5.32	4.88	4.38	3.88	3.37	2.88	2.43	2.02	TIO-003
			4.57	6.25	7.34	8.11	8.66	7.95	7.14	6.31	5.49	4.70	3.96	3.29	TIO-004
			5.56	7.61	8.94	9.88	10.55	9.68	8.69	7.69	6.68	5.72	4.82	4.01	TIO-005
			6.42	8.78	10.32	11.40	12.18	11.17	10.04	8.88	7.71	6.60	5.57	4.63	TIO-006

R 22 Capacity (kW)- TI-Series:

Condensing Temperature °C	Evaporating Temp °C														Cage Size
	+30	+20	+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
50	0.38	0.45	0.50	0.51	0.52	0.53	0.53	0.46	0.41	0.35	0.30	0.26	0.22	0.19	TIO-00X
	0.98	1.17	1.29	1.33	1.35	1.38	1.36	1.20	1.05	0.91	0.78	0.66	0.57	0.48	TIO-000
	2.40	2.86	3.16	3.26	3.32	3.39	3.33	2.95	2.58	2.24	1.91	1.62	1.40	1.19	TIO-001
	4.03	4.78	5.29	4.47	5.56	5.67	5.57	4.95	4.32	3.75	3.20	2.72	2.35	2.00	TIO-002
	6.41	7.64	8.42	8.70	8.85	9.03	8.87	7.88	6.87	5.97	5.10	4.34	3.45	3.18	TIO-003
	10.50	12.51	13.79	14.26	14.50	14.80	14.53	12.90	11.26	9.79	8.35	7.10	6.14	5.21	TIO-004
	12.80	15.24	16.81	17.37	17.67	18.03	17.70	15.72	13.72	11.93	10.18	8.66	7.49	6.35	TIO-005
	14.76	17.58	19.38	20.04	20.38	20.79	20.42	18.14	15.82	13.76	11.74	9.98	8.64	7.32	TIO-006
40	0.24	0.37	0.44	0.46	0.48	0.50	0.49	0.44	0.39	0.34	0.29	0.25	0.22	0.18	TIO-00X
	0.61	0.95	1.14	1.20	1.25	1.29	1.27	1.15	1.01	0.88	0.75	0.64	0.56	0.47	TIO-000
	1.51	2.33	2.78	2.94	3.07	3.17	3.12	2.82	2.47	2.16	1.85	1.58	1.38	1.17	TIO-001
	2.52	3.90	4.66	4.92	5.13	5.30	5.23	4.73	4.14	3.62	3.10	2.65	2.31	1.96	TIO-002
	4.02	6.21	7.42	7.84	8.18	8.44	8.33	7.53	6.59	5.76	4.94	4.23	3.68	3.12	TIO-003
	6.59	10.17	12.16	12.85	13.39	13.83	13.65	12.33	10.79	9.44	8.10	6.92	6.03	5.12	TIO-004
	8.03	12.40	14.82	15.65	16.32	16.85	16.63	15.03	13.15	11.50	9.87	8.44	7.35	6.23	TIO-005
	9.26	14.30	17.09	18.05	18.82	19.43	19.18	17.33	15.17	13.26	11.38	9.73	8.48	7.19	TIO-006
35		0.30	0.40	0.43	0.45	0.47	0.48	0.43	0.38	0.33	0.29	0.24	0.21	0.18	TIO-00X
		0.79	1.03	1.11	1.17	1.22	1.23	1.11	0.98	0.85	0.74	0.63	0.55	0.47	TIO-000
		1.93	2.53	2.72	2.88	3.00	3.01	2.71	2.40	2.09	1.81	1.55	1.35	1.15	TIO-001
		3.24	4.23	4.56	4.82	5.02	5.03	4.54	4.02	3.50	3.03	2.60	2.27	1.93	TIO-002
		5.16	6.74	7.27	7.68	8.00	8.01	7.23	6.40	5.57	4.83	4.14	3.61	3.07	TIO-003
		8.45	11.04	11.90	12.58	13.11	13.13	11.85	10.49	9.13	7.92	6.78	5.92	5.03	TIO-004
		10.30	13.46	14.50	15.32	15.97	16.00	14.44	12.78	11.12	9.65	8.27	7.21	6.13	TIO-005
		11.87	15.52	16.73	17.67	18.42	18.45	16.65	14.74	12.83	11.13	9.53	8.32	7.07	TIO-006
30		0.21	0.34	0.38	0.41	0.44	0.44	0.41	0.36	0.31	0.27	0.24	0.21	0.18	TIO-00X
		0.55	0.89	0.99	1.07	1.13	1.15	1.05	0.93	0.81	0.70	0.61	0.53	0.46	TIO-000
		1.35	2.19	2.44	2.63	2.78	2.81	2.57	2.29	1.99	1.72	1..50	1.31	1.12	TIO-001
		2.26	3.67	4.09	4.41	4.66	4.71	4.30	3.83	3.33	2.88	2.52	2.20	1.88	TIO-002
		3.59	5.84	6.51	7.02	7.42	7.50	6.84	6.10	5.30	4.59	4.01	3.51	2.99	TIO-003
		5.89	9.56	10.66	11.50	12.16	12.28	11.21	10.00	8.68	7.51	6.57	5.75	4.90	TIO-004
		7.18	11.65	12.99	14.02	14.81	14.97	13.66	12.18	10.58	9.16	8.01	7.01	5.98	TIO-005
		8.28	13.44	14.98	16.16	17.08	17.26	15.76	14.05	12.20	10.56	9.24	8.08	6.89	TIO-006
25			0.28	0.33	0.38	0.40	0.41	0.38	0.34	0.30	0.26	0.23	0.20	0.17	TIO-00X
			0.71	0.85	0.97	1.04	1.07	0.98	0.88	0.78	0.68	0.59	0.51	0.44	TIO-000
			1.76	2.10	2.37	2.56	2.62	2.40	2.16	1.91	1.67	1.44	1.26	1.08	TIO-001
			2.94	3.51	3.97	4.29	4.39	4.03	3.62	3.21	2.79	2.42	2.12	1.81	TIO-002
			4.68	5.59	6.33	6.84	7.00	6.41	5.77	5.11	4.45	3.85	3.37	2.88	TIO-003
			7.67	9.16	10.36	11.20	11.46	10.50	9.46	8.37	7.29	6.31	5.52	4.72	TIO-004
			9.35	11.16	12.63	13.64	13.96	12.80	11.52	10.19	8.89	7.69	6.73	5.75	TIO-005
			10.79	12.88	14.57	15.74	16.11	14.76	13.29	11.76	10.25	8.87	7.76	6.64	TIO-006
20			0.18	0.26	0.31	0.35	0.38	0.35	0.32	0.28	0.25	0.22	0.19	0.16	TIO-00X
			0.45	0.67	0.81	0.91	0.97	0.91	0.83	0.73	0.64	0.56	0.49	0.42	TIO-000
			1.12	1.65	2.00	2.24	2.38	2.22	2.03	1.79	1.58	1.37	1.21	1.04	TIO-001
			1.87	2.77	3.34	3.76	3.98	3.72	3.39	3.00	2.65	2.30	2.02	1.74	TIO-002
			2.98	4.41	5.33	5.99	6.34	5.92	5.40	4.78	4.22	3.66	3.22	2.77	TIO-003
			4.88	7.22	8.72	9.80	10.38	9.70	8.85	7.84	6.91	6.00	5.28	4.54	TIO-004
			5.95	8.80	10.63	11.95	12.65	11.83	10.79	9.55	8.42	7.31	6.44	5.53	TIO-005
			6.86	10.15	12.26	13.78	14.59	13.64	12.44	11.02	9.72	8.43	7.42	6.38	TIO-006

Electronic Expansion Valves And Controls Quick Selector Guide

Type	Function	Capacity kW R 22	Features	Main Application	Controls
EX2	Expansion Valve	0.9 ~ 17.2	Pulse	Refrigeration	EC2
EX4	Expansion Valve	2 ~ 16.5	Bipolar Stepper Motor Driven	Heat Pump AC Water Chillers	EC3-X Superheat Controller EC3-3 Cold Room Controller
EX5		5 ~ 50			
EX6		15 ~ 120			
EX7		35 ~ 330			
EX8		90 ~ 880			
EX4	Capacity Control	4.9	Bipolar Stepper Motor Driven	Hot Gas ByPass Regulator	EXD-Universal Controller
EX5		16			
EX6		37			
EX7		131			
EX8		399			
EX6	Capacity Control	4.1	Bipolar Stepper Motor Driven	Suction Pressure/ Crankcase Pressure Regulator	EXD-Universal Controller
EX7		15			
EX8		45			
EX5	Liquid Mass Flow Control	20	Bipolar Stepper Motor Driven	Condensing Pressure and Liquid Regulator	EXD-Universal Controller
EX6		46			
EX7		162			
EX8		491			
EX6	Heat Reclaim	11	Bipolar Stepper Motor Driven	Heat Reclaim	EXD-Universal Controller
EX7		39			
EX8		119			

EX2 Pulse Modulated Electric

The EX2 is an electrically driven expansion valve designed for use with R 22, R 134a, R 404A, and R 407C.

Features

- Pulse width modulation provides very precise temperature control
- Shut off function eliminates the necessity of a separate solenoid valve
- Dampened plunger reduces noise and effects of "water hammer"
- One valve body can be combined with 6 orifices to make 7 capacity ranges up to 18.7 kW (R 407C)
- ODF Connection
- Long life time, high reliability
- This valve requires a ASC2X type coil assembly.
  ASC2X type coil requires cable assembly PCN: 059261
- -40 ~ +50°C
- 40 bar Maximum Working Pressure: 400 psig MOPD, 500 psig
- UL/CUL file number: MP604

EX2 Series
(Uni-flow)

Ordering Information:

	Type	PCN	Nominal Capacity@100% Running (kW)[1]					
			R 134a	R 22	R 404A	R 507	R 407C	R 744
Valve Body 10 mm inlet/12 mm outlet ODF	EX2-M00	801091	13.3	17.2	12.1	12.1	18.7	35
Valve Body 3/8" inlet/1/2" outlet	EX2-I00S	801093						
Orifice 4	EXO-004	801089	8.5	10.9	7.7	7.7	11.8	22.2
Orifice 3	EXO-003	801088	5.6	7.2	5.1	5.1	7.8	14.6
Orifice 2	EXO-002	801087	3.3	4.3	3	3	4.7	8.7
Orifice 1	EXO-001	801086	2.5	3.2	2.3	2.3	3.5	6.5
Orifice 0	EXO-000	801085	1.2	1.6	1.1	1.1	1.7	3.3
Orifice X	EXO-00X	801084	0.7	0.9	0.6	0.6	1	1.8
Coil 24 VAC/ 50-60 Hz (10 W)	ASC 24V	801062	Only for Emerson EC2 Control (other coils pls. contact Emerson sales department)					

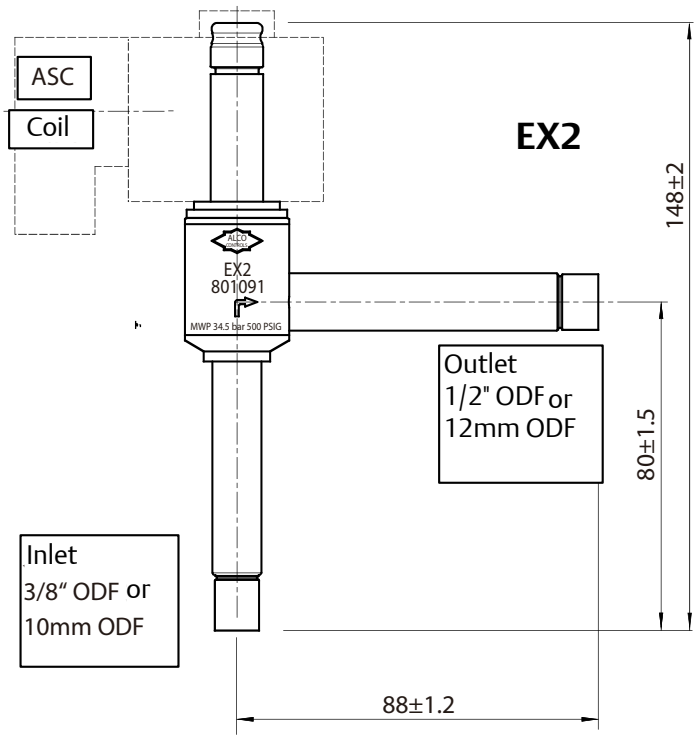
Note: 1. Orifice should be selected at max. 80% of Qn to allow for load fluctuation.

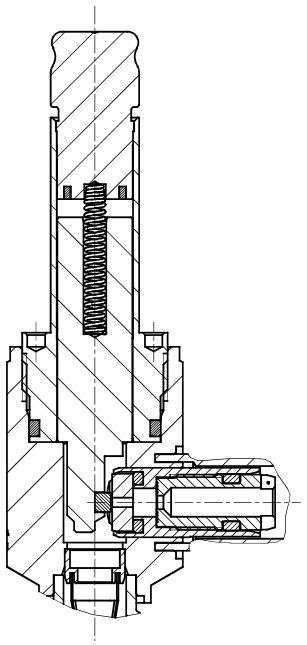
Nominal Capacity Based On Below Working Conditions:

Refrigerant	Evaporating Temp	Condensing Temp	Subcooling
R 22, R 134a, R 404A, R 507	+4°C	+38°C	1K
R 407C	+4°C Dew Point	+38°C bubble point/+43°C Dew Point	
R 744	-40°C	-10°C	

Note: Please refer to EX2 technical documents for valves under other working conditions.

EX2 Dimensional Data (mm):





EX2 Section View

EX4/5/6/7/8 Electronic Expansion Valves

The EX4-EX8 are stepper motor driven valves that are optimized for the control of liquid or gaseous mass flow in refrigeration systems. Multifunction capability as expansion valve, hot gas bypass, suction gas throttling, head pressure, liquid line actuator and other applications systems.

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 (HCFC, HFC) and for subcritical CO2 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 use of 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
- Max. working pressure, PS: 45 bar
- Liquid Inlet Temperature TS: Uni-flow: -50 to +100°C, Bi-flow: -40 to +80°C

Ordering Information:

Type	PCN	Flow Pattern	Capacity Range	Inlet Connection	Outlet Connection	Electrical Connection
EX4-I21	800615	Uni-flow	10 ~ 100%	3/8" ODF	5/8" ODF	M12 Plug
EX4-M21	800616			10 mm ODF	16 mm ODF	
EX5-U21	800618			5/8" (16 mm) ODF	7/8" (22 mm) ODF	
EX6-I21	800620			7/8" ODF	1-1/8" ODF	
EX6-M21	800621			22 mm ODF	28 mm ODF	
EX7-I21	800624			1-1/8" (28 mm) ODF	1-3/8" (35 mm) ODF	
EX7-M21	800625			1-1/8" (28 mm) ODF	1-3/8" (35 mm) ODF	
EX8-M21	800629			42 mm ODF	42 mm ODF	
EX8-U21	800630			1-3/8" (35 mm) ODF	1-3/8" (35 mm) ODF	
EX8-I21	800631			1-5/8" ODF	1-5/8" ODF	
EX4-U31	800617	Bi-flow (Heat Pump)		5/8" (16 mm) ODF	5/8" (16 mm) ODF	
EX5-U31	800619			7/8" (22 mm) ODF	7/8" (22 mm) ODF	
EX6-I31	800622			1-1/8" ODF	1-1/8" ODF	
EX6-M31	800623			28 mm ODF	28 mm ODF	
EX7-U31	800626			1-3/8" (35 mm) ODF	1-3/8" (35 mm) ODF	

Note: EX4/5/6/7/8 are delivered without cable/connector assembly (order separately).

EX4/EX5/EX6/EX7/EX8 Cable And Connector Assemblies:

Type	PCN	Temp Range	Length	Connector type to valve	Connector type to driver or controller	Example
EXV-M30	804664	-50 ~ +80°C	3.0 meters	M12	Loose wires applicable for EXD -U and EC3	
EXV-M60	804665		6.0 meters			

EX4/EX5/EX6/EX7/EX8 Application Expansion Valves And Liquid Injection Valves:

Nominal Capacities In Tons (10% ~ 100%) kW:

Type	R 407C	R 22	R 134a	R 404A	R 410A	R 23	R 124	R 744
EX4	2 ~ 17.4	2 ~ 16.5	1 ~ 12.8	1 ~ 11.5	2 ~ 19.3	2 ~ 17.8	1 ~ 9.2	3 ~ 33.5
EX5	5 ~ 53	5 ~ 50	4 ~ 39	4 ~ 35	6 ~ 58	5 ~ 54	3 ~ 28	10 ~ 102
EX6	15 ~ 126	15 ~ 120	10 ~ 93	10 ~ 84	15 ~ 140	13 ~ 130	7 ~ 67	24 ~ 244
EX7	35 ~ 347	35 ~ 330	25 ~ 255	25 ~ 230	40 ~ 385	-	-	70 ~ 670
EX8	100 ~ 925	90 ~ 880	70 ~ 680	60 ~ 613	100 ~ 1027	-	-	180 ~ 1789

Notes: 1. EX Bi-flow versions are not released for use with R 124 and R 23 refrigerants.
2. Capacity for Bi-flow versions identical in both flow directions.

The Nominal Capacity Is Based On The Following Conditions:

Refrigerant	Evaporating Temp	Condensing Temp	Subcooling
R 22, R 134a, R 404A, R 410A	+4°C	+38°C	1K
R 407C	+4°C Dew Point	+38°C bubble point/+43°C Dew Point	1K
R 124	+20°C	+80°C	1K
R 23	-60°C	-25°C	1K
R 744	-40°C	-10°C	1K

Note: Under other operating conditions and valves application, please refer to EX4/5/6/7/8 technical documents and software for guideline.

Technical Data:

CE (Certification) EX4/EX5: EX6/EX7/EX8:	 Not Required Required, Cat I, Module A
Compatibility (Valves are not Released for use with Inflammable Refrigerants)	HCFC, HFC, CO_2 Mineral and POE lubricants
MOPD (Maximum Operating Pressure Differential)	EX4/EX5/EX6/EX7: 35 bar EX8: 30 bar
Max Working Pressure, PS	45 bar
Ambient Temp Storage Temp	-40 ~ +55°C -40 ~ +70°C
Refrigerant Temp Range Bi-flow Version : Uni-flow Version :	 TS: -40 ~ +80°C TS: -50 ~ +100°C
Salt Spray Test	Stainless Valve Body
Humidity	5 ~ 95% R.H.
Connection Size	ODF Stainless Connection

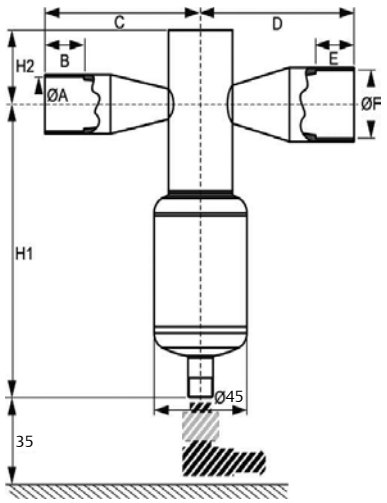
Protection Accordance to IEC 529, DIN 40050	IP67(with Alco supplied cable connector assembly)
Vibration	4g (0 ~ 1000 Hz, 1 Oktave /min.)
Shock	20g @ 11 ms 80g @ 1 ms
Net Weight (kg)	0.5 kg (EX4), 0.52 kg (EX5), 0.60 kg (EX6), 1.1 kg (EX7), 1.5 kg (EX8)
External Leakage	≤3 g/year
Seat Leakage	Positive shut-off better than solenoid valve
Accessories	Please refer to cable and connector assemblies of EX4/5/6/7/8 technical documents
Package and Transportation (Single Package)	Single pack, without electrical connector

Electric Data:

Stepper Motor Type	Bi-polar, phase current by chopper control (constant current)
Electrical Connection	4 pin terminal via plug
Driver Supply Voltage	Recommended: 24 VDC
Driver Supply Voltage Range	Range: 18-36 VDC
Phase Current (Operating)	EX4/EX5/EX6: 500mA±10% EX7: 750mA ±10% EX8: 800mA ±10%
Holding Current	EX4/EX5/EX6: 100mA EX7: 250mA EX8: 500mA
Nominal Input Power Per Phase:	EX4/EX5/EX6: 3.5W EX7/EX8: 5W

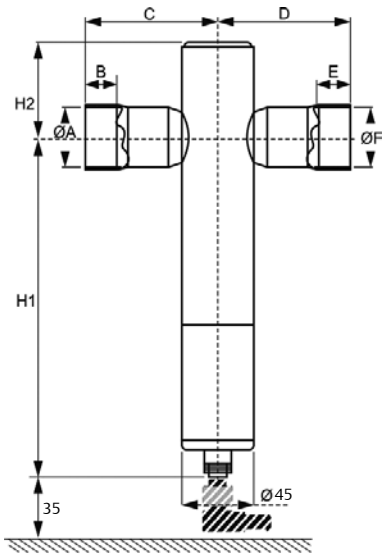
Phase Inductance	EX4/EX5/EX6: 30 mH±25% EX7: 20 mH±25% EX8: 22 mH±25%
Step Model	2 phase full step
Step Angle	1.8° per step ±8%
Total Number of Steps	EX4/EX5/EX6: 750 steps EX7: 1600 steps EX8: 2600 steps
Stepping Rate	500Hz
Winding Resistance Per Phase:	EX4/EX5/EX6: 13 Ω±10% EX7: 8 Ω±10% EX8: 6 Ω±10%
Full Travel Time	EX4/EX5/EX6: 1.5 seconds EX7: 3.2 seconds EX8: 5.2 seconds
Reference Position	Mechanical stop at fully close position

EX4/EX5/EX6/EX7 Dimensional Data (mm):



Type	Ø A x Ø F (ODF)	B	C	D	E	H1	H2
EX4-I21	3/8" x 5/8"	8	45	55	11	113	25
EX4-M21	10 x 16 mm	8	45	55	11	113	25
EX4-U31	16 x 16 mm (5/8" x 5/8")	11	55	55	11	113	25
EX5-U21	5/8" x 7/8" (16 x 22 mm)	11	55	65	16	113	25
EX5-U31	7/8" x 7/8" (22 x 22 mm)	16	65	65	16	113	25
EX6-I21	7/8" x 1-1/8"	16	65	75	19	113	25
EX6-M21	22 x 28 mm	16	65	75	19	113	25
EX6-I31	1-1/8" x 1-1/8"	19	75	75	19	113	25
EX6-M31	28 x 28 mm	19	75	75	19	113	25
EX7-I21	1-1/8" x 1-3/8"	20	77.5	82.5	23	157	42
EX7-M21	28 x 35 mm	20	77.5	82.5	23	157	42
EX7-U31	1-3/8" x 1-3/8" (35 x 35 mm)	23	82.5	82.5	23	157	42
EX8-M21	42 x 42 mm	20	80	80	20	200	56
EX8-U21	1-3/8" x 1-3/8" (35 x 35 mm)	20	80	80	20	200	56
Ex8-I21	1-3/8" x 1-3/8"	20	80	80	20	200	56

EX8 Dimensional Data (mm):



EXD-U00 Universal Driver Modules Series EXD-U00

EXD-U00 Universal Driver Modules Series EXD-U00 for the operation of ALCO stepper motor valves EX4/EX5/EX6/EX7/EX8 as:

- Solenoid Valve
- Electrical Expansion Valve
- Hot Gas Bypass or Evaporating Pressure Regulator as capacity control
- Crankcase Pressure Regulator
- Heat Reclaim Regulator
- Liquid Level Control

EXD-U00

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
- Dip-switches for selection of Electrical Control Valves, analogue input and start mode
- Aluminum housing for DIN Rail mounting
- Easy wiring
- Fully tested and ready for operation
- CE-marking for electromagnetic compatibility

K09-U00

ECP-024

K09-P00

ECT-323

Ordering Information:

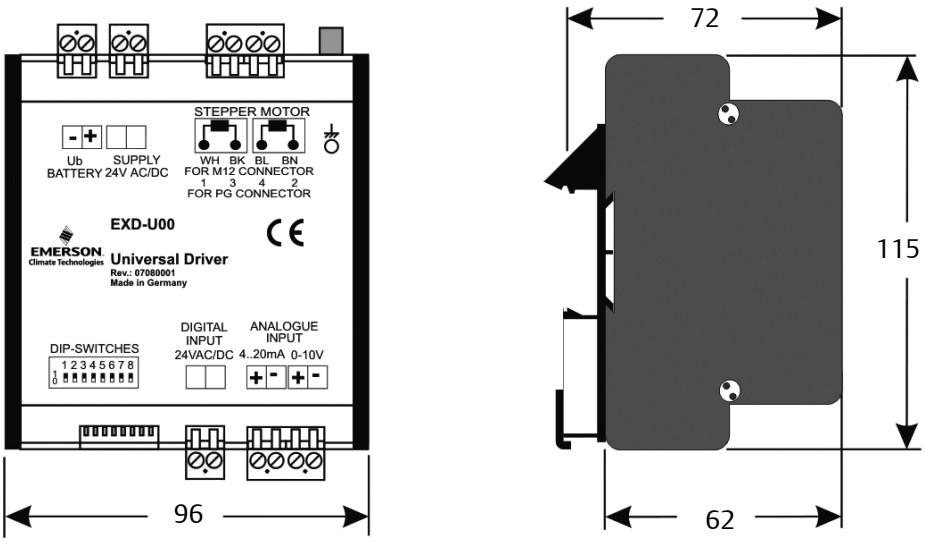
Description	Type	PCN
Universal Driver Module	EXD-U00	804557
EXD-U00 Electrical Terminal Kit	K09-U00	804559
Universal Driver Module+ Electrical Terminal Kit	EXD-U00+K09-U00	808038
Uninterruptible Power Supply	ECP-024	804558
ECP-024 Electrical Terminal Kit	K09-P00	804560
Transformer 230V/24V AC, 25VA	ECT-323	804424
Transformer 230V/24V AC, 60VA	ECT-623	804421

Specifications:

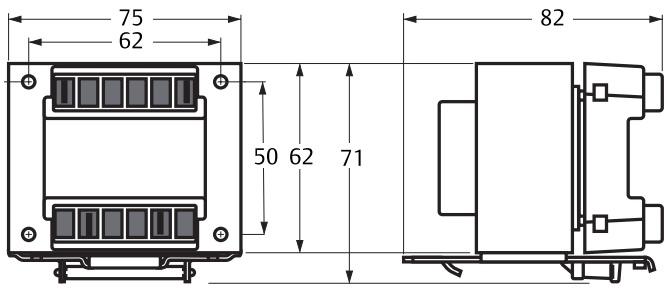
Supply Voltage	24V AC ±10%, 50/60Hz or 24V DC ±10%
Supply Current	1.0A external fuse
Power Consumption	10VA, incl. EXV valve
Temperature	-20 ~ +65°C
Ambient Temperature	0 ~ +60°C
Humidity	< 90% R.H. non condensing
Protection	IP 20
EMC	EN 61326-1, EN 50081, EN 50082
CE Marking	CE
Analogue Input Signal/Burden	4 – 20 mA/364 Ω
Analogue Input Signal/Impedance	0 – 10 V/27 kΩ
Digital Input Signal	24V AC ±10%, 50/60Hz or 24V DC ±10%
Connection to EX4-8	AWG20/22, via 4 wires cable, maximum 6m length AWG20/22
Connector	Dismountable screw terminal for wire size 0.5 ~ 2.5 mm^2
Mounting	DIN rail mounted
Housing	Aluminum

Note: Please refer to EXD-U00 technical documents for more information about EX D-U00 regulator.

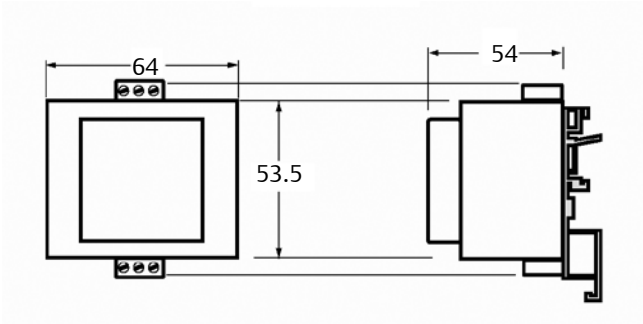
EXD-U00 Universal Driver Module Dimensional Data (mm):



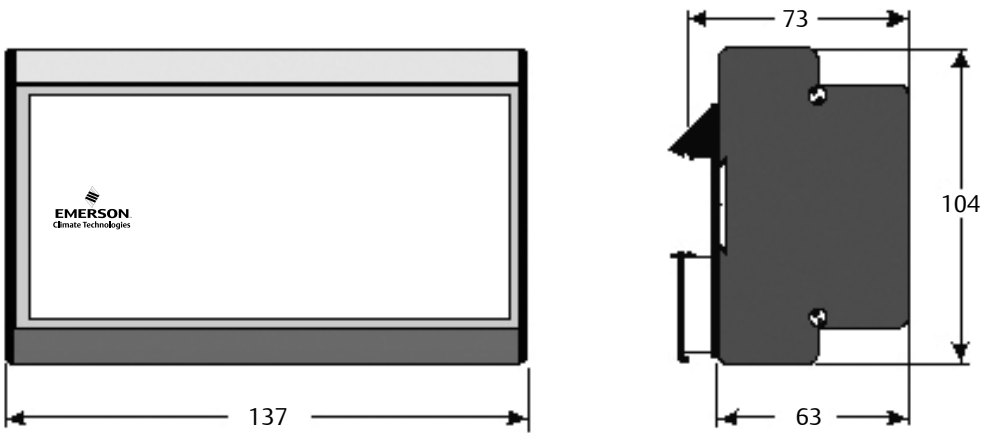
ECT-623 Transformer:



ECT-323 Transformer:



Uninterruptible Power Supply ECP-024 (mm):



EC3-X32 Superheat Controller

EC3-X32 is a stand-alone universal superheat controller for air conditioning, refrigeration and industrial applications such as chillers, industrial process cooling, rooftops, heat pumps, package unit, close control, cold room, food process and air driers. EC3-X32 offers remote access with built-in TCP/IP Ethernet communications and WebServer functionality.

EC3-X32

ECD-002

Features

- Superheat control in conjuction with Emerson stepper motor driven electrical control valves EX4-EX8
- Limitation of evaporating pressure (MOP)
- Low and high superheat alarm
- Low pressure switch function/alarm
- Freeze protection function/alarm
- Pump down function
- Monitoring of sensors and sensor wiring and detection of sensor and wiring failures
- Intelligent alarm management to protect the compressor, i.e fail safe operation
- Integral rechargeable battery to close EX control valves in case of power loss
- Support of TCP/IP Ethernet technology with WebServer functionality allows monitoring and configuration of controllers through a standard WebBrowser

Ordering Information:

Description		Type	PCN
Superheat Controller		EC3-X32	807782
Terminal Kit		K03-X32	807644
EXV Valve		EX4/EX5/EX6/EX7/EX8	
EXV Valve Connection		EXV-M60	804665
Pressure Sensor			
- R 22/R 124/R 134a/R 40A/R 407C/R 507C		PT5-07M	802350
- R 410A		PT5-18M	802351
- R 744		PT5-30M	802352
- For Intermediate Pressure Applications		PT5-18M	802351
Sensor Assemblies and Connection Cable	1.5 meters	PT4-M15	804803
	3.0 meters	PT4-M30	804804
	6.0 meters	PT4-M60	804805
NTC Temp Sensor	3.0 meters	ECN-N30	804496
	6.0 meters	ECN-N60	804497
	12.0 meters	ECN-N99	804499
Transformer (For One Set of Controller and Valve 25VA)		ECT-323	804424
Transformer (For Two Sets of Controller and Valve 60VA)		ECT-623	804421
Battery		24030102	24030102

Note: Please refer to EC3-X32 technical documents for more information about EC3-X32.

