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Thermostatic and Automatic Expansion Valves

Catalog E-1, July 2012

Parker

ENGINEERING YOUR SUCCESS.

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TEV Model Number Selection Guide

Nomenclature (Example)

SC	E	–	A	–	V	X	100	B	20
Valve Model	External Equalizer (Optional)		Orifice Designation OR Nominal Capacity in Tons		Refrigerant	Valve Charge	Maximum Operating Pressure (MOP)	Bleed (Optional)	Bleed Capacity

Valve Model
N, C,
EC, SC
EBS, O
H, HA
HC, HCA

External Equalizer (Optional)
(E) for Externally Equalized
Evaporator pressure drop > 3 psi
BLANK for Internally Equalized
Evaporator pressure drop < 3 psi or smaller tonnage evaporators
See Catalog E-1a, TEV and AEV Theory & Application.

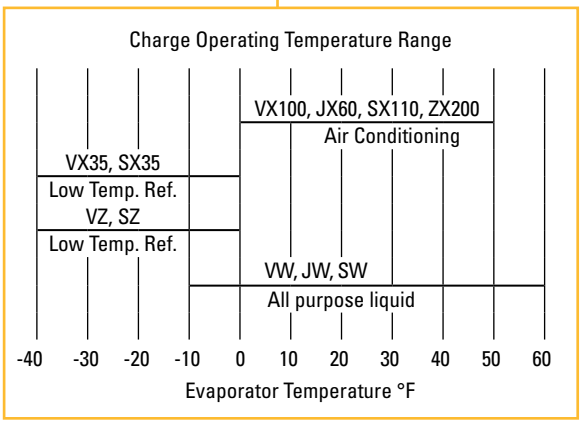
Orifice Designation OR Nominal Capacity in Tons
Capacity
Parker's expansion valves offer a range of capacities from 1/8 ton to 70 tons depending on refrigerant. See pages 17-21 for capacity tables.

Refrigerant
Rainbow Charge™ Refrigerant Designation

J	R-134a, R-401A (MP39), R-401B (MP66), R-12
V	R-407C (AC9000), R-22
S	R-125, R-404A (HP62), R-402A (HP80), R-402B (HP81), R-507 (AZ50)
Z	R-410A (AZ20)

Refrigerant Color Code
R-12 - yellow
R-134a - light blue
R-22 - green
R-402A - light brown (sand)
R-402B - olive
R-404A - orange
R-407C - medium brown
R-410A - rose
R-507 - teal

Valve Charge / Maximum Operating Pressure (MOP)



Bleed (Optional)
Bleed
Denoted by "B".
Not available on all TEVs.
See bleed capacity.
Used for equalizing system during off cycle (compressor unloading). Consult Parker.
See Catalog E-1a, TEV and AEV Theory & Application.

Bleed Capacity
Bleed Capacity
Percentage based on nominal capacity of valve specified by manufacturer or Parker.

†Charge Type
"W" (all-purpose) liquid charge maintains nearly flat superheat control over a -10°F to +60°F (-23°C to +15°C) evaporator temperature range.
"Z" (low temperature) charge provides fast pulldown benefits like a gas charge with the non-migrating benefits of a liquid charge; usable over a -40°F to 0°F (-40°C to -18°C) evaporator temperature range.
"X" (damped response) gas charge provides a pressure limiting (MOP) charge with anti-hunt characteristics over a -40°F to +60°F (-40°C to +15°C) evaporator temperature range.

Notes: M.O.P. not available on "W" or "Z" charge.
1. Maximum operational pressure 500 psig (35 bar) high side and 275 psig (19 bar) low side.
2. Maximum storage temperature 130°F (55°C).
3. Consult Parker for pressure and temperature exceptions.
4. Do not use "W" or "Z" liquid charges in applications where bulb temperatures can exceed 130°F (55°C). For these applications use type "X" MOP gas charge ***only***.

N Series

This small flare brass valve series is ideally suited where space is at a premium. Its stainless steel power element and compact body has always made it the first choice for installation in commercial refrigeration systems. External equalized models are provided with a 30" capillary and 1/4" SAE flare nut, eliminating the need to run a separate equalizer line. Medium, low & MOP "X" charges are available as noted below.

Applications

- Low Profile Coolers
- Beverage Dispensers
- Beverage Boxes
- Small Chillers
- Ice Machines
- Small Freezers

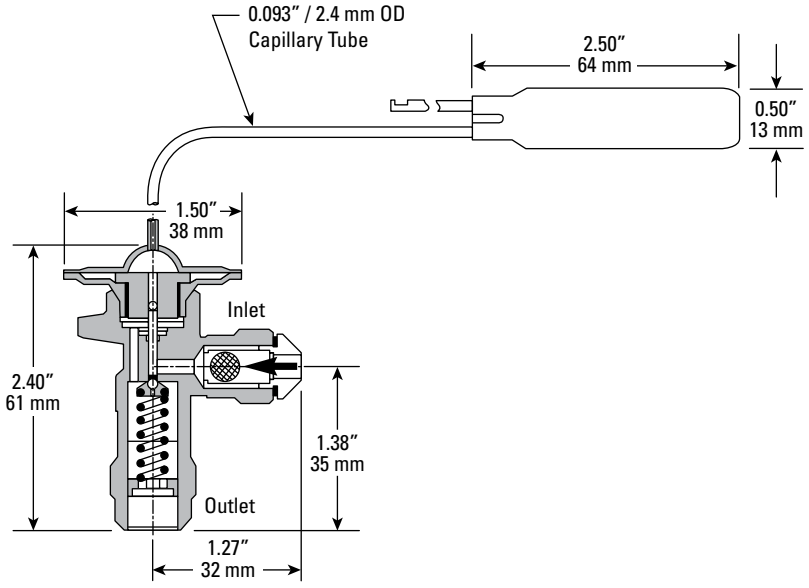
Features and Benefits

- Compact body
- Inlet strainer
- Factory set superheat
- Accurate and stable control
- Right angle configuration
- 30" capillary tube
- Weight: 5.0 oz. / .14 kg

Specifications

Refrigerant	Refrigerant Designation	Nominal Capacity (Tons)	Valve Description		Rainbow Charges™	Connection - (Inches)	
			Internally Equalized	Externally Equalized		Inlet	Outlet
R-12 R-134a R-401A R-401B	J	1/4	N-1/4-J	—	W X60	1/4 SAE	1/2 SAE
		1/2	N-1/2-J				
		2	N-2-J	NE-2-J		3/8 SAE	
R-402A R-402B R-404A R-502 R-507	S	1/2	N-1/2-S	—	W Z X110	1/4 or 3/8 SAE	1/2 SAE
		1/4	N-1/4-S			1/4 SAE	
		2	N-2-S	NE-2-S		3/8 SAE	
R-22 R-407C	V	1/4	N-1/4-V	—	W Z X100	1/4 SAE	1/2 SAE
		1/2	N-1/2-V			1/4 or 3/8 SAE	
		1	N-1-V				
		3	N-3-V	NE-3-V		3/8 SAE	

Dimensions



C(E) Series

The C(E) series incorporates a brass body with a 90° elbow inlet and SAE flare fittings using balanced port construction, allowing operation over varying load conditions. Designed for use on small refrigeration and or air conditioning systems, the external equalized models are provided with a 1/4" SAE male connection.

Applications

- Small Refrigeration Systems
- Slush Machines
- Air Conditioning Units
- Freezers
- Walk-in Coolers
- Refrigerated Cases
- Rail & Transport Refrigeration

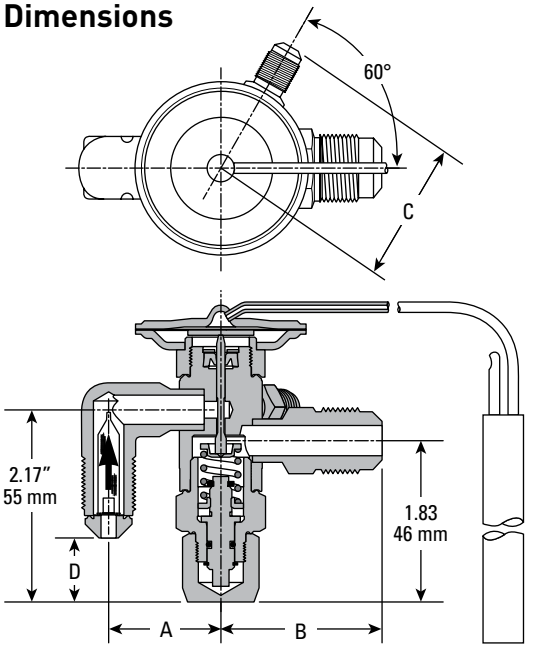
Features and Benefits

- Balanced port design
- Removable power element
- Inlet strainer – 100 mesh
- 60" capillary tube
- Field adjustable superheat
- 1/4" SAE external equalizer
- Weight: 1.0 lbs / 0.45 kg

Specifications

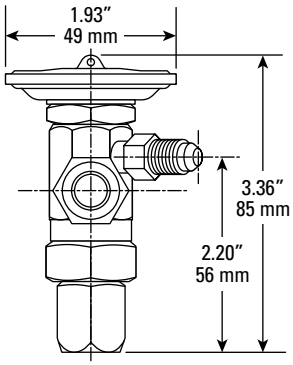
Refrigerant	Refrigerant Designation	Orifice Designation	Nominal Capacity (Tons)	Capacity Range of Valve to be Replaced (Tons)	Valve Description		Rainbow Charges™	Connection - (Inches)		External Equalizer Connection (Inches)
					Internally Equalized	Externally Equalized		Inlet	Outlet	
R-12 R-134a R-401A R-401B	J	AA	1/4	1/6 to 1/4	C-AA-J	CE-AA-J	W X60	1/4 SAE	1/2 SAE	1/4 SAE
		A	1	1/2 to 1	C-A-J	CE-A-J		3/8 SAE		
		B	2	1 to 2	C-B-J	CE-B-J				
		C	3	2 to 3	C-C-J	CE-C-J				
		D	5	3 to 5	C-D-J	CE-D-J			5/8 SAE	
R-402A R-402B R-404A R-502	S	AA	1/4	1/6 to 1/4	C-AA-S	CE-AA-S	W Z X110 X35	1/4 SAE	1/2 SAE	1/4 SAE
		A	1	1/2 to 1	C-A-S	CE-A-S		3/8 SAE		
		B	2	1 to 2	C-B-S	CE-B-S				
		C	3-1/2	2 to 3-1/2	C-C-S	CE-C-S				
		D	6	3-1/2 to 6	C-D-S	CE-D-S			5/8 SAE	
R-22 R-407C R-422D	V	AA	1/2	1/3 to 1/2	C-AA-V	CE-AA-V	W Z X100 X35	1/4 SAE	1/2 SAE	1/4 SAE
		A	1-1/2	3/4 to 1-1/2	C-A-V	CE-A-V		3/8 SAE		
		B	3	1-1/2 to 3	C-B-V	CE-B-V				
		C	5	3 to 5	C-C-V	CE-C-V				
		D	8	5 to 8	C-D-V	CE-D-V			5/8 SAE	

Dimensions



1/4 SAE Inlet Strainer
P/N 3008-000

3/8 SAE Inlet Strainer
P/N 1538-000



Fitting Size	A	B	C	D
1/4 SAE	1.11" 28 mm	—	1.54" 39 mm	1.15" 29 mm
3/8 SAE	1.27" 32 mm	—	—	0.75" 19 mm
1/2 SAE	—	1.82" 46 mm	—	—
5/8 SAE	—	1.98" 50 mm	—	—

Replacement Elements

Refrigerant Designation	Element
V	KT-46-VW KT-46-VX100
J	KT-46-JW KT-46-JX60
S	KT-46-SZ KT-46-SW KT-46-SX35

EC(E) Series

The EC(E) series features extended ODF solder connections, brass body and balanced port design. It is suited for both refrigeration and air conditioning applications.

Applications

- Small Chillers
- Air Conditioning Units
- Freezers
- Walk-in Boxes
- Refrigerated Cases
- Mobile Refrigeration

Features and Benefits

- Extended ODF connections
- Balanced port design
- 60" capillary tube
- Removable power element
- Field adjustable superheat
- 1/4" ODF external equalizer
- Weight: 1.0 lbs / 0.45 kg

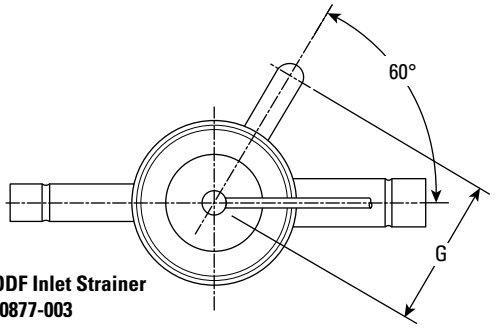
Specifications

Refrigerant	Refrigerant Designation	Orifice Designation	Nominal Capacity (Tons)	Capacity Range of Valve to be Replaced (Tons)	Valve Description		Rainbow Charges™	Connection - (Inches) Bold figures are standard		External Equalizer Connection (Inches)
					Internally Equalized	Externally Equalized		Inlet	Outlet	
R-12 R-134a R-401A R-401B	J	AA	1/4	1/6 to 1/4	EC-AA-J	ECE-AA-J	W X60	**1/4 ODF**	**1/2 ODF**	1/4 ODF
		A	1	1/2 to 1	EC-A-J	ECE-A-J		**3/8 ODF**		
		B	2	1 to 2	EC-B-J	ECE-B-J		**3/8 ODF** 1/2 ODF	**1/2 ODF** 5/8 ODF	
		C	3	2 to 3	EC-C-J	ECE-C-J		3/8 ODF **1/2 ODF** 5/8 ODF	1/2 ODF **5/8 ODF** 7/8 ODF	
		D	5	3 to 5	N/A	ECE-D-J		1/2 ODF **5/8 ODF**	**7/8 ODF**	
R-402A R-402B R-404A R-502 R-507	S	AA	1/4	1/6 to 1/4	EC-AA-S	ECE-AA-S	W Z X110 X35	**1/4 ODF**	**1/2 ODF**	1/4 ODF
		A	1	1/2 to 1	EC-A-S	ECE-A-S		**3/8 ODF**		
		B	2	1 to 2	EC-B-S	ECE-B-S		**3/8 ODF** 1/2 ODF	**1/2 ODF** 5/8 ODF	
		C	3-1/2	2 to 3-1/2	EC-C-S	ECE-C-S		3/8 ODF **1/2 ODF** 5/8 ODF	1/2 ODF **5/8 ODF** 7/8 ODF	
		D	6	3-1/2 to 6	N/A	ECE-D-S		1/2 ODF **5/8 ODF**	**7/8 ODF**	
R-22 R-407C R-422D	V	AA	1/2	1/3 to 1/2	EC-AA-V	ECE-AA-V	W Z X100 X35	**1/4 ODF**	**1/2 ODF**	1/4 ODF
		A	1-1/2	3/4 to 1-1/2	EC-A-V	ECE-A-V		**3/8 ODF**		
		B	3	1-1/2 to 3	EC-B-V	ECE-B-V		**3/8 ODF** 1/2 ODF	**1/2 ODF** 5/8 ODF	
		C	5	3 to 5	EC-C-V	ECE-C-V		3/8 ODF **1/2 ODF** 5/8 ODF	1/2 ODF **5/8 ODF** 7/8 ODF	
		D	8	5 to 8	N/A	ECE-D-V		1/2 ODF **5/8 ODF**	**7/8 ODF**	
R-410A	Z	AA	1/2	1/3 to 1/2	EC-AA-Z	ECE-AA-Z	X200	**1/4 ODF**	**1/2 ODF**	1/4 ODF
		A	1-1/2	3/4 to 1-1/2	EC-A-Z	ECE-A-Z		**3/8 ODF**		
		B	3	1-1/2 to 3	EC-B-Z	ECE-B-Z		**3/8 ODF** 1/2 ODF	**1/2 ODF** 5/8 ODF	
		C	5	3 to 5	EC-C-Z	ECE-C-Z		3/8 ODF **1/2 ODF** 5/8 ODF	1/2 ODF **5/8 ODF** 7/8 ODF	
		D	8	5 to 8	N/A	ECE-D-Z		1/2 ODF **5/8 ODF**	**7/8 ODF**	
		N/A	12-1/2	8 to 12-1/2	N/A	ECE-12-1/2-Z		**5/8 ODF**	**7/8 ODF** 1-1/8 ODF	
		N/A	15	12-1/2 to 15	N/A	ECE-15-Z				

EC(E) Series

Dimensions

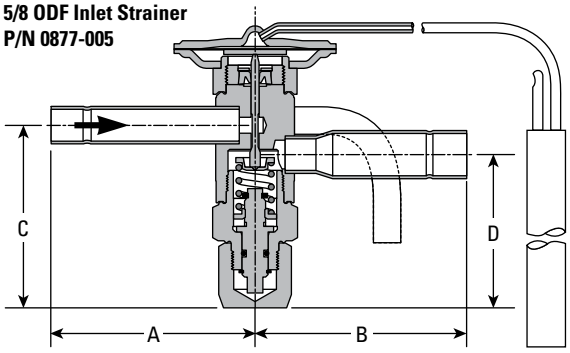
ECE-AA, -A, -B, -C, -D



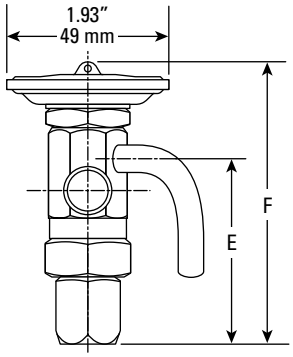
3/8 ODF Inlet Strainer
P/N 0877-003

1/2 ODF Inlet Strainer
P/N 0877-004

5/8 ODF Inlet Strainer
P/N 0877-005



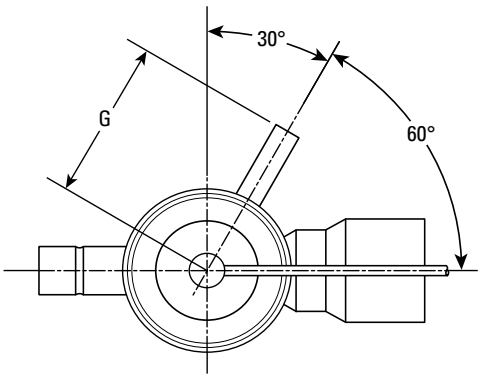
Fitting Size	A	B	C	D	E	F	G
1/4	2.69″ 68 mm	—	2.17″ 55 mm	—	2.20″ 56 mm	3.36″ 63 mm	1.71″ 63 mm
3/8	2.42″ 61 mm	—	2.17″ 55 mm	—	—	3.36″ 63 mm	—
1/2	2.35″ 60 mm	2.51″ 64 mm	2.17″ 55 mm	1.83″ 46 mm	—	3.36″ 63 mm	—
5/8	2.35″ 60 mm	2.51″ 64 mm	2.17″ 55 mm	1.83″ 46 mm	—	3.36″ 63 mm	—
7/8	—	2.51″ 64 mm	—	1.83″ 46 mm	—	3.36″ 63 mm	—

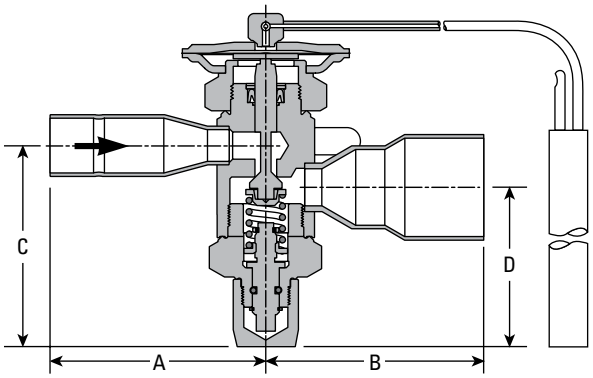


Replacement Elements

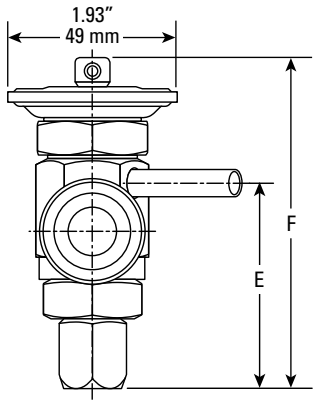
Refrigerant Designation	Element
V	KT-46-VW KT-46-VX100
J	KT-46-JW
S	KT-46-SZ KT-46-SW KT-46-SX35
Z	KT-46-ZX200

ECE-12-1/2-Z and ECE-15-Z Only





Fitting Size	A	B	C	D	E	F	G
1/4	—	—	—	—	2.36″ 60 mm	3.79″ 96 mm	1.90″ 48 mm
5/8	2.48″ 63 mm	—	2.30″ 58 mm	—	—	3.79″ 96 mm	—
7/8	—	2.51″ 64 mm	—	1.83″ 46 mm	—	3.79″ 96 mm	—
1-1/8	—	2.51″ 64 mm	—	1.83″ 46 mm	—	3.79″ 96 mm	—



Replacement Elements

Refrigerant Designation	Element
Z	KT-46-5-ZX200*

* For ECE-12-1/2-Z and ECE-15-Z only.

SC(E) Series

The SC(E) series brass body expansion valve incorporates a 90° elbow inlet with a removable strainer that may be replaced or cleaned without removing the valve from the system, and is an ideal choice for commerical refrigeration and super-market applications.

Applications

- Supermarket Cases
- Self-contained Cases
- Walk-in Coolers/Freezers
- Ice Machines
- Salad Bars
- Transport Refrigeration

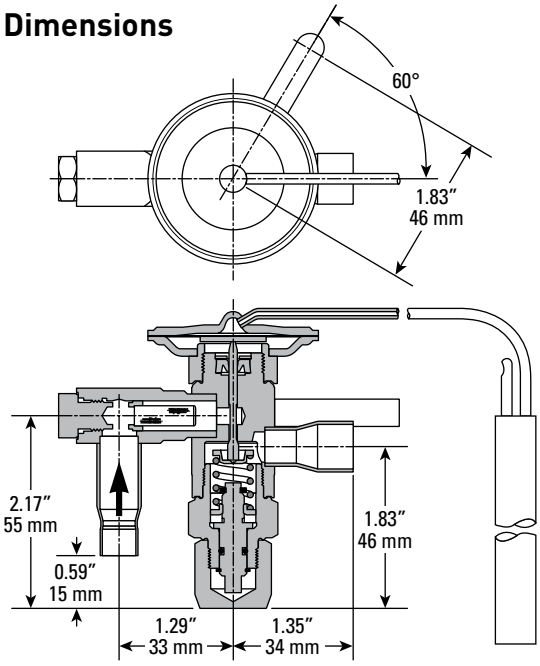
Features and Benefits

- Balanced port design
- Removable power element
- 60" capillary tube
- Removable inlet strainer – 100 mesh
- Field adjustable superheat
- 1/4" ODF external equalizer
- "W", "Z" or MOP "X" charges available
- Weight: 1.0 lbs / 0.45 kg

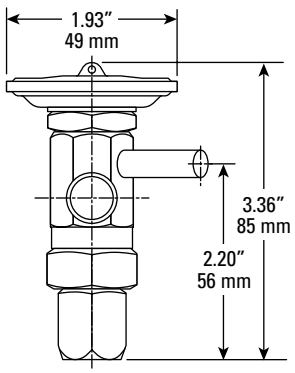
Specifications

Refrigerant	Refrigerant Designation	Orifice Designation	Nominal Capacity (Tons)	Capacity Range of Valve to be Replaced (Tons)	Valve Description		Rainbow Charges™	Connection - (Inches)		External Equalizer Connection (Inches)
					Internally Equalized	Externally Equalized		Inlet	Outlet	
R-12 R-134a R-401A R-401B	J	AA	1/4	1/6 to 1/4	N/A	SCE-AA-J	W X60	3/8 ODF	1/2 ODF	1/4 ODF
		A	1	1/2 to 1		SCE-A-J				
		B	2	1 to 2		SCE-B-J				
		C	3	2 to 3		SCE-C-J				
		D	5	3 to 5		SCE-D-J				
R-402A R-402B R-404A R-502 R-507	S	AAA	1/6	1/8 to 1/6	N/A	SCE-AAA-S	W Z X110 X35	3/8 ODF	1/2 ODF	1/4 ODF
		AA	1/4	1/6 to 1/4		SCE-AA-S				
		A	1	1/2 to 1		SCE-A-S				
		B	2	1 to 2		SCE-B-S				
		C	3-1/2	2 to 3-1/2		SCE-C-S				
		D	6	3-1/2 to 6		SCE-D-S				
R-22 R-407C R-422D	V	AAA	1/3	1/6 to 1/3	N/A	SCE-AAA-V	W Z X110 X35	3/8 ODF	1/2 ODF	1/4 ODF
		AA	1/2	1/3 to 1/2		SCE-AA-V				
		A	1-1/2	3/4 to 1-1/2		SCE-A-V				
		B	3	1-1/2 to 3		SCE-B-V				
		C	5	3 to 5		SCE-C-V				
		D	8	5 to 8		SCE-D-V				

Dimensions



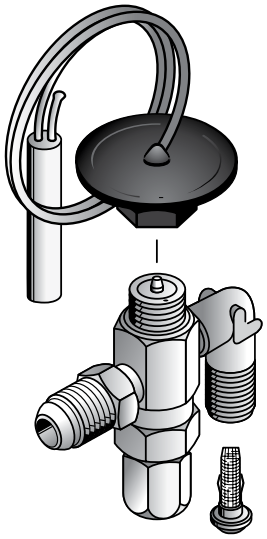
Removable Strainer
P/N 10198-000



Replacement Elements

Refrigerant Designation	Element
V	KT-46-VW KT-46-VX100
J	KT-46-JW
S	KT-46-SZ KT-46-SW KT-46-SX35

C Series Interchangeable Valve



The C series replaceable element style valves are designed for small refrigeration systems, such as refrigerated cases, coolers, and freezers. The externally equalized versions of these valves are ideal for air conditioning and refrigeration systems. C valves are balanced ported, engineered specifically for systems with a wide range of operating conditions and may be applied on bi-directional applications.