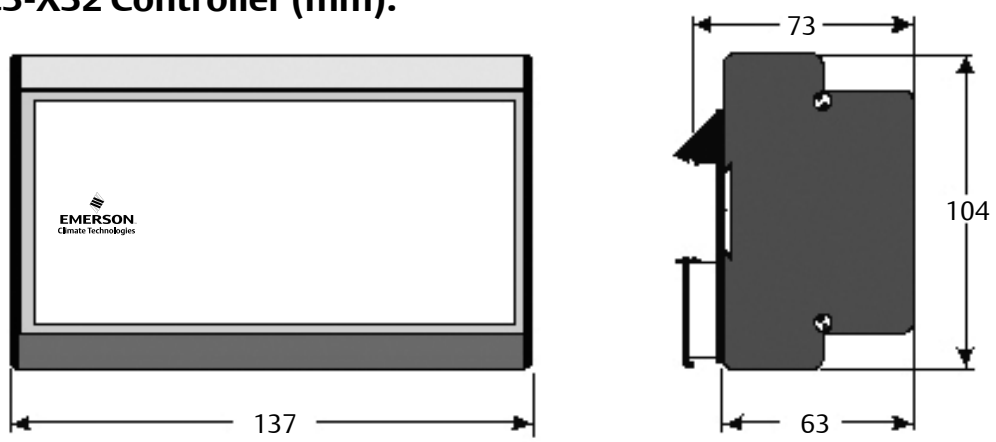
Optional Accessories:

Description	Type	PCN
Display/Keypad Unit (Opt.)	ECD-002	807657
Connection Cable EC3 to ECD-002	ECC-N50 or any standard Cat 5 patch cord with RJ45 connectors	807862

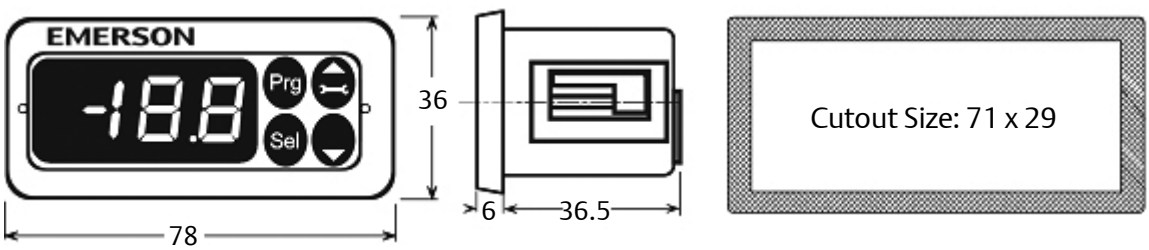
Specification:

Supply Voltage	24VAC ±10%, 50/60Hz
Digital Input	24 V AC ±10%, 50-60Hz 24 V DC ±10%
Power Consumption	25 VA max. including connected EX valve and display/keyboard
Internal Battery Charging Time	0 ~ 100% Approx. 2 hours if battery is fully empty
Plug-in Connector Size	Removable screw version, wire size 12-20 AWG 0.14 ~ 1.5mm^2
Ground Connection	6.3mm 1/4 in. spade earth connector
Applied Directive EMC	EN 61326, EN 50081, EN 61000-6-2,
LVD Certification	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4
RoHS Certification	EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
Marking	CE
Protection Class	IP 20
Vibration	4g , 10-1000Hz
Temperatures	-20 ~ +65ºC
Working Temp	0 ~ +60ºC 1 ~ +20ºC for optimum battery life
Humidity	0 – 80% R.H. non condensing
Weight	About 800 g
Mounting	DIN rail mounting

EC3-X32 Controller (mm):



ECD-002 Key Board Dimensional Data (mm):



EC3-X33 Superheat Controller

EC3-X33 is a stand-alone universal superheat controller for air conditioning, refrigeration and industrial applications such as chillers, industrial process cooling, rooftops, heat pumps, package unit, close control, cold room, food process and air driers. The optional ECD-002 Display/keypad Unit is necessary for setup but not for operation of the controllers.

EC3-X33 And ECD-002

Features

- Superheat control in conjunction with EMERSON stepper motor driven Electrical Control Valves EX4~EX8
- Limitation of evaporating pressure (MOP)
- Low superheat alarm
- Feed through of 4~20mA signal from evaporator pressure sensor to analogue output. This may also be connected to pressure input of any other controller to avoid need for multiple pressure sensors
- Monitoring of sensors and sensor wiring and detection of sensor and wiring failures
- Intelligent alarm management in order to protect the compressor i.e fail safe operation
- Integral rechargeable battery to close Electrical Control Valve in case of power loss

Ordering Information:

Description		Type	PCN
Superheat Controller		EC3-X33	807783
Terminal kit		K03-X33	807645
EXV Valve		EX4/EX5/EX6/EX7/EX8	
EXV Valve Connection Cable		EXV-M60	804665
Pressure sensor			
- R 22/R 124/R 134a/R 40A/R 407C/R 507C		PT5-07M	802350
- R 410A		PT5-18M	802351
- R 744		PT5-30M	802352
- For Intermediate Pressure Applications		PT5-18M	802351
Pressure Sensor Assemblies and Connection Cable	1.5 meters	PT4-M15	804803
	3.0 meters	PT4-M30	804804
	6.0 meters	PT4-M60	804805
NTC Temp Sensor	3.0 meters	ECN-N30	804496
	6.0 meters	ECN-N60	804497
	12.0 meters	ECN-N99	804499
Transformer (For One Set of Controller and Valve 25VA)		ECT-323	804424
Transformer (For Two Sets of Controller and Valve 60VA)		ECT-623	804421
Battery		24030102	24030102

Note: Please refer to EC3-X32 technical documents for more information about EC3-X32

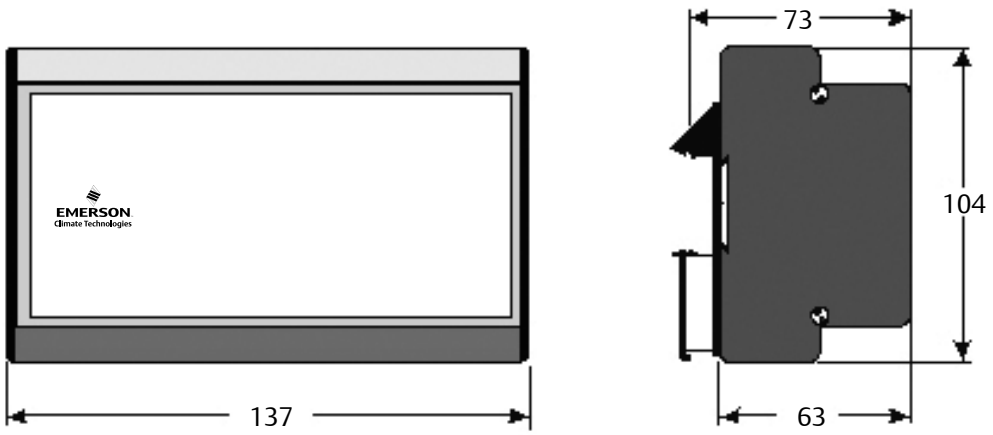
Optional Accessories:

Description	Type	PCN
Operation Keyboard	ECD-002	807657
Cable Connection between EC3-X33 and ECD-002	ECC-N50 or any standard Cat 5 patch cord with RJ45 connectors	807862

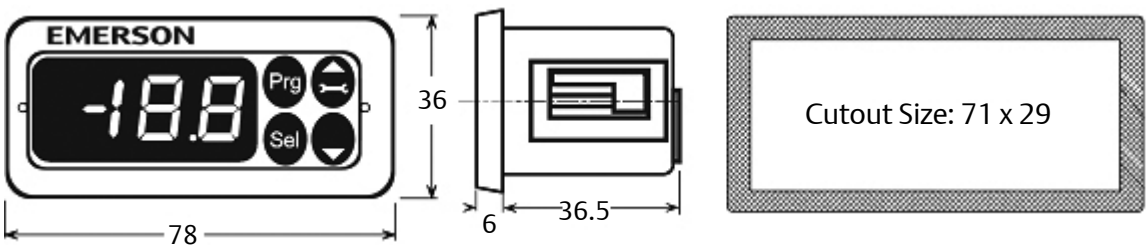
Specification:

Supply Voltage	24VAC ±10%, 50/60Hz
Digital Input	24 V AC ±10%, 50-60Hz 24 V DC ±10%
Power Consumption	25 VA max. including connected
Internal Battery Charging Time	0 ~100% Approx. 2 hours if battery is fullly empty
Plug-in Connector Size	Removable screw version wire size 12-20 AWG 0.14 ~1.5mm^2
Ground Connection	6.3mm 1.4 in. spade earth connector
Applied Directive: EMC	EN 61326, EN 50081, EN 61000-6-2
LVD Certification	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4
RoHS Certification	EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
Marking	CE
Protection Class	IP 20
Vibration	4g , 10-1000Hz
Storage Temp	-20 ~ +65°C
Operation Temp	0 ~ +60°C 1 ~ +20°C for optimum battery life
Humidity	0 ~ 80% R.H. non condensing
Weight	~ 800 g
Installation	DIN rail mounting

EC3-X33 Controller (mm):



ECD-002 Display Unit (mm):



PT5 Pressure Transmitters

The PT5 series of Pressure Transmitters convert a pressure into a linear electrical 4~20mA output signal suitable for controlling simple compressor and fan switching to the more sophisticated application of superheat modulation of EX series Electrical Control Valves.

With competitive performance to price characteristics and an easy to install pre-fabricated M12 cable assembly, the PT5 transmitters are the designers choice for all refrigeration and air conditioning applications.

PT5-xxM
Pressure Transmitter

PT4-Mxx
Pressure Transmitter
Cable Assemblies

Features

Sensitive pressure cells with strong primary output signals for the precise operation of superheat, compressor or fan controls systems

- Fully hermetic
- PT5-xxM pressure connector 7/16-20 UNF with Schrader valve opener
- PT5-xxT with 6mm x 50mm long tube for applications requiring a fully hermetic system solution
- Output signal 4 to 20 mA
- Standard pressure ranges compatible with former Emerson pressure transmitters - Sealed gauge pressure
- Calibrated at pressure and temperature ranges to fulfill demands of today's refrigeration and HVAC applications
- Reduced Full Scale Error characteristics over the complete temperature range
- Easy install M12 electrical connection with pre-assembled cable assemblies available in various lengths
- Protection class IP 65
- Vibration, shock and pulsation resistant
- CE-mark under EC EMC-Directive

Ordering Information:

Type	PCN		Pressure Range bar	Output Signal	Fluid Temp Range (°C)	PS: Max Operation Pressure (bar)	PT: Test Pressure (bar)	Burst Pressure (bar)	Pressure Connection
	Individually Packaged	MultiPack							
PT5-07M	802350	802350M	0.8 ~ 7	4 ~ 20 mA	-40 ~ +100	27	30	150	7/16" – 20 UNF (with Schrader valve opener
PT5-18M	802351	802351M	0 ~ 18			45	50	250	
PT5-30M	802352	802352M	0 ~ 30			45	50	250	
PT5-50M	802353	802353M	0 ~ 50			72	80	400	

Plug/Cable Assemblies Ordering Information:

Type	PCN		Length	Weight (g/pc)	Temp Range
	Individually Packaged	MultiPack			
PT4-M15	804803	804803M	1.5 meters	50	-50 ~ +80°C static application -25 ~ +80°C
PT4-M30	804804	804804M	3.0 meters	80	
PT4-M60	804805	804805M	6.0 meters	140	

Note: Longer length of the electrical connection cable beyond 6.0m must be verified by user in term of output signal as well as EMC within installed system.

Accuracy Performance		
Type	Total error	Temperature range
PT5-07M	±1% FS	-40 ~ +80°C
PT5-18M	±1% FS	-20 ~ +60°C
PT5-30M	±1% FS ±2% FS Typically ±2% FS	0 ~ +40°C -20 ~ +60°C -40 ~ +80°C
PT5-50M	±1% FS ±2% FS Typically ±2% FS	0 ~ +40°C -20 ~ +60°C -30 ~ +80°C

Notes: 1. Total error includes non-linearity, hysteresis, repeatability as well as offset and span drift due to the temperature changes.
2. % FS is related to percentage of full sensor scale.

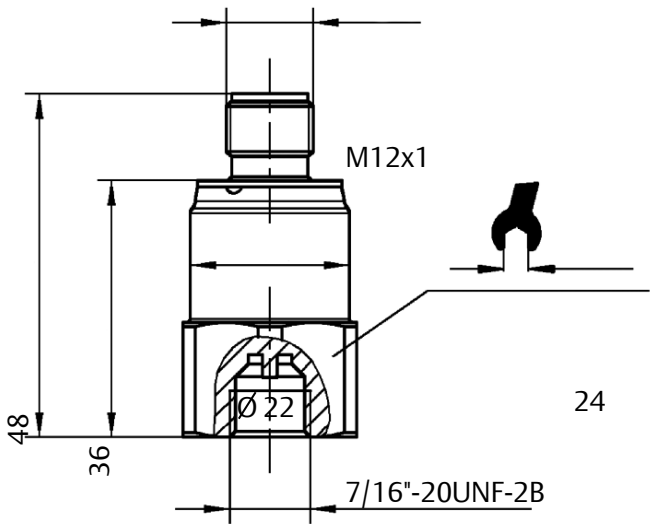
Technical Data:

Supply Voltage Nominal Voltage Voltage Range (Polarity Protected)	24 V DC 7 ~ 30 VDC
Permissible Noise & Ripple Influence of Supply Voltage	< 1 Vp-p < 0,02 %FS/V
Operating Current	4 ~ 20 mA (output) MAX≤ 24 mA
Load Resistance	R_L $\frac{Ub - 7.0V}{0.02A}$
Mounting Position	Non-position sensitive
Response Time	< 5 ms
Temperatures Operating Ambient Housing Medium Transport and Storage	 -25 ~ +80°C -40 ~ +100°C -25 ~ +80°C

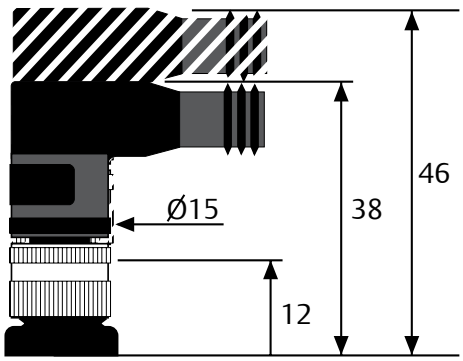
Sensor Life PT5 -07/-18 /-30 /-50	≥10,000,000 cycles full stroke at 77°F
Burst Pressure	Refer to previous table
Electrical Connection All Versions Transmitters PT4-Mxx Cable Assemblies	M12 connection to EN61076-2-101 part 2 Pre-fabricated with various cable lengths
Marking: CE Marking According to PED CE Marking According to EMC	Not allowed (SEP) CE marked according to 2004/108/EEC, EN 61326 (Certificate upon request)
Medium Compatibility	HFC, HCFC, CFC not suitable for ammonia and inflammable refrigerants!
Vibration at 10 ~ 2000 Hz	max 4 g
Protection Class	IP65 (acc. to EN 60529)
Materials: Housing, Pressure Connector and Diaphragm with Medium Contact	stainless steel 1.4534/AISI 316L
Weight Approx. (without Plug and Cable Assembly)	80 g

Dimensional Data (mm):

PT5-xxM Series



Plug Assembly with Removal Dimensions (mm):



Digital Superheat Controllers Series EC3-D72/EC3-D73

The EC3-D7x series is a stand-alone universal superheat controller with a built-in synchronization control for the Copeland Digital Scroll. It is suitable for air conditioning, refrigeration and industrial applications such as chillers, industrial process cooling, rooftops, heat pumps, package unit, close control, cold room, food process and air driers. The EC3-D72 offers remote access with built-in TCP/IP Ethernet communications and WebServer functionality. Any standard Webbrowser (e.g. Microsoft Internet Explorer® or Mozilla Firefox) can be used for monitoring or parameter setting. The EC3-D73 is exactly the same in its functionality but has no external communications. It is only possible to program the parameters using the optional ECD-002 display unit.

EC3-D72

ECD-002

Features

Synchronization of the PWM solenoid valve used for variable capacity control of the Copeland Scroll Digital

- Limitation of evaporating pressure (MOP)
- Low and high superheat alarm
- Low pressure switch function/alarm
- Freeze protection function/alarm
- Pump down function
- Feed through of 4~20mA signal from the evaporator pressure sensor to analogue output. This may also be connected to pressure input of any other controller to avoid need for multiple pressure sensors
- Monitoring of sensors and sensor wiring and detection of sensor and wiring failures
- Intelligent alarm management in order to protect the compressor i.e. fail safe operation
- Integral rechargeable battery to close the Electrical Control Valve in case of power loss
- Support of TCP/IP Ethernet technology with WebServer functionality allows monitoring and configuration of controllers through a standard WebBrowser (e.g. Internet Explorer® or Mozilla Firefox)
- Multiple language support
- Electrical connection via plug-in type screw terminal
- Aluminum housing for DIN rail mounting

Typical Ordering Package:

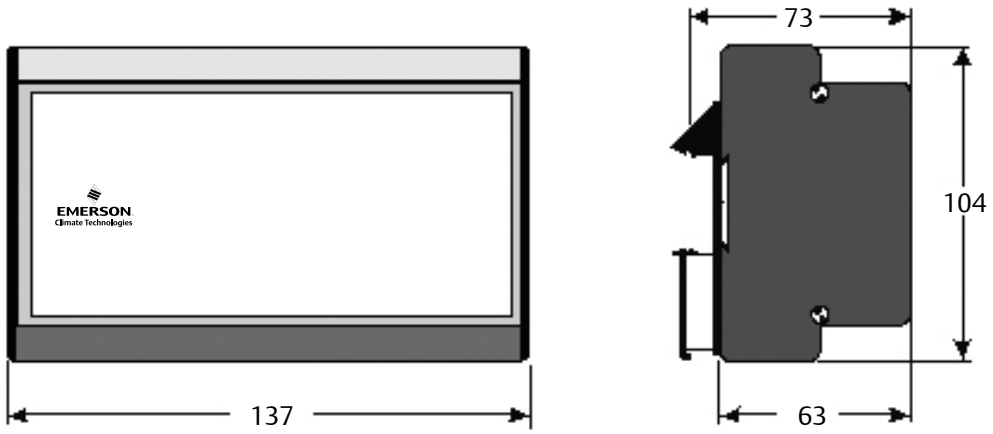
Description		Type	PCN
Digital Superheat Controller with TCP/IP Communication		EC3-D72	807805
Digital Superheat Controller without TCP/IP Communication		EC3-D73	807804
Terminal Kit		K03-331	807648
Electrical Control Valve		EX4/EX5/EX6	
Plug and Cable Assembly for Valve EX4, EX5, EX6, EX7 or EX8		EXV-M60	804665
Pressure Sensor - R 22/R 124/R 134a/R 40A/R 407C/R 507C - R 410A & Intermediate Pressure Applications		PT5-07M PT5-18M PT5-18M	802350 802351 802351
Plug and Cable Assembly for Pressure Sensor	1.5 meters	PT4-M15	804803
	3.0 meters	PT4-M30	804804
	6.0 meters	PT4-M60	804805
NTC Temperature Sensors	3.0 meters	ECN-N30	804496
	6.0 meters	ECN-N60	804497
	12.0 meters	ECN-N99	804499
Transformer (For One Set of Controller and Valve 25VA)		ECT-323	804424
Transformer (For Two Sets of Controllers and Valves 60VA)		ECT-623	804421
Battery		24030102	24030102
Display Unit (opt.)		ECD-002	807657
Connection Cable EC3-X33 to ECD-002		ECC-N50 or RJ45 Cat 5 cable 6 meters	807862

Note: For details about EC3-D72/73, please refer to EC3-D72/73 technical documents.

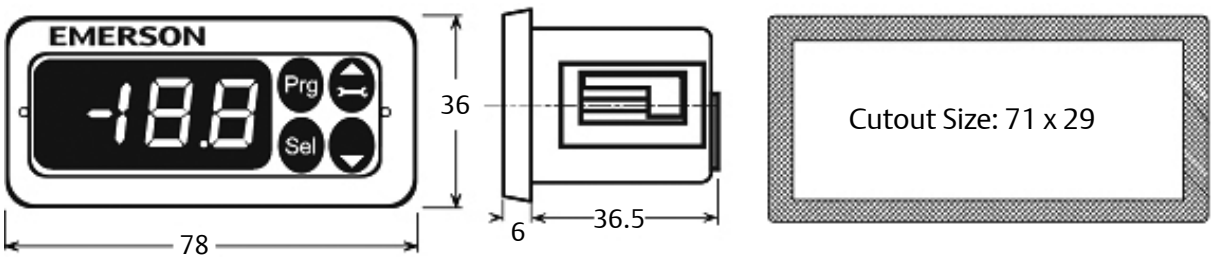
Technical Data:

Supply Voltage	24V AC ±10%, 50/60Hz
Digital Input	24 V AC ±10%, 50-60Hz 24 V DC ±10%
Power Consumption	25VA max. including connected ECV and display/keyboard
Internal Battery Charging Time	0 ~100% about two hours
Plug-in Connector Size	Removable screw version wire size 0.14 ~ 1.5mm^2
Ground Connection	6.3mm spade earth connector
Applied Directive EMC	EN 61326, EN 50081, EN 61000-6-2,
LVD Certification	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4
RoHS Certification	EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
Marking	CE
Protection Class	IP 20
Vibration	4g, 10-1000Hz
Temperature Storage	-20 ~ +65°C
Temperature Operating	0 ~ +60°C 1 ~ +20°C for optimum battery life
Humidity	0 ~ 80% r.h. non condensing
Weight	~ 800g
Mounting	DIN rail mounted

EC3-D72/73 Controller Dimensions (mm):



ECD-002 Display Unit Dimensions (mm):



EC2 Series Display Case And Universal Controllers

The EC2-Series form a state of the art generation of electronic controllers for refrigeration and air conditioning. The controllers combine in the small industry standard housing maximum functionality such as superheat, temperature and defrost controller with TCP/IP Ethernet communications and WebServer functionality. The version with Echelon LON network interface is for use in more complex systems, where different controllers must communicate with each other.

Several versions are available:

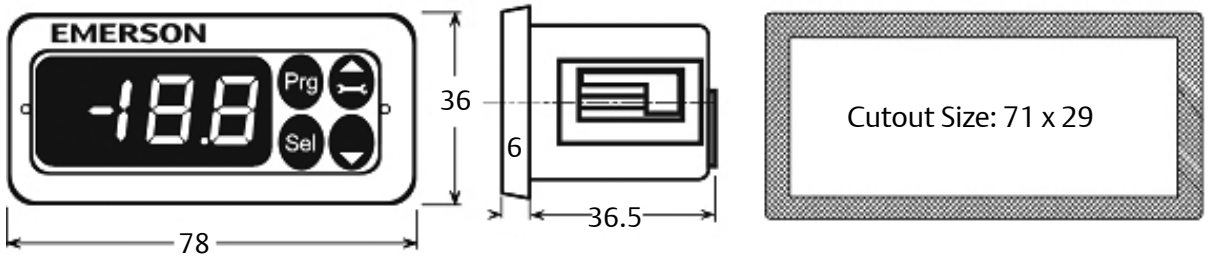
- EC2-35/37x Series Case Controllers (EXV, press./temp.)
- EC2-31/39x Series Case Controllers (EXV, temp./temp.)
- EC2-21/29x Series Case Controllers

EC2 Series

Features

- Superheat control with self-adapting algorithm and driver circuit for a pulse-width modulated EX2 Electrical Control Valve (EC2-35/37x & EC2-31/39x)
- Air temperature control
- Defrost and fan management (besides EC2-111/-112)
- Limitation of evaporating pressure (MOP) (EC2-35/37x & EC2-31/39x)
- 4 Relay/Triac outputs for valve, compressor, fan and defrost
- Support of two network technologies: TCP/IP Ethernet with WebServer functionality allows
- monitoring and configuration of controllers through a standard WebBrowser (e.g. Internet Explorer® or Mozilla Firefox) or Echelon FTT10 LON® technology for monitoring and configuration through a supervisory system such as the Emerson Monitoring Server EMS
- Alarm messaging by email (EC2-xx2)
- Electrical connection via plug-in type screw terminals
- 2½ digit LED display with automatic decimal point
- Indicator LEDs for compressor, fan, heater and alarm
- Standard 71 x 29 mm cut-out dimensions
- IP 65 protection class when mounted in front panel

EC2 Controllers Dimensional Data (mm):



Ordering Information:

Description	TCP/IP Ethernet			LON® FTT		
	Type	PCN Part No. Single Unit	PCN Part No. Single Kit	Type	PCN Part No. Single Unit	PCN Part No. Single Kit
Temperature and Superheat Control of EX2 (Press./Temp. Input) Version for Use with a Compressor Pack System	EC2-352	807772	808009	EC2-351	807771	808008
	EC2-372	807688	808011	EC2-371	807689	808010
Temperature and Superheat Control of EX2 (Temp./Temp Input) Version for Use with a Compressor Pack System	EC2-312	807682	808005	EC2-311	807681	808004
	EC2-392	807692	808007	EC2-391	807691	808006
Thermostat Control, for Thermo-Expansion Valve Version for Use with a Compressor Pack System	EC2-212	807482	808001	EC2-211	807481	808000
	EC2-292	807672	808003	EC2-291	807671	808002
Universal Controller	EC2-112	807472	-	EC2-111	807471	-

Kits Parts List:

PCN		808 000	808 001	808 002	808 003	808 004	808 005	808 008	808 009	808 010	808 011	808 006	808 007
Kit		EC2-211 Ctr. Kit LON	EC2-212 Ctr. Kit TCP/IP	EC2-291 Ctr. Kit LON	EC2-292 Ctr. Kit LON TCP/IP	EC2-311 Ctr. Kit LON	EC2-312 Ctr. Kit TCP/IP	EC2-351 Ctr. Kit LON	EC2-352 Ctr. Kit TCP/IP	EC2-371 Ctr. Kit LON	EC2-372 Ctr. Kit TCP/IP	EC2-391 Ctr. Kit LON	EC2-392 Ctr. Kit TCP/IP
	PCN												
Terminal Kits													
K02-000	800050					1	1	1	1	1	1	1	1
K02-211	807647	1	1	1	1								
Sensors													
ECN-F60	804283	1	1	1	1	1	1	1	1	1	1	1	1
ECN-P60	804281			2	2	2	2	1	1	3	3	4	4
ECN-S60	804284	2	2			2	2	2	2				
Transformers													
ECT-523	804332	1	1	1	1	1	1	1	1	1	1	1	1
Pressure Transmitter													
PT5-07M	802350							1	1	1	1		
Cable Assembly PT4-M60	804805							1	1	1	1		

Input and Output Configuration:

	EC2-11x	EC2-21x/-29x	EC2-31x	EC2-39x	EC2-35x	EC2-37x
Temperature Inputs 10kΩ @ 25°C, -50 ~ 50°C	3	3	5	5	4	4
Pressure Transmitter Input 24VDC, 4 ~ 20mA					1	1
Digital Inputs, Configurable Volt Free Contact 5V/0.1mA	2	2		1		1
Output Relays, AgNi Inductive (AC15) 250V/2A Resistive (AC1) 250V/8A			3	3	3	3
Resistive (AC1) 250V/6A	4	4				
Output Triac EX2 Coil 24VAC 0.1 ~ 1A			1	1	1	1
Digital Output Configurable	4	1		1		1
Communication TCP/IP or LON®	Ethernet 10Mbit /sec. FTT10					

EC2-552 Series Condensing Unit Controllers

The EC2-Series form a new generation of electronic controllers for refrigeration and air conditioning. The controllers combine in the small industry standard housing maximum functionality such as step less compressor modulation and variable fan speed control with TCP/IP Ethernet communications and WebServer functionality. Any standard WebBrowser (e.g. Internet Explorer® or Mozilla Firefox) can be used for monitoring or parameter setting.

EC2-552 Series

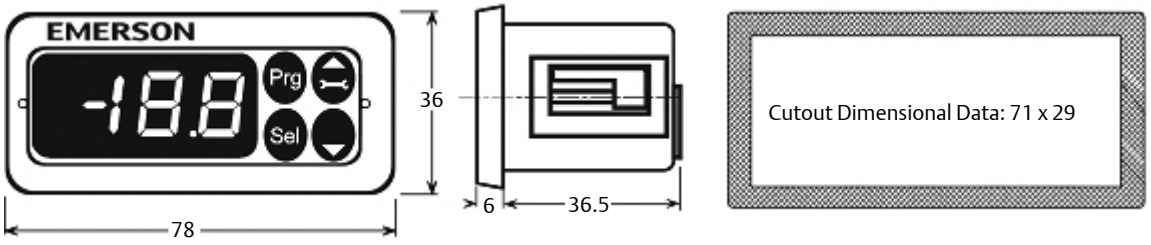
Features

- Suction pressure control for up to 2 compressors; 1 Copeland Digital Scroll compressor and 1 single stage compressor
- Variable fan speed condensing pressure control with EMERSON FSP Series Fan Speed Power Modules
- Multiple control options: Dead band control, base load control
- Compressor and fan motor rotation with run-time equalisation
- Fast recovery of suction and condensing pressure
- Sensor failure management with emergency operating procedures
- Relay outputs with 230 VAC SPDT contacts for compressor crankcase heater control
- Support of TCP/IP Ethernet networking technology with WebServer functionality allows monitoring and configuration of controllers through a standard WebBrowser (e.g. Internet Explorer® or Mozilla Firefox)
- Alarm messaging by email
- Electrical connection via plug-in type screw terminals
- 2½ digit LED display with automatic decimal point
- Indicator LEDs for compressor, fan, press./°C and alarm
- Standard 71 x 29 mm cut-out dimensions
- IP 65 protection class when mounted in front panel

Ordering Information:

Description		Type	PCN
Condensing Unit Controller 1 Digital Scroll Compressor, 1 Single Stage Compressor, Variable Fan Speed Control with FSP		EC2-552	807738
Terminal Kit		K02-540	800070
Network Cable	6.0 meters	ECX-N60	804422
Electrical Expansion Valve Connection Cable		EXV-M60	804665
Condenser Fan Speed Controllers FSP			
	Three Phase, max 4A	FSP-340	800376
	Single Phase, max8A	FSP-180	800373
	Single Phase, max 5A	FSP-150	800370
Condenser Fan Speed Controllers Cable	1.5 meters	FSP-L15	804693
	3.0 meters	FSP-L30	804694
Pressure Sensor			
	-0.8 ~ 7 bar	PT5-07M	802350
	0 ~ 18 bar	PT5-18M	802351
	0 ~ 30 bar	PT5-30M	802352
	0 ~ 50 bar	PT5-50M	802353
Plug and Cable Assembly for Pressure Sensor			
	1.5 meters	PT4-M15	804803
	3.0 meters	PT4-M30	804804
	6.0 meters	PT4-M60	804805
Transformer (For Two Sets of Controllers and Valves 25VA)		ECT-323	804424
Transformer (For Two Sets of Controllers and Valves 60VA)		ECT-623	804421

EC2 Controllers Dimensional Data (mm):



Solenoid Valves & Coils Quick Selector Guide

Application	Features	Solenoid Valve Type	Nominal Cooling Capacity R 22 (kW)[1]	Nominal Cooling R 410A (kW)[1]
Discharge Gas/ Suction Line	Two way, normally closed solenoid valve	100RB2	4.6	
		200RB2	12.6	
		200RB3	16.8	
		200RB4	28	
		200RB5	28.7	
		200RB6	33.3	
		200RB7	59.5	
		200RB9	106.8	
		200RB12	122.2	
		200RD2		11.9
		200RD3		15.8
		200RD4		26.3
		200RD5		27.0
		200RD6		31.2
		200RD7		55.2
		200RD9		97.6
		200RD12		102.3
		240RA8	54.6	
		240RA9(5/8)	81.6	
		240RA8(1-1/8)	106.8	
		240RA12	122.2	
		240RA16	203	
		240RA20	333.9	

Note: 1. 3 pig pressure drop per ARI Standard 760

100RB Solenoid Valves

The 100RB is a direct-acting, 2-way, normally closed valve. 100 RB valves are used for liquid or discharge gas refrigerant service.

100RB Series

Feature

- One coil fits all valve sizes
- Extended ends for easy installation (standard)
- Long-life molded coils
- PTFE O-ring for superior external sealing
- Maximum fluid temperature: 121ºC
- Maximum working pressure: 500 psig (34.5 bar)
- MOPD: 300 psig (20.7 bar)
- UL/CUL file number: MP 604

Nomenclature:

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

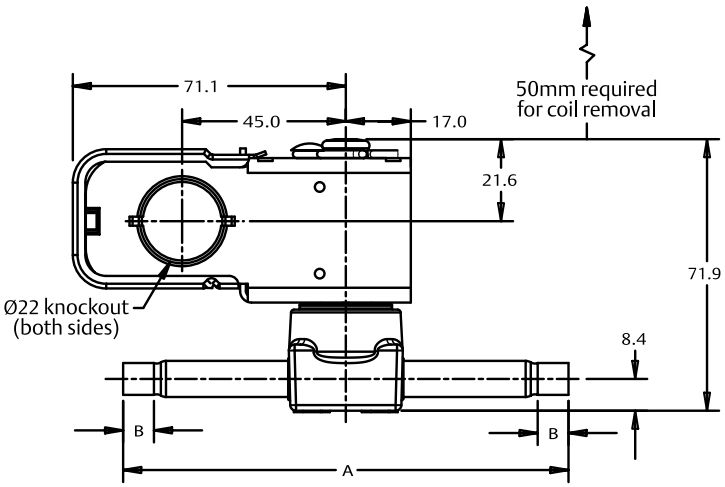
Note: 1. Valves are supplied without the solenoid coils. Please select appropriate solenoid coils in line with specific voltage.

Ordering Information And Nominal[1] Liquid Capacity Table – Tons (kW):

PCN	Type	Connection Size (inch)	R 134a	R 22	R 407C	R 404A/R 507
047503	100RB2S2 VLC	1/4" ODF	1.2 (4.2)	1.27 (4.5)	1.21 (4.3)	0.85 (3.0)
047504	100RB2S3 VLC	3/8" ODF				
047505	100RB2S4 VLC	1/2" ODF				
047500	100RB2F2 VLC	1/4" SAE				
047501	100RB2F3 VLC	3/8" SAE				

Notes: 1. Nominal capacities at +38°C condensing temperature, +4°C evaporating temperature, 0.2 bar pressure drop between valve inlet and outlet in liquid applications.
2. See extended capacity tables for other operating conditions.
3. Valve Repair Kit and Parts are available on request.