C valves are supplied as 2 individual component parts: the **thermostatic element**, and the **valve body**. The interchangeable nature of the C family makes it ideal for reducing inventory, while increasing valve options — so, the right valve is always on hand.

Body Features

C brass body type valves feature traditional knife edge, metal-to-metal thermostatic element to valve body construction, which ensures a leak-proof joint.

Selective Charges

The selective thermostatic charges are specifically designed for low temperature, medium temperature, and air conditioning applications. The elements are manufactured with a large flat diaphragm to reduce diaphragm stresses and provide precise control. And, because C valve bodies and thermostatic elements are supplied as independent components, the installer is able to select the best possible thermostatic charge for the application.

Internal Port Design

Refrigerant flow through the valve port opposes the pin movement in all type C valves. This provides improved stability at light loads, when the pin modulates to a position close to the port. Additionally, charge migration, is reduced or eliminated by the C valve design. By engineering the liquid flow to enter through the top of the valve body, the liquid refrigerant warms the thermostatic element and minimizes the potential for charge migration.

Applications

- Small Refrigeration Systems
- Air Conditioning Systems
- Heat Pump Systems
- Freezers
- Walk-in Coolers
- Refrigerated Cases

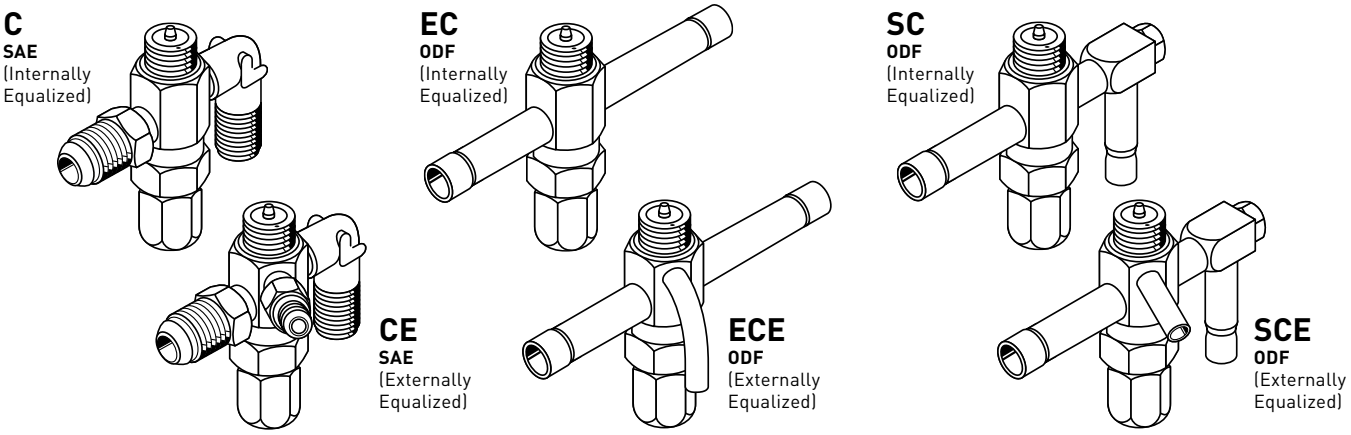
Features and Benefits

- Balanced port design
- Removable power element
- Inlet strainer – 100 mesh
- 60″ capillary tube
- Field adjustable superheat
- 1/4″ SAE external equalizer
- Weight: 1.0 lbs / 0.45 kg

C Series Interchangeable Valve

Selecting Components

Body



Capacities

Nominal Capacity - Tons (Capacity Range of Valve to be Replaced - Tons)									Orifice Designation Letter Code	Available Valve Body Configurations*
R-12	R-22 R-407C R-422D	R-134a	R-401A R-401B	R-402A R-402B	R-404A	R-410A	R-502	R-507		
1/4 (1/6 to 1/4)	**1/2** (1/3 to 1/2)	**1/4** (1/6 to 1/4)	**1/4** (1/6 to 1/4)	**1/4** (1/6 to 1/4)	**1/4** (1/6 to 1/4)	**1/2** (1/3 to 1/2)	**1/4** (1/6 to 1/4)	**1/4** (1/6 to 1/4)	AA	C - AA - 1/4 X 1/2 SAE CE - AA - 1/4 X 1/2 X 1/4 SAE EC - AA - 3/8 X 1/2 ODF ECE - AA - 3/8 X 1/2 X 1/4 ODF SC - AA - 3/8 X 1/2 ODF SCE - AA - 3/8 X 1/2 X 1/4 ODF
1 (1/2 to 1)	**1-1/2** (3/4 to 1-1/2)	**1** (1/2 to 1)	**1** (1/2 to 1)	**1** (1/2 to 1)	**1** (1/2 to 1)	**1-1/2** (3/4 to 1-1/2)	**1** (1/2 to 1)	**1** (1/2 to 1)	A	C - A - 1/4 X 1/2 SAE CE - A - 1/4 X 1/2 X 1/4 SAE EC - A - 3/8 X 1/2 ODF ECE - A - 3/8 X 1/2 X 1/4 ODF SC - A - 3/8 X 1/2 ODF SCE - A - 3/8 X 1/2 X 1/4 ODF
2 (1 to 2)	**3** (1-1/2 to 3)	**2** (1 to 2)	**2** (1 to 2)	**2** (1 to 2)	**2** (1 to 2)	**3** (1-1/2 to 3)	**2** (1 to 2)	**2** (1 to 2)	B	CE - B - 1/4 X 1/2 X 1/4 SAE ECE - B - 3/8 X 1/2 X 1/4 ODF SCE - B - 3/8 X 1/2 X 1/4 ODF
3 (2 to 3)	**5** (3 to 5)	**3** (2 to 3)	**3** (2 to 3)	**3-1/2** (2 to 3-1/2)	**3-1/2** (2 to 3-1/2)	**5** (3 to 5)	**3-1/2** (2 to 3-1/2)	**3-1/2** (2 to 3-1/2)	C	CE - C - 1/4 X 1/2 X 1/4 SAE ECE - C - 3/8 X 1/2 X 1/4 ODF SCE - C - 3/8 X 1/2 X 1/4 ODF
5 (3 to 5)	**8** (5 to 8)	**5** (3 to 5)	**5** (3 to 5)	**6** (3-1/2 to 6)	**6** (3-1/2 to 6)	**8** (5 to 8)	**6** (3-1/2 to 6)	**6** (3-1/2 to 6)	D	ECE - D - 3/8 X 1/2 X 1/4 ODF

*See Pages 5 through 8 for Valve Assembly Dimensions.

Body Nomenclature (Example)

CE – **A** – **3/8 x 1/2 x 1/4 SAE**

Valve Model

C, EC, SC
Internally Equalized
CE, ECE, SCE
Externally Equalized

Orifice Designation

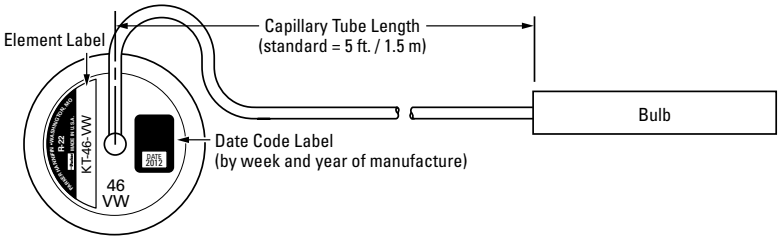
AA
A
B
C
D
See capacity table above for more details.

Connection Size and Style

Inlet x Outlet x External Equalizer Connection Sizes and Style

C Series Interchangeable Valve

Element



Element Nomenclature (Example)

KT	–	46	–	V		W
Abbreviation for "Kit"		Element Size Number		Refrigerant Code ①		Thermostatic Charge

① While many new refrigerants and refrigerant blends have a unique letter code, many use the same thermostatic element as the traditional refrigerant they replace. Refer to the table below to select the correct thermostatic element.

Recommended Thermostatic Valve Charges**

Application	Applicable Evaporator Temperature Range	Refrigerants			
		22 407C	12 134a	502 404A	410A
Low Temperature Refrigeration	-40°F to 0°F	VZ	–	SZ	–
Commercial Refrigeration	-30°F to +60°F	VW	JW	SW	–
Low Temperature Pressure Limiting	-40°F to +0°F	VX35	–	SX35	–
Commercial Pressure Limiting	-10°F to +60°F	VX100	JX60	–	ZX200
Air Conditioning	+30°F to +60°F	VX100	JX60	–	ZX200

Rainbow Charge Refrigerant Designation

J	R-134a, R-401A (MP39), R-401B (MP66), R-12
V	R-407C (AC9000), R-22
S	R-125, R-404A (HP62), R-402A (HP80), R-402B (HP81), R-507 (AZ50)
Z	R-410A (AZ20)

Refrigerant Color Code

R-12 - yellow
R-134a - light blue
R-22 - green
R-402A - light brown (sand)
R-402B - olive
R-404A - orange
R-407C - medium brown
R-410A - rose
R-502 - purple
R-507 - teal

****Application Factors:**

1. The Type "X" thermostatic charges have essentially the same characteristics as the conventional Z cross charges with one exception: they produce a pressure limit or MOP. The "X" charges are not intended as replacements for the Z charges - they should only be used where a definite pressure limit is required to prevent motor overloading.
2. All air conditioning and heat pump charges are intended for use with externally equalized valves.
3. For dual temperature applications, use the "W" charge.
4. The "W" charge may be used on applications down to -30°F (-34°C) on R-22, R-404A and R-507.
5. R-410A elements for use with ECE only.

†Charge Type

"W" (all-purpose) liquid charge maintains nearly flat superheat control over a -10°F to +60°F (-23°C to +15°C) evaporator temperature range.

"Z" (low temperature) charge provides fast pulldown benefits like a gas charge with the non-migrating benefits of a liquid charge; usable over a -40°F to 0°F (-40°C to -18°C) evaporator temperature range.

"X" (damped response) gas charge provides a pressure limiting (MOP) charge with anti-hunt characteristics over a -40°F to +60°F (-40°C to +15°C) evaporator temperature range.

Notes: M.O.P. not available on "W" or "Z" charge.

1. Maximum operational pressure 500 psig (35 bar) high side and 275 psig (19 bar) low side.
2. Maximum storage temperature 130°F (55°C).
3. Consult Parker for pressure and temperature exceptions.
4. Do not use "W" or "Z" liquid charges in applications where bulb temperatures can exceed 130°F (55°C).
   For these applications use type "X" MOP gas charge ***only***.

H Series and HC Series

The H series balanced port valve is designed specifically for air conditioning and heat pumps used in both air or water source systems. It offers features such as bleed ports and a variety of connection styles for the inlet, outlet and external equalizer.

The HC series adds a built-in 5 ton check valve for R-22, R-407C and R-410A heat pump applications with either factory set or field adjustable superheat.

Applications

- Air Conditioning Systems
- Heat Pump Systems
- Bi-flow (package) Heat Pump Systems

Features and Benefits

- Stainless steel power element
- Bleed ports available
- Bi-directional metering available
- Weight: 10.7 oz. (.30 kg)
- Factory set or field adjustable
- Low pressure drop internal check valve

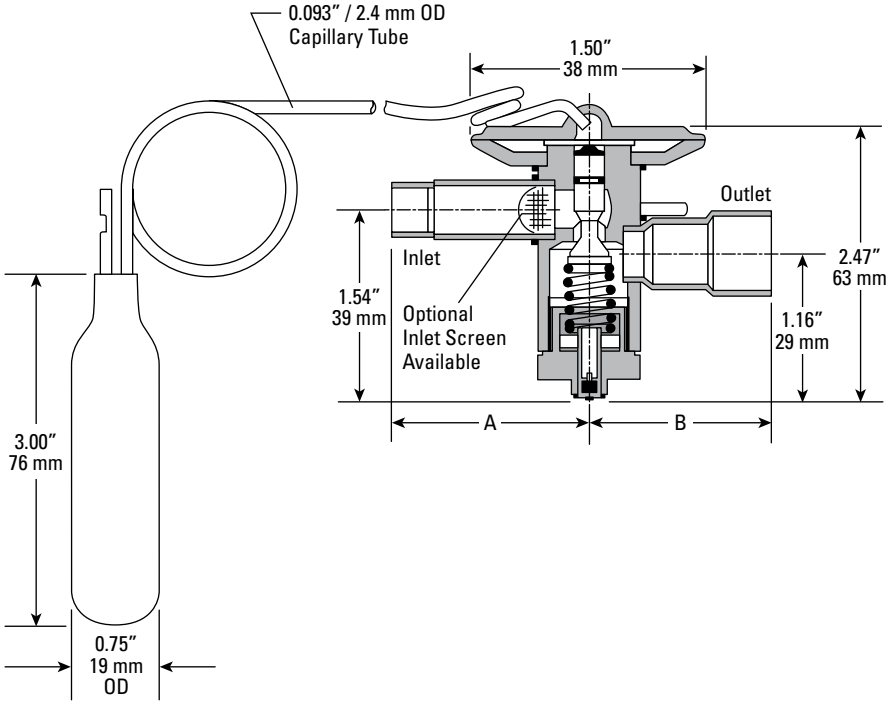
Specifications

Refrigerant	Refrigerant Designation	Nominal Capacity (Tons)	Valve Description		Rainbow Charges™	Bleed Port for Off Cycle Operation (Optional)	Connections - (Inches)	
			Internally Equalized	Externally Equalized			Inlet	Outlet
R-22 R-407C	V	1-1/2	HA 1-1/2V	HAE 1-1/2V	X100	B	1/4, 3/8, 1/2 & 5/8 ODF flo-rater	3/8, 1/2, 5/8 & 7/8 ODF flo-rater
		3	HA 3V	HAE 3V				
		5	HA 5V	HAE 5V				
		models with internal check valves - "C" designation						
		1-1/2	HCA 1-1/2V	HCAE 1-1/2V	X100	B	1/4, 3/8, 1/2 & 5/8 ODF flo-rater	3/8, 1/2, 5/8 & 7/8 ODF flo-rater
		3	HCA 3V	HCAE 3V				
		5	HCA 5V	HCAE 5V				
R-410A	Z	1-1/2	HA 1-1/2Z	HAE 1-1/2Z	X200	B	1/4, 3/8, 1/2 & 5/8 ODF flo-rater	3/8, 1/2, 5/8 & 7/8 ODF flo-rater
		3	HA 3Z	HAE 3Z				
		5	HA 5Z	HAE 5Z				
		specific models with internal check valves - "C" designation						
		1-1/2	HCA 1-1/2Z	HCAE 1-1/2Z	X200	B	1/4, 3/8, 1/2 & 5/8 ODF flo-rater	3/8, 1/2, 5/8 & 7/8 ODF flo-rater
		2	HCA 2Z	HCAE 2Z				
		3	HCA 3Z	HCAE 3Z				
		5	HCA 5Z	HCAE 5Z				

H Series and HC Series

Dimensions

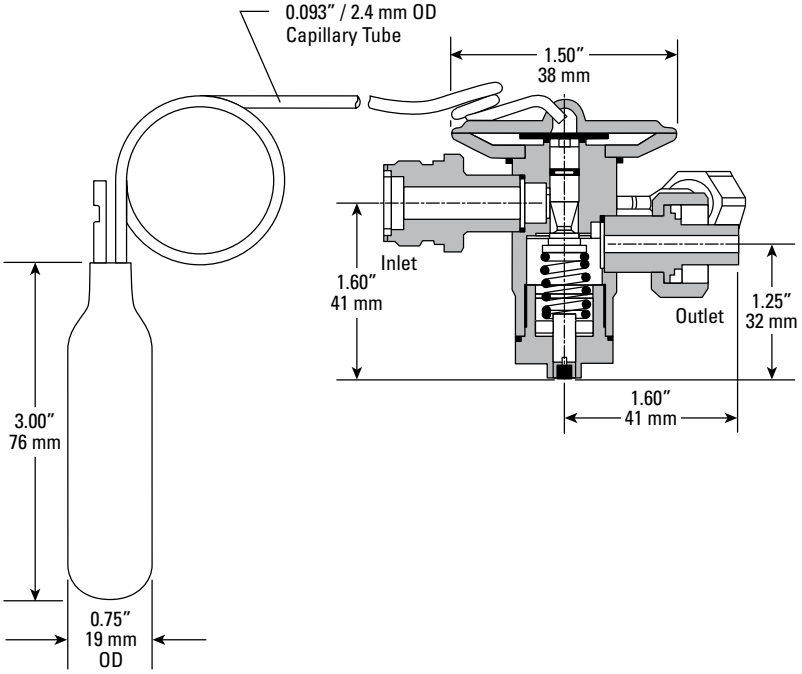
Connections ODF

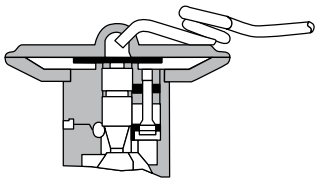


Fitting Size Inlet/Outlet	A	B
1/4	1.46" 37 mm	1.46" 37 mm
3/8	1.69" 43 mm	1.69" 43 mm
1/2	1.46 37 mm	1.46 37 mm
5/8	1.57" 40 mm	1.57" 40 mm
7/8	—	2.07" 53 mm

Dimensions

Connections – flo-rater
Inlet 3/4" – 20
Outlet 3/4" – 20





Check Valve Section

Allows reverse flow in heating mode.

EBSE Series

The EBSE series valve is a brass bar body valve and features a balanced port construction and extended ODF connections. The thermostatic element is replaceable. The balanced port construction makes this valve ideally suited for air conditioning and commercial refrigeration applications which operate over widely varying conditions.

Applications

- Air Conditioning
- Commercial Refrigeration

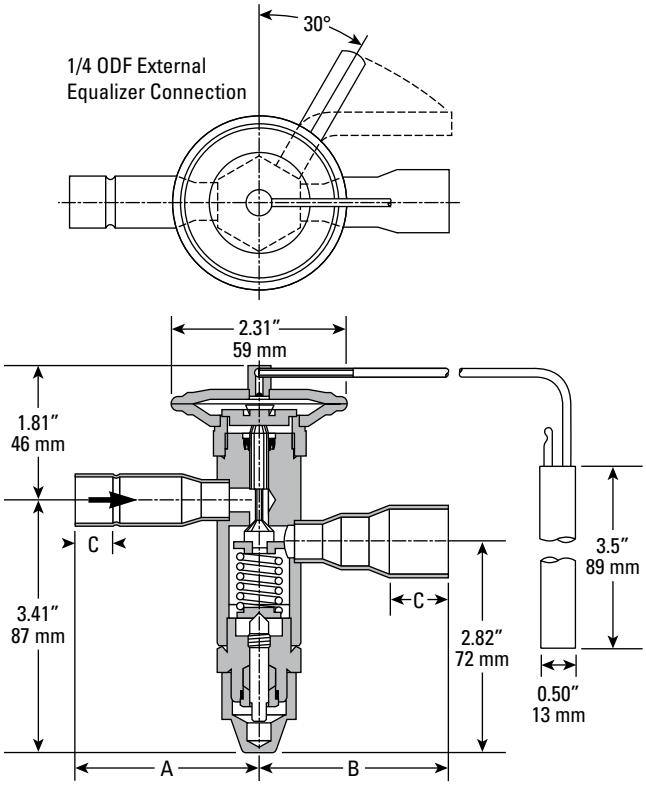
Features and Benefits

- Balanced port design
- Removable power element
- Field adjustable superheat
- 1/4" sweat external equalizer

Specifications

Refrigerant	Refrigerant Designation	Nominal Capacity (Tons)	Valve Description	Rainbow Charges™	Standard Tubing Length Feet (m)	Connection - (Inches)		External Equalizer Connection (Inches)
						Inlet	Outlet	
R-12 R-134a R-401A R-401B	J	5	EBSE-5-J	W	5 (1.5)	5/8 ODF	7/8 ODF	1/4 ODF
		7	EBSE-7-J					
		9	EBSE-9-J			7/8 ODF	1-1/8 ODF	
		12	EBSE-12-J				1-3/8 ODF	
R-402A R-402B R-404A R-502 R-507	S	6	EBSE-6-S	W Z X35	5 (1.5)	5/8 ODF	7/8 ODF	1/4 ODF
		7-1/2	EBSE-7-1/2-S					
		10	EBSE-10-S			7/8 ODF	1-1/8 ODF	
		13	EBSE-13-S				1-3/8 ODF	
R-22 R-407C R-422D	V	8	EBSE-8-V	W X100	5 (1.5)	5/8 ODF	7/8 ODF	1/4 ODF
		11	EBSE-11-V					
		15	EBSE-15-V			7/8 ODF	1-1/8 ODF	
		20	EBSE-20-V				1-3/8 ODF	

Dimensions



Fitting Size	A	B	C
5/8	2.46" 62 mm	—	.50" 13 mm
7/8	2.46" 62 mm	2.53" 64 mm	.75" 19 mm
1-1/8	—	2.53" 64 mm	.81" 21 mm
1-3/8	—	3.04 77 mm	.97" 25 mm

Replacement Elements

Refrigerant Designation	Element
V	KT-83-VW KT-83-VX100
J	KT-83-JW
S	KT-83-SW KT-83-SZ KT-83-SX35

OE Series

The OE series valve utilizes balanced port construction to provide optimum operation on medium to large tonnage air conditioning and refrigeration systems. Two brass body styles with copper ODF connections and a removable thermostatic power element provide the stability and control required in a variety of applications, especially where there are wide changes in load conditions. Body Style 1 has an R-22 nominal capacity up to 30 tons, while Body Style 2 extends the capacity range to 70 tons.

Applications

- Air Conditioning
- Process Chillers
- Commercial Refrigeration

Features and Benefits

- Balanced port design
- Removable power element
- Field adjustable superheat
- 1/4" sweat external equalizer
- 60" capillary tube

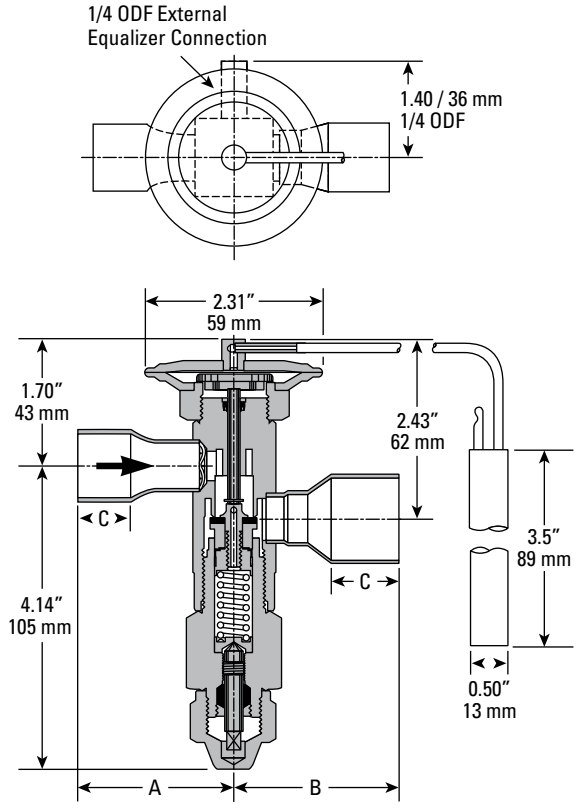
Specifications

Refrigerant	Refrigerant Designation	Nominal Capacity (Tons)	Valve Description	Rainbow Charges™	Standard Tubing Length Feet (m)	Connection - (Inches)		External Equalizer Connection (Inches)
						Inlet	Outlet	
R-12 R-134a R-401A R-401B	J	9	OE-9-J	W	5 (1.5)	7/8 ODF	1-1/8 ODF	1/4 ODF
		12	OE-12-J				1-3/8 ODF	
		16	OE-16-J			1-1/8 ODF		
		23	OE-23-J					
		32	OE-32-J					
		40	OE-40-J					
R-402A R-402B R-404A R-502 R-507	S	9	OE-9-S	W Z X35	5 (1.5)	7/8 ODF	1-1/8 ODF	1/4 ODF
		12	OE-12-S				1-3/8 ODF	
		21	OE-21-S			1-1/8 ODF		
		30	OE-30-S					
		35	OE-35-S					
		45	OE-45-S					
R-22 R-407C R-422D	V	15	OE-15-V	W X110	5 (1.5)	7/8 ODF	1-1/8 ODF	1/4 ODF
		20	OE-20-V				1-3/8 ODF	
		30	OE-30-V			1-1/8 ODF		
		40	OE-40-V					
		55	OE-55-V					
		70	OE-70-V					
R-410A	Z	20	OE-20-Z	X200	5 (1.5)	7/8 ODF	1-3/8 ODF	1/4 ODF
		25	OE-25-Z					
		35	OE-35-Z			1-1/8 ODF		
		50	OE-50-Z					
		60	OE-60-Z					