100 RB Series Dimensional Data (mm):



Type	Connection Type (inch)	A	B
100RB 2S2 VLC	1/4 ODF	117.6	7.9
100RB 2S3 VLC	3/8 ODF	117.6	7.9
100RB 2S4 VLC	1/2 ODF	117.6	9.7
100RB 2F2 VLC	1/4 SAE	78.7	-
100RB 2F3 VLC	3/8 SAE	88.1	-

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

200RB Solenoid Valves

The 200RB is a pilot-operated, 2-way, normally closed valve. 200RB valves are used for liquid, discharge, or suction gas refrigerant service.

200RB Series

Features

- One coil fits all valve sizes
- Extended ends for easy installation (standard)
- Long-life molded coils
- PTFE O-ring for superior external sealing
- Maximum fluid temperature: 121°C
- Maximum working pressure: 500 psig
- MOPD: 300 psig (20.7 bar)
- Minimum operating pressure drop: 2 psi (0.14 bar)
- UL/CUL file number: MP604

Nomenclature:

200R	B	5	T	4	T	VLC
Valve Series	Design Series	Port Size (in 1/16")	Connection Type F = SAE S = ODF P = NPTF T = Copper Extended Ends	Connection Size (In 1/8")	M = manual stem T = mounting stud (optional)	Coil[1]

Note: 1. Valves are supplied without the solenoid coils. Please select appropriate solenoid coils in line with specific voltage.

Ordering Information And Nominal Liquid Capacity Table – Tons (kW):

1. Standard Valve

PCN	Description	Connection Size (inch)	R 134a	R 22	R 407C	R 404A/ R 507
053104	200RB 2 F 2	1/4 SAE	2.9 (10.4)	3.1 (11.0)	2.9 (10.3)	2.1 (7.4)
062611	200RB 2 F 3	3/8 SAE				
053105	200RB 2 T 2	1/4 ODF				
053106	200RB 2 T 3	3/8 ODF				
052726	200RB 3 F 3	3/8 SAE	4.4 (15.6)	4.8 (17.0)	4.5 (16.0)	3.2 (11.3)
052727	200RB 3 F 4	1/2 SAE				
049609	200RB 3 T 3	3/8 ODF				
049692	200RB 3 T 4	1/2 ODF				
047506	200RB 4 F 3	3/8 SAE	5.3 (18.6)	5.6 (19.8)	5.3 (18.8)	3.7 (13.1)
047517	200RB 4 T 3	3/8 ODF				
047518	200RB 4 T 4	1/2 ODF				
058950	200RB 4 T 5	5/8 ODF				
047519	200RB 5 F 4	1/2 SAE	6.4 (22.7)	8.2 (29.0)	7.8 (27.6)	5.4 (19.1)
059729	200RB 5 F 5	5/8 ODF				
057206	200RB 5 T 4	1/2 ODF				
059730	200RB 5 T 5	5/8 ODF				
059731	200RB 6 F 4	1/2 SAE	7.8 (27.7)	10.0 (35.4)	9.5 (33.6)	6.5 (23.0)
059732	200RB 6 F 5	5/8 SAE				
047544	200RB 6 T 4	1/2 ODF				
056766	200RB 6 T 5	5/8 ODF				

Ordering Information And Nominal Liquid Capacity Table – Tons (kW):

2. Mounting Stud

PCN	Description	Connection Size (inch)	R 134a	R 22	R 407C	R 404A/ R 507
047508	200RB 4 F 3T	3/8 SAE	5.3 (18.6)	5.6 (19.8)	5.3 (18.8)	3.7 (13.1)
049162	200RB 4 T 3T	3/8 ODF				
049163	200RB 4 T 4T	1/2 ODF				
058045	200RB 4 T 5T	5/8 ODF				
047521	200RB 5 F 4T	1/2 SAE	6.4 (22.7)	8.2 (29.0)	7.8 (27.6)	5.4 (19.1)
047523	200RB 5 F 5T	5/8 ODF				
049164	200RB 5 T 4T	1/2 ODF				
049165	200RB 5 T 5T	5/8 ODF				
047531	200RB 6 F 4T	1/2 SAE	7.8 (27.7)	10.0 (35.4)	9.5 (33.6)	6.5 (23.0)
047534	200RB 6 F 5T	5/8 SAE				
047546	200RB 6 T 4T	1/2 ODF				
047548	200RB 6 T 5T	5/8 ODF				
064562	200RB 7 T 5T	5/8 ODF	14.8 (52.5)	15.6 (55.2)	14.8 (52.4)	10.3 (36.5)
064284	200RB 7 T 7T	7/8 ODF				
064764	200RB 9 T 5T	5/8 ODF	22.0 (78.0)	23.3 (92.5)	22.2 (78.6)	15.3 (54.2)
064766	200RB 9 T 7T	7/8 ODF	28.9 (102.3)	30.5 (108.0)	29.0 (103.0)	20.1 (71.1)
064769	200RB 9 T 9T	1-1/8 ODF				
064820	200RB 12 T 7T	7/8 ODF	33.2 (117.5)	34.9 (124.0)	33.2 (128.0)	23.0 (81.4)
064823	200RB 12 T 9T	1-1/8 ODF				

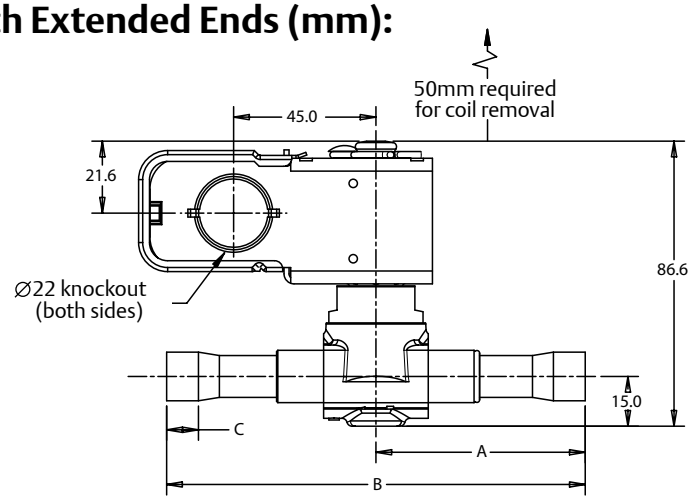
Ordering Information And Nominal Liquid Capacity Table – Tons (kW)

3. Manual Stem

PCN	Description	Connection Size (inch)	R 134a	R 22	R 407C	R 404A/ R 507
064267	200RB 7 T 5M	5/8 ODF	14.8 (52.5)	15.6 (55.2)	14.8 (52.4)	10.3 (36.5)
064283	200RB 7 T 7M	7/8 ODF				
064763	200RB 9 T 5M	5/8 ODF	22.0 (78.0)	23.3 (92.5)	22.2 (78.6)	15.3 (54.2)
064765	200RB 9 T 7M	7/8 ODF	28.9 (102.3)	30.5 (108.0)	29.0 (103.0)	20.1 (71.1)
064768	200RB 9 T 9M	1-1/8 ODF				
064819	200RB 12 T 7M	7/8 ODF	33.2 (117.5)	34.9 (124.0)	33.2 (128.0)	23.0 (81.4)
064822	200RB 12 T 9M	1-1/8 ODF				

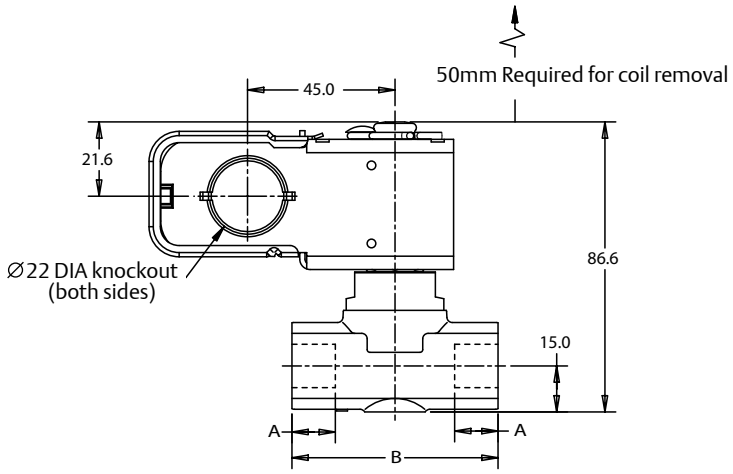
Notes: 1. Capacities based on 38°C liquid and 4°C saturated evaporator per ARI standard 760-87.
2. See Extended Capacity Tables for ratings at a wide range of conditions.
3. Valve Repair Kit and Parts are available on request.

200RB2~6 With Extended Ends (mm):



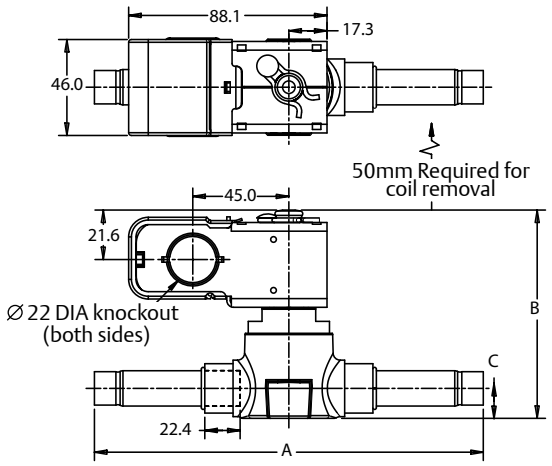
Description	Port Size (inch)	Connection Type (inch)	A	B	C
200RB 2T2	1/8	1/4 ODF	61.5	117.3	6.4
200RB 2T3		3/8 ODF			7.9
200RB 3T3	3/16	3/8 ODF			7.9
200RB 3T4		1/2 ODF			9.7
200RB 4T4	1/4		63.5	127.0	
200RB 4T5		5/8 ODF	82.6	165.1	12.7
200RB 5T4	5/16	1/2 ODF	63.5	127.0	9.7
200RB 5T5		5/8 ODF	82.6	165.1	12.7
200RB 6T4	3/8	1/2 ODF	63.5	127.0	9.7
200RB 6T5		5/8 ODF	82.6	165.1	12.7

200RB2 ~ 6 Without Extended Ends (mm):



Description	Port Size (inch)	Connection Type (inch)	A	B
200RB 4F3	1/4	3/8 SAE	–	79.2
200RB 5F4	5/16	1/2 SAE	–	88.9
200RB 5F5		5/8 SAE		95.3
200RB 6F4	3/8	1/2 SAE	–	88.9
200RB 6F5		5/8 SAE		95.3

200RB7, 9, 12 With Extended Ends (mm):



Description	Port Size (inch)	Connection Type (inch)	A	B	C
200RB 7T5	7/16	5/8 ODF	174.8	93.7	13.5
200RB 7T7		7/8 ODF	181.1		
200RB 9T5	9/16	5/8 ODF	174.8	102.9	17.3
200RB 9T6		3/4 ODF	187.5		
200RB 9T7		7/8 ODF	181.1		
200RB 9T9		1-1/8 ODF	215.9		
200RB 12T7	3/4	7/8 ODF	190.5		
200RB 12T9		1-1/8 ODF	215.9		

200RD Solenoid Valves

The 200RD is a pilot-operated, 2-way, normally closed, solenoid valve that is suitable for all refrigerants, including R 410A. 200RD valves are used for liquid, discharge, or suction gas refrigerant service.

200RD Series

Features

- One coil fits all valve sizes
- Extended ends for easy installation (standard)
- Long-life molded coils
- PTFE O-ring for superior external sealing
- Maximum fluid temperature: 121°C
- Maximum working pressure: 680 psig (46.9 barg)
- Minimum operating pressure drop: MOPD: 550 psig (38 bar)
- MinOPD 2psi (0.14 bar)
- MP604 UL/CUL file number: MP604

Nomenclature:

200R	D	5	T	4	T	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[1]

Note: 1. Valves are supplied without the solenoid coils. Please select appropriate solenoid coils in line with specific voltage.

Ordering Information And Nominal Liquid Capacity - Tons (kW):

1. Standard Valve

PCN	Type	Connection Size ODF (inch)	R 410A Tons (kW)
066158	200RD 2 T 2	1/4	3.4 (11.9)
066159	200RD 2 T 3	3/8	
066160	200RD 3 T 2	1/4	4.5(15.8)
066161	200RD 3 T 3	3/8	
066162	200RD 3 T 4	1/2	
066172	200RD 7 T 5	5/8	15.7 (55.22)
066173	200RD 7 T 7	7/8	
066174	200RD 9 T 5	5/8	27.7 (97.59)
066175	200RD 9 T 7	7/8	
066176	200RD 9 T 9	1 1/8	
066177	200RD 12T 7	7/8	29.10 (102.34)
066178	200RD 12T 9	1 1/8	

Ordering Information And Nominal Liquid Capacity Table – Tons (kW):

2. Mounting Stud[1]

PCN	Type	Connection Size ODF (inch)	R 410A Tons (kW)
066184	200RD 4 T 3T	3/8	7.5 (26.4)
066185	200RD 4 T 4T	1/2	
066186	200RD 4 T 5T	5/8	
066187	200RD 5 T 3T	3/8	7.7 (27.1)
066188	200RD 5 T 4T	1/2	
066189	200RD 5 T 5T	5/8	
066190	200RD 6 T 4T	1/2	8.9 (31.3)
066191	200RD 6 T 5T	5/8	
066195	200RD 7 T 5T	5/8	15.7 (55.22)
066194	200RD 7 T 7T	7/8	
066202	200RD 9 T 5T	5/8	27.7 (97.59)
066196	200RD 9 T 7T	7/8	
066197	200RD 9 T 9T	1 1/8	
066198	200RD 12 T 7T	7/8	29.10 (102.34)
066199	200RD 12 T 9T	1 1/8	

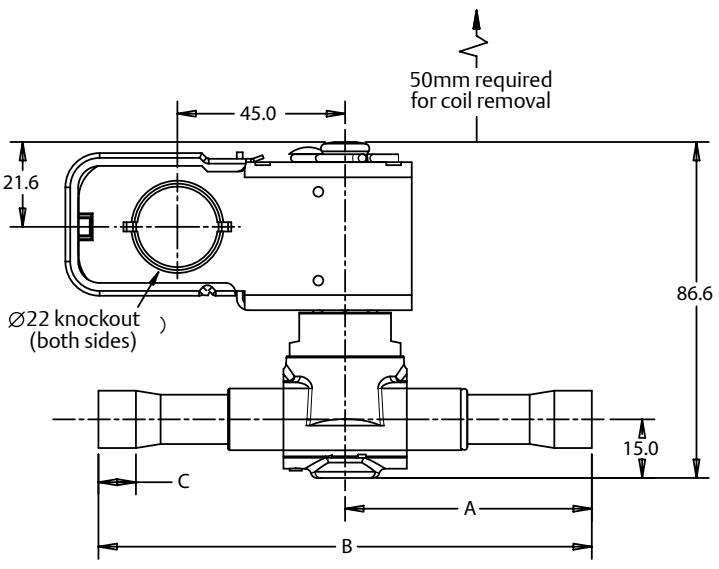
Ordering Information And Nominal Liquid Capacity Table – Tons (kW):

3. Manual Stem[2]

PCN	Type	Connection Size ODF (inch)	R 410A Tons (kW)
066211	200RD 6 T 4M	1/2	8.9 (31.3)
066212	200RD 6 T 5M	5/8	
066214	200RD 7 T 5M	5/8	15.7 (55.22)
066215	200RD 7 T 7M	7/8	
066216	200RD 9 T 5M	5/8	27.7 (97.59)
066217	200RD 9 T 7M	7/8	
066218	200RD 9 T 9M	1 1/8	
066219	200RD 12 T 7M	7/8	29.10 (102.34)
066220	200RD 12 T 9M	1 1/8	

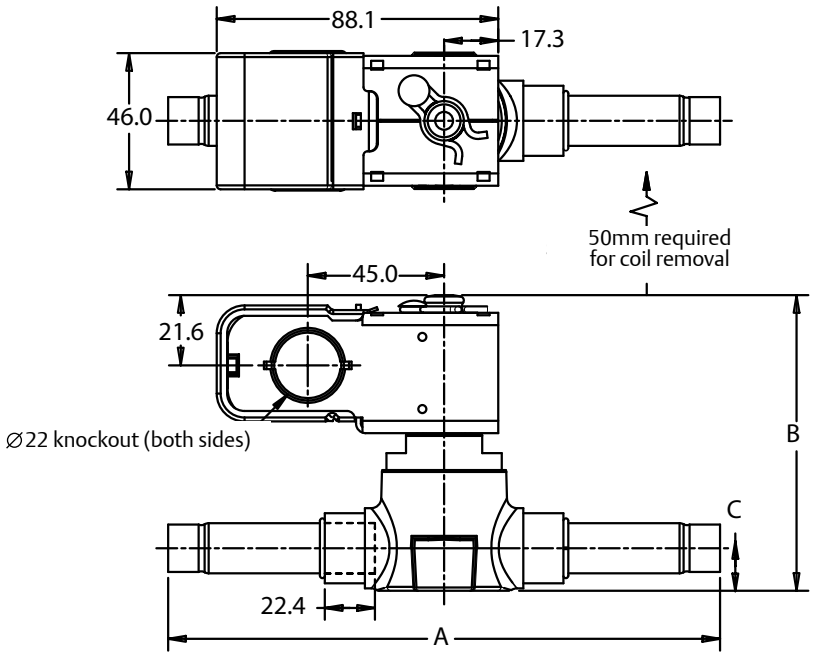
Notes: 1. Add "T" to the end of description for Mounting Stud
2. Add "M" to the end of the description for Manual Stem
3. Nominal capacities at +38°C condensing temperature, +4°C evaporating temperature, 0.2 bar pressure drop between valve inlet and outlet in liquid applications.

200RD 2-6 Series With Extended Ends Dimensional Data (mm):



Type	Port Size (inch)	Connection Type (inch)	A	B	C
200RD 2T2	1/8	1/4 ODF	61.5	117.3	6.4
200RD 2T3		3/8 ODF			7.9
200RD 3T2	3/16	1/4 ODF			6.4
200RD 3T3		3/8 ODF			7.9
200RD 3T4		1/2 ODF			9.7
200RD 4T4	1/4		63.5	127.0	
200RD 4T5		5/8 ODF	82.6	165.1	12.7
200RD 5T3	5/16	3/8 ODF	58.7	117.3	7.9
200RD 5T4		1/2 ODF	63.5	127.0	9.7
200RD 5T5		5/8 ODF	82.6	165.1	12.7
200RD 6T3	3/8	3/8 ODF	58.7	117.3	7.9
200RD 6T4		1/2 ODF	63.5	127.0	9.7
200RD 6T5		5/8 ODF	82.6	165.1	12.7

200RD7, 9,12 Series With Extended Ends Dimensional Data (mm):



Type	Port Size (inch)	Connection Type (inch)	A	B	C
200RD 7T5	7/16	5/8 ODF	174.8	93.7	13.5
200RD 7T7		7/8 ODF	181.1		
200RD 9T5	9/16	5/8 ODF	174.8	102.9	17.3
200RD 9T6		3/4 ODF	187.5		
200RD 9T7		7/8 ODF	181.1		
200RD 9T9		1-1/8 ODF	215.9		
200RD 12T7	3/4	7/8 ODF	190.5		
200RD 12T9		1-1/8 ODF	215.9		

240RA Solenoid Valves

The 240RA is a 2-way, normally closed diaphragm valve.
240RA valves are used for liquid, suction, and hot gas service.

240RA Series

Features

- One coil fits all valve sizes
- Can be brazed into the line without disassembly
- PTFE diaphragm for high temperature applications
- Extended ends for easy installation (standard)
- Long-life molded coils
- Mounting stud models can be field converted to manual stem
- Maximum fluid temperature: 121°C
- Maximum working pressure: 500 psig (34.5 bar)
- MOPD: 300 psi (20.7 bar)
- MinOPD 1psi (0.07 bar)
- UL/CUL file number: MP604

Nomenclature:

240R	A	16	T	11	T	VLC
Valve Series	Design Series	Port Size (in 1/16")	Connection Type T = copper intended ends	Connection Size (in 1/8")	M = manual stem T = mounting stud (optional)	Coil[1]

Note: 1. Valves are supplied without the solenoid coils. Please select appropriate solenoid coils in line with specific voltage.

Ordering Information And Nominal Liquid Capacity Table – Tons (kW):

1. Mounting Stud

PCN	Type	Connection Size ODF (inch)	R 134a	R 22	R 407C	R 404A/R 507
040846	240RA 8 T 5T	5/8	14.8 (52.5)	15.6 (55.2)	14.8 (52.4)	10.3 (36.5)
044860	240RA 8 T 7T	7/8				
040848	240RA 9 T 5T	5/8	22.0 (78.0)	23.3 (82.5)	22.1 (78.2)	15.3 (54.2)
043205	240RA 9 T 7T	7/8	28.9 (102.3)	30.5 (108.0)	29.0 (103.0)	21.0 (71.1)
044861	240RA 9 T 9T	1-1/8				
040850	240RA 12 T 7T	7/8	33.2 (117.5)	34.9 (124.0)	33.2 (118.0)	23.0 (81.4)
043959	240RA 12 T 9T	1-1/8				
042549	240RA 16 T 9T	1-1/8	55.1 (195.1)	58.0 (205.0)	55.2 (195.0)	38.3 (135.0)
044428	240RA 16 T 11T	1-3/8				
047761	240RA 20 T 11T	1-3/8	86.8 (307.4)	95.4 (338.0)	90.8 (321.0)	65.7 (230.0)
047747	240RA 20 T 13T	1-5/8				
054297	240RA 20 T 17T	2-1/8				

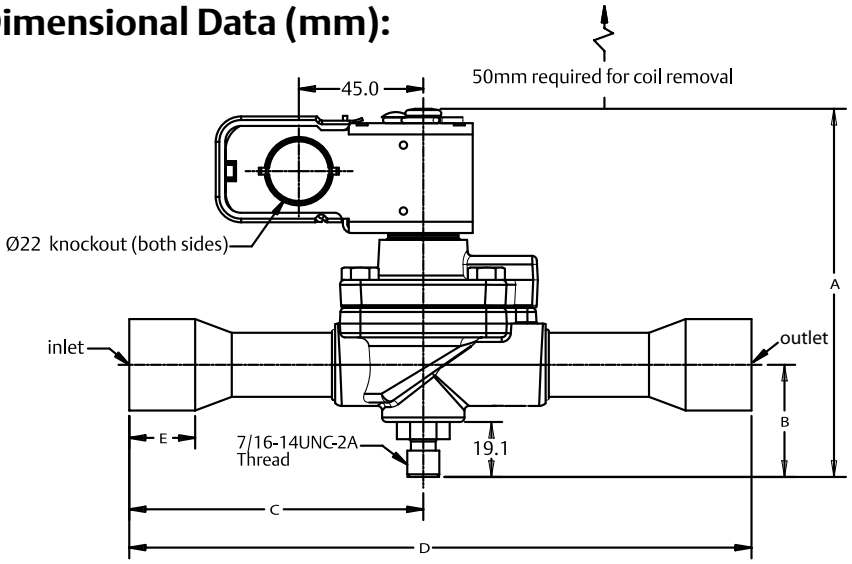
Ordering Information And Nominal Liquid Capacity Table – Tons (kW):

2. Manual Stem

PCN	Type	Connection Size ODF (inch)	R 134a	R 22	R 407C	R 404A/R 507
040845	240RA 8 T 5M	5/8	14.8 (52.5)	15.6 (55.2)	14.8 (52.4)	10.3 (36.5)
045753	240RA 8 T 7M	7/8				
040847	240RA 9 T 5MM	5/8	22.0 (78.0)	23.3 (82.5)	22.1 (78.2)	15.3 (54.2)
043204	240RA 9 T 7M	7/8	28.9 (102.3)	30.5 (108.0)	29.0 (103.0)	21.0 (71.1)
045752	240RA 9 T 9M	1-1/8				
040849	240RA 12 T 7M	7/8	33.2 (117.5)	34.9 (124.0)	33.2 (118.0)	23.0 (81.4)
045549	240RA 12 T 9M	1-1/8				
042548	240RA 16 T 9M	1-1/8	55.1 (195.1)	58.0 (205.0)	55.2 (195.0)	38.3 (135.0)
044788	240RA 16 T 11M	1-3/8				
046636	240RA 20 T 11M	1-3/8	86.8 (307.4)	95.4 (338.0)	90.8 (321.0)	65.7 (230.0)
046637	240RA 20 T 13M	1-5/8				
046638	240RA 20 T 17M	2-1/8				

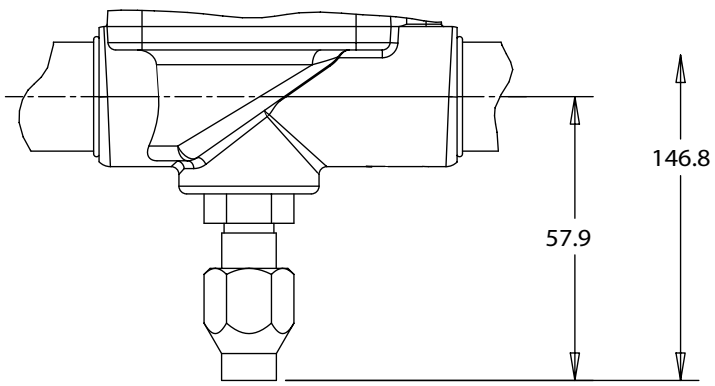
Notes: 1. Add "T" to the end of description for Mounting Stud
2. Add "M" to the end of the description for Manual Stem
3. Nominal capacities at +38°C condensing temperature, +4°C evaporating temperature, 0.2 bar pressure drop between valve inlet and outlet in liquid applications.
4. See Extended Capacity Tables for ratings at a wide range of conditions.

240RA Series Dimensional Data (mm):



Type	Port Size (inch)	Connection Type (inch)	A	B	C	D	E
240RA8T5T	1/2	5/8 ODF	121.9	34.0	83.3	174.8	12.7
240RA8T5M			134.1	46.5			
240RA8T7T		7/8 ODF	121.9	34.0	86.6	181.1	19.0
240RA8T7M			134.1	46.5			
240RA9T5T	9/16	5/8 ODF	129.0	38.1	81.3	174.8	12.7
240RA9T5M			141.2	52.8			
240RA9T7T		7/8 ODF	129.0	38.1	84.6	181.1	19.1
240RA9T7M			141.2	52.8			
240RA9T9T		1-1/8 ODF	129.0	38.1	102.1	215.9	23.1
240RA9T9M			141.2	52.8			
240RA12T7T	3/4	7/8 ODF	129.0	38.1	89.4	190.5	19.1
240RA12T7M			141.2	52.8			
240RA12T9T		1-1/8 ODF	129.0	38.1	102.1	215.9	23.1
240RA12T9M			141.2	52.8			
240RA16T9T	1	1-1/8 ODF	135.6	42.2	104.9	230.1	
240RA16T9M			147.3	56.6			
240RA16T11T		1-3/8 ODF	135.6	42.2	130.3	280.9	24.6
240RA16T11M			147.3	56.6			
240RA20T11T	1-1/4	1-3/8 ODF	138.4	33.3	129.8	274.6	
240RA20T11M			164.3	59.2			
240RA20T13T		1-5/8 ODF	138.4	33.3	149.6	314.5	27.7
240RA20T13M			164.3	59.2			
240RA20T17T		2-1/8 ODF	138.4	33.3	167.1	349.3	34.0
240RA20T17M			164.3	59.2			

With Manual Stem - "M" Version (mm):



Coils For Solenoid Valves

Features

- Compact designs
- Coil windings are insulated to provide shock and vibration protection
- ASC2 is designed to provide weather protection
- Interchangeable housings

ASC2-DIN

AMG-Junction Box

MMG-Special DC

Solenoid Coil Prefix Selection Table:

PCN	Coil Code
015383	ASC 2 GS 2562-2 208-240V/50-60Hz
015384	ASC 2 GS 2562-1 120V/50-60Hz
015516	ASC 2 GS 2562-3 24V/50-60Hz
015561	ASC 2 GS 2562-4 24V/DC
057342	AMG(CLIP)X-27979-G70 6 208-220/208-240V 50/60Hz
057331	AMG(CLIP)X-27979-G72 6 120V/50-60Hz
057341	AMG(CLIP)X-27979-G71 6 24V/50-60Hz

ASC2, AMG, MMG Coils for Solenoid Valves:

ASC2 Coils: 100RB, 240RA

Nominal Voltage and Frequency	Applied Voltage and Frequency	Amperes		Holding VA	Watts Max.	Coil Insulation
		Inrush	Holding			
24-50/60	24/50	1.67	1.10	26	15/12	Class F Molded
24-50/60	24/60	1.41	0.83	20		
120-50/60	120/50	0.31	0.22	26		
120-50/60	120/60	0.26	0.16	20		
240-50/60	240/50	0.17	0.13	31		
240-50/60	240/60	0.15	0.10	23		

ASC2 Coils: 200RB, 540RA

Nominal Voltage and Frequency	Applied Voltage and Frequency	Amperes		Holding VA	Watts Max.	Coil Insulation
		Inrush	Holding			
24-50/60	24/50	2.18	1.07	26	15/12	Class F 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		

AMG Coils: 100RB, 240RA

Nominal Voltage and Frequency	Applied Voltage and Frequency	Amperes		Holding VA	Watts Max.	Coil Insulation
		Inrush	Holding			
24-50/60	24/50	1.20	0.96	23	17/12	Class F Molded
24-50/60	24/60	1.0	0.74	18		
120-50/60	120/50	0.25	0.21	25		
120-50/60	120/60	0.19	0.16	19		
208-220/50 208-240/60	208/50	0.14	0.08	17		
208-220/50 208-240/60	208/60	0.12	0.06	12		
208-220/50 208-240/60	220/50	0.16	0.10	24		
208-220/50 208-240/60	240/60	0.13	0.08	19		
480-50/60	480/50	0.06	0.05	24		
480-50/60	480/60	0.05	0.04	19		

AMG Coils: 200RB, 540RA

Nominal Voltage and Frequency	Applied Voltage and Frequency	Amperes		Holding VA	Watts Max.	Coil Insulation
		Inrush	Holding			
24-50/60	24/50	2.00	0.96	23	17/12	Class F Molded
24-50/60	24/60	1.6	0.74	18		
120-50/60	120/50	0.45	0.21	25		
120-50/60	120/60	0.36	0.16	19		
208-220/50 208-240/60	208/50	0.19	0.08	17		
208-220/50 208-240/60	208/60	0.15	0.06	12		
208-220/50 208-240/60	220/50	0.24	0.10	24		
208-220/50 208-240/60	240/60	0.19	0.08	19		
480-50/60	480/50	0.11	0.05	24		
480-50/60	480/60	0.09	0.04	19		

Solenoid Capacity Tables

Liquid Capacities (kW):

Valve Series	Pressure Drop Across Valve - kPa							
	13.6	**20.5**	**27.2**	**34.0**	**13.6**	**20.5**	**27.2**	**34.0**
	R 22				**R 407C**			
100RB	3.7	4.5	5.2	5.8	3.5	4.3	4.9	5.5
200RB 2	9.0	11.0	12.7	14.2	8.4	10.3	11.9	13.3
200RB 3	13.9	17.0	19.6	21.9	13.0	15.9	18.4	20.6
200/500RB4	16.2	19.8	22.9	25.6	15.3	18.8	21.7	24.2
200/500RB5	23.7	29.0	33.5	35.7	22.5	27.6	31.9	35.6
200/500RB6	28.9	35.4	40.9	45.7	27.5	33.6	38.8	43.4
200/500RB7	45.1	55.2	63.8	71.3	42.8	52.4	60.5	67.6
200RB9 (5/8)	67.3	82.5	95.2	106.5	64.2	78.6	90.7	101.5
200RB9 (7/8, 1-1/8)	88.2	108.0	124.7	139.4	83.8	102.7	118.5	132.5
200RB12	100.9	123.5	142.7	159.5	96.0	117.5	135.7	151.7
240/540RA8	45.1	55.2	63.8	71.3	42.8	52.4	60.5	67.6
240/540RA9T (5/8)	67.3	82.5	95.2	106.5	64.2	78.6	90.7	101.5
240/540RA9T (7/8, 1-1/8)	88.2	108.0	124.7	139.4	83.8	102.7	118.5	132.5
240/540RA12	100.9	123.5	142.7	159.5	96.0	117.5	135.7	151.7
240/540RA16	167.6	205.3	237.1	265.1	159.5	195.4	225.6	252.3
240/540RA20	275.7	337.7	390.0	436.0	262.4	321.4	371.2	415.0
	R 134a				**R 404A/R 507**			
100RB	3.4	4.2	4.8	5.4	2.5	3.0	3.5	3.9
200RB2	8.5	10.4	12.0	13.4	6.1	7.4	8.6	9.6
200RB3	12.7	15.6	18.0	20.2	9.2	11.3	13.1	14.6
200/500RB4	15.2	18.6	21.5	24.1	10.7	13.1	15.1	16.9
200/500RB5	22.7	27.7	32.0	35.8	15.6	19.1	22.1	24.7
200/500RB6	27.3	33.4	38.5	43.1	18.8	23.0	26.6	29.7
200/500RB7	42.8	52.5	60.6	67.7	29.8	36.5	42.1	47.1
200RB9 (5/8)	63.7	78.0	90.1	100.8	44.2	54.2	62.5	69.9
200RB9 (7/8, 1-1/8)	83.5	102.3	118.1	132.1	58.1	71.2	82.2	91.9
200RB12	95.9	117.5	135.7	151.7	66.5	81.4	94.0	105.1
240/540RA8	42.8	52.5	60.6	67.7	29.8	36.5	42.1	47.1
240/540RA9T (5/8)	63.7	78.0	90.1	100.8	44.2	54.2	52.5	69.9
240/540RA9T (7/8, 1-1/8)	83.5	102.3	118.1	132.1	58.1	71.2	82.2	91.9
240/540RA12	95.9	117.5	135.7	151.7	66.5	81.4	94.0	105.1
240/540RA16	159.3	195.1	225.3	251.9	110.7	135.6	156.6	175.0
240/540RA20	251.0	307.4	354.9	396.8	189.9	232.6	268.6	300.3