OE Series

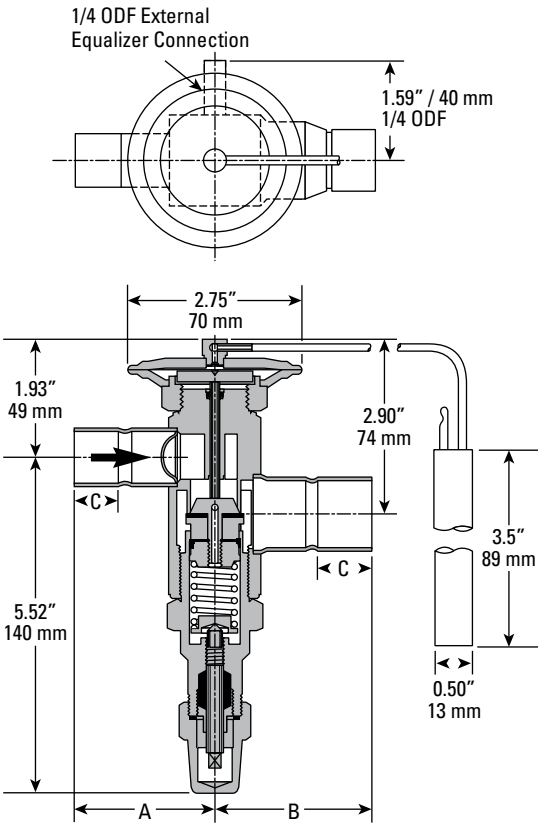
Dimensions – Inches

Type OE with Number 83 & 85 Element



Fitting Size Straight Thru ODF Solder	A	B	C
7/8	2.09″ 53 mm	—	0.75″ 19 mm
1-1/8	2.21″ 56 mm	2.23″ 57 mm	0.91″ 23 mm
1-3/8	—	2.39″ 61 mm	0.97″ 25 mm

Type OE with Number 33 & 85-3 Element



Fitting Size Straight Thru ODF Solder	A	B	C
7/8	2.09″ 53 mm	—	0.78″ 20 mm
1-1/8	2.69″ 68 mm	—	0.91″ 23 mm
1-3/8	—	2.84″ 72 mm	0.97″ 25 mm
1-5/8	—	3.12″ 79 mm	1.09″ 28 mm

Replacement Elements

Refrigerant Designation	Element	
V	KT-83-VW KT-83-VX100	KT-33-VW KT-33-VX100
Z	KT-85-ZX200	KT-85-3-ZX200
S	KT-83-SW KT-83-SZ KT-83-SX35	KT-33-SW KT-33-SZ KT-33-SX35
J	KT-83-JW	KT-33-JW

Capacity Tables

R-22 Capacities in Tons (R-407C Refrigerant & Liquid Temperature Correction Factor below)

Valve Type	Nominal Capacity (Tons) or Orifice Designation	Evaporator Temperature°F																							
		40°F								20°F								0°F							
		Pressure Drop (PSI)																							
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
N	1	0.87	1.0	1.1	1.2	1.3	1.4	1.5	1.6	0.85	0.98	1.1	1.2	1.3	1.4	1.5	1.5	0.75	0.87	0.97	1.1	1.2	1.2	1.3	1.4
N	3	2.6	3.0	3.4	3.7	4.0	4.3	4.5	4.7	2.5	2.9	3.3	3.6	3.9	4.1	4.4	4.6	2.3	2.6	2.9	3.2	3.5	3.7	3.9	4.1
H(E), HC(E)	1-1/2	1.3	1.5	1.7	1.8	2.0	2.1	2.3	2.4	1.3	1.5	1.6	1.8	1.9	2.1	2.2	2.3	1.1	1.3	1.5	1.6	1.8	1.9	2.0	2.1
H(E), HC(E)	3	2.6	3.0	3.4	3.7	4.0	4.2	4.4	4.5	2.6	2.9	3.3	3.6	3.9	4.2	4.3	4.4	2.3	2.6	3.0	3.2	3.5	3.7	3.8	3.9
H(E), HC(E)	5	4.3	5.0	5.6	6.1	6.6	7.1	7.2	7.3	4.2	4.9	5.5	6.0	6.5	6.9	7.0	7.1	3.8	4.4	4.9	5.4	5.8	6.2	6.3	6.4
SCE	AAA	0.30	0.35	0.39	0.43	0.46	0.50	0.53	0.55	0.30	0.34	0.38	0.42	0.45	0.48	0.51	0.54	0.26	0.30	0.33	0.37	0.40	0.42	0.45	0.47
C(E), EC(E), SCE	AA	0.52	0.60	0.67	0.73	0.79	0.85	0.90	0.95	0.51	0.58	0.65	0.72	0.77	0.83	0.88	0.92	0.44	0.51	0.57	0.63	0.68	0.72	0.77	0.81
C(E), EC(E), SCE	A	1.5	1.8	2.0	2.1	2.3	2.5	2.6	2.8	1.5	1.7	1.9	2.1	2.3	2.4	2.6	2.7	1.3	1.5	1.7	1.9	2.0	2.2	2.3	2.4
C(E), EC(E), SCE	B	2.8	3.2	3.6	3.9	4.2	4.5	4.8	5.1	2.7	3.1	3.5	3.8	4.1	4.4	4.7	4.9	2.4	2.8	3.1	3.4	3.7	3.9	4.2	4.4
C(E), EC(E), SCE	C	4.3	5.0	5.6	6.1	6.6	7.1	7.5	7.9	4.2	4.9	5.5	6.0	6.5	6.9	7.3	7.7	3.8	4.4	4.9	5.3	5.8	6.2	6.5	6.9
C(E), EC(E), SCE	D	6.9	8.0	9.0	9.8	10.6	11.3	12.0	12.7	6.8	7.8	8.7	9.6	10.3	11.0	11.7	12.3	6.0	7.0	7.8	8.5	9.2	9.9	10.5	11.0
EBSE	8	7.4	8.5	9.5	10.4	11.2	12.0	12.8	13.4	6.8	7.9	8.8	9.6	10.4	11.1	11.8	12.4	5.7	6.5	7.3	8.0	8.6	9.2	9.8	10.3
EBSE	11	10.0	11.5	12.9	14.1	15.2	16.3	17.3	18.2	9.2	10.7	11.9	13.0	14.1	15.1	16.0	16.8	7.6	8.8	9.9	10.8	11.7	12.5	13.2	14.0
EBSE	15	13.4	15.5	17.3	18.9	20.5	21.9	23.2	24.4	12.6	14.6	16.3	17.8	19.3	20.6	21.9	23.0	9.4	10.9	12.2	13.3	14.4	15.4	16.3	17.2
EBSE	20	19.3	22.3	25.0	27.4	29.5	31.6	33.5	35.3	17.7	20.4	22.8	25.0	27.0	28.9	30.6	32.3	13.1	15.1	16.9	18.5	20.0	21.4	22.7	23.9
OE	15	13.0	15.0	16.8	18.4	19.8	21.2	22.5	23.7	12.0	13.9	15.5	17.0	18.4	19.6	20.8	22.0	10.1	11.7	13.0	14.3	15.4	16.5	17.5	18.4
OE	20	19.2	22.2	24.8	27.2	29.4	31.4	33.3	35.1	17.8	20.6	23.0	25.2	27.2	29.1	30.8	32.5	14.9	17.2	19.3	21.1	22.8	24.4	25.9	27.3
OE	30	26.4	30.5	34.1	37.4	40.4	43.1	45.8	48.2	24.5	28.2	31.6	34.6	37.4	39.9	42.4	44.7	20.5	23.7	26.5	29.0	31.3	33.5	35.5	37.5
OE	40	34.9	40.3	45.1	49.4	53.3	57.0	60.5	63.7	33.7	38.9	43.5	47.6	51.5	55.0	58.3	61.5	24.8	28.6	32.0	35.1	37.9	40.5	42.9	45.3
OE	55	47.6	55.0	61.5	67.4	72.8	77.8	82.5	87.0	46.0	53.1	59.3	65.0	70.2	75.1	79.6	83.9	33.8	39.1	43.7	47.9	51.7	55.3	58.6	61.8
OE	70	63.2	73.0	81.6	89.4	96.6	103	110	115	61.0	70.5	78.8	86.3	93.2	99.6	106	111	44.9	51.9	58.0	63.5	68.6	73.3	77.8	82.0

These ratings are based on vapor free 100°F liquid refrigerant entering the expansion valve, and a maximum of 7°F change in superheat.

Refrigerant	Liquid Temperature Entering TEV							
	0°F	20°F	40°F	60°F	80°F	100°F	120°F	140°F
	Correction Factor							
R-22	1.57	1.45	1.34	1.23	1.12	1.00	0.88	0.76
R-407C	1.58	1.45	1.32	1.18	1.04	0.89	0.74	0.57

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

TEV Capacity = TEV Rating x CF Liquid Temperature – Example: Actual capacity of an SCE-B using R-407C at a 40°F evaporator, 125 psi pressure drop across the TEV, and a 80°F liquid temperature entering the TEV = 3.58 (from rating chart) x 1.04 (CF liquid temperature) = 3.72 tons

R-22 Capacities in Kilowatts (R-407C Refrigerant & Liquid Temperature Correction Factor below)

Valve Type	Nominal Capacity (kW) or Orifice Designation	Evaporator Temperature°C																							
		5°C								-5°C								-15°C							
		Pressure Drop (BAR)																							
		4	6	8	10	12	14	16	18	4	6	8	10	12	14	16	18	4	6	8	10	12	14	16	18
N	4	2.6	3.2	3.7	4.2	4.5	4.9	5.3	5.6	2.6	3.1	3.6	4.1	4.4	4.8	5.1	5.4	2.4	2.9	3.3	3.7	4.1	4.4	4.7	5.0
N	11	7.9	9.7	11.2	12.5	13.6	14.7	15.8	16.7	7.7	9.4	10.9	12.2	13.3	14.3	15.4	16.3	7.0	8.6	9.9	11.2	12.2	13.1	14.1	14.9
H(E), HC(E)	5	4.0	4.9	5.7	6.4	7.0	7.5	8.0	8.5	3.9	4.8	5.6	6.2	6.8	7.4	7.9	8.3	3.6	4.4	5.0	5.6	6.2	6.7	7.1	7.6
H(E), HC(E)	11	8.0	9.8	11.4	12.7	13.9	15.0	16.1	17.0	7.9	9.6	11.1	12.4	13.6	14.7	15.7	16.7	7.1	8.7	10.1	11.3	12.3	13.3	14.3	15.1
H(E), HC(E)	18	13.4	16.4	18.9	21.2	23.2	25.1	26.8	28.4	13.1	16.1	18.5	20.7	22.7	24.5	26.2	27.8	11.9	14.6	16.8	18.8	20.6	22.2	23.8	25.2
SCE	AAA	0.92	1.1	1.3	1.5	1.6	1.7	1.8	2.0	0.90	1.1	1.3	1.4	1.6	1.7	1.8	1.9	0.81	0.99	1.1	1.3	1.4	1.5	1.6	1.7
C(E), EC(E), SCE	AA	1.6	1.9	2.2	2.5	2.7	2.9	3.1	3.3	1.5	1.9	2.2	2.4	2.7	2.9	3.1	3.3	1.4	1.7	2.0	2.2	2.4	2.6	2.8	2.9
C(E), EC(E), SCE	A	4.6	5.6	6.5	7.3	8.0	8.6	9.2	9.7	4.5	5.5	6.3	7.1	7.8	8.4	9.0	9.5	4.1	5.0	5.8	6.5	7.1	7.7	8.2	8.7
C(E), EC(E), SCE	B	8.4	10.3	11.9	13.3	14.5	15.7	16.8	17.8	8.2	10.0	11.6	13.0	14.2	15.3	16.4	17.4	7.5	9.2	10.6	11.9	13.0	14.0	15.0	15.9
C(E), EC(E), SCE	C	13.1	16.1	18.5	20.7	22.7	24.5	26.2	27.8	12.8	15.7	18.1	20.3	22.2	24.0	25.6	27.2	11.7	14.4	16.6	18.6	20.3	22.0	23.5	24.9
C(E), EC(E), SCE	D	21.0	25.7	29.7	33.2	36.3	39.2	42.0	44.5	20.5	25.1	29.0	32.4	35.5	38.3	41.0	43.5	18.8	23.0	26.5	29.7	32.5	35.1	37.5	39.8
EBSE	28	22.4	27.4	31.6	35.4	38.7	41.8	44.7	47.4	20.9	25.5	29.5	33.0	36.1	39.0	41.7	44.2	17.9	22.0	25.3	28.3	31.0	33.5	35.8	38.0
EBSE	39	30.3	37.0	42.8	47.8	52.4	56.6	60.5	64.2	28.2	34.6	39.9	44.6	48.9	52.8	56.4	59.9	24.3	29.7	34.3	38.3	42.0	45.4	48.5	51.4
EBSE	53	40.6	49.8	57.5	64.2	70.4	76.0	81.3	86.2	38.5	47.1	54.4	60.9	66.7	72.0	77.0	81.6	30.9	37.8	43.6	48.8	53.5	57.7	61.7	65.5
EBSE	70	58.8	72.0	83.1	92.9	102	110	118	125	54.2	66.4	76.7	85.7	93.9	101	108	115	43.0	52.6	60.8	67.9	74.4	80.4	85.9	91.2
OE	53	39.5	48.3	55.8	62.4	68.3	73.8	78.9	83.7	36.8	45.1	52.0	58.2	63.7	68.9	73.6	78.1	31.9	39.1	45.1	50.5	55.3	59.7	63.8	67.7
OE	70	58.4	71.5	82.6	92.3	101	109	117	124	54.5	66.7	77.0	86.1	94.3	102	109	116	47.2	57.8	66.8	74.7	81.8	88.4	94.5	100
OE	105	80.2	98.3	113	127	139	150	160	170	74.8	91.6	106	118	130	140	150	159	64.9	79.5	91.8	103	112	121	130	138
OE	141	106	130	150	167	183	198	212	224	102	125	145	162	177	192	205	217	81.5	99.8	115	129	141	152	163	173
OE	193	144	177	204	228	250	270	289	306	140	171	198	221	242	261	279	296	111	136	157	176	193	208	222	236
OE	246	192	235	271	303	332	359	383	407	185	227	262	293	321	347	371	393	148	181	209	233	256	276	295	313

These ratings are based on vapor free 40°C liquid refrigerant entering the expansion valve, and a maximum of 4°C change in superheat.