Valve Series	Pressure Drop Across Valve - kPa			
	R 410A			
	13.6	20.5	27.2	34.0
200RD 2	6.6	8.1	9.4	10.4
200RD 3	12.0	14.7	16.9	18.9
200RD 4	20.9	25.5	29.5	33.0
200RD 5	23.5	28.6	33.2	37.1
200RD 6	25.0	30.2	34.8	39.0
200RD 7	42.7	55.0	63.4	70.4
200RD 9	78.2	97.1	112.2	126.5
200RD 12	83.1	101.9	117.3	131.6

Discharge Capacity (kW):

Valve Series	Evaporator Temperature – °C											
	13.8	34.5	69.0	172.5	345	690	13.8	34.5	69.0	172.5	345	690
	R 22						R 407C					
100RB	0.6	1.0	1.5	2.3	2.9	3.4	0.6	1.0	1.5	2.3	2.9	3.5
200/500RB2	1.9	3.0	4.3	6.8	8.7	10.0	1.9	3.0	4.2	6.7	8.7	10.2
200/500RB3	2.7	4.3	6.1	9.3	11.9	13.1	2.7	4.2	6.0	9.2	11.9	13.5
200/500RB4	3.5	5.6	7.9	11.9	16.0	20.2	3.5	5.5	7.8	11.8	15.9	20.3
200/500RB5	5.1	8.0	11.4	17.3	22.9	27.9	5.0	7.9	11.2	17.2	22.9	28.2
200/500RB6	5.6	8.8	12.4	18.7	25.2	32.1	5.5	8.6	12.2	18.5	25.0	32.2
200/500RB7	7.6	12.0	17.0	27.5	36.7	45.5	7.5	11.8	16.7	27.3	36.5	45.8
200RB9 (5/8)	12.8	20.2	28.6	44.2	58.7	72.0	12.6	19.9	28.2	43.8	58.4	72.7
200RB9 (7/8, 1-1/8)	16.2	25.6	36.2	54.7	70.8	81.8	16.0	25.2	35.7	54.3	70.8	79.5
200RB12	17.9	28.4	40.1	63.9	82.8	94.1	21.2	33.6	47.5	75.1	104.6	131.3
240/540RA8	7.6	12.0	17.0	27.5	36.7	45.5	7.5	11.8	16.7	27.3	36.5	45.8
240/540RA9T5	12.8	20.2	28.6	44.2	58.7	72.0	12.6	19.9	28.2	43.8	58.4	72.7
240/540RA9 (7/8, 1-1/8)	16.2	25.6	36.2	54.7	70.8	81.8	16.0	25.2	35.7	54.3	70.8	79.5
240/540RA12	17.9	28.4	40.1	63.9	82.8	94.1	21.2	33.6	47.5	75.1	104.6	131.3
240/540RA16	29.5	46.7	66.0	101.4	133.7	161.6	29.1	46.0	65.1	100.5	133.3	163.7
240/540RA20	41.3	65.3	92.3	152.2	198.6	233.5	40.7	64.4	91.0	151.0	198.4	237.7
	R 134a						R 404A/R 507					
100RB	0.5	0.8	1.2	1.8	2.2	2.1	0.6	0.9	1.2	1.9	2.5	3.0
200/500RB2	1.6	2.5	3.6	5.3	6.4	6.0	1.6	2.6	3.6	5.8	7.6	9.0
200/500RB3	2.3	3.5	5.0	7.3	8.6	7.3	2.3	3.6	5.2	8.0	10.4	11.9
200/500RB4	2.9	4.6	6.5	9.6	12.4	14.5	3.0	4.7	6.7	10.2	13.7	17.7
200/500RB5	4.2	6.7	9.2	13.8	17.5	18.9	4.3	6.8	9.7	14.8	19.8	24.7
200/500RB6	4.6	7.3	10.3	15.0	19.7	23.3	4.7	7.5	10.5	16.0	21.7	28.0
200/500RB7	6.3	9.9	14.1	22.0	28.2	31.5	6.4	10.2	14.4	23.6	31.6	40.0
200RB9 (5/8)	3.0	4.7	6.7	10.0	12.7	13.9	10.9	17.2	24.3	37.8	50.7	63.5
200RB9 (7/8, 1-1/8)	3.8	6.0	8.5	12.2	14.8	14.2	13.8	21.8	30.8	46.9	61.6	71.4
200RB12	4.2	6.6	9.4	14.2	17.1	15.9	15.3	24.1	34.1	54.9	71.7	84.6
240/540RA8	6.3	9.9	14.1	22.0	28.2	31.5	6.4	10.2	14.4	23.6	31.6	40.0
240/540RA9T5	10.6	16.7	23.7	35.3	44.9	49.2	10.9	17.2	24.3	37.8	50.7	63.5
240/540RA9 (7/8, 1-1/8)	13.4	21.2	30.0	43.1	52.4	50.1	13.8	21.8	30.8	46.9	61.6	71.4
240/540RA12	14.8	23.5	33.2	50.2	60.6	56.4	15.3	24.1	34.1	54.9	71.7	84.6
240/540RA16	24.4	38.7	54.7	80.6	101.4	107.6	15.3	24.1	34.1	52.5	68.4	80.2
240/540RA20	34.2	54.1	76.4	120.4	148.4	148.3	35.1	55.5	78.5	130.6	172.3	208.3

Valve Series	Pressure Drop Across Valve - kPa					
	13.8	34.5	69.0	172.5	345	690
	R 410A					
200RD 2	1.6	2.6	3.6	5.7	7.4	8.9
200RD 3	2.7	4.3	6.0	9.6	12.3	15.5
200RD 4	5.3	8.3	11.6	18.6	24.5	30.7
200RD 5	6.0	9.8	13.8	21.8	29.7	38.4
200RD 6	7.0	10.9	15.1	23.6	30.9	40.1
200RD 7	8.1	12.4	17.5	27.3	34.3	45.5
200RD 9	17.2	27.3	38.7	61.6	84.5	107.1
200RD 12	24.9	39.0	55.8	88.2	103.3	126.8

Suction Gas Capabilities @ 14.0 kPa Pressure Drop (kW):

Valve Series	Evaporator Temperature – °C									
	4	-7	-18	-29	-40	4	-7	-18	-29	-40
	R 22					R 407C				
200RB 2	1.3	1.1	0.8	0.7	0.5	1.3	1.1	0.8	0.7	0.5
200RB 3	1.9	1.5	1.2	1.0	0.7	1.9	1.5	1.2	1.0	0.7
200RB 4	1.9	1.5	1.2	1.0	0.9	1.9	1.5	1.2	1.0	0.9
200RB 5	3.6	2.9	2.3	1.8	1.3	3.6	2.9	2.3	1.8	1.3
200RB 6	3.0	2.4	2.0	1.5	1.5	3.0	2.4	2.0	1.5	1.5
200RB 7	4.2	3.4	2.8	2.2	1.7	4.2	3.4	2.8	2.2	1.7
200RB 9	12.4	10.1	8.1	6.4	4.6	12.4	10.1	8.1	6.4	4.6
200RB 12	11.4	9.3	7.5	5.9	6.0	11.4	9.3	7.5	5.9	6.0
240/540RA8	5.3	4.2	3.5	2.8	2.1	5.3	4.2	3.5	2.8	2.1
240/540RA9T5	7.0	5.6	4.6	3.5	2.8	7.0	5.6	4.6	3.5	2.8
240/540RA9T5	8.4	7.0	5.6	4.2	3.5	8.4	7.0	5.6	4.2	3.5
240/540RA12	10.2	8.4	6.7	5.3	4.2	10.2	8.4	6.7	5.3	4.2
240/540RA16	20.4	16.5	13.4	10.5	8.1	20.4	16.5	13.4	10.5	8.1
240/540RA20	28.8	23.6	19.0	14.8	11.6	28.8	23.6	19.0	14.8	11.6
	R 134a					R 404A/R 507				
200RB 2	1.0	0.8	0.6	0.5	0.3	1.1	0.9	0.7	0.5	0.4
200RB 3	1.5	1.2	0.9	0.6	0.4	1.6	1.3	1.0	0.7	0.5
200RB 4	1.5	1.2	1.3	0.9	0.6	1.6	1.3	1.0	0.7	0.8
200RB 5	2.7	2.1	1.5	1.1	0.7	3.0	2.4	1.8	1.4	0.9
200RB 6	2.3	1.8	1.8	1.3	0.9	2.5	2.0	1.5	1.2	1.1
200RB 7	3.2	1.5	2.0	1.4	1.0	3.5	2.8	2.2	1.7	1.2
200RB 9	9.5	7.5	5.6	4.0	2.7	10.3	8.2	6.4	4.9	3.5
200RB 12	8.8	6.9	7.2	5.3	3.6	9.5	7.6	5.9	4.5	4.5
240/540RA8	2.8	2.1	1.8	1.4	1.1	3.2	2.5	1.8	1.4	1.1
240/540RA9T5	4.9	3.9	2.8	2.1	1.4	5.3	4.2	3.2	2.5	1.8
240/540RA9	6.0	4.9	3.9	2.8	1.8	6.7	5.3	4.2	3.2	2.1
240/540RA12	6.7	5.3	4.2	3.2	2.1	7.7	6.3	4.9	3.5	2.8
240/540RA16	11.3	8.8	6.7	4.9	3.5	12.0	9.5	7.4	5.6	4.2
240/540RA20	15.5	12.3	9.5	7.0	5.6	16.9	13.4	10.2	7.7	5.6
	R 410A									
200RD 2	1.1	0.9	0.7	0.6	0.5					
200RD 3	1.9	1.6	1.2	1.0	0.7					
200RD 4	3.5	2.9	2.3	1.8	1.4					
200RD 5	4.3	3.6	2.9	2.3	1.7					
200RD 6	4.7	3.8	3.1	2.4	1.9					
200RD 7	5.1	4.2	3.5	2.8	2.1					
200RD 9	12.1	10.0	8.1	6.3	4.9					
200RD 12	17.7	14.2	11.2	8.9	6.8					

ACP Hot Gas Bypass Regulators

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.

ACP Series

Features

- Small compact size adapts to any installation
- Cover multiple capacity ranges
- Fully adjustable from 0-5.5 bar (factory setting 2.8 bar)
- Maximum working pressure: 31 bar
- Maximum working temperature: 150°C
- UL/CUL fi le number: SA5312

Nomenclature:

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

Nominal Capacity Table In Tons:

Valve	Port Diameter (mm)	Capacity Tons (kW)			
		R 134a	R 22	R 407C	R 507/R 404A
ACP(E)-1	1.2	0.07 (0.25)	0.09 (0.32)	0.09 (0.32)	0.09 (0.32)
ACP(E)-2	1.5	0.09 (0.32)	0.12 (0.42)	0.12 (0.42)	0.11 (0.39)
ACP(E)-3	2.6	0.16 (0.56)	0.22 (0.77)	0.22 (0.77)	0.20 (0.70)
ACP(E)-4	2.9	0.23 (0.81)	0.32 (1.12)	0.32 (1.12)	0.28 (0.98)
ACP(E)-5	3.2	0.37 (1.30)	0.50 (1.75)	0.50 (1.75)	0.45 (1.58)
ACP(E)-6	3.6	0.50 (1.75)	0.69 (2.42)	0.69 (2.42)	0.60 (2.10)
ACP(E)-7	4.3	0.71(2.49)	0.98 (3.43)	0.98 (3.43)	0.90 (3.15)
ACP(E)-8	5.0	0.84 (2.94)	1.20 (4.20)	1.20 (4.20)	1.00 (3.50)
ACP(E)-9	5.8	0.98 (3.43)	1.40 (4.90)	1.40 (4.90)	1.20 (4.20)

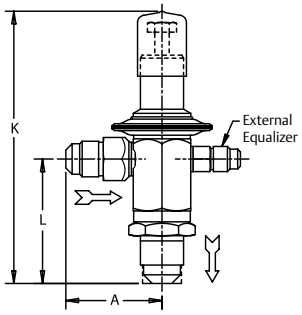
Note: All capacities shown are at 37.8°C Condensing temperature, 4.4°C Evaporator Temperature, with a solid column of liquid at the valve inlet.

Ordering Information:

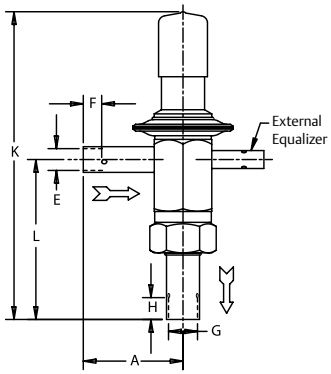
PCN	Type	PCN	Type
057233	ACP 1 IE 1/4 x 3/8 ODF S/T	057016[1]	ACPE 5 ODF EE 3/8 x 1/2 ODF ANG
047680	ACP 1 IE 1/4 x 3/8 ODF ANG	047790[1]	ACPE 7 SAE EE 3/8 x 1/2 ODF ANG
047651	ACP 2 IE 1/4 x 3/8 ODF ANG	047654	ACP 7 IE 3/8 x 1/2 ODF ANG
047105[1]	ACP 4 IE 1/4 x 3/8 ODF ANG	047655	ACP 8 IE 3/8 x 1/2 ODF ANG
047284	ACP 5 IE 1/4 x 3/8 ODF ANG	057017	ACPE 9 ODF EE 3/8 x 1/2 ODF ANG
053374[1]	ACP 5 IE 3/8 x 3/8 ODF ANG	057771	ACP 9 IE 1/2 x 5/8 ODF ANG

Note: PCNs with 1 mean standard products.

Dimensional Data (mm):

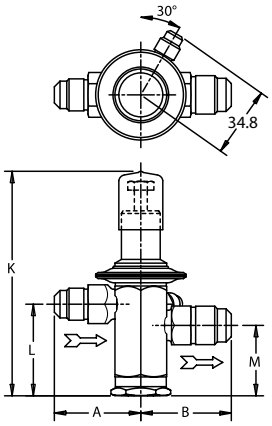


SAE Connections

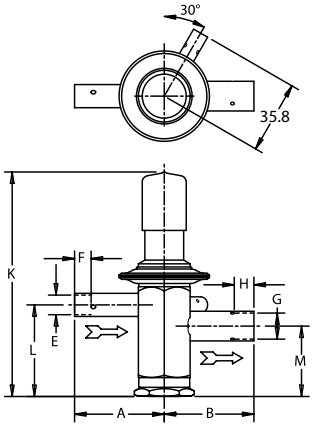


ODF Connections

ACP Angle (figure 1)



SAE Connections



ODF Connections

ACP Straight-thru (figure 2)

ACP Angle Dimensional Data (mm): see figure 1

ACP (E)	Inlet (inch)	Outlet (inch)	A	B	E Diameter	F MIN	G Diameter	H MIN	K	L
Angle SAE	1/4	3/8	38.1	-	-	-	-	-	114.3	54.1
	3/8	3/8 - 1/2	41.7							
	1/2		43.7							
	1/4	5/8	38.1						117.1	56.6
	3/8		41.7							
	1/2		43.7							
Angle ODF	1/4	3/8	31.8	-	6.4	8.1	9.4	8.1	115.6	55.1
	3/8	1/2	30.2		9.4	8.1	12.7	9.7		
	1/2	5/8			12.7	9.7	15.7	12.7	120.1	59.9
	5/8		35.1		15.7	12.7				
	1/4		31.8		6.4	8.1				
	3/8		30.2		9.4	8.1				
	1/4	1/2	31.8		6.4	8.1	12.7	9.7	115.6	55.1
	1/2	7/8	30.2		12.7	9.7	22.1	19.1	129.8	69.3

ACP Angle Dimensional Data (mm): see figure 2

ACP (E)	Inlet (inch)	Outlet (inch)	A	B	E Diameter	F MIN	G Diameter	H MIN	K	L	M
Angle SAE	1/4	3/8	38.1	41.7	-	-	-	-	108.0	47.8	37.6
	3/8	1/2	41.7								
	1/2		43.7	43.7							
	1/4	5/8	38.1								
	3/8		41.7	50.3							
	1/2		43.7								
Angle ODF	1/4	3/8	31.8	30.2	6.4	8.1	9.4	8.1			
	3/8	1/2	30.2		9.4	8.1	12.7	9.7			
	1/2	5/8			12.7	9.7	15.7	12.7			
	5/8		35.1	35.1	15.7	12.7					
	1/4		31.8		6.4	8.1					
	3/8		30.2		9.4	8.1					
	1/4	1/2	31.8	30.2	6.4	8.1	12.7	9.7			
	1/2	7/8	30.2	44.5	12.7	9.7	22.1	19.1			
	3/8				9.4	8.1	22.1	19.1			

CPHE Hot Gas Bypass Regulators

High quality materials and processes for high reliability and long lifetime.

Features

- 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

CPHE Series

Selection:

Type	Nominal Bypass Capacity Q_n kW				Orifice	Standard Flange Solder/ODF		Power Assembly
	R 134a	R 22	R 407C	R 404A/R 507		mm	inch	
CPHE - 1X	3.5	5	5.8	4.5	X 22440-B5B	C 501 - 7 mm 12 x 16	C 501 - 7 1/2 x 5/8	X7818 - 1
CPHE - 2X	6.4	9	10.4	8.1	X 22440-B8B	A 576 mm 16 x 22 (22 x 28 ODM)	A 576 5/8 x 7/8 (7/8 x 1-1/8 ODM)	
CPHE - 3X	12	17	20	15	X 11873-B5B	10331 22 x 22	10331 7/8 x 7/8 (1-1/8 x 1-1/8 ODM)	
CPHE - 3.5X	13	19	22	17	X 9117-B7B	9153 mm 22 x 22	9153 7/8 x 7/8	
CPHE - 4X	16	23	27	21	X 9117-B9B			
CPHE - 5X	21	29	34	26	X 9166-B10B			
CPHE - 6X	35	50	58	45	X 9144-B13B	9149 22 x 22	9149 7/8 x 7/8	

Note: Nominal capacities at +38°C condensing temperature, +4°C evaporating temperature (saturated temperatures/dew point) and 1 K liquid sub cooling at the inlet of the expansion valve.

CPHE Selection For Other Operating Conditions:

For other evaporating temperatures the bypass capacity Q_{Byp} shall be multiplied with the correction factor K_{Byp}.

QByp x KByp = Qn

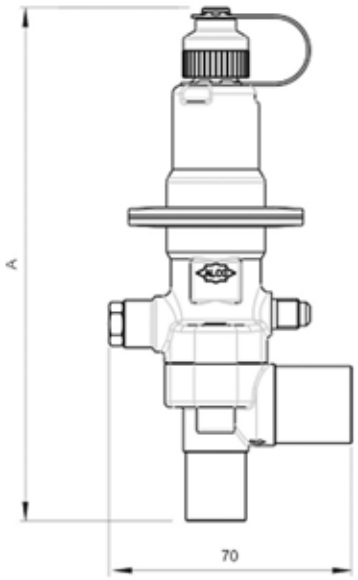
QByp: Required bypass capacity
KByp: Correction factor for evaporating temperature
Qn: Nominal valve capacity

Refrigerant	Condensing Temperature °C	Correction Factor K_{byp} Evaporating Temperature °C					
		10	0	-10	-20	-30	-40
R 134a	50	0.78	0.77	0.78	0.8		
	40	0.99	0.94	0.93	0.94		
	30	1.35	1.21	1.15	1.14		
R 22	50	0.8	0.77	0.77	0.77	0.79	0.82
	40	1	0.93	0.91	0.91	0.92	0.95
	30	1.34	1.19	1.12	1.1	1.09	1.12
R 407C	50	0.83	0.82	0.83	0.86		
	40	0.99	0.95	0.95	0.97		
	30	1.26	1.17	1.13	1.13		
R 404A/ R 507	50	0.86	0.85	0.87	0.91	0.97	1.06
	40	0.99	0.95	0.94	0.96	1	1.05
	30	1.26	1.13	1.09	1.08	1.1	1.14

Technical Data:

Adjustment Range:	-0.4 ~ 5 bar
Factory Setting:	1.4 bar
Max. allowable Pressure PS:	35 bar
Operating Temperature Range TS:	-40°C ~ 120°C
Ambient Temperature Range:	-40 ~ 50°C
Transport Temperature Range:	-40 ~ 70°C

Dimensional Data (mm):



Type	A
	mm
CPHE-1X	173
CPHE-2X	192
CPHE-3X	210
CPHE-3.5X	210
CPHE-4X	210
CPHE-5X	210
CPHE-6X	222

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
- 25 bar Maximum Operating Pressure
- -30°C ~ +80°C Operating Temp Range, 0.5 ~ 6.9 bar Pressure Range
- 2 bar Factory Setting
- Pressure change per turn:
  PRC/PRE-1: 0.6 bar
  PRC/PRE-2: 0.4 bar

PRE/PRC Series

Nomenclature:

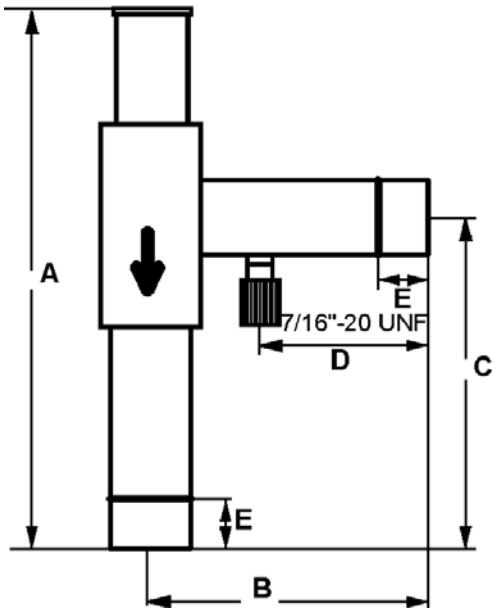
PR	C	1	1	A
Pressure regulator Series	C= Crankcase Pressure Regulator E= Evaporator Pressure Regulator	1= Small 2=Large	Pressure Range 1=0.5 ~ 6.9 bar	Connection Size A = 5/8"-16mm B = 7/8"-22mm C = 28mm D = 1-1/8" E = 35mm-1-3/8"

Ordering Information:

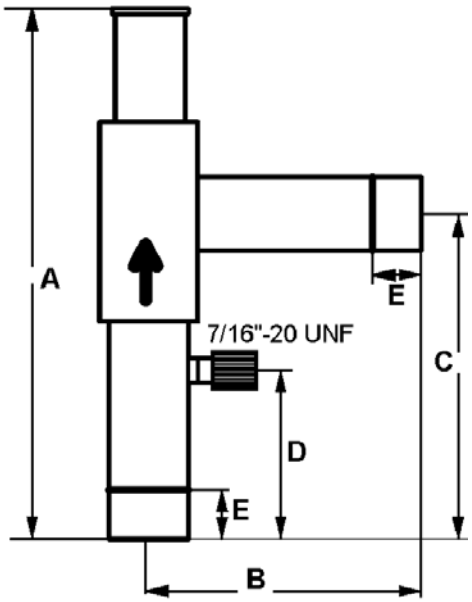
Type	PCN	Connection Size ODF (inch)	Pressure Regulator Range (bar)	Factory Pressure Setting (bar)	Nominal Capacity in kW			
					R 134a	R 404A R 507	R 407C	R 22
PRE-11A	800380	16mm-5/8"	0.5 – 6.9	2	3	4.5	4.5	4.8
PRE-11B	800381	22mm-7/8"						
PRE-21C	800382	28mm			7.4	11.1	11.1	11.9
PRE-21D	800383	1-1/8"						
PRC-11A	800384	16mm-5/8"	0.5 – 6.9	2	3	4.5	4.5	4.8
PRC-11B	800385	22mm-7/8"						
PRC-21C	800386	28mm			7.4	11.1	11.1	11.9
PRC-21D	800387	1-1/8"						
PRC-21E	800388	35mm-1-3/8"						

Note: Nominal capacities are based on evaporating Temperature +4°C, condensing temperature +38°C and a pressure drop of 1K.

Dimensional Data (mm):



PRC



PRE

Type	Connection Size ODF (inch)	Weight (kg)	Size (mm)				
			A	B	C	D	E
PRE-11A	16mm-5/8"	0.55	245	133	151	83	13
PRE-11B	22mm-7/8"	0.6	245	133	151	83	19
PRE-21C	28mm	1.2	310	145	196	85	25
PRE-21D	1-1/8"	1.2	310	145	196	85	25
PRC-11A	16mm-5/8"	0.55	245	133	151	83	13
PRC-11B	22mm-7/8"	0.6	245	133	151	83	19
PRC-21C	28mm	1.2	321	145	196	85	25
PRC-21D	1-1/8"	1.2	321	145	196	85	25
PRC-21E	35mm-1-3/8"	1.25	321	145	196	85	25

ACK Check Valves

The ACK check valve is a normally closed magnetic check valve that prevents reverse refrigerant flow in liquid lines and compressor discharge lines.

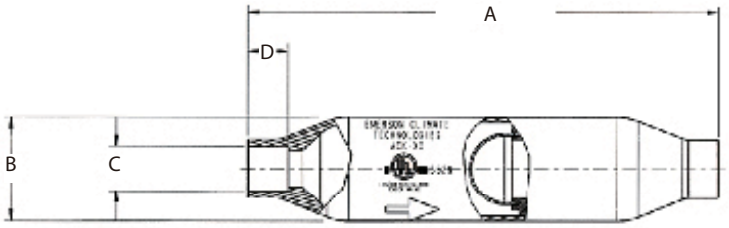
ACK Series

Features

- Copper Connection Sizes 1/4" through 2-5/8"
- Hermetic Spun Copper Design
- Near Zero Internal Leak Rate
- Magnetic Checking Action
- Built-In 30 Mesh Stainless Steel Strainer
- Can Be Installed In Any Position
- UL/CUL File number: SA 5312

Nomenclature:

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



Ordering Information And Dimensional Data (mm):

PCN	Size	Connection Size ODF (inch)	A	B	C	D	Opening Pressure (oz/sq in)	MWP (psig) (bar)	Leak Rate CIM @ 60 psi	Nominal kW R 22 Suction 40°C/0 0.07 (bar)	Nominal kW R 22 Liquid 40°C/0 0.07 (bar)	Cv
064985	ACK-4	1/4	101.6	22.4	6.5	4.8	1.20	55	0.015	1.4	9.1	0.9
064986	ACK-6	3/8			9.6	10.1	1.30			2.1	10.9	1.0
064987	ACK-8	1/2	127.0	28.7	12.8	7.9	3.50	47	0.034	4.2	32.9	3.1
064988	ACK-10	5/8			16.0	12.7				4.9	45.5	3.6
064989	ACK-12	3/4	177.8	41.4	19.2	16.0	3.80	47	0.074	11.6	94.5	8.0
064990	ACK-14	7/8			22.3	10.7				13.0	101.5	9.2
064991	ACK-18	1-1/8	212.9	54.1	28.7	23.9	6.80	47	0.122	21.0	178.5	15.4
064992	ACK-22	1-3/8	238.3	66.8	35.1	26.4	10.20	47	0.172	33.3	276.5	23.8
064993	ACK-26	1-5/8	266.7	79.5	41.4	27.2	11.40	47	0.272	59.5	357.0	24.2
064994	ACK-34	2-1/8	304.8	92.2	54.1	34.0	18.10	47	0.386	105.0	745.5	38.7
064995	ACK-42	2-5/8	330.2	104.9	66.8	38.1	23.00	47	0.512	175.0	1312.5	71.7

BVE/BVS Series Refrigeration Ball Valves

The BVE/BVS series refrigeration ball valves isolate suction, discharge, and liquid line pipework during maintenance shutdown periods.

BVE/BVS Series

Features

- Forged brass body
- Compact, lightweight, hermetic design
- Compatible with HCFC and HFC refrigerants/lubricants including R 410A and CO_2
- Full flow design
- Bi-directional flow characteristics
- Valve stem cap retained by strap attached to main body
- Integrated access port available on all sizes
- Low operating friction design
- Extended tubes: 100% Copper Connections
- Fluid temperature range: -40°C to 120°C
- UL/CUL file number: SA 5312
- Applied Standards EN 12284, EN 378,
- EN12420, PED 97/23/EC, RoHS 2002/95/EC

Nomenclature:

BV	E	014
Ball Valve	Access Valve E = without S = with	Connection Size 1/4"

→

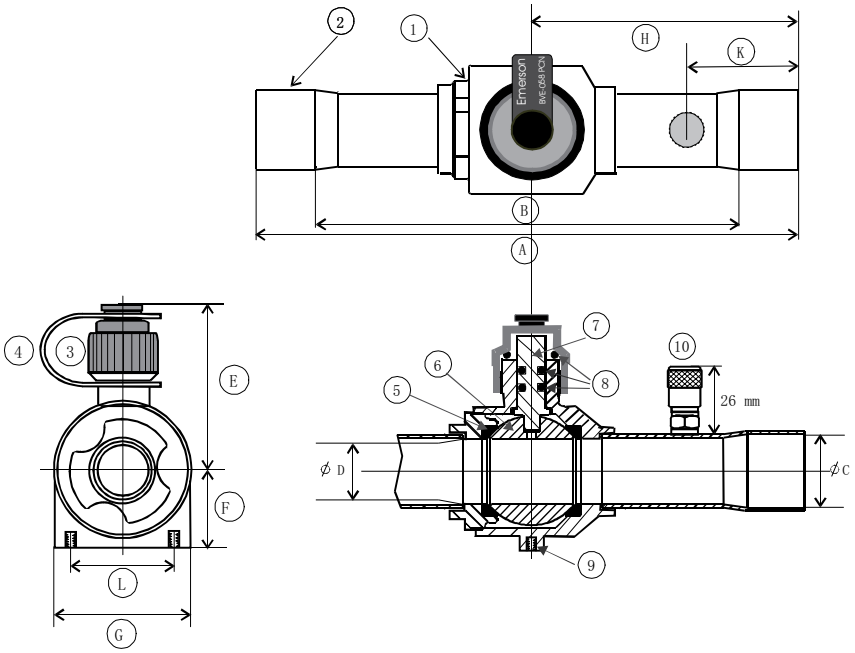
014	1/4"
038	3/8"
012	1/2"
058	5/8"
034	3/4"
078	7/8"
118	1 1/8"
138	1 3/8"
158	1 5/8"
218	2 1/8"
258	2 5/8"
318	3 1/8"

Ordering Information:

Type	
BVE	PCN
BVE-014	806730
BVE-038	806732
BVE-012	806734
BVE-058	806736
BVE-034	806737
BVE-078	806738
BVE-118	806739
BVE-138	806741
BVE-158	806742
BVE-218	806744
BVE-258	806745

Type		Connection Size
BVS	PCN	Inch
BVS-014	806750	1/4"
BVS-038	806752	3/8"
BVS-012	806754	1/2"
BVS-058	806756	5/8"
BVS-034	806757	3/4"
BVS-078	806758	7/8"
BVS-118	806759	1 1/8"
BVS-138	806761	1 3/8"
BVS-158	806762	1 5/8"
BVS-218	806764	2 1/8"
BVS-258	806765	2 5/8"

Dimensional Data (mm):



1 Sealed brass body
2 Copper extension tubes
3 Plastic Stem cap
4 Label strap
5 PTFE seats
6 Chromate brass ball
7 Stem
8 O-Rings
9 Mounting Threads
10 Schrader Conn. (BVS) 7/16-20 UNF-1/4" flare

BVE	Nominal ØC	A	B	D	E	F	G	H	K	L	Thread ⑨	Cap ③	Weight (kg)
BVE/S-014	1/4" ODF	120	104	8	41	14	23	56	26	-	M3	M18	0.36
BVE/S-038	3/8" ODF	118	102					55	25	15			
BVE/S-012	1/2" ODF	127	107	14	45	17	31	61	26	22	M4		0.38
BVE/S-058	5/8" ODF		101										
BVE/S-034	3/4" ODF	157	125	20	49	20	40	77	35	31			0.66
BVE/S-078	7/8" ODF		118										
BVE/S-118	1 1/8" ODF	169	123	25	67	26	51	85	39	38		M27	1.04
BVE/S -138	1-3/8" ODF	231	182	32	72	31	61	116	52	48	M6		1.64
BVE/S-158	1-5/8" ODF	277	220	39	88	37	74	138	60	55		M36	2.43
BVE/S-218	2-1/8" ODF	297	228	50	95	47	93	148	65	74			4.67
BVE/S-258	2-5/8" ODF		222						70				5.54

System Protectors Quick Selector Guide

Hermetic Filter-Driers			
Type	**Filter-Driers**	**Refrigerant**	**Function**
Liquid	EK / EKZ	HCFC, HFC	Premium Universal Replacement
Liquid	BFK / BFKZ	HCFC, HFC	Bi-flow
Suction	ASF	HCFC, HFC	Filter Only
Take-A-Part Filter-Driers			
Type	**Filter-Driers**	**Liquid**	**Suction**
Take-a-part	STAS	Yes	Yes
Take-a-part	ADKS	Yes	Yes
Core			
Type	**Core/Filter**	**Recommended Use**	**Function**
Core	D-48	HCFC	High Acid
Core	H-48/100	HCFC	High Acid and Water Removal
Core	W-48/100HH	HCFC, HFC	Water Removal
Core	F-48/100	HCFC, HFC	Filter Only
Core	UK 48	CFC, HCFC, HFC	Premium Universal Replacement
Moisture Indicator			
Type	**Series**	**Refrigerant**	**Function**
Take-a-part	AMI	HCFC, HFC	High Sensitivity
Hermetic	HMI	HCFC, HFC	High Sensitivity
Take-a-part	A-IHL	HCFC, HFC	High Sensitivity
Suction Accumulator			
Type	**Series**	**Recommended Use**	**Function**
Hermetic	A-AS	HCFC,HFC	Liquid Separation

EK Liquid Line Filter Drier

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 134a, R 22, R 404A, R 407C, R 410A, R 500, and R 507.