Refrigerant	Liquid Temperature Entering TEV							
	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C
	Correction Factor							
R-22	1.52	1.42	1.32	1.21	1.11	1.00	0.89	0.78
R-407C	1.53	1.41	1.28	1.15	1.02	0.88	0.74	0.59

These factors include corrections for liquid refrigerant density and net refrigerating effect, and are based on an evaporator temperature of -15°C. However, they may be used for any evaporator temperature from -15°C to 5°C since the variation in the actual factors across this range is insignificant.

TEV Capacity = TEV Rating x CF Liquid Temperature – Example: Actual capacity of an SCE-B using R-407C at a 5°C evaporator, 8 bar pressure drop across the TEV, and a 30°C liquid temperature entering the TEV = 12.1 (from rating chart) x 1.02 (CF liquid temperature) = 12.3 kW

Capacity Tables

R-134a Capacities in Tons (R-401A, R-409A Refrigerant & Liquid Temperature Correction Factor below)

Valve Type	Nominal Capacity (Tons) or Orifice Designation	Evaporator Temperature °F																							
		40°F								20°F								0°F							
		Pressure Drop (PSI)																							
		40	60	80	100	120	140	160	180	40	60	80	100	120	140	160	180	40	60	80	100	120	140	160	180
N	1/2	0.59	0.72	0.83	0.93	1.0	1.1	1.2	1.3	0.56	0.69	0.79	0.89	0.98	1.1	1.1	1.2	0.49	0.61	0.70	0.78	0.85	0.92	0.99	1.1
N	2	1.8	2.2	2.5	2.8	3.1	3.3	3.5	3.8	1.7	2.1	2.4	2.7	2.9	3.1	3.4	3.6	1.5	1.8	2.1	2.3	2.6	2.8	3.0	3.1
C(E), EC(E), SCE	AA	0.35	0.43	0.50	0.56	0.61	0.66	0.70	0.74	0.34	0.41	0.47	0.53	0.58	0.63	0.67	0.71	0.32	0.39	0.45	0.50	0.55	0.60	0.64	0.68
C(E), EC(E), SCE	A	1.0	1.3	1.5	1.6	1.8	1.9	2.1	2.2	0.99	1.2	1.4	1.6	1.7	1.8	2.0	2.1	0.86	1.1	1.2	1.4	1.5	1.6	1.7	1.8
C(E), EC(E), SCE	B	1.9	2.3	2.7	3.0	3.3	3.5	3.8	4.0	1.8	2.2	2.6	2.9	3.1	3.4	3.6	3.8	1.6	1.9	2.2	2.5	2.7	3.0	3.2	3.4
C(E), EC(E), SCE	C	3.0	3.6	4.2	4.7	5.1	5.5	5.9	6.3	2.8	3.5	4.0	4.5	4.9	5.3	5.6	6.0	2.5	3.0	3.5	3.9	4.3	4.6	4.9	5.2
C(E), EC(E), SCE	D	4.7	5.8	6.7	7.5	8.2	8.8	9.4	10.0	4.5	5.5	6.4	7.1	7.8	8.4	9.0	9.6	3.9	4.8	5.6	6.2	6.8	7.4	7.9	8.4
EBSE	5	5.0	6.1	7.1	7.9	8.7	9.4	10.0	10.6	4.0	4.9	5.6	6.3	6.9	7.4	7.9	9.4	3.4	4.2	4.8	5.4	5.9	6.4	6.8	7.2
EBSE	7	6.9	8.4	9.7	10.9	11.9	12.9	13.8	14.6	5.5	6.7	7.7	8.6	9.5	10.2	10.9	11.6	4.7	5.8	6.6	7.4	8.1	8.8	9.4	10.0
EBSE	9	9.1	11.2	12.9	14.4	15.8	17.1	18.2	19.4	6.9	8.4	9.7	10.9	11.9	12.9	13.7	14.6	5.5	6.8	7.8	8.7	9.6	10.3	11.0	11.7
EBSE	12	13.1	16.0	18.5	20.7	22.6	24.4	26.1	27.7	9.9	12.1	14.0	15.6	17.1	18.5	19.7	20.9	7.7	9.5	10.9	12.2	13.4	14.5	15.4	16.4
OE	9	8.9	10.8	12.5	14.0	15.3	16.6	17.7	18.8	7.6	9.3	10.8	12.0	13.2	14.2	15.2	16.1	6.6	8.1	9.3	10.4	11.4	12.6	13.2	14.0
OE	12	11.5	14.1	16.3	18.2	19.9	21.5	23.0	24.4	9.9	12.1	14.0	15.6	17.1	18.5	19.8	21.0	8.6	10.5	12.1	13.6	14.9	16.0	17.1	18.2
OE	16	15.2	18.7	21.6	24.1	26.4	28.5	30.5	32.3	13.1	16.0	18.5	20.7	22.7	24.5	26.2	27.8	11.4	13.9	16.1	18.0	19.7	21.3	22.7	24.1
OE	23	22.6	27.7	32.0	35.8	39.2	42.3	45.2	48.0	21.2	25.9	29.9	33.5	36.7	39.6	42.3	44.9	17.5	21.4	24.7	27.6	30.3	32.7	34.9	37.1
OE	32	31.5	38.6	44.5	49.8	54.5	58.9	63.0	66.8	29.5	36.1	41.7	46.6	51.0	55.1	58.9	62.5	24.3	29.8	34.4	38.4	42.1	45.5	48.6	51.6
OE	40	39.3	48.2	55.6	62.2	68.1	73.6	78.7	83.5	36.8	45.1	52.1	58.2	63.8	68.9	73.6	78.1	30.4	37.2	43.0	48.0	52.6	56.9	60.8	64.5

These ratings are based on vapor free 100°F liquid refrigerant entering the expansion valve, and a maximum of 7°F change in superheat.

Refrigerant	Liquid Temperature Entering TEV							
	0°F	20°F	40°F	60°F	80°F	100°F	120°F	140°F
	Correction Factor							
R-134a	1.69	1.56	1.42	1.29	1.14	1.00	0.85	0.71
R-401A	1.75	1.62	1.49	1.36	1.23	1.09	0.95	0.81
R-409A	1.65	1.54	1.42	1.31	1.19	1.06	0.94	0.81

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

TEV Capacity = TEV Rating x CF Liquid Temperature – Example: Actual capacity of an SCE-B using R-409A at a 20°F evaporator, 120 psi pressure drop across the TEV, and a 80°F liquid temperature entering the TEV = 3.12 (from rating chart) x 1.19 (CF liquid temperature) = 3.72 tons

R-134a Capacities in Kilowatts (R-401A, R-409A Refrigerant & Liquid Temperature Correction Factor below)

Valve Type	Nominal Capacity (kW) or Orifice Designation	Evaporator Temperature °C																							
		5°C								-5°C								-15°C							
		Pressure Drop (BAR)																							
		2.5	4.0	5.5	7.0	8.5	10.0	11.5	13.0	2.5	4.0	5.5	7.0	8.5	10.0	11.5	13.0	2.5	4.0	5.5	7.0	8.5	10.0	11.5	13.0
N	3	1.9	2.4	2.9	3.2	3.6	3.9	4.1	4.4	1.9	2.3	2.7	3.1	3.4	3.7	4.0	4.2	1.7	2.1	2.5	2.8	3.1	3.3	3.6	3.8
N	7	5.8	7.3	8.6	9.7	10.7	11.5	12.4	13.2	5.5	7.0	8.2	9.3	10.2	11.1	11.9	12.7	5.0	6.3	7.4	8.3	9.2	9.9	10.7	11.3
C(E), EC(E), SCE	AA	1.2	1.5	1.7	1.9	2.1	2.3	2.5	2.6	1.1	1.4	1.6	1.8	2.0	2.2	2.4	2.5	1.1	1.3	1.6	1.8	1.9	2.1	2.3	2.4
C(E), EC(E), SCE	A	3.4	4.3	5.0	5.6	6.2	6.7	7.2	7.7	3.2	4.1	4.8	5.4	6.0	6.5	6.9	7.4	2.9	3.7	4.3	4.9	5.4	5.8	6.2	6.6
C(E), EC(E), SCE	B	6.2	7.8	9.2	10.3	11.4	12.3	13.2	14.1	5.9	7.5	8.8	9.9	10.9	11.8	12.7	13.5	5.3	6.7	7.9	8.9	9.8	10.6	11.4	12.1
C(E), EC(E), SCE	C	9.6	12.2	14.3	16.1	17.8	19.3	20.7	22.0	9.2	11.7	13.7	15.5	17.0	18.5	19.8	21.1	8.3	10.5	12.3	13.9	15.3	16.6	17.8	18.9
C(E), EC(E), SCE	D	15.4	19.5	22.9	25.8	28.4	30.8	33.1	35.2	14.8	18.7	21.9	24.7	27.3	29.6	31.7	33.7	13.3	16.8	19.7	22.2	24.5	26.5	28.5	30.3
EBSE	18	16.5	20.8	24.4	27.6	30.4	33.0	35.3	37.6	13.4	17.0	19.9	22.5	24.7	26.8	28.8	30.6	11.6	14.6	17.1	19.3	21.3	23.1	24.8	26.3
EBSE	25	22.7	28.7	33.7	38.0	41.9	45.4	48.7	51.8	18.5	23.4	27.4	30.9	34.1	37.0	39.7	42.2	15.9	20.1	23.6	26.6	29.4	31.9	34.2	36.3
EBSE	32	30.2	38.2	44.7	50.5	55.6	60.3	64.7	68.8	23.5	29.7	34.9	39.3	43.3	47.0	50.4	53.6	19.1	24.1	28.3	31.9	35.2	38.2	40.9	43.5
EBSE	42	43.2	54.6	64.1	72.3	79.6	86.4	92.6	98.5	33.7	42.7	50.0	56.4	62.2	67.4	72.3	76.9	26.9	34.0	39.9	45.0	49.6	53.8	57.7	61.4
OE	32	29.1	36.8	43.2	48.7	53.7	58.2	62.4	66.4	25.4	32.2	37.7	42.6	46.9	50.9	54.6	58.0	22.3	28.3	33.1	37.4	41.2	44.7	47.9	50.9
OE	42	37.8	47.9	56.1	63.3	69.8	75.7	81.2	86.3	33.1	41.8	49.0	55.3	61.0	66.1	70.9	75.4	29.0	36.7	43.1	48.6	53.5	58.1	62.3	66.2
OE	56	50.1	63.4	74.4	83.9	92.4	100	108	114	43.8	55.4	65.0	73.3	80.8	87.6	93.9	100	38.5	48.7	57.1	64.4	70.9	76.9	82.5	87.7
OE	81	74.1	93.7	110	124	137	148	159	169	69.8	88.3	104	117	129	140	150	159	60.0	75.9	89.0	100	111	120	129	137
OE	110	103	130	153	172	190	206	221	235	97.2	123	144	163	179	194	208	222	83.4	106	124	140	154	167	179	190
OE	140	129	163	191	216	238	258	276	294	121	154	180	203	224	243	260	277	104	132	155	175	192	209	224	238

These ratings are based on vapor free 40°C liquid refrigerant entering the expansion valve, and a maximum of 4°C change in superheat.

Refrigerant	Liquid Temperature Entering TEV							
	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C
	Correction Factor							
R-134a	1.64	1.52	1.39	1.26	1.13	1.00	0.87	0.73
R-401A	1.70	1.59	1.46	1.34	1.22	1.09	0.96	0.83
R-409A	1.61	1.50	1.40	1.29	1.18	1.07	0.95	0.83

These factors include corrections for liquid refrigerant density and net refrigerating effect, and are based on an evaporator temperature of -15°C. However, they may be used for any evaporator temperature from -15°C to 5°C since the variation in the actual factors across this range is insignificant.