EK Series

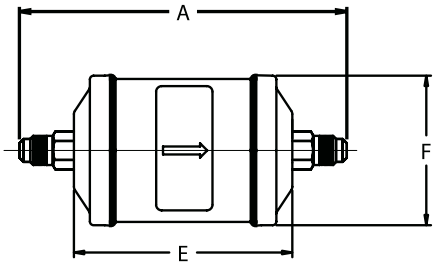
Features

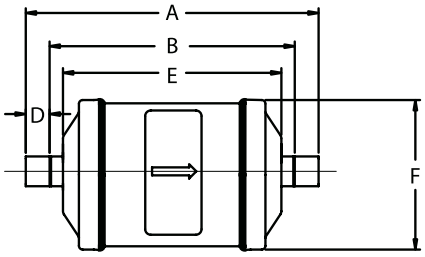
- Filtration first for more effective use of surface area of desiccant
- High moisture and acid removal capacity
- Solid copper connections
- Corrosion resistant epoxy powder paint finish
- Copeland® brand products approved for POE Oils
- Shock resistant steel shell construction
- Filtration: 20 microns
- Maximum working pressure: 47 bar
- UL/CUL file number: SA 3124

Nomenclature:

EK	08	3	S
Drier Series	Unit Size (in^3)	Connection Size (in 1/8")	S = ODF Connections (omit for SAE)

Ordering Information (mm):





PCN	Type	Dimensions (mm)					Weight (kg)
		A	B	D	E	F	
060009	EK 032	111.3	-	-	65.0	41.4	0.2
060012	EK 032S	98.6	79.5	9.7			
060013	EK 033	119.1	-	-			
060014	EK 033S	103.1	81.0	11.2			
047601	EK 052	122.2	-	-	76.2	66.8	0.4
047602	EK 052S	112.8	93.7	9.7			
047603	EK 053	130.3	-	-			
047604	EK 053S	114.3	92.2	11.2			
047605	EK 082	143.0	-	-	96.8		0.6
047606	EK 082S	133.3	114.3	9.7			
047607	EK 083	150.9	-	-			
047608	EK 083S	134.9	112.8	11.2			
047609	EK 084	157.3	-	-			
047610	EK 084S	136.7	111.3	12.7			
047613	EK 163	174.8	-	-	120.7		0.6
047614	EK 163S	158.8	138.2	11.2			
047615	EK 164	179.3	-	-			
047616	EK 164S	160.3	134.9	12.7			
047617	EK 165	190.5	-	-			
047618	EK 165S	166.6	134.9	16.0			
047619	EK 167S	190.5	143.0	19.1			

PCN	Type	Dimensions (mm)					Weight (kg)
		A	B	D	E	F	
048210	EK 303	244.6	-	-	190.5	77.7	1.7
048211	EK 303S	228.6	206.5	11.2			
048212	EK 304	251.0	-	-			
048213	EK 304S	231.9	206.5	12.7			
048214	EK 305	261.9	-	-			
048215	EK 305S	236.5	204.7	16.0			
048216	EK 306S	246.1	214.4				
048217	EK 307S	251.0	212.9	19.1			
048218	EK 309S	260.4	214.4	23.9			
048219	EK 413	247.7	-	-	193.8	93.7	2.2
048220	EK 414	254.0					
048221	EK 414S	235.0	209.6	12.7			
048222	EK 415	265.2	-	-			
048223	EK 415S	239.8	208.0	16.0			
048224	EK 417S	254.0	215.9	19.1			
048225	EK 419S	277.9					
048228	EK 757S	392.2	354.1		331.7		3.4
048229	EK 759S	400.1	352.6	23.9			

Capacity Table:

Type	Connections Inlet/Outlet (inch)	Flow Capacity kW @ 0.07 bar pressure drop[1,3] Unit (kW)				Water Capacity[2] (g)									
						R 134a		R 22		R 407C		R 410A		R 404A / R 507	
		R 134a	R 22/R 410A	R 407C	R 404A/R 507	24°C	52°C	24°C	52°C	24°C	52°C	24°C	52°C	24°C	52°C
EK 032	1/4 SAE	7.0	7.7	7.4	4.9	2.0	1.9	2.0	1.7	1.7	1.3	1.1	1.0	1.9	1.9
EK 032S	1/4 ODF	9.5	10.2	10.2	7.0										
EK 033	3/8 SAE	10.5	11.6	11.2	7.7										
EK 033S	3/8 ODF	10.5	11.6	11.2	7.7										
EK 052	1/4 SAE	7.4	8.1	7.7	5.3	5.8	5.3	5.7	4.9	4.8	3.8	3.2	2.9	5.5	5.3
EK 052S	1/4 ODF	11.6	12.6	12.3	8.4										
EK 053	3/8 SAE	12.3	13.3	13.0	8.8										
EK 053S	3/8 ODF	15.4	16.8	16.5	11.2										
EK 082	1/4 SAE	8.1	8.8	8.4	6.0	11.9	10.9	11.8	10.0	9.8	7.8	8.0	5.9	11.2	10.9
EK 082S	1/4 ODF	10.9	11.9	11.6	7.7										
EK 083	3/8 SAE	14.0	15.1	15.1	10.2										
EK 083S	3/8 ODF	15.8	17.2	16.8	11.6										
EK 084	1/2 SAE	23.5	25.6	24.9	17.2										
EK 084S	1/2 ODF	24.9	27.0	26.3	17.9										
EK 162	1/4 SAE	8.1	8.8	8.4	6.0	18.6	17.1	18.4	15.7	15.3	12.0	10.3	9.3	17.5	17.0
EK 162S	1/4 ODF	10.9	11.9	11.6	7.7										
EK 163	3/8 SAE	13.7	14.7	14.4	9.8										
EK 163S	3/8 ODF	15.4	16.8	16.5	11.2										
EK 164	1/2 SAE	21.4	23.1	22.8	15.1										
EK 164S	1/2 ODF	29.8	32.2	31.5	21.7										
EK 165	5/8 SAE	34.0	36.8	36.1	24.5										
EK 165S	5/8 ODF	35.4	38.2	37.5	25.6										
EK 167S	7/8 ODF	54.3	58.8	57.8	39.2										
EK 303	3/8 SAE	15.1	16.5	16.1	10.9	33.2	30.6	32.9	28.1	27.4	21.7	25.8	17.8	31.4	30.4
EK 303S	3/8 ODF	22.1	23.8	23.5	16.1										
EK 304	1/2 SAE	28.4	30.8	30.1	20.7										
EK 304S	1/2 ODF	35.0	37.8	37.1	25.2										
EK 305	5/8 SAE	37.1	40.3	39.6	27.0										
EK 306S	3/4 ODF	51.8	56.0	55.0	37.5										
EK 307S	7/8 ODF	58.8	63.7	62.7	42.7										
EK 309S	1 1/8 ODF	68.6	74.2	72.8	49.7										

Capacity Table:

Type	Connections Inlet/Outlet (inch)	Flow Capacity kW @ 0.07 bar pressure drop[1,3] Unit (kW)				Water Capacity[2] (g)									
						R 134a		R 22		R 407C		R 410A		R 404A / R 507	
		R 134a	R 22/ R 410A	R 407C	R 404A/ R 507	24ºC	52ºC	24ºC	52ºC	24ºC	52ºC	24ºC	52ºC	24ºC	52ºC
EK 413	3/8 SAE	15.1	16.5	16.1	10.9	46.9	42.7	46.0	39.3	38.3	30.4	35.8	23.3	43.8	42.5
EK 414	1/2 ODF	36.4	39.6	38.9	26.3										
EK 414S	1/2 ODF	37.8	41.0	40.3	27.3										
EK 415	5/8 SAE	42.0	45.5	44.8	30.5										
EK 417S	7/8 ODF	71.1	77.0	75.6	51.5										
EK 419S	1 1/8 ODF	97.0	105.0	102.9	70.4										
EK 757S	7/8 ODF	77.7	84.4	82.6	56.4	108.0	101.0	108.0	94.0	90.5	73.0	73.0	55.6	101.0	101.0
EK 759S	1 1/8 ODF	114.5	123.9	121.8	83.0										

Notes: 1. All ratings in accordance with ARI Standard 710-04. 30°C liquid refrigerant temperature,-15°C saturated vapor temperature.
0.4 kg./min./kW for R 134a
0.4 kg./min./kW for R 22 and R 407C
0.5 kg./min./kW for R 404A / R 507
0.35 kg./min./kW for R 410A
2. Water Capacities are based on Equilibrium Point Dryness (EPD) of:
50 parts per million for R 134a, R 404A / 507, R 410A and R 407C, 60 parts per million for R 22
3. For 0.14 bar pressure drop, multiply values by 1.4

Liquid Refrigerant Holding Capacity (kg):

Type	R 134a		R 22		R 407C		R 410A		R 404A/R 507	
	24ºC	52ºC	24ºC	52ºC	24ºC	52ºC	24ºC	52ºC	24ºC	52ºC
03	0.07	0.06	0.07	0.06	0.07	0.06	0.06	0.05	0.06	0.05
05	0.17	0.15	0.17	0.15	0.16	0.14	0.15	0.12	0.15	0.12
08	0.21	0.19	0.21	0.19	0.20	0.18	0.19	0.16	0.19	0.16
16	0.26	0.24	0.26	0.24	0.25	0.22	0.23	0.20	0.23	0.20
30	0.74	0.67	0.73	0.66	0.70	0.61	0.65	0.55	0.64	0.54
41	1.03	0.93	1.02	0.91	1.00	0.85	0.91	0.76	0.90	0.75
75	1.87	1.69	1.84	1.66	1.76	1.55	1.64	1.39	1.62	1.37

EKZ Liquid Line Filter Drier

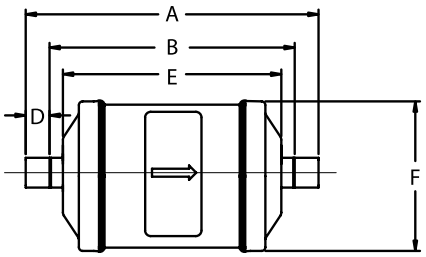
The EK Liquid Line Filter Drier is a premium OEM R 410A Filter Drier with 20 micron filtration for maximum protection.

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^3)	Connection Size (in 1/8")	S = ODF connections

Ordering Information:

Description	Dimensions (inch)					Weight (kg)
	A	B	D	E	F[1]	
EKZ 032S	3.94	3.14	0.35	2.57	1.73	0.23
EKZ 033S	4.03	2.81	0.61			
EKZ 052S	4.41	3.24	0.35	3.00	2.64	0.40
EKZ 0525S	4.19	3.55	0.32			
EKZ 053S	4.45	3.22	0.62			
EKZ 054S	4.50	3.24	0.63			
EKZ 083S	5.26	4.02	0.62	3.80	1.25	
EKZ 084S	5.30	4.04	0.63			
EKZ 085S	5.59	4.32	0.63			
EKZ 163S	6.23	5.43	0.40	4.76	1.50	
EKZ 164S	6.33	5.33	0.50			
EKZ 165S	6.55	5.29	0.63			
EKZ 167S	7.14	5.63	0.75			
EKZ 305S	9.24	7.99	0.63	7.46	3.14	1.70
EKZ 306S	9.65	8.39	0.63			
EKZ 307S	9.82	8.32	0.75			
EKZ 417S	10.04	8.54	0.75	7.68	3.63	2.15
EKZ 419S	10.39	8.58	0.91			

Note: 1. Does not include weld bead

BFK Liquid Line Bi-Directional Filter Drier

The BFK is a solid core, bi-directional, liquid line Filter Drier for heat pump applications for use with CFC, HCFC, and HFC refrigerants.

BFK Series

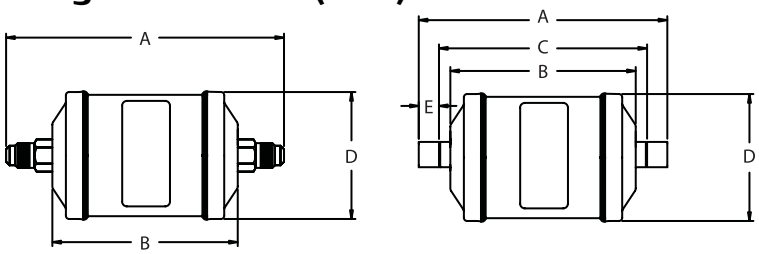
Features

- 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
- 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:

BFK	08	3	S
Series	Unit Size (in^3)	Connection Size (in 1/8")	S = ODF connections (omit for SAE)

Ordering Information (mm):



PCN	Type	Connection Size (inch)	Dimension (mm)					Weight (kg)
			A	B	C	D	E	
062300	BFK-052	1/4 SAE	122.4	76.2	-	66.5	-	0.5
062425	BFK-052S	1/4 ODF	112.8		93.7		9.7	
062254	BFK-053	3/8 SAE	130.3		-		-	
062255	BFK-053S	3/8 ODF	113.8		93.2		10.2	
058597	BFK-0825S	5/16 ODF	127.5	97.0	111.3		8.1	
043321	BFK-083	3/8 SAE	150.9		-		-	
043323	BFK-083S	3/8 ODF	134.4		113.8		10.2	
043325	BFK-084	1/2 SAE	156.5		-		-	
043327	BFK-084S	1/2 ODF	136.7		111.3		12.7	
043728	BFK085	5/8 SAE	168.1		-		-	
043730	BFK-085S	5/8 ODF	142.2		110.5		16.0	
043330	BFK-163	3/8 SAE	171.2	117.1	-	80.0	-	0.9
043333	BFK-163S	3/8 ODF	154.4		134.1		10.2	
043335	BFK-164	1/2 SAE	176.8		-		-	
043337	BFK-164S	1/2 ODF	156.7		131.3		12.7	
043732	BFK-165	5/8 SAE	188.2		-		-	
043734	BFK-165S	5/8 ODF	162.3		130.6		16.0	
058589	BFK-167S	7/8 ODF	177.5	190.5	139.4	80.0	6.4	1.7
063076	BFK303	3/8 SAE	244.6				-	
063077	BFK-303S	3/8 ODF	227.8				10.2	
063078	BFK-304	1/2 SAE	249.9				-	
063079	BFK-304S	1/2 ODF	229.1				12.7	
063080	BFK-305	5/8 SAE	261.9				-	
063081	BFK-305S	5/8 ODF	236.5				16.0	
063082	BFK-306	3/4 SAE	269.5				-	
063083	BFK-306S	3/4 ODF	246.9				16.0	
063084	BFK-307S	7/8 ODF	251.7				19.1	
063451	BFK-309S	1 1/8 ODF	259.6				23.1	

Capacity Table:

Type	Connections (inch)	Flow Capacity kW @ 0.07 bar pressure drop [1,3] Unit (kW)			Water Capacity[2] (g)					
					R 22		R 407C		R 410A	
		R 22	R 410A	R 407C	24ºC	52ºC	24ºC	52ºC	24ºC	52ºC
BFK-052	1/4 SAE	5.6	5.6	5.6	3.7	3.3	2.9	2.1	2.0	1.8
BFK-052S	1/4 ODF	7.7	7.7	7.7						
BFK-053S	3/8 ODF	14.0	14.0	13.7						
BFK-083	3/8 SAE	15.8	15.8	15.4	8.0	7.2	5.3	4.0	4.3	3.8
BFK-083S	3/8 ODF	17.9	17.9	17.5						
BFK-084	1/2 SAE	22.4	22.4	22.1						
BFK-084S	1/2 ODF	23.5	23.5	23.1						
BFK-085S	5/8 ODF	28.4	28.4	27.7						
BFK-163	3/8 SAE	16.1	16.1	15.8	16.2	14.7	11.9	9.0	8.9	8.0
BFK-163S	3/8 ODF	18.2	18.2	17.9						
BFK-164	1/2 SAE	27.0	27.0	26.6						
BFK-164S	1/2 ODF	28.4	28.4	27.7						
BFK-165	5/8 SAE	29.1	29.1	28.4						
BFK-165S	5/8 ODF	30.5	30.5	29.8						
BFK-303S	3/8 ODF	20.3	20.3	20.0	29.3	26.6	22.6	17.3	20.8	14.7
BFK-304	1/2 SAE	26.6	26.6	26.3						
BFK-304S	1/2 ODF	34.0	34.0	33.3						
BFK-305	5/8 SAE	36.1	36.1	35.4						
BFK-305S	5/8 ODF	49.7	49.7	48.7						
BFK-306S	3/4 ODF	56.0	56.0	55.0						
BFK-307S	7/8 ODF	58.5	58.5	57.4						

Notes: 1. All ratings in accordance with ARI Standard 710-04. 30°C liquid refrigerant temperature,-15°C saturated vapor temperature.
0.4 kg./min./kW for R 134a,
0.4 kg./min./kW for R 22 and R 407C,
0.5 kg./min./kW for R 404A/507
0.35 kg./min./kW for R 410A
2. Water Capacities are based on Equilibrium Point Dryness (EPD) of:
50 parts per million for R 134a, R 404A/507, R 410A and R 407C, 60 parts per million for R 22
3. For 0.14 bar pressure drop, Multiply values by 1.4

BFKZ Liquid Line Bi-Directional Filter Drier

The BFK is a solid core, bi-directional, liquid line Filter Drier for OEM heat pump applications optimised 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

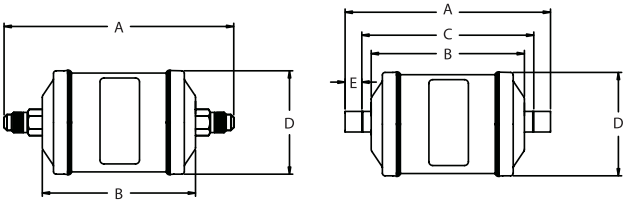
Nomenclature: (example: BFKZ 165S)

BFKZ	16	5	S
Series	Unit Size (in^3)	Connection Size (in 1/8")	S = ODF connections (omit for SAE)

Specifications:

- Dessicant Blend: 100% Molecular Sieve Dessicant optimised for high water capacity
- Filtration: 40 microns
- Maximum working pressure: 680 psig
- UL/CUL file number: SA3124

Dimensional Data (inch):



Order Information:

Description	Connection Size (inch)	Dimension (inch)					Weight (kg)
		A	B	C	D	E	
BFKZ-052	1/4 SAE	4.82	3.0	-	2.64	-	0.4
BFKZ-052S	1/4 ODF	4.15		3.45		0.35	
BFKZ-053	3/8 SAE	5.13		-		-	
BFKZ-053S	3/8 ODF	4.48		3.24		0.62	
BFKZ-054	1/2 SAE	5.36		-		-	
BFKZ-054S	1/2 ODF	4.58		3.58		0.50	
BFKZ-0825S	5/16 ODF	5.02	3.82	4.38		0.32	
BFKZ-083	3/8 SAE	5.94		-		-	
BFKZ-083S	3/8 ODF	5.29		4.48		0.40	
BFKZ-084	1/2 SAE	6.16		-		-	
BFKZ-084S	1/2 ODF	5.38		4.38		0.50	
BFKZ-085	5/8 SAE	6.62		-		-	
BFKZ-085S	5/8 ODF	5.60		4.35		0.63	
BFKZ-163	3/8 SAE	6.74	4.64	-	3.14	-	0.9
BFKZ-163S	3/8 ODF	6.08		5.28		0.40	
BFKZ-164	1/2 SAE	6.96		-		-	
BFKZ-164S	1/2 ODF	6.17		5.17		0.50	
BFKZ-165	5/8 SAE	7.41		-		-	
BFKZ-165S	5/8 ODF	6.39		5.14		0.63	
BFKZ-166S	3/4 ODF	6.86		5.60		0.63	
BFKZ-167S	7/8 ODF	6.99		5.49		0.75	
BFKZ-305	5/8 SAE	10.31	7.50	-	3.63	-	1.7
BFKZ-305S	5/8 ODF	9.26		7.74		0.76	
BFKZ-306S	3/4 ODF	9.68		7.76		0.96	
BFKZ-307S	7/8 ODF	9.91		8.41		0.75	
BFKZ-309S	1 1/8 ODF	10.22		-		0.91	

Liquid Refrigerant Holding Capacity (kg):

Unit Size	R 22		R 407C		R 410A	
	24°C	52°C	24°C	52°C	24°C	52°C
05	130.4	119.1	124.7	110.6	116.2	99.2
08	218.3	195.6	207.0	181.4	195.6	164.4
16	402.6	360.0	382.7	334.5	357.2	300.5
30	595.3	530.1	567.0	493.3	555.7	467.8

BFKZ Capacity Tables:

Description	Connection (inch)	Flow Capacity Tons @ 1 psi ΔP [1,3] (For kW, multiply tons by 3.5)			Water Capacity[2] (g)					
					R 22		R 407C		R 410A	
		R 22	R 410A	R 407C	24°C	52°C	24°C	52°C	24°C	52°C
BFKZ-05 2	1/4 SAE	1.6	1.6	1.6	4.8	4.5	4.8	4.5	4.8	4.5
BFKZ-05 2S	1/4 ODF	2.2	2.2	2.2						
BFKZ-05 3	3/8 SAE	3.5	3.5	3.4						
BFKZ-05 3S	3/8 ODF	4.0	4.0	3.9						
BFKZ-05 4	1/2 SAE	6.0	6.0	5.9						
BFKZ-05 4S	1/2 ODF	6.3	6.3	6.2						
BFKZ-082 5S	5/16 ODF	3.0	3.0	3.0	7.5	7.0	7.5	7.0	7.5	7.0
BFKZ-08 3	3/8 SAE	4.5	4.5	4.4						
BFKZ-08 3S	3/8 ODF	5.1	5.1	5.0						
BFKZ-08 4	1/2 SAE	6.4	6.4	6.3						
BFKZ-08 4S	1/2 ODF	6.7	6.7	6.6						
BFKZ-08 5	5/8 SAE	7.2	7.2	7.0						
BFKZ-08 5S	5/8 ODF	8.1	8.1	7.9						
BFKZ-16 3	3/8 SAE	4.6	4.6	4.5	14.8	14.0	14.8	14.0	14.8	14.0
BFKZ-16 3S	3/8 ODF	5.2	5.2	5.1						
BFKZ-16 4	1/2 SAE	7.7	7.7	7.6						
BFKZ-16 4S	1/2 ODF	8.1	8.1	7.9						
BFKZ-16 5	5/8 SAE	8.3	8.3	8.1						
BFKZ-16 5S	5/8 ODF	8.7	8.7	8.5						
BFKZ-16 6S	3/4 ODF	15.0	15.0	14.7						
BFKZ-16 7S	7/8 ODF	16.0	16.0	15.7						
BFKZ-30 5	5/8 SAE	10.3	10.3	10.1	27.5	27.0	30.5	28.5	30.5	28.5
BFKZ-30 5S	5/8 ODF	14.2	14.2	13.9						
BFKZ-30 6S	3/4 ODF	16.0	16.0	15.7						
BFKZ-30 7S	7/8 ODF	16.7	16.7	16.4						
BKFZ-30 9S	1-1/8 ODF	18.0	18.0	17.5						

Notes: 1. All ratings in accordance with ARI Standard 710-04. 30°C liquid refrigerant temperature,-15°C saturated vapor temperature.
0.4 kg./min./kW for R 134a
0.4 kg./min./kW for R 22 and R 407C
0.5 kg./min./kW for R 404A / R 507
0.35 kg./min./kW for R 410A
2. Water Capacities are based on Equilibrium Point Dryness (EPD) of:
50 parts per million for R 134a, R 404A/507, R 410A and R 407C,
60 parts per million for R 22
3. For 2 PSI ΔP

ASF Suction Line Filters

The ASF is a specifically designed filter to protect the compressor from dirt and all solid contaminants.

Features

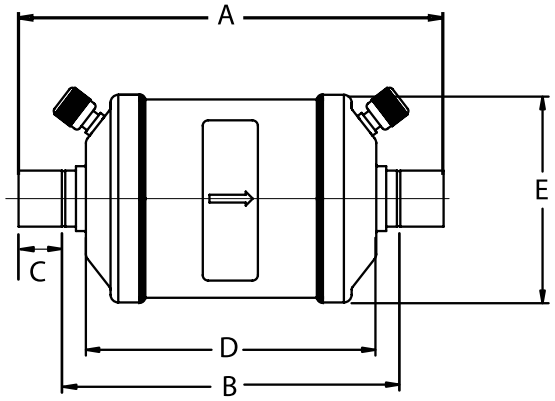
- Dual access valves for easy pressure readings
- Solid copper connections
- Corrosion resistant epoxy powder paint fi nish
- Filtration: 40 microns
- Maximum working pressure: 34.5 bar
- UL/CUL fi le number: SA 3124

ASF Series

Nomenclature:

ASF	35	S	5	VV
Series	(in^3)	Connection Type S= ODF F= SAE	Connection Size (in 1/8")	Dual Access Valves

Dimensional Data And Ordering Information (mm):



PCN	Description	Dimensions (mm)					Weight (kg)
		A	B	C	D	E[1]	
062961	ASF 11S4	111.3	85.9	12.7	73.2	66.8	0.7
062962	ASF 11S5	117.6	85.9	16.0	73.2	66.8	0.7
062963	ASF 28S7	165.1	127.0	19.1	104.9	77.7	0.9
062964	ASF28S9-VV	188.2	142.5	23.1	104.9	77.7	0.9
049177	ASF28S3-VV	142.0	119.9	11.2	104.9	93.7	0.9
049178	ASF28S4-VV	145.0	119.1	12.7	104.9	93.7	0.9
049179	ASF35F5-VV	192.0	-	-	120.7	93.7	1.1
049180	ASF35S5-VV	165.9	134.1	16.0	120.7	93.7	1.1
059999	ASF45F3-VV	195.3	-	-	141.2	93.7	1.4
049181	ASF45S6-VV	196.9	165.1	16.0	141.2	93.7	1.4
049182	ASF45S7-VV	201.7	163.6	19.1	141.2	93.7	1.4
049183	ASF50S9-VV	224.5	178.6	23.1	155.7	127.0	1.6
063113	ASF64S17-VV	298.5	230.1	33.3	193.8	127.0	1.6
063115	ASF64S21-VV	330.2	254.0	38.1	200.2	127.0	1.6
049184	ASF75S11-VV	311.2	261.9	24.6	209.6	127.0	2.3
049185	ASF75S13-VV	308.9	251.7	28.7	209.6	127.0	2.3

Note: 1. Does not include weld bead.

STAS Steel Liquid and Suction Line Filter Drier

The STAS is a replaceable core Filter Drier for CFC, HCFC, and HFC refrigerants for use in large commercial air conditioning and refrigeration systems.

STAS Series

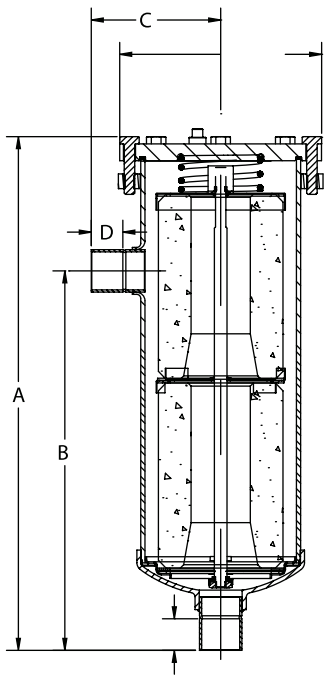
Features

- Slotted cover/unique internal hardware for hassle-free installation
- Full fl ow fi ttings for low pressure drop
- Corrosion resistant epoxy powder paint fi nish
- Sturdy steel shells for long life
- Solid copper connections
- 100 mesh outlet screen
- Filtration (with core): 40 microns
- Maximum working pressure: SV version= 34.5 bar T version = 47 bar
- UL/CUL fi le number: SA7175

Nomenclature:

STAS	48	9	T
Steel Take-Apart Series	Unit Size (in^3)	Connection Size (in 1/8")	System Service T = Liquid Line Service SV = Suction Line Service

Ordering Information And Dimensional Data (mm):



PCN	Description	Size (mm)				Number of 48 in^3 Cores
		A	B	C	D	
053001	STAS-485T	252.5	152.4	96.0	16.0	1
053003	STAS-487T	246.1	158.8	95.3	19.8	
053005	STAS-489T	247.7	160.3	97.5	23.9	
053007	STAS-4811T	249.9	163.6	100.8	23.9	
053043	STAS-4813S-V[1]	251.0	152.9	102.3	28.7	
053044	STAS-4817S-V[1]	255.5	166.6	115.8	34.0	
053045	STAS-4821S-V[1]	265.2	178.6	120.7	26.4	
053375	STAS-4813T	251.0	165.1	102.4	28.7	
053938	STAS-4811SV	250.0	163.6	100.8	23.9	
053010	STAS-967T	385.8	297.7	95.3	19.8	2
053012	STAS-969T	386.6	299.2	97.5	23.9	
053014	STAS-9611T	388.9	302.5	100.8	26.2	
053017	STAS-9613T	390.7	304.0	102.4	28.7	
053018	STAS-9617T	395.2	305.6	115.8	34.0	
053047	STAS-9617S-V[1]	395.2	305.6	115.8	34.0	
053048	STAS-9621S-V[1]	404.9	317.5	120.7	38.1	
059739	STAS-9625 SV	420.1	320.8	138.2	42.2	
053020	STAS-1449T	539.8	441.5	97.5	23.9	3
053022	STAS-14411T	542.0	445.3	100.8	26.2	
053024	STAS-14413T	543.1	446.8	102.4	28.7	
053025	STAS-14417T	547.6	447.8	115.8	34.0	
053028	STAS-19211T	683.5	584.2	100.8	26.2	4
053030	STAS-19213T	684.3	588.5	102.4	28.7	
053031	STAS-19217T	689.1	587.5	115.8	34.0	
056213	STAS-1927/5T	673.1	152.4	93.7	19.8/16.0	

Note: 1. SV style include stainless steel bolts and access valve

Capacity Table:

Type	Connection Size (inch)	Flow Capacity kW @ 0.07 bar pressure drop[1,2] Unit (kW)				
		R 134a	R 22	R 407C	R 404A / R 507	R 410A
STAS-485T	5/8 ODF	66.5	73.5	70.0	49.0	77.0
STAS-487T	7/8ODF	122.5	133.0	129.5	87.5	143.5
STAS-489T	1 1/8ODF	168.0	185.5	178.5	122.5	203.0
STAS-4811T	1 3/8ODF	196.0	213.5	206.5	140.0	280.0
STAS-4813T	1 5/8ODF	273.0	297.5	290.5	196.0	304.5
STAS-967T	7/8ODF	129.5	143.5	140.0	94.5	157.5
STAS-969T	1 1/8ODF	203.0	220.5	213.5	147.0	248.5
STAS-9611T	1 3/8ODF	252.0	276.5	269.5	182.0	301.0
STAS-9613T	1 5/8ODF	273.0	297.5	290.5	196.0	346.5
STAS-1449T	1 1/8ODF	196.0	213.5	206.5	140.0	248.5
STAS-14411T	1 3/8ODF	283.5	308.0	301.0	203.0	346.5
STAS-14413T	1 5/8ODF	311.5	339.5	332.5	224.0	350.0
STAS-14417T	2 1/8ODF	360.5	392.0	381.5	259.0	416.5
STAS-19211T	1 3/8ODF	301.0	329.0	322.0	217.0	353.5
STAS-19213T	1 5/8ODF	332.5	360.5	353.5	238.0	388.5
STAS-19217T	2 1/8ODF	371.0	402.5	392.0	266.0	423.5

Notes: 1. All ratings in accordance with ARI Standard 710-04. 30°C liquid refrigerant temperature,-15°C saturated vapor temperature.
0.4 kg./min./kW for R 134a
0.4 kg./min./kW for R 22 and R 407C
0.5 kg./min./kW for R 404A / R 507
0.35 kg./min./kW for R 410A
2. For 0.14 bar pressure drop, multiply values by 1.4

ADKS Liquid And Suction Line Filter Drier

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

ADKS Series

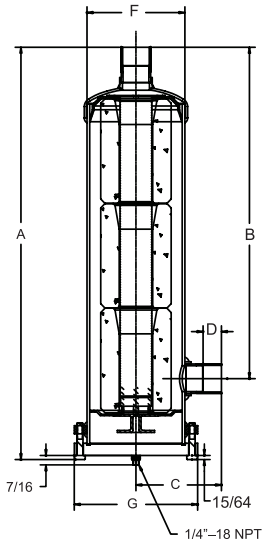
Features

- Full flow fittings for low pressure drop
- Corrosion resistant epoxy powder paint fi nish
- Sturdy steel shells for long life durability
- Filtration (with core): 40 microns
- Maximum working pressure: 34 bar
- UL/CUL fi le number: SA 3124
- Bolt Torque: 48 Nm

Nomenclature:

STAS	300	13	T
Series	Unit Size (in^3)	Connection Size (in 1/8")	T = Tap Access Connection

Dimensional Data and Ordering Information:



PCN	Type	Dimensions (mm)								Number Of 100 in^3 Cores	Weight (kg)
		A	B	C	D	E	F[2]	G	H[1]		
026570	ADKS-30013T	647.7	494.5	106.4	28.7	589.0	152.4	192.0	565.2	3	17.7
037978	ADKS-30017T	650.0	482.6	96.0	42.9						
032105	ADKS-40017T	815.1	647.7	96.0	42.2	761.2			733.6	4	20.9
037570	ADKS-40021T	841.5	678.7	122.2	37.3						

Notes: 1. "H" Dimension is the clearance required to change the internal hardware assembly
T = 1/4" FPT access connection
2. Does not include weld bead

Capacity Table:

Type	Connection Size (inch)	Flow Capacity kW @ 0.07 bar pressure drop [1,2] Unit (kW)			
		R 134a	R 22/R 410A	R 407C	R 404/507
ADKS 30013T	1 5/8 ODF	357.0	385.0	378.0	255.5
ADKS 30017T	2 1/8ODF	518.0	560.0	549.5	374.5
ADKS 40017T	2 1/8ODF	549.5	595.0	584.5	399.0
ADKS 40021T	2 5/8ODF	581.0	630.0	619.5	420.00

Notes: 1. All ratings in accordance with ARI Standard 710-04. 30°C liquid refrigerant temperature,-15°C saturated vapor temperature.
0.4 kg./min./kW for R 134a,
0.4 kg./min./kW for R 22 and R 407C,
0.5 kg./min./kW for R 404A/507
0.35 kg./min./kW for R 410A
2. For 0.14 bar pressure drop, multiply values by 1.4

Filter-Drier Cores And Filters

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.

Cores And Filters

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:

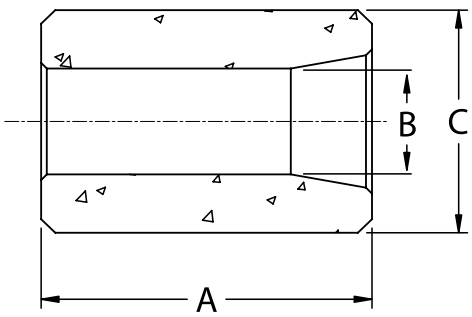
H	48
Series	(in^3)

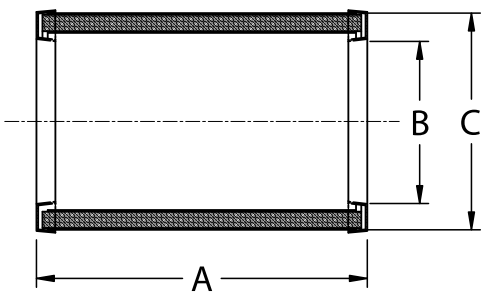
Ordering Information:

PCN	Type	Refrigerant	Function	Water Capacity[1] (g)									
				R 134a		R 22		R 407C		R 404A /R 507		R 410A	
				24ºC	52ºC	24ºC	52ºC	24ºC	52ºC	24ºC	52ºC	24ºC	52ºC
059541	D-48	HCFC	High Acid Removal	20.8	17.0	18.2	12.7	11.3	4.8	22.9	17.2	10.5	4.3
059542	H-48	HCFC	High Acid and Water Removal	33.8	26.9	29.9	21.8	22.3	14.3	36.1	26.8	19.0	11.3
061235	W-48-HH	HCFC, HFC	Burnout Cleanup	19.4	14.7	16.8	11.3	14.5	8.3	20.9	14.5	12.5	6.5
061617	UK-48	CFC, HCFC, HFC	Universal Replacement	1272	1168	1181	1072	1033	786	1319	1241	976	707
089338	H-100	HCFC	High Acid and Water Removal	55.6	41.7	48.1	33.7	36.3	20.9	60.0	42.0	33.6	18.2
043582	W-100-HH	HCFC, HFC	Burnout Cleanup	53.9	40.6	46.9	31.1	31.5	18.2	58.1	39.6	28.7	15.4
089559	F-48	HCFC, HFC	Filter (Suction Only)	-									
095762	F-100	HCFC, HFC	Filter (Suction Only)	-									

Note: 1. Water Capacities are based on Equilibrium Point Dryness (EPD) of:
50 parts per million for R 134a, R 404A/R 410A and R 407C, 60 parts per million for R 22

Dimensional Data (mm):





Filter drier block size	Dimensions (mm)			Weight (kg)
	A	B	C	
42	152.4	40.1	79.2	0.5
48	139.7	45	94.5	0.7
100	165.1	52.3	122.2	2.0

Filter drier block size	Dimensions (mm)			Weight (kg)
	A	B	C	
F48/F48R	140	71.4	98.6	0.3
F100	165	95.3	122.2	0.7

AMI Moisture Indicators

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 following page.

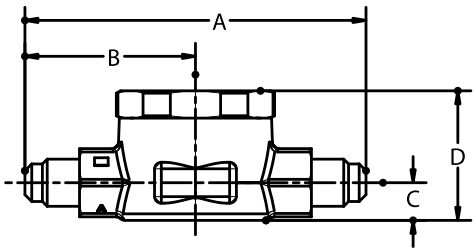
AMI Series

Features

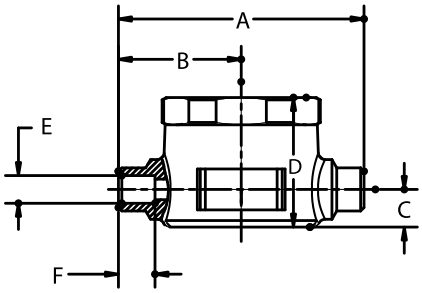
- Highest sensitivity moisture indicator available
- Take-Apart design for easy repair
- Single indicator for all common refrigerants
- Accurate color calibration at low ppm levels and higher temperatures
- Wide angle viewing/high visibility window for ease of monitoring
- Solid copper connections
- Maximum working pressure: 45 bar
- UL/CUL file number: SA 9566

Nomenclature: AMI 1SS4

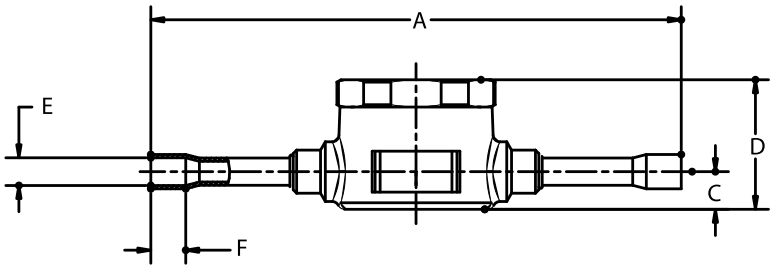
AMI	1	TT	4
Moisture Indicator Series	Design Series 1 = standard connection 2 = bushing style	Connection Style TT = TUBE STUB x TUBE STUB	Connection Size (in 1/8")



"MM" Male Flare x Male Flare



"SS" SWEAT x SWEAT



Type "TT" TUBE STUB x TUBE STUB

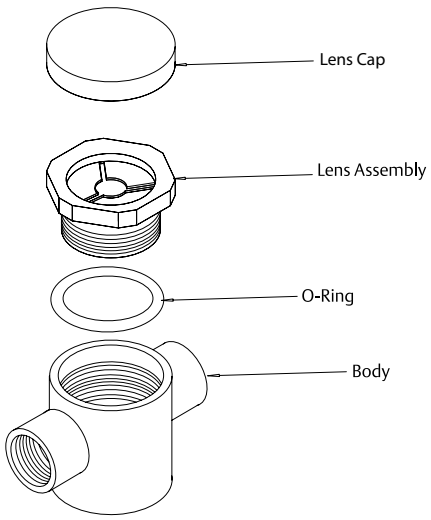
Ordering Information And Dimensional Data (mm):

PCN	Description	Connection Type	Connection Size (inch)	A	B	C	D	E
048803	AMI-1MM2	MALE FLARE x MALE FLARE	1/4	79.5	39.6	8.6	30.2	-
048804	AMI-1MM3	MALE FLARE x MALE FLARE	3/8	85.9	42.9			-
048805	AMI-1MM4	MALE FLARE x MALE FLARE	1/2	92.2	46.0	11.9	36.6	-
048806	AMI-1MM5	MALE FLARE x MALE FLARE	5/8	98.6	49.3			-
048811	AMI-1SS2	ODF Connection	1/4	57.2	28.7	8.6	46.0	7.9
048812	AMI-1SS3	ODF Connection	3/8					
048813	AMI-1SS4	ODF Connection	1/2	66.8	33.3	11.9	36.6	9.7
048814	AMI-1SS5	ODF Connection	5/8					12.7

PCN	Description	Connection Type	Connection Size (inch)	A	B	C	D	E
048815	AMI-1SS7	ODF Connection	7/8	79.5	39.6	15.5	44.5	19.1
048816	AMI-1SS9	ODF Connection	1-1/8	85.9	42.9	17.0	48.8	22.4
047298	AMI-1TT2	ODF Connection	1/4	124.2	-	8.6	20.6	7.9
042771	AMI-1TT3	ODF Connection	3/8		-			
022302	AMI-1TT4	ODF Connection	1/2	125.0	-	11.9	36.6	9.7
031136	AMI-1TT5	ODF Connection	5/8	124.7	-			12.7
031357	AMI-1TT7	ODF Connection	7/8	161.5	-	15.5	44.5	19.1
031578	AMI-1TT9	ODF Connection	1-1/8	160.0	-	17.0	48.8	22.4
060255	AMI-1TT11	ODF Connection	1-3/8	176.3	-	25.4	60.5	16.8

Replacement Parts For AMI:

PCN	Part	Type
021371	Lenscap	12740-1
020877	"O" Ring	PS1525-2
027511	Lens Assembly (Consists of lens assembly, lens cap and "O" Ring)	X12978-1



Moisture Content Color Code (ppm H_2O):

Indication Liquid Temperature	Dry (Dark Blue)			Caution (Purple)			Wet (Salmon)		
	24ºC	38ºC	52ºC	24ºC	38ºC	52ºC	24ºC	38ºC	52ºC
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

HMI-Hermetic Moisture Indicators

The HMI is designed to provide an accurate method of determining the moisture content of a system's refrigerant. The HMI has a unique high accuracy moisture indicator for CFC, HCFC, and HFC refrigerants.

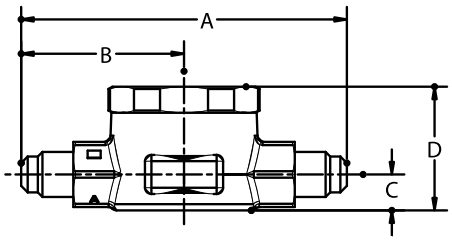
HMI Series

Features

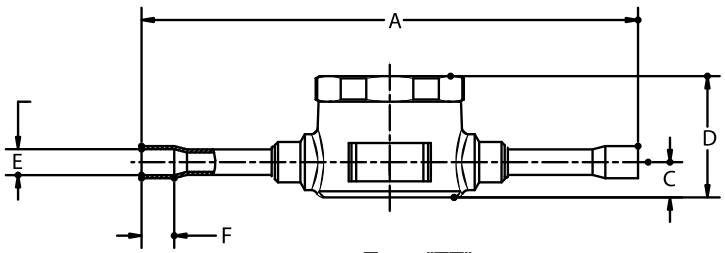
- Highest sensitivity moisture indicator available
- Hermetic, leak-free construction
- Single indicator for all common refrigerants
- Accurate color calibration at low ppm levels and higher temperatures
- Wide angle viewing/high visibility window for ease of monitoring
- All brass corrosion resistant body for fewer leaks
- Solid copper connections
- Maximum working pressure: 47 bar
- UL/CUL fi le number: SA 9566

Nomenclature:

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



Type "MM"
MALE FLARE x MALE FLARE



Type "TT"
TUBE STUB x TUBE STUB

Ordering Information And Dimensional Data (mm):

PCN	Description	Connection Type	Connection Size (inch)	A	B	C	D	E	F MIN
065391	HMI-1MM2	TYPE "MM" MALE FLARE X MALE FLARE	1/4	79.5	39.6	8.6	23.9	-	-
065392	HMI-1MM3		3/8	85.9	42.9	8.6	23.9		
065393	HMI-1MM4		1/2	91.9	46.0	11.9	30.2		
065394	HMI-1MM5		5/8	98.6	49.3	11.9	30.2		
065395	HMI-1MM6		3/4	127.0	63.5	15.0	38.9		
065405	HMI1-1TT2	ODF TUBE STUB X TUBE STUB	1/4	141.2	-	8.6	23.9	6.4	9.7
065406	HMI1-1TT3		3/8	142.7		8.6	23.9	9.7	10.2
065407	HMI1-1TT4		1/2	149.4		11.9	30.2	12.7	12.7
065408	HMI1-1TT5		5/8	149.4		15.5	38.1	16.0	16.0
065409	HMI1-1TT6		3/4	166.6		15.5	38.1	19.1	16.0
065410	HMI1-1TT7		7/8	160.3		15.5	42.5	22.4	19.1
065411	HMI1-1TT9		1 1/8	167.4		17.0	42.5	28.7	22.9

Moisture Content Color Code (ppm H_2O):

Indication Liquid Temperature	Dry (Dark Blue)			Caution (Purple)			Wet (Salmon)		
	24ºC	38ºC	52ºC	24ºC	38ºC	52ºC	24ºC	38ºC	52ºC
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

A-IHL Moisture Indicators

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

A-IHL Series

Specifications:

- Maximum working pressure: 500 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 (inch)	Overall Length (inch)
060853	A-IHL-9S	1 1/8 ODF	6.31
061030	A-IHL-11S	1 1/8 ODF	7.12
061031	A-IHL-13S	1 5/8 ODF	7.87
061032	A-IHL-17S	2 1/8 ODF	8.68
060973	A-IHL-21S	2 5/8 ODF	9.45

A-AS Suction Accumulators

The A-AS protects the compressor from liquid slugging and is used with CFC, HCFC, and HFC refrigerants. It is available for systems through 28 tons nominal capacity.

A-AS Series

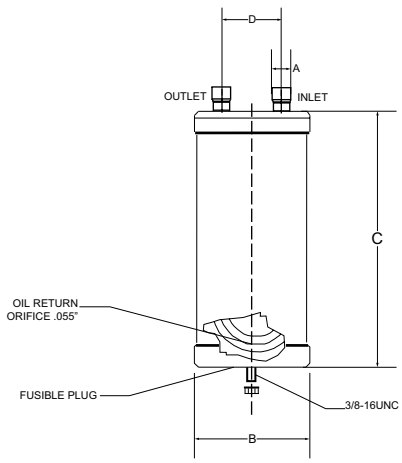
Features

- Designed to operate in a range of -40 to ~ +4°C 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

Nomenclature example: A-AS 3 125

A	AS	3	12	5
Series	Accumulator Suction	Diameter (inch)	Height (inch)	Fitting Size (in 1/8")

Dimensional Data (mm):



Specifications:

- Maximum working pressure: 300 psig
- Fusible plug temperature: 221°C

Ordering Information (mm):

SZ PCN	Description	A Fitting Size nominal (inch)	B Diameter	C Height	D Fitting Separation	Weight (kg)	R 22 4°C (kW)	Holding Capacity (kg) 50% Full	
								4°C Liquid R 22/R 134a	4°C Liquid R 404A/R 507
016254	A-AS 384[1]	1/2	76.2	203.2	41.4	0.91	7.0	0.68	0.68
016256	A-AS 3105[1]	5/8	76.2	254.0	41.4	1.09	10.5	0.91	0.91
016257	A-AS 3125[1]	5/8	76.2	304.8	41.4	1.32	10.5	1.36	1.14
016258	A-AS 3126[1]	3/4	76.2	304.8	41.4	1.32	14.0	1.36	1.14
016259	A-AS 3145[1]	5/8	76.2	381.0	41.4	1.50	10.5	1.59	1.36
016260	A-AS 3146[1]	3/4	76.2	355.6	41.4	1.50	14.0	1.59	1.25
016261	A-AS 464	1/2	101.6	152.4	63.5	1.27	7.0	1.14	0.91
016262	A-AS 465	5/8	101.6	152.4	63.5	1.27	10.5	1.14	0.91
016263	A-AS 4105	5/8	101.6	254.0	63.5	2.09	10.5	1.82	1.59
016264	A AS 4106	3/4	101.6	254.0	63.5	2.09	14.0	1.82	1.59
016265	A AS 596	3/4	127.0	228.6	69.9	2.32	14.0	2.72	2.50
016266	A-AS 597	7/8	127.0	228.6	69.9	2.32	25.6	2.72	2.50
016267	A-AS 5126	3/4	127.0	304.8	69.9	3.00	14.0	3.63	3.41
016268	A-AS 5127	7/8	127.0	304.8	69.9	3.00	25.6	3.63	3.41
016269	A-AS 5137	7/8	127.0	330.2	69.9	3.22	25.6	3.86	3.63
016270	A-AS 5139	1-1/8	127.0	330.2	69.9	3.22	41.3	3.86	3.63
016271	A-AS 5179	1-1/8	127.0	431.8	69.9	3.81	41.3	5.45	4.54
016272	A-AS 51711	1-3/8	127.0	431.8	69.9	3.81	65.8	5.45	4.54
016273	A-AS 6117	7/8	152.4	279.4	74.7	4.54	25.6	4.54	4.09
016274	A-AS 6137	7/8	152.4	330.2	74.7	5.31	25.6	5.83	5.22
016275	A-AS 6139	1-1/8	152.4	330.2	74.7	5.31	41.3	5.83	5.22
016276	A-AS 61411	1-3/8	152.4	355.6	74.7	5.49	65.8	6.38	5.71
016277	A-AS 61713	1-5/8	152.4	431.8	74.7	6.99	99.8	7.86	7.03
016279	A-AS 62013	1-5/8	152.4	508.0	74.7	8.22	99.8	9.36	8.37
016281	A-AS 62513	1-5/8	152.4	635.0	74.7	10.26	99.8	11.72	10.48

Note: 1. Not supplied with a fusible plug

Filter-Drier Extended Capacity Tables

Type	Flow Capacity (kW) Suction Line								
	R 134a				R 404A / R 507				
	Evaporator Temperature (°C)								
	4	-7	-18	-29	4	-7	-18	-29	-40
	Pressure Drop (bar)								
	0.14	0.11	0.07	0.04	0.21	0.14	0.11	0.07	0.04
ASF 28S3-VV	4.2	2.8	1.8	1.4	6.7	4.2	2.5	1.4	0.7
ASF 28S4-VV	7.0	4.6	3.2	2.5	11.6	7.0	4.6	2.5	1.4
ASF 35F5-VV	8.1	5.3	3.5	2.8	13.3	8.1	5.3	3.2	1.4
ASF 35S5-VV	11.6	7.7	5.3	4.2	18.6	11.2	7.4	4.2	2.1
ASF 45S6-VV	16.8	10.9	7.7	5.6	27.7	16.8	10.5	6.3	3.2
ASF 45S7-VV	23.5	16.5	10.9	6.0	34.0	20.7	13.0	7.7	3.9
ASF 50S9-VV	33.3	23.5	15.1	8.1	53.6	32.6	20.7	12.3	6.0
ASF 64S17-V	91.0	63.0	42.0	22.4	115.5	70.4	44.5	26.3	12.6
ASF 75S11-VV	42.0	30.5	19.6	10.5	45.2	27.3	17.5	10.2	4.9
ASF 75S13-VV	49.0	33.3	22.1	11.9	67.6	41.3	26.3	15.4	7.4

Type	Flow Capacity (kW) Suction Line														
	R 22					R 407C					R 410A				
	Evaporator Temperature (°C)														
	4	-7	-18	-29	-40	4	-7	-18	-29	-40	4	-7	-18	-29	-40
	Pressure Drop (bar)														
	0.21	0.14	0.11	0.07	0.04	0.21	0.14	0.11	0.07	0.04	0.21	0.14	0.11	0.07	0.04
ASF 28S3-VV	8.4	4.6	3.2	2.5	1.8	9.5	5.3	3.9	3.2	2.5	5.6	3.2	2.1	1.8	1.1
ASF 28S4-VV	14.4	8.1	5.6	4.2	3.2	16.1	9.1	6.7	5.3	4.2	9.8	5.6	3.9	2.8	2.1
ASF 35F5-VV	16.5	9.1	6.3	4.6	3.5	18.2	10.5	7.7	5.6	4.6	11.2	6.3	4.2	3.2	2.5
ASF 35S5-VV	23.1	13.0	9.1	6.7	5.6	25.6	14.7	10.9	8.1	7.4	15.8	8.8	6.3	4.6	3.5
ASF 45S6-VV	34.3	19.3	13.0	9.5	7.7	38.5	22.1	15.8	11.6	10.5	23.5	13.3	8.8	6.3	4.9
ASF 45S7-VV	42.0	28.0	19.6	12.6	10.5	45.5	32.2	23.8	15.4	14.0	28.7	19.3	13.3	8.4	7.0
ASF 50S9-VV	66.5	42.0	28.7	17.2	9.1	73.5	49.0	34.7	21.0	12.3	45.5	28.7	19.6	11.6	6.0
ASF 64S17-V	144.0	94.5	66.5	42.0	24.2	161.0	108.5	80.5	52.5	32.6	98.0	66.5	45.5	28.0	15.8
ASF 75S11-VV	56.0	52.5	38.5	23.5	11.6	63.0	59.5	45.5	29.1	15.4	38.5	35.0	26.3	15.8	7.7
ASF 75S13-VV	84.0	52.5	35.0	22.8	11.2	94.5	59.5	42.0	28.0	15.1	56.0	35.0	23.8	15.1	7.4

Type	Filter-Drier Cartridge	Flow Capacity (kW) Suction Line			
		R 134a			
		Evaporator Temperature (°C)			
		4	-7	-18	-29
		Pressure Drop (bar)			
		0.14	0.11	0.07	0.04
ADKS 30013T	F-100 (3 pieces)	87.5	59.5	38.5	21.7
ADKS 30017T	F-100 (3 pieces)	150.5	105.0	66.5	38.5
ADKS 40017T	F-100 (4 pieces)	157.5	108.5	70.0	38.5
ADKS 40021T	F-100 (4 pieces)	238.0	164.5	105.0	59.5
ADKS 30013T	100 Cubic Inch (3 pieces)	70.0	49.0	30.5	17.2
ADKS 30017T	100 Cubic Inch (3 pieces)	108.5	77.0	49.0	27.0
ADKS 40017T	100 Cubic Inch (4 pieces)	119.0	80.5	52.5	29.4
ADKS 40021T	100 Cubic Inch (4 pieces)	171.5	119.0	77.0	42.0
STAS-489 S-V	F-48 (1 piece)	45.5	28.0	17.5	7.0
STAS-4811S-V	F-48 (1 piece)	52.5	35.0	21.0	10.5
STAS-4813 S-V	F-48 (1 piece)	70.0	42.0	24.5	14.0
STAS-4817 S-V	F-48 (1 piece)	87.5	52.5	35.0	17.5
STAS-4821S-V	F-48 (1 piece)	105.0	70.0	45.5	21.0
STAS-9617 S-V	F-48 (2 pieces)	98.0	63.0	35.0	17.5
STAS-9621 S-V	F-48 (2 pieces)	133.0	87.5	52.5	24.5
STAS-489 S-V	48 Cubic Inch (1 piece)	28.0	21.0	14.0	3.5
STAS-4811S-V	48 Cubic Inch (1 piece)	35.0	24.5	14.0	7.0
STAS-4813 S-V	48 Cubic Inch (1 piece)	45.5	28.0	17.5	10.5
STAS-4817 S-V	48 Cubic Inch (1 piece)	59.5	35.0	24.5	14.0
STAS-4821S-V	48 Cubic Inch (1 piece)	70.0	45.5	28.0	14.0
STAS-9617 S-V	48 Cubic Inch (2 pieces)	63.0	42.0	21.0	14.0
STAS-9621 S-V	48 Cubic Inch (2 pieces)	87.5	59.5	35.0	17.5

Type	Filter-Drier Cartridge	Flow Capacity (kW) Suction Line									
		R 22					R 407C				
		Evaporator Temperature (°C)									
		4	-7	-18	-29	-40	4	-7	-18	-29	-40
		Pressure Drop (bar)									
		0.21	0.14	0.11	0.07	0.04	0.21	0.14	0.11	0.07	0.04
ADKS 30013T	F-100 (3 pieces)	157.5	105.0	70.0	45.5	24.5	175.0	119.0	84.0	56.0	32.9
ADKS 30017T	F-100 (3 pieces)	269.5	175.0	122.5	77.0	42.0	301.0	199.5	147.0	94.5	56.0
ADKS 40017T	F-100 (4 pieces)	280.0	185.5	129.5	80.5	45.5	311.5	213.5	157.5	98.0	59.5
ADKS 40021T	F-100 (4 pieces)	427.0	280.0	192.5	119.0	66.5	476.0	322.0	231.0	147.0	87.5
ADKS 30013T	100 Cubic Inch (3 pieces)	122.5	80.5	56.0	35.0	19.3	136.5	91.0	66.5	42.0	25.9
ADKS 30017T	100 Cubic Inch (3 pieces)	196.0	129.5	87.5	56.0	30.8	217.0	147.0	105.0	70.0	42.0
ADKS 40017T	100 Cubic Inch (4 pieces)	213.5	140.0	94.5	59.5	33.3	234.5	161.0	115.5	73.5	45.5
ADKS 40021T	100 Cubic Inch (4 pieces)	308.0	203.0	140.0	87.5	49.0	343.0	234.5	168.0	108.5	66.5
STAS-489 S-V	F-48 (1 piece)	77.0	49.0	35.0	21.0	7.0	84.0	56.0	42.0	24.5	10.5
STAS-4811S-V	F-48 (1 piece)	98.0	59.5	42.0	24.5	10.5	108.5	66.5	49.0	31.5	14.0
STAS-4813 S-V	F-48 (1 piece)	122.5	70.0	52.5	28.0	14.0	136.5	80.5	63.0	35.0	17.5
STAS-4817 S-V	F-48 (1 piece)	164.5	105.0	70.0	35.0	17.5	182.0	119.0	84.0	42.0	24.5
STAS-4821S-V	F-48 (1 piece)	210.0	140.0	87.5	52.5	24.5	234.5	161.0	105.0	66.5	31.5
STAS-9617 S-V	F-48 (2 pieces)	175.0	105.0	70.0	42.0	21.0	196.0	119.0	84.0	52.5	28.0
STAS-9621 S-V	F-48 (2 pieces)	245.0	150.5	98.0	59.5	28.0	273.0	171.5	119.0	73.5	38.5
STAS-489 S-V	48 Cubic Inch (1 piece)	52.5	31.5	24.5	14.0	3.5	59.5	35.0	28.0	17.5	3.5
STAS-4811S-V	48 Cubic Inch (1 piece)	63.0	38.5	28.0	17.5	7.0	70.0	45.5	35.0	21.0	10.5
STAS-4813 S-V	48 Cubic Inch (1 piece)	80.5	45.5	35.0	21.0	10.5	91.0	52.5	42.0	24.5	14.0
STAS-4817 S-V	48 Cubic Inch (1 piece)	108.5	70.0	45.5	24.5	10.5	122.5	80.5	56.0	31.5	14.0
STAS-4821S-V	48 Cubic Inch (1 piece)	140.0	94.5	59.5	35.0	17.5	157.5	108.5	73.5	42.0	24.5
STAS-9617 S-V	48 Cubic Inch (2 pieces)	115.5	70.0	45.5	28.0	14.0	129.5	80.5	56.0	35.0	17.5
STAS-9621 S-V	48 Cubic Inch (2 pieces)	164.5	98.0	63.0	38.5	21.0	182.0	112.0	77.0	49.0	28.0

Type	Filter-Drier Cartridge	Flow Capacity (kW) Suction Line									
		R 404A / R 507					R 410A				
		Evaporator Temperature (°C)									
		4	-7	-18	-29	-40	4	-7	-18	-29	-40
		Pressure Drop (bar)									
		0.21	0.14	0.11	0.07	0.04	0.21	0.14	0.11	0.07	0.04
ADKS 30013T	F-100 (3 pieces)	129.5	84.0	56.0	35.0	19.3	-	-	-	-	-
ADKS 30017T	F-100 (3 pieces)	217.0	140.0	94.5	63.0	32.9	-	-	-	-	-
ADKS 40017T	F-100 (4 pieces)	231.0	150.5	101.5	63.0	34.3	-	-	-	-	-
ADKS 40021T	F-100 (4 pieces)	346.5	224.0	150.5	98.0	52.5	-	-	-	-	-
ADKS 30013T	100 Cubic Inch (3 pieces)	101.5	66.5	45.5	28.0	15.1	-	-	-	-	-
ADKS 30017T	100 Cubic Inch (3 pieces)	161.0	105.0	70.0	45.5	23.8	-	-	-	-	-
ADKS 40017T	100 Cubic Inch (4 pieces)	171.5	112.0	77.0	49.0	25.9	-	-	-	-	-
ADKS 40021T	100 Cubic Inch (4 pieces)	252.0	164.5	112.0	70.0	38.5	-	-	-	-	-
STAS-489 S-V	F-48 (1 piece)	70.0	42.0	28.0	17.5	10.5	94.5	59.5	42.0	25.9	8.8
STAS-4811S-V	F-48 (1 piece)	52.5	52.5	35.0	21.0	14.0	119.0	73.5	52.5	30.1	13.0
STAS-4813 S-V	F-48 (1 piece)	105.0	63.0	38.5	24.5	17.5	150.5	84.0	63.0	34.3	17.2
STAS-4817 S-V	F-48 (1 piece)	140.0	87.5	52.5	31.5	24.5	199.5	126.0	84.0	42.0	21.7
STAS-4821S-V	F-48 (1 piece)	192.5	105.0	70.0	42.0	28.0	255.5	168.0	105.0	63.0	30.1
STAS-9617 S-V	F-48 (2 pieces)	140.0	87.5	52.5	35.0	24.5	213.5	126.0	84.0	52.5	25.9
STAS-9621 S-V	F-48 (2 pieces)	210.0	122.5	87.5	52.5	35.0	297.5	182.0	119.0	73.5	34.7
STAS-489 S-V	48 Cubic Inch (1 piece)	45.5	28.0	21.0	14.0	7.0	63.0	38.5	29.8	17.2	4.2
STAS-4811S-V	48 Cubic Inch (1 piece)	59.5	35.0	21.0	14.0	10.5	77.0	45.5	34.0	21.4	8.8
STAS-4813 S-V	48 Cubic Inch (1 piece)	70.0	42.0	24.5	17.5	14.0	98.0	56.0	42.0	25.9	13.0
STAS-4817 S-V	48 Cubic Inch (1 piece)	94.5	59.5	35.0	21.0	17.5	133.0	84.0	56.0	30.1	13.0
STAS-4821S-V	48 Cubic Inch (1 piece)	129.5	70.0	45.5	28.0	21.0	171.5	115.5	73.5	42.0	21.7
STAS-9617 S-V	48 Cubic Inch (2 pieces)	94.5	59.5	38.5	24.5	17.5	140.0	84.0	56.0	34.3	17.2
STAS-9621 S-V	48 Cubic Inch (2 pieces)	140.0	80.5	59.5	35.0	24.5	199.5	119.0	77.0	49.0	25.9