TEV Capacity = TEV Rating x CF Liquid Temperature – Example: Actual capacity of an SCE-B using R-409A at a -5°C evaporator, 8.5 bar pressure drop across the TEV, and a 30°C liquid temperature entering the TEV = 11.2 (from rating chart) x 1.18 (CF liquid temperature) = 13.2 kW

Capacity Tables

R-404A Capacities in Tons (R-507 Refrigerant & Liquid Temperature Correction Factor below)

Valve Type	Nominal Capacity (Tons) or Orifice Designation	Evaporator Temperature °F															
		40°F								20°F							
		Pressure Drop (PSI)															
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
N	1/2	0.57	0.66	0.74	0.81	0.87	0.94	1.0	1.1	0.54	0.63	0.70	0.77	0.83	0.89	0.94	1.0
N	2	1.7	2.0	2.2	2.4	2.6	2.8	3.0	3.1	1.6	1.9	2.1	2.3	2.5	2.7	2.8	3.0
SCE	AAA	0.20	0.23	0.26	0.28	0.30	0.33	0.34	0.36	0.19	0.22	0.24	0.27	0.29	0.31	0.33	0.34
C(E), EC(E), SCE	AA	0.34	0.39	0.44	0.48	0.52	0.56	0.59	0.62	0.32	0.37	0.42	0.46	0.49	0.53	0.56	0.59
C(E), EC(E), SCE	A	1.0	1.2	1.3	1.4	1.5	1.6	1.7	1.8	0.95	1.1	1.2	1.3	1.5	1.6	1.7	1.7
C(E), EC(E), SCE	B	1.8	2.1	2.4	2.6	2.8	3.0	3.2	3.3	1.7	2.0	2.2	2.5	2.7	2.8	3.0	3.2
C(E), EC(E), SCE	C	2.9	3.3	3.7	4.1	4.4	4.7	5.0	5.2	2.7	3.1	3.5	3.8	4.2	4.4	4.7	5.0
C(E), EC(E), SCE	D	4.6	5.3	5.9	6.5	7.0	7.5	7.9	8.4	4.3	5.0	5.6	6.1	6.6	7.1	7.5	7.9
EBSE	6	4.9	5.7	6.4	7.0	7.6	8.1	8.6	9.0	4.4	5.0	5.6	6.2	6.7	7.1	7.5	8.0
EBSE	7-1/2	6.7	7.7	8.7	9.5	10.2	11.0	11.6	12.2	5.9	6.8	7.6	8.4	9.0	9.7	10.2	10.8
EBSE	10	8.3	9.5	10.7	11.7	12.6	13.5	14.3	15.1	7.5	8.6	9.6	10.5	11.4	12.2	12.9	13.6
EBSE	13	11.8	13.6	15.2	16.7	18.0	19.3	20.5	21.6	10.8	12.5	14.0	15.3	16.5	17.7	18.7	19.8
OE	9	8.4	9.7	10.8	11.9	12.8	13.7	14.5	15.3	7.2	8.3	9.2	10.1	10.9	11.7	12.4	13.1
OE	12	11.5	13.2	14.8	16.2	17.5	18.7	19.9	20.9	9.8	11.3	12.6	13.8	14.9	16.0	16.9	17.9
OE	21	18.5	21.4	23.9	26.2	28.3	30.3	32.1	33.8	15.8	18.3	20.4	22.4	24.1	25.8	27.4	28.9
OE	30	26.6	30.8	34.4	37.7	40.7	43.5	46.2	48.7	25.0	28.9	32.3	35.4	38.2	40.8	43.3	45.7
OE	35	30.9	35.7	39.9	43.7	47.2	50.4	53.5	56.4	29.0	33.5	37.4	41.0	44.3	47.3	50.2	52.9
OE	45	39.7	45.9	51.3	56.2	60.7	65	69	73	37.3	43.0	48.1	52.7	56.9	60.8	65	68

Valve Type	Nominal Capacity (Tons) or Orifice Designation	Evaporator Temperature °F															
		0°F								-10°F							
		Pressure Drop (PSI)															
		75	100	125	150	175	200	225	250	75	100	125	150	175	200	225	250
N	1/2	0.47	0.54	0.61	0.66	0.72	0.77	0.81	0.86	0.30	0.35	0.39	0.43	0.46	0.49	0.52	0.55
N	2	1.4	1.6	1.8	2.0	2.2	2.3	2.4	2.6	0.93	1.1	1.2	1.3	1.4	1.5	1.6	1.7
SCE	AAA	0.18	0.21	0.23	0.25	0.27	0.29	0.31	0.32	0.17	0.20	0.22	0.24	0.26	0.28	0.30	0.31
C(E), EC(E), SCE	AA	0.30	0.35	0.39	0.43	0.46	0.50	0.53	0.56	0.28	0.32	0.36	0.39	0.42	0.45	0.48	0.51
C(E), EC(E), SCE	A	0.8	1.0	1.1	1.2	1.3	1.3	1.4	1.5	0.53	0.61	0.68	0.75	0.81	0.86	0.91	0.96
C(E), EC(E), SCE	B	1.5	1.7	1.9	2.1	2.3	2.5	2.6	2.7	0.99	1.2	1.3	1.4	1.5	1.6	1.7	1.8
C(E), EC(E), SCE	C	2.4	2.7	3.0	3.3	3.6	3.8	4.1	4.3	1.5	1.7	1.9	2.1	2.3	2.4	2.6	2.7
C(E), EC(E), SCE	D	3.8	4.3	4.9	5.3	5.7	6.1	6.5	6.9	1.9	2.2	2.5	2.7	2.9	3.1	3.3	3.5
EBSE	6	3.6	4.1	4.6	5.1	5.5	5.8	6.2	6.5	2.9	3.4	3.8	4.1	4.5	4.8	5.1	5.4
EBSE	7-1/2	4.8	5.6	6.3	6.9	7.4	7.9	8.4	8.8	3.7	4.3	4.8	5.3	5.7	6.1	6.5	6.8
EBSE	10	5.6	6.5	7.3	7.9	8.6	9.2	9.7	10.3	4.8	5.5	6.1	6.7	7.3	7.8	8.2	8.7
EBSE	13	7.9	9.1	10.2	11.2	12.1	12.9	13.7	14.4	6.8	7.8	8.7	9.5	10.3	11.0	11.7	12.3
OE	9	5.6	6.5	7.2	7.9	8.6	9.2	9.7	10.2	4.3	5.0	5.6	6.1	6.6	7.1	7.5	7.9
OE	12	7.7	8.9	9.9	10.8	11.7	12.5	13.3	14.0	6.9	7.9	8.9	9.7	10.5	11.2	11.9	12.6
OE	21	11.1	12.8	14.3	15.7	16.9	18.1	19.2	20.2	8.2	9.5	10.6	11.7	12.6	13.5	14.3	15.1
OE	30	17.8	20.6	23.0	25.2	27.2	29.1	30.9	32.5	12.3	14.3	15.9	17.5	18.9	20.2	21.4	22.5
OE	35	20.7	23.8	26.7	29.2	31.5	33.7	35.8	37.7	13.4	15.5	17.3	19.0	20.5	21.9	23.2	24.5
OE	45	26.6	30.7	34.3	37.6	40.6	43.4	46	49	15.4	17.8	19.9	21.8	23.6	25.2	26.8	28.2

These ratings are based on vapor free 100°F liquid refrigerant entering the expansion valve, and a maximum of 7°F change in superheat.

Refrigerant	Liquid Temperature Entering TEV							
	0°F	20°F	40°F	60°F	80°F	100°F	120°F	140°F
	Correction Factor							
R-404A	2.04	1.84	1.64	1.43	1.22	1.00	0.77	0.53
R-507	1.95	1.76	1.56	1.37	1.18	0.98	0.76	0.50

These factors include corrections for liquid refrigerant density and net refrigerating effect, and are based on an evaporator temperature of 0°F. However, they may be used for any evaporator temperature from -10°F to 40°F since the variation in the actual factors across this range is insignificant.

TEV Capacity = TEV Rating x CF Liquid Temperature – Example: Actual capacity of an SCE-B using R-507 at a 20°F evaporator, 175 psi pressure drop across the TEV, and a 80°F liquid temperature entering the TEV = 1.91 (from rating chart) x 1.18 (CF liquid temperature) = 2.25 tons

Capacity Tables

R-404A Capacities in Kilowatts (R-507 Refrigerant & Liquid Temperature Correction Factor below)

Valve Type	Nominal Capacity (kW) or Orifice Designation	Evaporator Temperature °C															
		5°C								-5°C							
		Pressure Drop (BAR)															
		4	6	8	10	12	14	16	18	4	6	8	10	12	14	16	18
N	3	1.7	2.1	2.4	2.7	3.0	3.2	3.4	3.6	1.6	2.0	2.3	2.6	2.8	3.0	3.3	3.4
N	7	5.1	6.2	7.2	8.1	8.8	9.6	10.2	10.8	4.9	5.9	6.9	7.7	8.4	9.1	9.7	10.3
SCE	AAA	0.59	0.72	0.84	0.93	1.0	1.1	1.2	1.3	0.56	0.69	0.80	0.89	0.97	1.1	1.1	1.2
C(E), EC(E), SCE	AA	1.0	1.2	1.4	1.6	1.8	1.9	2.0	2.2	0.97	1.2	1.4	1.5	1.7	1.8	1.9	2.1
C(E), EC(E), SCE	A	3.0	3.7	4.2	4.7	5.2	5.6	6.0	6.3	2.8	3.5	4.0	4.5	4.9	5.3	5.7	6.0
C(E), EC(E), SCE	B	5.4	6.7	7.7	8.6	9.4	10.2	10.9	11.5	5.2	6.3	7.3	8.2	9.0	9.7	10.3	11.0
C(E), EC(E), SCE	C	8.5	10.4	12.0	13.5	14.8	15.9	17.0	18.1	8.1	9.9	11.5	12.8	14.0	15.2	16.2	17.2
C(E), EC(E), SCE	D	13.6	16.7	19.3	21.5	23.6	25.5	27.3	28.9	13.0	15.9	18.3	20.5	22.5	24.3	25.9	27.5
EBSE	21	14.4	17.7	20.4	22.8	25.0	27.0	28.9	30.6	12.9	15.8	18.3	20.4	22.4	24.1	25.8	27.4
EBSE	26	19.6	24.0	27.7	31.0	33.9	36.7	39.2	41.6	17.5	21.5	24.8	27.7	30.3	32.8	35.0	37.2
EBSE	35	24.1	29.5	34.1	38.1	41.8	45.1	48.2	51.2	22.0	27.0	31.1	34.8	38.1	41.2	44.0	46.7
EBSE	46	34.4	42.2	48.7	54.4	59.6	64.4	68.9	73.0	31.9	39.0	45.1	50.4	55.2	59.6	63.7	67.6
OE	32	24.5	30.0	34.7	38.8	42.5	45.9	49.1	52.0	21.3	26.1	30.1	33.7	36.9	39.9	42.6	45.2
OE	42	33.6	41.1	47.5	53.1	58.1	62.8	67.1	71.2	29.2	35.7	41.2	46.1	50.5	54.5	58.3	61.8
OE	74	54.2	66.4	76.7	85.7	93.9	101	108	115	47.1	57.7	66.6	74.5	81.6	88.1	94.2	99.9
OE	110	77.6	95.1	110	123	134	145	155	165	73.4	89.9	104	116	127	137	147	156
OE	120	90.0	110	127	142	156	168	180	191	85.1	104	120	134	147	159	170	180
OE	160	116	142	164	183	200	216	231	245	109	134	155	173	189	205	219	232

Valve Type	Nominal Capacity (kW) or Orifice Designation	Evaporator Temperature °C															
		-15°C								-25°C							
		Pressure Drop (BAR)															
		4	6	8	10	12	14	16	18	4	6	8	10	12	14	16	18
N	3	1.4	1.8	2.0	2.3	2.5	2.7	2.9	3.1	0.86	1.1	1.2	1.4	1.5	1.6	1.7	1.8
N	7	4.3	5.3	6.1	6.8	7.5	8.1	8.6	9.2	2.6	3.2	3.7	4.2	4.6	5.0	5.3	5.6
SCE	AAA	0.53	0.65	0.75	0.84	0.92	1.0	1.1	1.1	0.48	0.59	0.68	0.77	0.84	0.91	1.0	1.0
C(E), EC(E), SCE	AA	0.91	1.1	1.3	1.4	1.6	1.7	1.8	1.9	0.79	1.0	1.1	1.2	1.4	1.5	1.6	1.7
C(E), EC(E), SCE	A	2.5	3.1	3.6	4.0	4.4	4.7	5.1	5.4	1.5	1.8	2.1	2.4	2.6	2.8	3.0	3.2
C(E), EC(E), SCE	B	4.6	5.6	6.5	7.3	8.0	8.6	9.2	9.8	2.8	3.5	4.0	4.5	4.9	5.3	5.6	6.0
C(E), EC(E), SCE	C	7.2	8.8	10.2	11.4	12.5	13.5	14.4	15.3	4.2	5.2	6.0	6.7	7.3	7.9	8.4	8.9
C(E), EC(E), SCE	D	11.5	14.1	16.3	18.2	20.0	21.6	23.1	24.5	5.3	6.5	7.5	8.4	9.2	9.9	10.6	11.3
EBSE	21	10.9	13.4	15.5	17.3	18.9	20.5	21.9	23.2	8.0	9.8	11.3	12.6	13.8	14.9	16.0	16.9
EBSE	26	14.8	18.2	21.0	23.5	25.7	27.8	29.7	31.5	10.2	12.4	14.4	16.1	17.6	19.0	20.3	21.6
EBSE	35	17.6	21.6	24.9	27.9	30.5	33.0	35.2	37.4	13.1	16.0	18.5	20.7	22.7	24.5	26.2	27.8
EBSE	46	25.0	30.6	35.4	39.5	43.3	46.8	50.0	53.0	18.6	22.8	26.4	29.5	32.2	34.9	37.3	39.6
OE	32	17.4	21.3	24.6	27.5	30.1	32.5	34.8	36.9	12.1	14.8	17.0	19.1	20.9	22.5	24.1	25.6
OE	42	23.8	29.1	33.6	37.6	41.2	44.5	47.6	50.5	19.2	23.5	27.2	30.4	33.3	35.9	38.4	40.7
OE	74	35.5	43.5	50.2	56.1	61.5	66.4	71.0	75.3	23.0	28.2	32.5	36.4	39.9	43.1	46.0	48.8
OE	110	56.8	69.6	80.4	89.9	98.5	106	114	121	34.5	42.2	48.7	54.5	59.7	64.5	68.9	73.1
OE	120	65.9	80.7	93.2	104	114	123	132	140	37.4	45.8	52.9	59.2	64.8	70.0	74.8	79.4
OE	160	84.7	104	120	134	147	158	169	180	43.1	52.8	61.0	68.2	74.7	80.7	86.3	91.5

These ratings are based on vapor free 40°C liquid refrigerant entering the expansion valve, and a maximum of 4°C change in superheat.