A-AS Suction Accumulator Capacity Tables in Tons of Refrigeration

Description	R 134a					R 404A/R 507				
	-40°C	-29°C	-18°C	-7°C	4°C	-40°C	-29°C	-18°C	-7°C	4°C
A-AS 3 84	0.20	0.30	0.60	0.80	1.20	0.20	0.40	0.80	1.00	1.30
A-AS 3 105	0.30	0.50	0.80	1.20	1.70	0.40	0.60	1.20	1.60	2.00
A-AS 3 125	0.30	0.50	0.80	1.20	1.70	0.40	0.60	1.20	1.60	2.00
A-AS 3 126	0.40	0.60	1.00	1.60	2.30	0.40	0.70	1.50	2.00	2.60
A-AS 3 145	0.30	0.50	0.80	1.20	1.70	0.40	0.60	1.20	1.60	2.00
A-AS 3 146	0.40	0.60	1.00	1.60	2.30	0.40	0.70	1.50	2.00	2.60
A-AS 4 64	0.20	0.30	0.60	0.80	1.20	0.20	0.40	0.80	1.00	1.30
A-AS 4 65	0.30	0.50	0.80	1.20	1.70	0.40	0.60	1.20	1.60	2.00
A-AS 4 105	0.30	0.50	0.80	1.20	1.70	0.40	0.60	1.20	1.60	2.00
A-AS 4 106	0.40	0.60	1.00	1.60	2.30	0.40	0.70	1.50	2.00	2.60
A-AS 5 96	0.40	0.60	1.00	1.60	2.30	0.40	0.70	1.50	2.00	2.60
A-AS 5 97	0.70	1.10	1.80	2.80	4.00	0.80	1.30	2.70	3.60	4.60
A-AS 5 126	0.40	0.60	1.00	1.60	2.30	0.40	0.70	1.50	2.00	2.60
A-AS 5 127	0.70	1.10	1.80	2.80	4.00	0.80	1.30	2.70	3.60	4.60
A-AS 5 137	0.70	1.10	1.80	2.80	4.00	0.80	1.30	2.70	3.60	4.60
A-AS 5 139	1.30	2.00	3.10	5.00	7.20	1.40	2.10	4.40	5.90	7.60
A-AS 5 179	1.90	3.00	3.10	5.00	7.20	1.40	2.10	4.40	5.90	7.60
A-AS 5 1711	1.90	3.00	4.60	7.30	10.70	2.20	3.40	7.20	9.60	12.20
A-AS 6 117	0.70	1.10	1.80	2.80	4.00	0.80	1.30	2.70	3.60	4.60
A-AS 6 137	0.70	1.10	1.80	2.80	4.00	0.80	1.30	2.70	3.60	4.60
A-AS 6 139	1.30	2.00	3.10	5.00	7.20	1.40	2.10	4.40	5.90	7.60
A-AS 6 1411	1.90	3.00	4.60	7.30	10.70	2.20	3.40	7.20	9.60	12.20
A-AS 6 1713	3.00	4.80	7.30	11.70	17.00	3.30	5.10	10.70	14.20	18.20
A-AS 6 2013	3.00	4.80	7.30	11.70	17.00	3.30	5.10	10.70	14.20	18.20
A-AS 6 2513	3.00	4.80	7.30	11.70	17.00	3.30	5.10	10.70	14.20	18.20

Description	R 22					R 502				
	-40°C	-29°C	-18°C	-7°C	4°C	-40°C	-29°C	-18°C	-7°C	4°C
A-AS 3 84	0.40	0.60	0.90	1.40	2.00	0.30	0.50	0.80	1.30	1.80
A-AS 3 105	0.50	0.80	1.40	2.10	3.00	0.50	0.80	1.20	1.90	2.70
A-AS 3 125	0.50	0.80	1.40	2.10	3.00	0.50	0.80	1.20	1.90	2.70
A-AS 3 126	0.72	1.10	1.80	2.80	4.00	0.60	1.00	1.60	2.50	3.50
A-AS 3 145	0.50	0.80	1.40	2.10	3.00	0.60	0.80	1.20	1.90	2.70
A-AS 3 146	0.72	1.10	1.80	2.80	4.00	0.60	1.00	1.60	2.50	3.50
A-AS 4 64	0.40	0.60	0.90	1.40	2.00	0.30	0.50	0.80	1.30	1.80
A-AS 4 65	0.50	0.80	1.40	2.10	3.00	0.50	0.80	1.20	1.90	2.70
A-AS 4 105	0.50	0.80	1.40	2.10	3.00	0.50	0.80	1.20	1.90	2.70
A-AS 4 106	0.72	1.10	1.80	2.80	4.00	0.60	1.00	1.60	2.50	3.50
A-AS 5 96	0.72	1.10	1.80	2.80	4.00	0.60	1.00	1.60	2.50	3.50
A-AS 5 97	1.30	2.00	3.30	5.10	7.30	1.10	1.70	2.80	4.30	6.20
A-AS 5 126	0.72	1.10	1.80	2.80	4.00	0.60	1.00	1.60	2.50	3.50
A-AS 5 127	1.30	2.00	3.30	5.10	7.30	1.10	1.70	2.80	4.30	6.20
A-AS 5 137	1.30	2.00	3.30	5.10	7.30	1.10	1.70	2.80	4.30	6.20
A-AS 5 139	2.10	3.30	5.30	8.30	11.80	1.90	2.90	4.60	7.10	10.20
A-AS 5 179	2.10	3.30	5.30	8.30	11.80	1.90	2.90	4.60	7.10	10.20
A-AS 5 1711	3.40	5.30	8.50	13.20	18.80	3.00	4.60	7.40	11.60	16.50
A-AS 6 117	1.30	2.00	3.30	5.10	7.30	1.10	1.70	2.80	4.30	6.20
A-AS 6 137	1.30	2.00	3.30	5.10	7.30	1.10	1.70	2.80	4.30	6.20
A-AS 6 139	2.10	3.30	5.30	8.30	11.80	1.90	2.90	4.60	7.10	10.20
A-AS 6 1411	3.40	5.30	8.50	13.20	18.80	3.00	4.60	7.40	11.60	16.50
A-AS 6 1713	5.10	8.00	12.80	20.00	28.50	4.40	6.90	11.00	17.20	24.50
A-AS 6 2013	5.10	8.00	12.80	20.00	28.50	4.40	6.90	11.00	17.20	24.50
A-AS 6 2513			12.80	20.80	28.50	4.40	6.90	11.00	17.20	24.50

Notes: 1. The maximum capacity in tons recommended is based on a pressure drop through the accumulator equivalent to 0.6°C.
2. 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.
3. All of the data is based on tons of refrigeration and is not related to horsepower.
4. Minimum evaporator temperature of -40°C. Minimum temperature of the suction gas through the accumulator is -11°C.

Oil Controls Quick Selector Guide

Description	Type	Cooling Capacity (kW) R 22, 4°C	MAX Working Pressure (bar)
A-W	Hermetic	7.1 - 106	31.0
A-F	Take-a-part	7.1 - 106	31.0
A-WC	Hermetic	28 - 84	41.0
A-FC	Take-a-part	74 - 445	31.0
A-WZ	Hermetic	10.9 - 98.5	41.0
AOR	Hermetic		31.0
OMB	Electrical		44.0
W-OLC	Mechanical		31.0
Universal Test Kit			

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.

A-F Series

Features

- Hermetic welded or accessible bolted flange construction
- Solid copper connections
- Corrosion resistant epoxy powder paint
- Maximum working pressure: 31 bar
- UL/CUL file number: SA10468

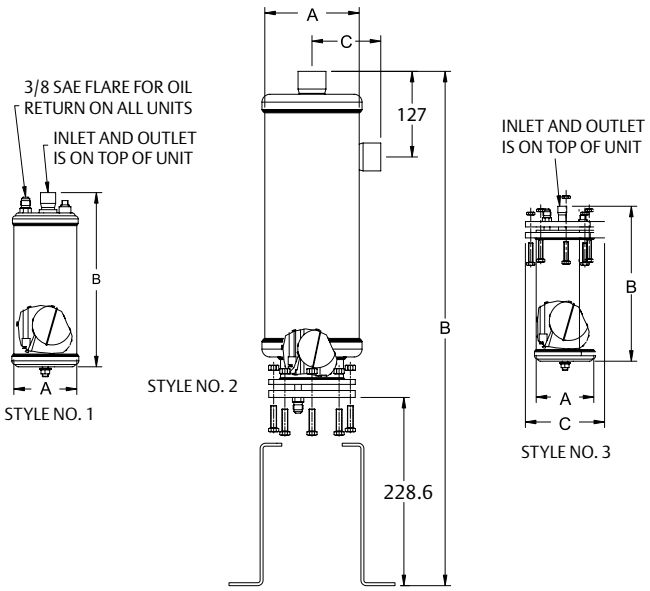
Nomenclature:

A	W	5582	4
Series	W = Welded F = Flanged	Model Number	Connection Size (in 1/8")

Ordering Information And Capacity Table:

Size				R 22 / R 407C		R 134a		R 404A / R 507		Oil Pre-charge Amount (ml)
Description	PCN	Description	PCN	-40ºC	4ºC	-40ºC	4ºC	-40ºC	4ºC	
				kW	kW	kW	kW	kW	kW	
A-F 58824	060877	A-W 55824	060933	5.3	7.1	3.5	6.2	5.3	7.0	500
A-F 58855	060878	A-W 55855	060934	15.9	19.5	11.5	15.9	14.2	19.0	
A-F 58877	060879	A-W 55877	060931	24.8	28.3	16.8	23.0	23.0	30.0	
A-F 58889	060759	A-W 55889	060974	31.9	37.2	23.0	30.1	30.1	38.0	
A-F 589011	060760	A-W 559011	060930	40.7	47.8	28.3	40.7	37.2	49.0	
A-F 589213	060761	A-W 559213	060975	49.6	62.0	33.6	46.9	49.6	60.0	
–	–	A-W 569011	060978	45.8	49.8	33.4	48.2	38.7	66.9	600
A-F 579213	060875	A-W 569213	060979	56.6	63.7	41.6	56.6	62.0	81.0	
A-F 579417	060876	A-W 569417	060980	88.5	106.0	63.7	89.4	92.0	121.0	

Dimensional Data (mm):



A-W Series Dimensional Data (mm):

Description	Size	Connection Size (inch)	A	B
A-W 55824	1	1/2 ODF	101.6	273.1
A-W 55855		5/8 ODF		335.3
A-W 55877		7/8 ODF		381.0
A-W 55889		1-1/8 ODF		412.8
A-W 559011		1-3/8 ODF		495.3
A-W 569011		1-3/8 ODF	152.4	400.0
A-W 569213		1-5/8 ODF		482.6
A-W 569417		2-1/8 ODF		495.3

A-F Series Dimensional Data (mm):

Description	Size	Connection Size(inch)	A	B	C
A-F 58824	3	1/2 ODF	101.6	266.7	139.7
A-F 58855		5/8 ODF		381.0	
A-F 58877		7/8 ODF		457.2	
A-F 58889		1-1/8 ODF		539.8	
A-F 589011		1-3/8 ODF		542.8	
A-F 589213		1-5/8 ODF		552.5	
A-F 579213	2	1-5/8 ODF	152.4	511.0	111.0
A-F 579417		2-1/8 ODF		515.9	117.6

A-WC/A-FC High Efficiency Centrifugal Oil

A-WC/A-FC for multiple compressor racks for supermarkets and air conditioning.

- Systems with long refrigerant lines
- Systems with inherent oil return problems
- Ultra-low temperature systems
- For use with CFCs, HCFCs, HFCs and their lubricants

A-FC Series

Features

- Internal Oil collection screen.
- Hermetic welded or accessible bolted flange construction.
- Solid steel connections.
- Corrosion resistant epoxy powder paint.
- High efficiency (99%) centrifugal separation. Maximum working pressure:
  - A-FC : 31 bar
  - A-WC: 41 bar
- CUL. Listed (SA 8547)

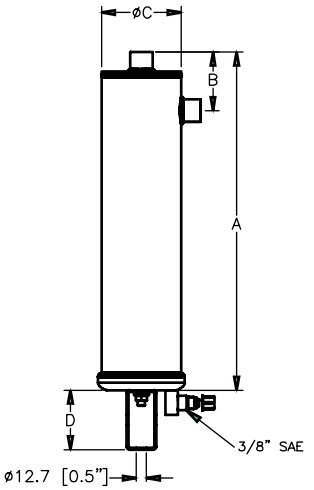
Nomenclature:

A	F	C	8	24	17	17	H
Series	W = Welded F = Flanged	Centrifugal	Diameter (inch)	(inch)	Inlet connection (in 1/8")	Inlet connection (in 1/8")	5" legs standard H=10" legs

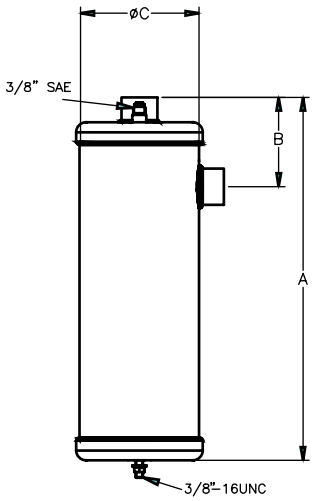
Ordering Information And Capacity Table

PCN	Type	Connection Size ODF (inch)	Style Number	Shell O.D. (inch)	Cooling Capacity kW								Pre- Charge Amount (ml)
					R 134a		R 22 / R 407C		R 404A / R 507		R 410A		
					-40°C	+4°C	-40°C	+4°C	-40°C	+4°C	-40°C	+4°C	
065895	A-WC 41777	7/8	1	4	16	19	25	28	22	29	38	43	450
065896	A-WC 41999	1-1/8			19	23	29	33	26	34	45	50	
066094	A-WC 6181111	1-3/8	2	6	30	37	46	53	41	54	71	80	750
066095	A-WC 6181313	1-5/8			42	51	65	74	58	76	100	112	
066096	A-WC 6181717	2-1/8			48	58	74	84	66	87	114	129	
065930	A-FC 6221111	1-3/8	3		42	51	65	74	58	76	-		
065931	A-FC 6221111H												
065362	A-FC 6221313	1-5/8			48	58	74	84	66	87			
065932	A-FC 6221313H												
065933	A-FC 6221717	2-1/8			50	61	77	88	69	91			
065934	A-FC 6221717H												
065276	A-FC 8241717		4	8	80	97	124	140	110	145			
065935	A-FC 8241717H												
065936	A-FC 10272121	2-5/8		10	159	195	248	280	220	290			
065937	A-FC 10272121H												
065938	A-FC 12302525H	3-1/8		12	253	309	393	445	349	469			

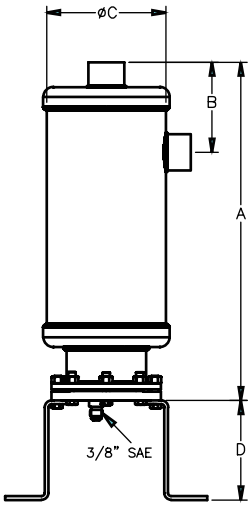
Dimensional Data (mm):



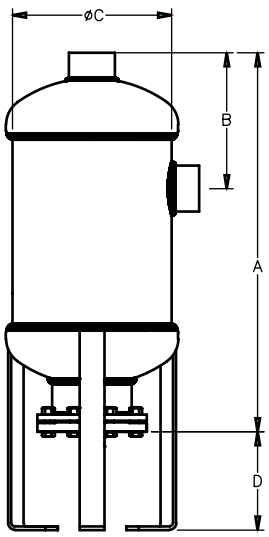
Style 1



Style 2



Style 3



Style 4

Part number	Type number	Connection Size (inch)	Dimensions (mm)			
			A	B	C	D
A-WC 41777	1	7/8	432.1	75.0	101.6	–
A-WC 41999		1-1/8	483.1	78.0		
A-WC 6181111	2	1-3/8	463.7	102.8	152.4	
A-WC 6181313		1-5/8		117.7		
A-WC 6181717		2-1/8	466.8	120.9		
A-FC 6221111	3	1-3/8	466.8	100.1	152.4	127.0
A-FC 6221111H						254.0
A-FC 6221313		1-5/8		115.1		127.0
A-FC 6221313H						254.0
A-FC 6221717		2-1/8	435.1	118.1		127.0
A-FC 6221717H						254.0
A-FC 8241717	4		484.1	173.5	203.2	127.0
A-FC 8241717H						254.0
A-FC 10272121		2-5/8	561.3	155.2	254.0	127.0
A-FC 10272121H						254.0
A-FC 12302525H		3-1/8	637.5	179.1	304.8	

A-WZ Oil Separators (R 410A)

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.

A-WZ Series

Features

- Hermetic welded construction
- Nickel plated steel connections
- Corrosion resistant epoxy powder paint
- Maximum working pressure: 41 bar
- UL/CUL fi le number: SA8547
- CE marked per PED 97/23EC

Nomenclature:

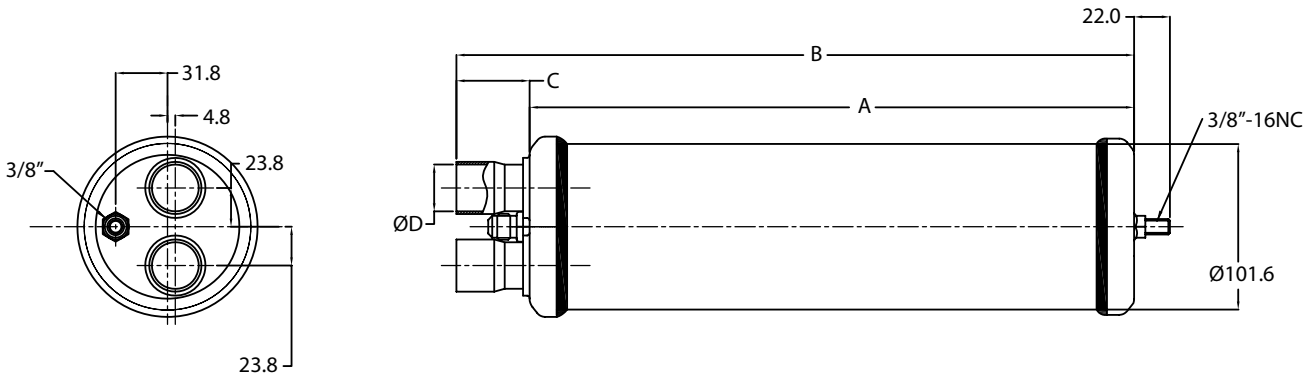
A	WZ	5582	4
Series	W = Welded	Model Number	Connection Size (in 1/8")

Ordering Information And Capacity Table:

Description	Solder Connection Size (ODF) (inch)	PCN	Shell OD (mm)	Lenght (mm)	R 410A		Oil Pre-charge Amount (ml)
					-40°C	4°C	
					kW	kW	
A-WZ 55824	1/2	066135	101.6	276.4	9.5	10.9	500
A-WZ 55855	5/8	066136		338.1	26.0	29.5	
A-WZ 55877	7/8	066137		384.3	38.7	42.2	
A-WZ 55889	1 1/8	066138		416.1	52.8	59.8	
A-WZ 559011	1 3/8	066139		498.6	66.8	73.9	
A-WZ 56909	1 1/8	066140	152.4	393.7	63.3	70.3	600
A-WZ 569011	1 3/8	066141		400.0	66.8	73.9	
A-WZ 56929	1 1/8	066142		469.9	63.3	73.9	
A-WZ 569213	1 5/8	066143		469.9	84.4	98.5	

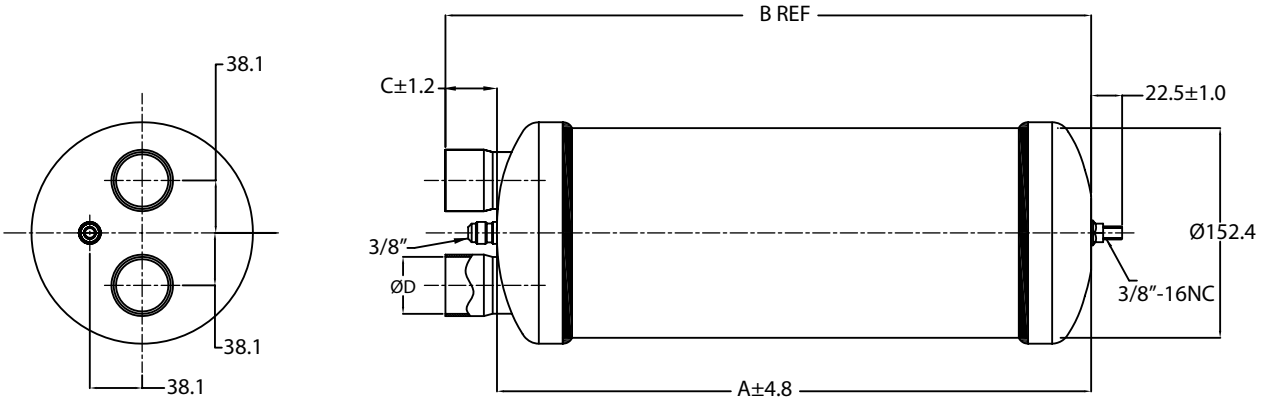
Dimensional Data:

4 inch Oil Separator Dimensional Data (mm):



No	Description	PCN	A	B	C	D (inch)
1	A-WZ-55824	066135	251.5	276.9	24.8	1/2
2	A-WZ-55855	066136	300.0	338.0	38.3	5/8
3	A-WZ-55877	066137	347.5	384.2	36.7	7/8
4	A-WZ-55889	066138	371.5	415.8	44.9	1 1/8
5	A-WZ-559011	066139	451.7	498.3	47.8	1 3/8

6 Inch Oil Separator Dimensional Data (mm):



No.	Description	PCN	A	B	C	D
1	A-WZ-56909	066140	355.6	393.0	38.9	1 1/8"
2	A-WZ-569011	066141	355.6	399.0	44.5	1 3/8"
3	A-WZ-56929	066142	431.8	369.2	38.9	1 1/8"
4	A-WZ-569213	066143	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.

AOR Series

Features

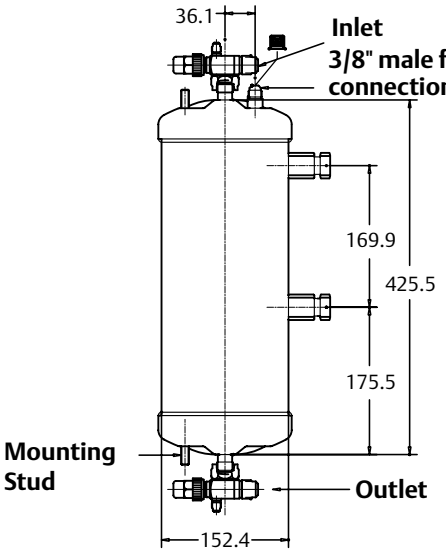
- Two sight glasses with floating ball indicators - 2 gallon model
- Three sight glasses with floating ball indicators
  - 4 gallon model
- 3/8" flare rotolock valves on top and bottom
- Corrosion resistant epoxy powder paint finish
- Standard mounting stud 3/8 x 16 TPI
- Maximum working pressure: 31 bar
- UL/CUL file number: SA8547

Nomenclature:

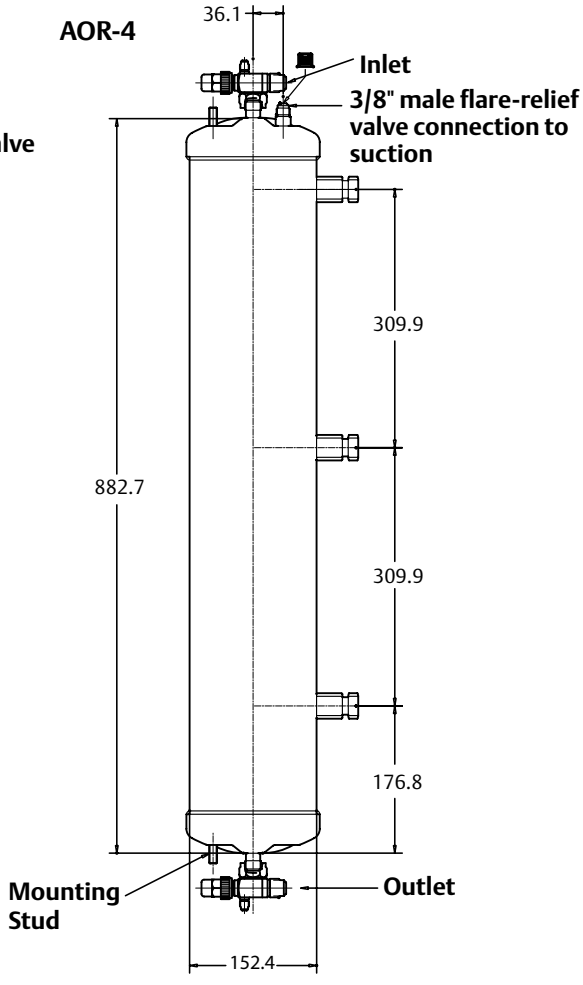
AOR	3
Series	Gallons (1 gallon= 3.8 l)

PCN	Description	Total Volume gallons	A Level Volume (gals)	B Level Volume (gals)	Length (mm)	Number of sight glasses
064950	AOR - 2	2	3/4	1 - 2/3	508.0	2
065981	AOR - 3	3	2/3	2 - 2/3	787.4	3
065283	AOR - 3.5	3.5	2/3	2 - 2/3	787.4	2
064951	AOR - 4	4	1-1/2	3 - 3/4	965.2	3

AOR-2



AOR-4



OMB Crankcase Oil Level Protective Control

The OMB is a compressor crankcase oil level protective control ideal for use with Copeland Scroll® models ZF, ZB, ZR and ZS. It is also recommended for Copeland® brand products, Carlyle, Bitzer, and other semi-hermetic compressors.

OMB Series

Specifications

- Maximum working pressure: 44 bar
- Solenoid MOPD: 24 bar
- Supply voltage: 24 V AC, 50/60 Hz
- Solenoid coil: ASC 2L 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 @ 220 VAC 50/60 Hz
- Refrigerant compatibility: HFC, HCFC, CFC
- Oil temperature: 82°C Max.
- Storage and transport temperature: 60°C Max.
- Operating ambient temperature: 50°C Max.
- Oil supply fitting: 1/4" Male SAE
- UL/CUL file number: SA8547
- Transformer VA requirements: 25 VA[1]

Features

- Precision oil level measurement for maximum protection
- Easy monitoring with alarm and status lights
- Foam resistant design prevents nuisance trips unlike optical sensor designs
- Contaminant proof operation ensures accurate control
- Only approved oil level control for Copeland Scroll®

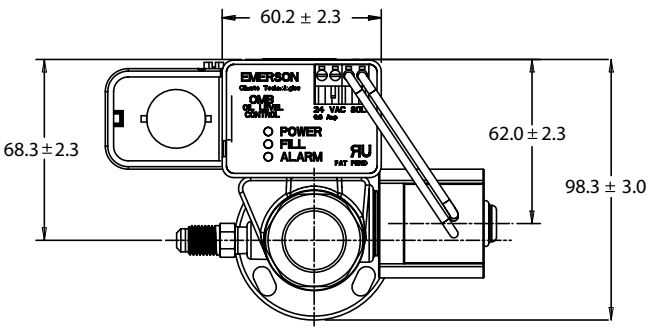
Nomenclature:

OMB	JB1	ASC 2 24 50/60
Oil Management Control	JB1 - Junction Box MO1 - Series Relief Connector	Solenoid Coil Model Number Voltage, Frequency (Included)

Ordering Information:

PCN	Description
	Oil Management Control
065365	OMB-JB1 ASC 2 24/50-60 - STD
065366	OMB-MO1 ASC 2 24/50-60 - STD
	Adapters
065668	OMB-ACA Adapter(3/4"x 14 NPTF)
065667	OMB-ACB Adapter (1-1/8" x 12 UNF)
066077	OMB-ACD Adapter (1-1/4" x 12 UNF)
066078	OMB-ACE Adapter (1-3/4" x 12 UNF)
-	OMB-AUA Adapter
	Service parts
048638	Inlet Flare Screen
020877	Sight Glass O-Ring
064812	Mounting O-Rings (3 pieces)
049191	KS-30112 Solenoid Repair Kit

Dimensional Data (mm):



Notes: 1. Field supplied transformer should always be of the same primary voltage as the electrical supply system.
2. Unit must be mounted horizontally for correct operation.

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.

W-OLC Series

Features

- Corrosion resistant epoxy powder paint finish
- Universal mounting pattern for standard semihermetic Compressors
- Maximum working pressure: 31 bar
- UL/CUL file number: SA8547

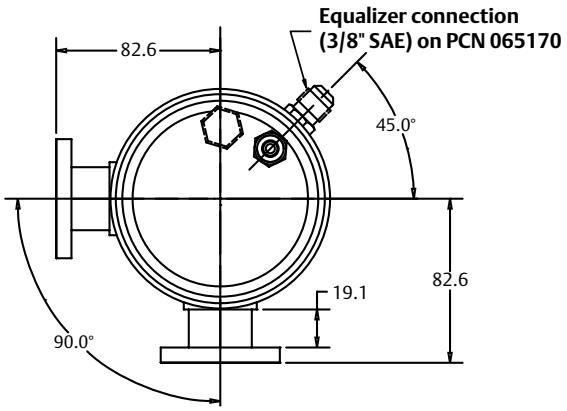
Nomenclature:

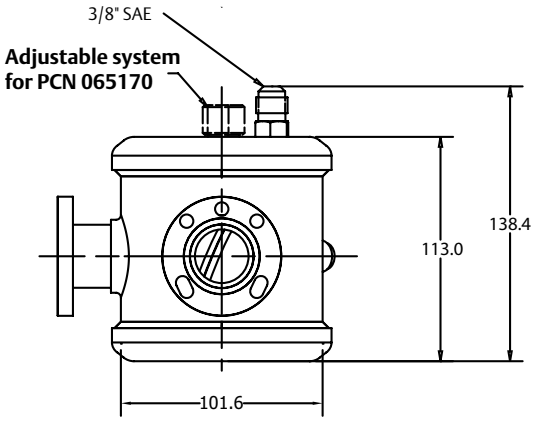
W-OLC	2-4
Series	2 = 1/2, 4 = 1/4, 2 -4 = adjustable

Ordering Information And Size :

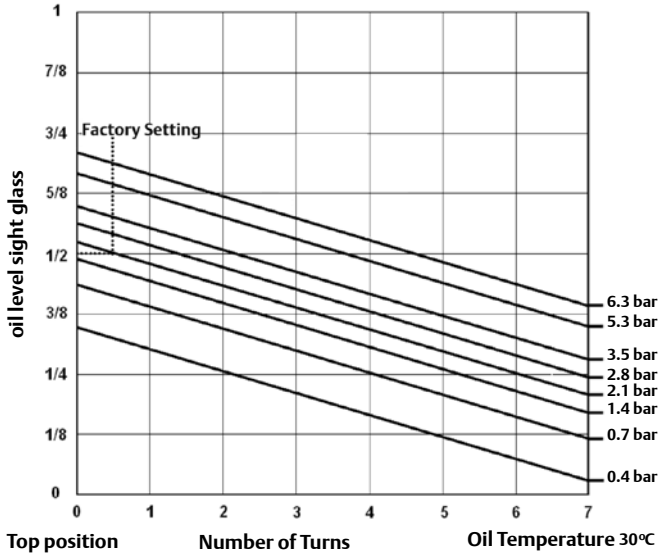
PCN	Description	Sight Glass Level
064953	W-OLC-2	1/2 Sight Glass
064954	W-OLC-4	1/4 Sight Glass
065170	W-OLC-2-4	1/4- 1/2 Level (Adjustable)

Dimensional Data (mm):





W-OLC-2-4 Oil Level Chart



Note: Data obtained using POE lubricant at 30 C with a 1 inch diameter sight glass.

Universal Acid Test Kit

The Universal Acid Alert Test Kit provides a reliable indication as to the acid level of the refrigeration oil.

Features

- Features
- Quick and easy test kit
- Universal acid test kit for use with all refrigeration lubricants
- By changing the percentage of oil sample taken, the acid number of the oil can be accurately determined
- Phase separation of the chemicals eliminates interference from discolored oil

Ordering Information And Size :

PCN	Description
064427	AA Kit Universal

Pressure Controllers Quick Selector Guide

Series	Selection Criteria					
	Design	Number of Contacts (SPDT)	Adjustable	Protection	Rated Operational Current at 230V AC	
					Inductive Amp. AC15	Motor Rating
PS1	Single Pressure Switch	1	Yes	IP44	10A	24A
PS2	Dual Pressure Switch	2	Yes	IP44	10A	24A
FD113	Differential Pressure Switch	2	Yes	IP30	3A	0.1A

Electronic Fan Speed Controller

Type	Function	Features	Main Application
FSY	Fan Regulator	Small Capacity	Condensing Fan Speed Regulator
FSP	Fan Regulator	Large Capacity	Condensing Fan Speed Regulator

PS1/PS2 Series Control

PS1 and PS2 Pressure Controls are designed for use on high and low pressure applications in refrigeration and heat pump systems. By operating a set of electrical contacts, pressure is kept inside a certain limit.

PS1 Series

PS2 Series

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 wire seal
- 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
- Single switch and dual switch models available

Nomenclature:

PS1	A	3	A
Adjustable single Pressure Control	Function A= Automatic Reset B= External Manual Reset EN12263 R= External Manual Reset S= Internal Manual Reset EN12263 U= R→A Convertible W= Automatic Reset DIN/EN12263	Pressure Range 1 = -0.75 ~ 3 bar 2 = -0.8 ~ 1.5 bar 3 = -0.5 ~ 7 bar 4 = 1 ~ 20 bar 5 = 6 ~ 31 bar	Connection type A = 7/16" -20 UNF male flare K=1 flare nut with 1 meter cap tube 7/16"-20 UNF L=1/4" ODM solder with 1 meter cap tube. U= 6mm ODF, 80mm X=1/4" ODF, 80mm

PS2	L	7	A
Dual Pressure Switch	Function A= Both sides: Automatic Reset B= Both Sides: External Manual Reset EN12263 L= Left Side: Automatic reset. Right Side: External manual reset R= Both sides: External Manual Reset S= Both sides: Internal Manual Reset EN12263 U=Both sides: R→A Convertible W= Both Sides: Automatic Reset DIN/EN12263	Pressure Range 7 = Left -0.5 ~ 7 bar Right 6 ~ 31 bar 8 = Left 6 ~ 31 bar Right 6 ~ 31 bar 9 = left -0.75 ~ 3 bar right 6 ~ 31 bar	Connection type A=7/16" -20 UNF male flare K= 1 flare nut with 1 meter cap tube 7/16"-20 UNF L=1/4" ODM solder with 1 meter cap tube. U= 6mm ODF solder , 80mm X=1/4" ODF solder 80mm

Technical Data PS1/PS2:

Environmental Conditions

Ambient Temperatures Storage and Transportation Operation	 -50 °C to +70 °C -50 °C to +70 °C
Medium Temperature Range at Pressure Connector TS:	-50 °C to +70 °C
Driver Supply Voltage:	Recommended: 24 VDC
Dust and Water Protection EN 60529/IEC 529:	IP44 Control mounted flush against the wall
Phase Current (Operating):	EX4/EX5/EX6: 500mA±10% EX7: 750mA ±10% EX8: 800mA ±10%
Vibration Resistance:	4g @ 10 ~ 1000 Hz

Materials and Compatibility

Housing Materials Cover: Frame:	 Polycarbonate (PC) Steel, yellow chromed
Materials with Medium Contact Pressure Conn. (A)/Belows: Pressure Conn. (C)/Belows: Pressure Conn. (K, L)/Belows:	 brass/bronze stainless steel/steel copper/bronze
Medium Compatibility	HFC, HCFC

Note: PS1/PS2 are not released for use with flammable refrigerants.

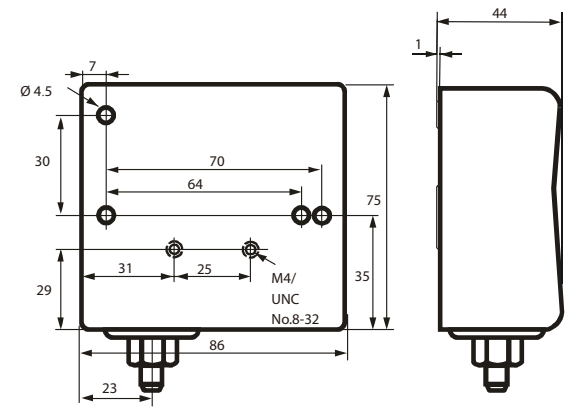
Electrical Contacts

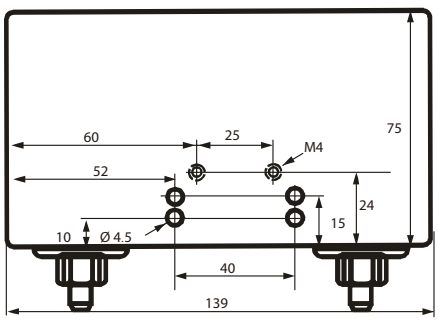
Type of Contacts -PS1: -PS2:	 1 x SPDT contact 2 x SPDT contact
Type of Contacts - standard: - options:	 Cu Ag3 gold plated contacts
Heating Load (AC1)	24A/230V AC
Inductive Load (AC15)	10A/230V AC
Inductive Load (DC13)	0.1A/230V DC 3A/24V DC 6A/12V DC
Motor Rating UL (FLA)	24A/120/240V AC
Locked Rotor UL (LRA) / Startup (AC3)	144A/120/240V AC

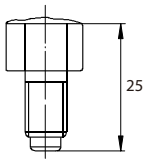
Approvals

EN 12263 (TUV) Required by DIN 8901 and DIN 8975	specific models (approved pending)
Low Voltage Directive 73/23/EWG 93/68/EWG:	all models (CE - Label)
Germanic Lloyd:	standard models when used with marine cable glands (accessory)
UL / CSA:	all models

Dimensions And Drawings (mm):

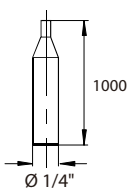






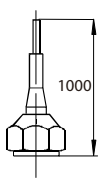
A

7/16"-20UNF



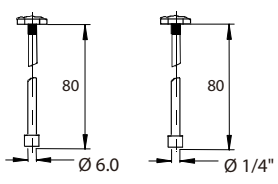
L

1/4" Soldier tube



K

1 m capillary tube



U / X

6 mm or 1/4" ODF Solder tube

Ordering Information:

Single Pressure Controls PS1

Type	PCN	Adjustment Range		Lower Setpoint (bar)	Factory Setting (bar)	Leakage Test Pressure (bar)	Pressure Connection
		Upper Setpoint (bar)	Differential (bar)				
PS1-A3A	4370700	-0.5 ~ 7	0.5 ~ 5	-0.9	3.5/4.5	25	7/16"-20UNF
PS1-R3A	4350100	-0.5 ~ 7	external reset approx. 1bar above set point	-0.9	3.5	25	7/16"-20UNF
PS1-A3K	4370600	0.5 ~ 7	0.5 ~ 5	-0.9	3.5 / 4.5	25	capillary/nut
PS1-A5A	4350500	6 ~ 31	2 ~ 15	3	16/20	36	7/16"-20UNF
PS1-R5A	4350700	6 ~ 31	external reset approx. 3bar below set point	_	20	36	7/16"-20UNF
PS1-W5U	4713439	6 ~ 31	2 ~ 15	3	16 / 20	36	solder 6 mm

Dual Pressure Controls PS2

Type	PCN	Adjustment Range				Factory Setting (bar)		Leakage Test Pressure (bar)		Pressure Connection
		Upper Setpoint (bar)		Differential (bar)		left	right	left	right	
		left	right	left	right					
PS2-A7A	4353400	-0.5 ~ 7	6 ~ 31	0.5 ~ 5	ca. 4 fix	3.5/4.5	20	25	36	7/16"-20UNF
PS2-L7A	4351100	-0.5 ~ 7	6 ~ 31	0.5 ~ 5	External reset approx. 4bar below setpoint	3.5/4.5	20	25	36	7/16"-20UNF
PS2-M7A	4361300	0.5 ~ 7	6 ~ 31	0.5 ~ 5	ca. 4 fix	3.5 / 4.5	20	25	36	1/4" SAE male flare
PS2-W7A	4360100	0.5 ~ 7	6 ~ 31	0.5 ~ 5	ca. 4 fix	3.5 / 4.5	20	25	36	7/16"-20UNF

FD113 Oil Pressure Safety

FD113 uses the pressure differential between the 2 inputs to operate an electrical switch.

FD113/ FD113ZU Series

Features

- Pressure range adjustable from 4 to 65 psid; timer start pressure - timer stop pressure is 3 psid above timer start pressure
- A SPDT switch is used in the pressure portion of the control which allows the addition of a "safe-light" when desired
- Electronic Timer is Time-Adjustable from 20 to 150 seconds Supply voltage - 24 to 240 Volt AC/DC; Timing unaffected by voltage or ambient temperature variations
- A SPDT Manual Reset Switch is used in the Timer Module; Upon time-out, the compressor is stopped and an alarm circuit is energized; To restart the compressor and deenergize the alarm circuit, the reset button is pushed
- A factory installed Jumper allows the FD113 to be powered from a single source power; Should separate circuits be desired for the timer and "Lockout" switch, the Jumper can be removed
- Agency approvals include: UL/CUL fi le number E85974, VDE 0631/0660, TÜV, CE 73/23/EWG, CE 93/68/EWG

Ordering Information:

Differential Pressure Controls Type	PCN	Time Delay		Cut Out		Cut In Fixed Setting (bar)	Max. Differential Pressure (bar)	Max. Proof Pressure (bar)
		Adjustable Sec	Factory Setting Sec	Adjusting Range P (bar)	Factory Setting (bar)			
FD 113	0710173	-	-	0.3 ~ 4.5	0.7	0.2 above cut out	-0.8 ~ 12	25
FD 113 ZU	3465300	20 ~ 150	120					
FD 113 ZU (A22-057) Copeland-Version	0711195	-	115 fix	-	0.63 fix	appr. 0.9		

Technical Data:

Ambient Temperature Range Storage and transportation Operation	 -20°C ~ +70°C -20°C ~ +70°C
Max. Temperature at Pressure Connection	+70°C
Protection acc. to EN60529/IEC529	IP30
Vibration Resistance (10 to 1000 Hz)	4g @ 10 ~ 1000Hz
Inductive Amp. (AC)	3.0A / 230V AC
Inductive Amp. (DC)	0.1A / 230V AC

Differential Pressure Setting	The cut-out pressure can be adjusted between 0.3 bar and 4.5 bar (factory setting: 0.7 bar). Cut-in pressure is fixed 0.2 bar above cut-out pressure.
Reset (Fig.0)	FD113 and FD113A are automatically reset, FD113 ZU have to be manually reset with the reset button.
FD113 Test (Fig.0)	Pushing lever 1 upwards simulates a pressure rise at the HP side. Pushing lever down during operation simulates a lack of HP.
FD113 Test (Fig.0, Fig 1)	When testing "Fault-circuit"=low oil pressure observe safety precautions. Use screwdriver to press lever 1 for the delay time-setting (>20s ~ >150s) to the lower stop.

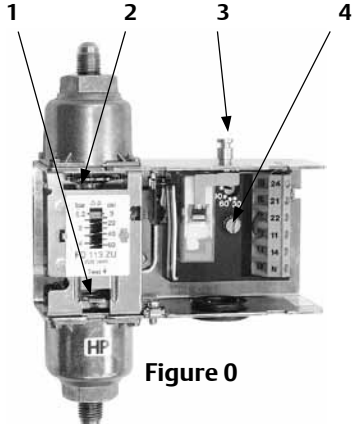


Figure 0

No.	Description
1	Test lever
2	Differential pressure adjustment.
3	Manual reset
4	Delay time setter

Wiring:

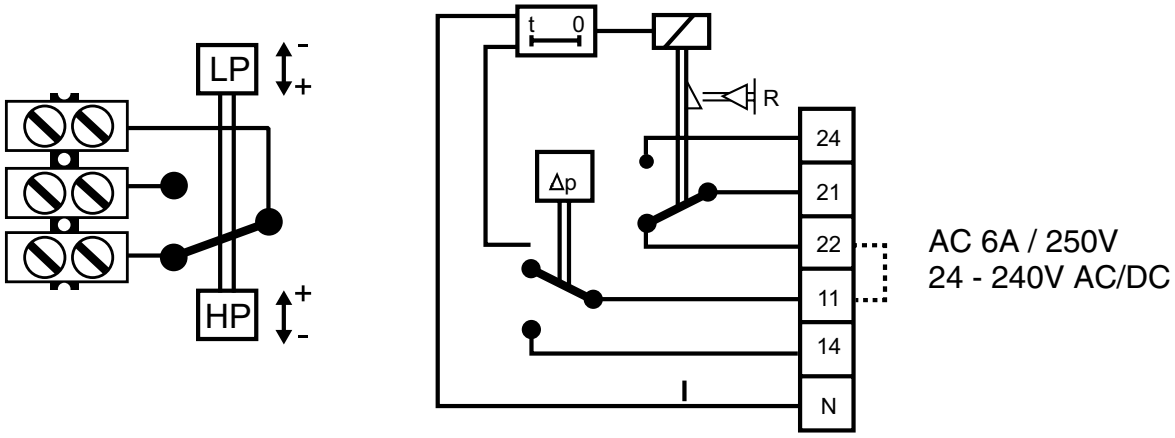


Figure 1

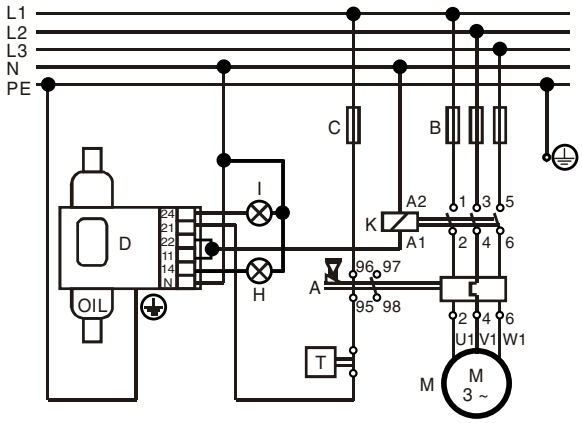


Figure 2: Terminals 22 – 11 jumped

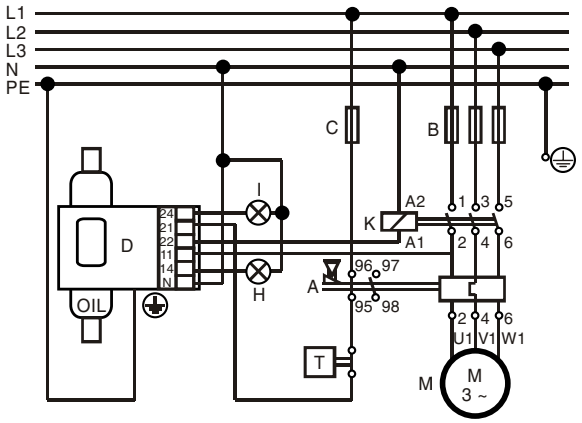


Figure 3

A: Thermal overload relay (motor protection)
B: Motor fuses
C: Control circuit fuse
D: Differential pressure control
T: thermostat
H: Indicator lamp "Oil pressure"
I : Indicator lamp "Fault"
K : Compressor contactor
M: Compressor motor

FSY Electronic Fan Speed Controller Series

Electronic Speed Controllers FSY control the speed of fan motors depending on pressure.

Features

- Pressure actuated fan speed control
- High Voltage Triac (800 Volts)
- Integrated protection circuit against voltage and current peaks
- EMC-Filter included in connector EN 175301-803
- Multi-position plug incl. 1.5 m (opt. 3 and 6 m) cable for flexible installation
- No additional gasket required (complete molded into plug)
- For all common refrigerants including R410A
- UL Certification GQHG2.E183816 for FSY

FSY Controller incl. EMC Filter Cable Assembly

Ordering Information:

1. Controllers:

Type	PCN	Pressure range (bar)	Factory setting (bar)	Maximum operating pressure (bar)	Test pressure (bar)	Pressure Connection
FSY-41S	0715533	4.0 ~ 12.5	8.0	27	30	7/16"-20 UNF Female
FSY-42S	0715534	9.2 ~ 21.2	15.0	32	36	7/16"-20 UNF Female
FSY-42U	0715535					6mm - ODF
FSY-42X	0715536					1/4" - ODF
FSY-43S	0715537	12.4 ~ 28.4	21.8	43	48	7/16"-20 UNF Female
FSY-43U	0715538					6mm - ODF
FSY-43X	0715539					1/4" - ODF

Notes: 1. Bold Types mean standard products.
2. Factory setting is the pressure at which fan is switched off FSP.

2. Cable Assemblies:

Type	PCN	Temp Range °C	Length (m)
FSF-N15	804640	-25/+80	1.5
FSF-N30	804641		3.0
FSF-N60	804642		6.0
FSF-L15	804643	-50/+80	1.5
FSF-L30	804644		3.0

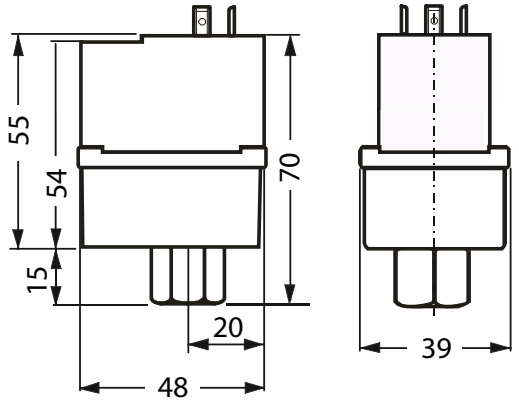
Note: FSO plug without filter, for OEM customers only. When FSX is used with FSO there is no compliance with EC-Directive 89/336/EC because EMC requirements are not met.

Technical Data:

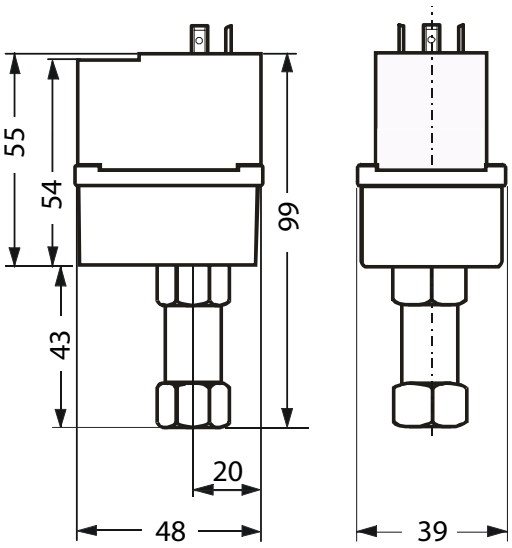
Supply Voltage FSY Nominal Current	230VAC +15%, -20% (50-60 Hz) 0.1-4 (3) A
Starting Current	Max. 8 ampere/5sec
Medium Compatibility Storage, Transportation Ambient Medium	 -30ºC to 70ºC -20ºC to 55ºC (40ºC, see diagram below) -20ºC to 70ºC
Protection Class (IEC529/DIN 40050)	IP 65 (with fitted connectors)
Housing Material	PC and PA
Medium Compatibility	HFC, HCFC

Pressure changes per turn of adjusting screw	Pressure range 1: clockwise counter clockwise	4.0 ~ 12.5 bar about +1.2 bar about -1.2 bar
	Pressure range 2: clockwise counter clockwise	9.2 ~ 21.2 bar about +2.5 bar about -2.5 bar
	Pressure range 3: clockwise counter clockwise	12.4 ~ 28.4 bar about +3.3 bar about -3.3 bar
Weight FSY-41/2 Weight FSY-43 Weight FSF-N15 Weight FSF-N30 Weight FSF-N60	0.12 kg 0.15 kg 0.14 kg 0.20 kg 0.33 kg	

Electronic Fan Speed Controller Dimensional Data (mm):

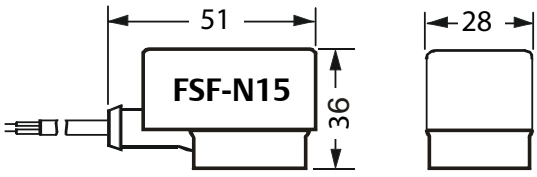


FSY-41S/42S
Pressure Connection: S
(7/16" – 20 Female Flare)



FSY-43S

Plug And Cable Assembly Dimensional Data (mm):



FSP Electronic Fan Speed Power Module FSP

Electronic Power Modules FSP control the speed of condenser fan motors in commercial refrigeration and airconditioning systems. The necessary input signal of 0~10 V depending on condensing pressure can be generated by the optional Control Module FSE, or other electronic controllers.

FSP
Power Module

Features

- Can be used in combination with Emerson FSE, EC2, EC3 and other electronic controllers which provide a 0~10 V output signal for condensing pressure control
- Energy saving due to improved cooling efficency
- Reduced fan noise level during low ambient temperature conditions
- Improved overall performance of cooling system
- Versions for 1- and 3-phase Motors
- Short start impulse to overcome friction and windmilling
- Easy installation with cables for power supply and motor connection factory wired
- IP 67 protection for outdoor mounting
- CE marking (EMC, LVD)

FSE
Control Module

Options:

- FSE Control Module for pressure input
- DIN-rail mounting kit
- Cable assemblies

Ordering Information:

Selection Chart FSP:

Type	PCN	Supply Voltage	Current Range (A)	Max. Start Current, mas 1 sec (A)	Power Supply Cable Length (m)	Motor Cable Length (m)	Wire Diameter	Weight (g)
FSP-150	800370	230V/50Hz	0.3 ~ 5	15 A	1.5	0.75	3 x 1 mm²	1050
FSP-180	800373		0.3 ~ 8	24A				
FSP-340	800376	400V/3/50Hz	0.3 ~ 4	12A			5 x 1 mm²	1650

Selection Chart Control Modules FSE:

Type	PCN	Refrigerants	Adjustment Range Pcut (bar)	Cut-off Pressure factory set (bar)	Test Pressure	Pressure Connection	Weight (g)
FSE-01S	804701	R 134a	4 ~ 12.5	7.8	30 bar	7/16"– 20 UNF female	125
FSE-02S	804706	R 22, R 407C, R 404A, R 507	10 ~ 21	15.5	36 bar		
FSE-03S	804711	R 410A	12 ~ 28	20.4	48 bar		150

Note: Pcut = Cut-off pressure at which fan is switched off / lower end of proportional range.

Selection Chart Cable Assemblies: for connection to FSC Control Module:

Temperature Range: -25 ~ 80 °C/no UL		Temperature Range: -50 ~ 80 °C/UL appr.		Length (m)	Weight (g)
Type	PCN	Type	PCN		
FSE-N15	804680	FSE-L15	804693	1.5	80
FSE-N30	804681	FSE-L90	804694	3.0	130
FSE-N60	804682	FSE-L60	804 685	6.0	220

FSP Technical Data:

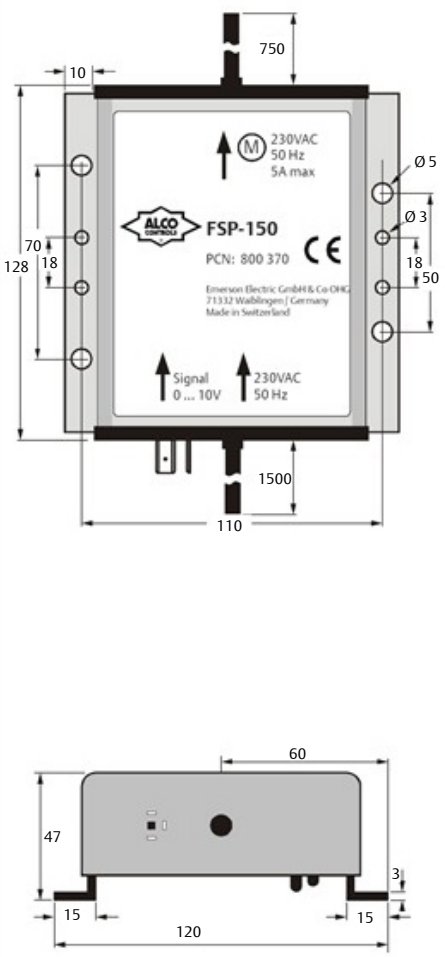
Temperature Range Storage and Transportation Operation	 -40ºC ~ +70ºC -20ºC ~ +65ºC
Material Housing	Aluminum with plastic ends, completely molded with a two-component Polyurethane casting compound. Resistant against common refrigerant oils.
Mounting	Direct with screws or DIN-rail with mounting clips

Signal Input Voltage		0 ~ 10 VDC
Supply Voltage	FSP-150/-180:	230V+10%/-15% ,/50Hz
	FSP-340:	400V+10%/-15%, /50Hz
EMC Compatibility		EN 55014-1:2000 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6 EN 50082-1
Protection class (IEC529/EN 60529)		IP 67
Weight	FSP-150/-180:	1.0kg
	FSP-340:	1.8kg
Rated Current		FSP-150: 0.3 ~ 5 A FSP-180: 0.3 ~ 8 A FSP-340: 0.3 ~ 4 A

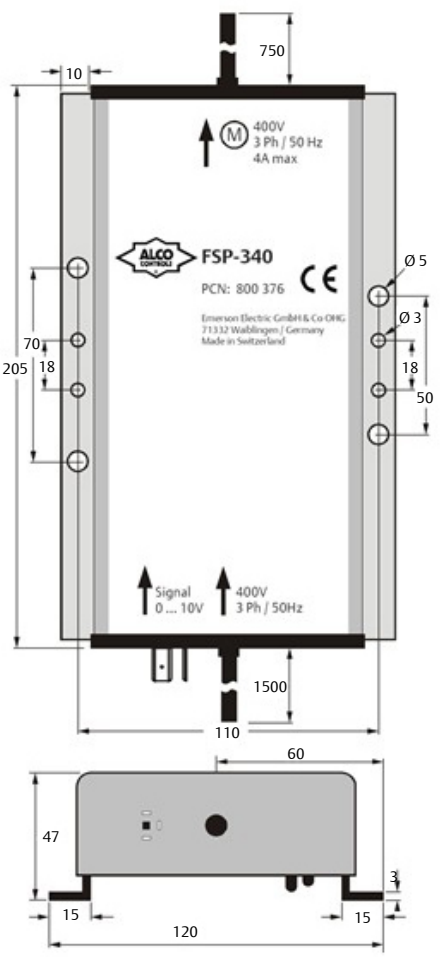
Note: Total rated current of single phase motors with Steinmetz capacitor should not be higher than 80% of nominal current listed.

FSP Dimensional Data (mm):

FSP-150 / FSP-180



FSP-340

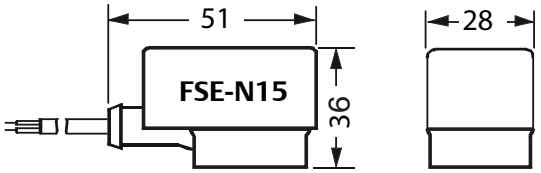


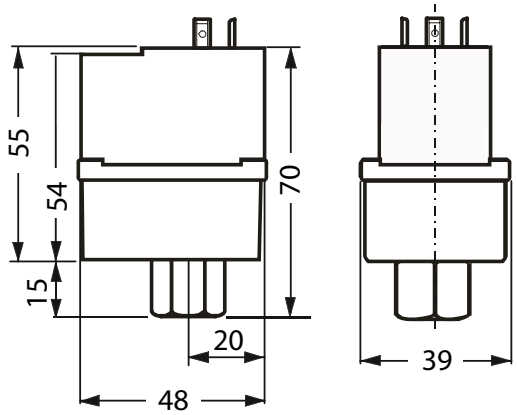
FSE Technical Data:

Supply Voltage	10V, supplied by FSP Power Module
Output Signal	0 ~ 10V DC
Operating Current	max. 1 mA
Medium Compatibility	HFC, HCFC, POE-, synthetic and mineral oils
Protection Class (IEC529/EN 60529)	IP 65

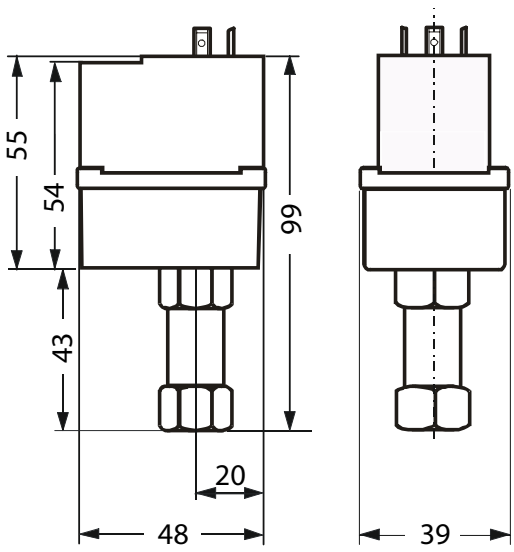
Pressure Connection		
FSE-01S and FSE-02S		Brass
FSE-03S		Stainless
Max. Operating Pressure, PS	FSE - 01:	27 bar
	FSE - 02:	32 bar
	FSE - 03:	43 bar
Temperature Range		
Storage and Transportation		-30ºC ~ +70ºC
Operation		-20ºC ~ +65ºC
Materials Housing Cover		PA

FSE Dimensional Data (mm):





FSE-01S / FSE-02S



FSE-03S

EMERSON
Climate Technologies

Appendix

Saturation Pressure Table For Refrigerants (bar, absolute):

Temperature °C	R 410A	R 134a	R 22	R 404A		R 507	R 407C		R 23	
	Refrigerants Code									
	Z	M	H	S		S	N		B	Temperature °C
				Liquid	Vapour		Liquid	Vapour		
85		29.29	40.29						47.24	25
80		**26.35**	**36.52**						**41.84**	**20**
75		23.65	33.04						36.97	15
70		21.17	29.83	33.34	33.01				32.58	10
65		18.89	26.87	31.95	31.84	31.91			28.62	5
60	**38.44**	**16.81**	**24.15**	**28.75**	**28.63**	**29.59**			**25.04**	**0**
55	34.47	14.91	21.64	25.80	25.66	26.54	24.91	22.48	21.83	-5
50	**30.79**	**13.17**	**19.33**	**23.08**	**22.94**	**23.73**	**22.24**	**19.88**	**18.94**	**-10**
45	27.41	11.59	17.21	20.58	20.44	21.14	19.79	17.52	16.35	-15
40	**24.31**	**10.16**	**15.27**	**18.29**	**18.15**	**18.78**	**17.55**	**15.39**	**14.03**	**-20**
35	21.47	8.87	13.50	16.20	16.06	16.62	15.50	13.46	11.97	-25
30	**18.90**	**7.70**	**11.88**	**14.29**	**14.15**	**14.65**	**13.63**	**11.73**	**10.14**	**-30**
25	16.56	6.65	10.41	12.55	12.42	12.86	11.93	10.17	8.53	-35
20	**14.45**	**5.72**	**9.08**	**10.98**	**10.85**	**11.24**	**10.41**	**8.78**	**7.12**	**-40**
15	12.55	4.88	7.88	9.56	9.44	9.78	9.03	7.54	5.89	-45
10	**10.85**	**4.15**	**6.80**	**8.28**	**8.17**	**8.47**	**7.79**	**6.44**	**4.83**	**-50**
8	10.22	3.88	6.40	7.80	7.70	7.98	7.33	6.03	4.45	-52
6	9.62	3.62	6.02	7.35	7.25	7.52	6.90	5.65	4.09	-54
4	9.04	3.38	5.66	6.92	6.82	7.08	6.48	5.28	3.75	-56
2	8.49	3.15	5.31	6.51	6.41	6.65	6.09	4.94	3.44	-58
0	**7.97**	**2.93**	**4.98**	**6.11**	**6.01**	**6.25**	**5.71**	**4.61**	**3.14**	**-60**
-2	7.48	2.72	4.66	5.74	5.64	5.86	5.34	4.30	2.87	-62
-4	7.00	2.53	4.36	5.38	5.29	5.50	5.00	4.00	2.61	-64
-6	6.55	2.34	4.08	5.04	4.95	5.15	4.68	3.72	2.37	-66
-8	6.12	2.17	3.81	4.71	4.63	4.82	4.37	3.46	2.15	-68
-10	**5.72**	**2.01**	**3.55**	**4.40**	**4.32**	**4.50**	**4.08**	**3.21**	**1.95**	**-70**
-12	5.33	1.86	3.31	4.11	4.03	4.20	3.80	2.97	1.76	-72
-14	4.97	1.71	3.08	3.83	3.76	3.92	3.53	2.75	1.58	-74
-16	4.62	1.58	2.86	3.57	3.50	3.65	3.29	2.54	1.42	-76
-18	4.29	1.45	2.65	3.32	3.25	3.40	3.05	2.34	1.28	-78
-20	**3.98**	**1.33**	**2.46**	**3.09**	**3.02**	**3.15**	**2.83**	**2.16**	**1.14**	**-80**
-22	3.69	1.22	2.27	2.86	2.80	2.93	2.62	1.99	1.02	-82
-24	3.42	1.12	2.10	2.65	2.59	2.71	2.42	1.82	0.90	-84
-26	3.16	1.02	1.94	2.46	2.40	2.51	2.23	1.67	0.80	-86
-28	2.91	0.93	1.78	2.27	2.21	2.32	2.06	1.53	0.71	-88
-30	**2.68**	**0.85**	**1.64**	**2.10**	**2.04**	**2.14**	**1.89**	**1.40**	**0.62**	**-90**
-32	2.47	0.77	1.51	1.93	1.88	1.98	1.74	1.28	0.55	-92
-34	2.27	0.70	1.38	1.78	1.73	1.82	1.60	1.16	0.48	-94
-36	2.08	0.63	1.26	1.63	1.58	1.67	1.46	1.05	0.42	-96
-38	1.90	0.57	1.16	1.49	1.45	1.53	1.34	0.96	0.36	-98
-40	**1.74**	**0.52**	**1.05**	**1.37**	**1.33**	**1.40**	**1.22**	**0.87**	**0.32**	**-100**
-42	1.58	0.47	0.96	1.25	1.21	1.28	1.11	0.78	0.27	-102
-44	1.44	0.42	0.87	1.14	1.10	1.17	1.01	0.70	0.23	-104
-46	1.31	0.37	0.79	1.04	1.00	1.07	0.92	0.63	0.20	-106
-48	1.18	0.34	0.72	0.94	0.91	0.97	0.83	0.57	0.17	-108
-50	**1.07**	**0.30**	**0.65**	**0.85**	**0.82**	**0.88**	**0.75**	**0.51**	**0.14**	**-110**
-52	0.96	0.27	0.58	0.77	0.74	0.80	0.68	0.45	0.12	-112
-54	0.87	0.24	0.52	0.70	0.67	0.72	0.61	0.40	0.10	-114
-56	0.78	0.21	0.47	0.63	0.60	0.65	0.55	0.36	0.09	-116
-58	0.70	0.19	0.42	0.56	0.54	0.59	0.49	0.32	0.07	-118
-60	**0.62**	**0.16**	**0.38**	**0.51**	**0.48**	**0.53**	**0.44**	**0.28**	**0.06**	**-120**

Note: The pressure values required for selection of R 404A and R 407C expansion valves are shown shaded.

Conversions:

1 psi	=	0.07 bar	°F	=	°C
1 Atm	=	14.7 psi	-40	=	-40
1 Bar	=	14.5 psia	-20	=	-29
1 In	=	2.54cm/25.4mm	0	=	-18
1BTU	=	0.252 kcal	+20	=	-7
1 Ton	=	12,000 BTUH	+40	=	+4
1 Ton	=	3.517 kWH	+70	=	+21
1 Lb	=	0.4536 kg	+100	=	+38
			+120	=	+49
			+140	=	+60

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