Refrigerant	Liquid Temperature Entering TEV							
	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C
	Correction Factor							
R-404A	1.98	1.79	1.60	1.41	1.21	1.00	0.79	0.56
R-507	1.89	1.71	1.53	1.35	1.17	0.98	0.78	0.53

These factors include corrections for liquid refrigerant density and net refrigerating effect, and are based on an evaporator temperature of -15°C. However, they may be used for any evaporator temperature from -25°C to 5°C since the variation in the actual factors across this range is insignificant.

TEV Capacity = TEV Rating x CF Liquid Temperature – Example: Actual capacity of an SCE-B using R-507 at a -5°C evaporator, 12 bar pressure drop across the TEV, and a 30°C liquid temperature entering the TEV = 6.72 (from rating chart) x 1.17 (CF liquid temperature) = 7.86 kW

Capacity Tables

R-410A Capacities in Tons

Valve Type	Nominal Capacity (Tons) or Orifice Designation	Evaporator Temperature °F																	
		40°F						20°F						0°F					
		Pressure Drop (PSI)																	
		120	160	200	240	280	320	120	160	200	240	280	320	120	160	200	240	280	320
H(E), HC(E)	1-1/2	1.3	1.5	1.7	1.8	2.0	2.1	1.3	1.5	1.6	1.8	1.9	2.1	1.2	1.4	1.6	1.7	1.9	2.0
H(E), HC(E)	3	2.6	3.0	3.4	3.7	4.0	4.2	2.6	2.9	3.3	3.6	3.9	4.2	2.4	2.8	3.2	3.5	3.7	4.0
H(E), HC(E)	5	4.3	5.0	5.6	6.1	6.6	7.1	4.4	4.9	5.5	6.0	6.5	6.9	4.1	4.7	5.3	5.8	6.2	6.7
ECE	AA	0.62	0.72	0.80	0.88	0.95	1.0	0.61	0.70	0.78	0.86	0.93	0.99	0.53	0.61	0.69	0.75	0.81	0.87
ECE	A	1.8	2.1	2.3	2.6	2.8	3.0	1.8	2.1	2.3	2.5	2.7	2.9	1.6	1.8	2.0	2.2	2.4	2.6
ECE	B	3.3	3.8	4.3	4.7	5.1	5.4	3.2	3.7	4.2	4.6	5.0	5.3	2.9	3.3	3.7	4.1	4.4	4.7
ECE	C	5.2	6.0	6.7	7.3	7.9	8.5	5.1	5.9	6.5	7.2	7.7	8.3	4.5	5.2	5.8	6.4	6.9	7.4
ECE	D	8.3	9.6	10.7	11.7	12.7	13.6	8.1	9.4	10.5	11.5	12.4	13.2	7.2	8.4	9.3	10.2	11.1	11.8
ECE	12-1/2	10.8	12.5	14.0	15.3	16.5	17.7	10.6	12.2	13.6	14.9	16.1	17.2	9.4	10.9	12.2	13.3	14.4	15.4
ECE	15	12.6	14.5	16.2	17.8	19.2	20.5	12.3	14.1	15.8	17.3	18.7	20.0	10.9	12.6	14.1	15.5	16.7	17.9
OE	20	17.3	20.0	22.4	24.5	26.5	28.3	16.9	19.5	21.8	23.9	25.8	27.6	15.9	18.4	20.6	22.5	24.3	26.0
OE	25	20.8	24.0	26.8	29.4	31.7	33.9	20.3	23.4	26.2	28.7	31.0	33.1	19.1	22.1	24.7	27.0	29.2	31.2
OE	35	28.6	33.0	36.9	40.4	43.7	46.7	27.9	32.2	36.0	39.4	42.6	45.5	26.3	30.3	33.9	37.2	40.1	42.9
OE	50	43.3	50.0	55.9	61.2	66.1	70.7	42.2	48.8	54.5	59.7	64.5	69.0	39.8	46.0	51.4	56.3	60.8	65.0
OE	60	52.0	60.0	67.1	73.5	79.4	84.8	50.7	58.5	65.4	71.7	77.4	82.8	47.8	55.2	61.7	67.5	73.0	78.0

These ratings are based on vapor free 100°F liquid refrigerant entering the expansion valve, and a maximum of 7°F change in superheat.

Refrigerant	Liquid Temperature Entering TEV							
	0°F	20°F	40°F	60°F	80°F	100°F	120°F	140°F
	Correction Factor, CF Liquid Temperature							
R-410A	1.79	1.63	1.47	1.32	1.16	1.00	0.83	0.62

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

TEV Capacity = TEV Rating x CF Liquid Temperature – Example: Actual capacity of an HCE-3 using R-410A at a 40°F evaporator, 160 psi pressure drop across the TEV, and a 80°F liquid temperature entering the TEV = 3.00 (from rating chart) x 1.16 (CF liquid temperature) = 3.48 tons

R-410A Capacities in Kilowatts

Valve Type	Nominal Capacity (kW) or Orifice Designation	Evaporator Temperature °C																	
		5°C						-5°C						-15°C					
		Pressure Drop (BAR)																	
		8	11	14	17	20	23	8	11	14	17	20	23	8	11	14	17	20	23
H(E), HC(E)	5	4.5	5.3	5.9	6.6	7.1	7.6	4.4	5.2	5.8	6.4	6.9	7.5	4.3	5.0	5.7	6.3	6.7	7.3
H(E), HC(E)	11	9.0	10.5	11.9	13.1	14.2	15.2	8.8	10.3	11.6	12.8	13.9	14.9	8.6	10.0	11.3	12.5	13.3	14.5
H(E), HC(E)	18	15.0	17.6	19.8	21.8	23.7	25.4	14.7	17.2	19.4	21.4	23.2	24.9	14.3	16.7	18.9	20.8	22.3	24.2
ECE	AA	2.1	2.5	2.8	3.0	3.3	3.5	2.0	2.4	2.7	3.0	3.2	3.5	1.8	2.2	2.4	2.7	2.9	3.1
ECE	A	6.1	7.1	8.1	8.9	9.6	10.3	6.0	7.0	7.9	8.7	9.4	10.1	5.5	6.4	7.2	8.0	8.6	9.3
ECE	B	11.1	13.1	14.7	16.2	17.6	18.9	10.9	12.8	14.4	15.9	17.2	18.5	10.0	11.7	13.2	14.5	15.8	16.9
ECE	C	17.4	20.4	23.0	25.4	27.5	29.5	17.0	19.9	22.5	24.8	26.9	28.8	15.6	18.3	20.6	22.7	24.6	26.4
ECE	D	27.8	32.6	36.8	40.6	44.0	47.2	27.2	31.9	36.0	39.7	43.0	46.2	24.9	29.2	33.0	36.3	39.4	42.3
ECE	44	36.3	42.5	48.0	52.9	57.4	61.5	35.5	41.6	46.9	51.7	56.1	60.2	32.5	38.1	43.0	47.4	51.4	55.1
ECE	53	42.1	49.5	55.7	61.4	66.5	71.4	41.2	48.3	54.4	60.0	65.1	69.8	37.7	44.2	49.9	54.9	59.6	63.9
OE	70	57.3	67.1	75.8	83.5	90.5	97.1	56.2	65.9	74.3	81.9	88.8	95.2	53.7	62.9	70.9	78.1	84.7	90.9
OE	88	68.7	80.6	90.9	100	109	117	67.4	79.0	89.2	98.2	107	114	64.3	75.4	85.1	93.8	102	109
OE	123	94.5	111	125	138	149	160	92.7	109	123	135	147	157	88.4	104	117	129	140	150
OE	176	143	168	189	209	226	243	140	165	186	205	222	238	134	157	177	195	212	227
OE	211	172	201	227	250	272	291	168	198	223	246	266	286	161	189	213	234	254	273

These ratings are based on vapor free 40°C liquid refrigerant entering the expansion valve, and a maximum of 4°C change in superheat.

Refrigerant	Liquid Temperature Entering TEV							
	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C
	Correction Factor, CF Liquid Temperature							
R-410A	1.73	1.59	1.44	1.30	1.15	1.00	0.84	0.65

These factors include corrections for liquid refrigerant density and net refrigerating effect, and are based on an evaporator temperature of -15°C. However, they may be used for any evaporator temperature from -15°C to 5°C since the variation in the actual factors across this range is insignificant.

TEV Capacity = TEV Rating x CF Liquid Temperature – Example: Actual capacity of an HCE-3 using R-410A at a 5°C evaporator, 11 bar pressure drop across the TEV, and a 30°C liquid temperature entering the TEV = 10.5 (from rating chart) x 1.15 (CF liquid temperature) = 12.1 kW

A Series Constant Pressure (Automatic) Valves

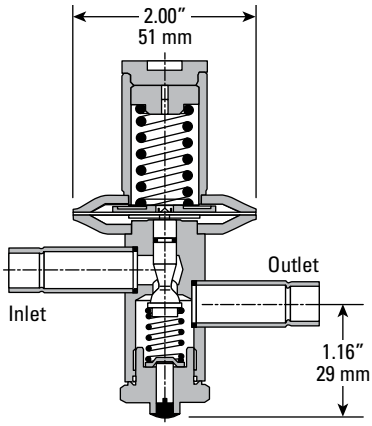
Specifications

- 0-90 psig adjustment range
- Bypass bleeds available
- Construction: Brass, copper and stainless steel
- Internally equalized
- U.L. recognized for maximum operating pressure of 500 psig high side, 400 psig low side

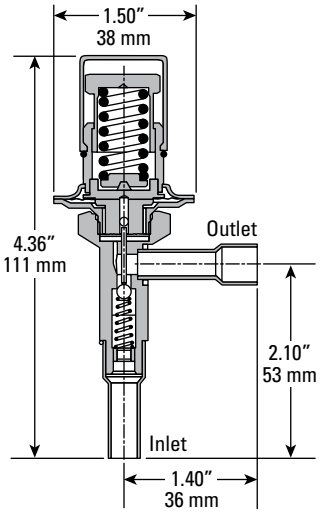
Model No.	Equalizer	Connections (Inches)	
		Inlet	Outlet
AS	Internal	1/4 ODF	3/8 ODF
A1	Internal	1/4 ODF	1/4 NPTF
A1	Internal	1/4 SAE	1/4 NPTF
A2*	Internal	1/4 SAE	1/2 SAE
A3	Internal	3/8 SAE	1/2 SAE
A4	Internal	1/4 SAE	1/2 SAE
A4	Internal	3/8 SAE	1/2 SAE
A7	Internal	1/4 ODF	1/4 ODF
A7	Internal	1/4 ODF	3/8 ODF
A7	Internal	3/8 ODF	3/8 ODF
A7	Internal	3/8 SAE	3/8 SAE
AT	Internal	1/4 SAE	1/4 NPTF
AT	Internal	1/4 ODF	1/4 NPTF

*1/2" x 3/8" SAE flare adaptor available.

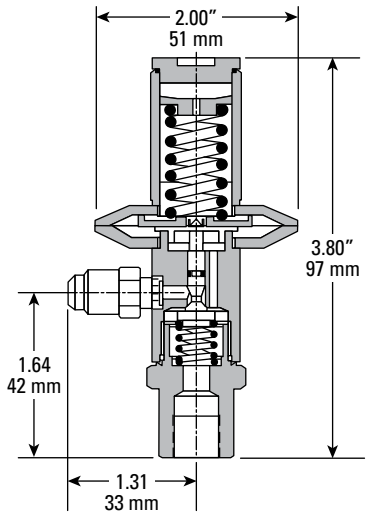
Model A7



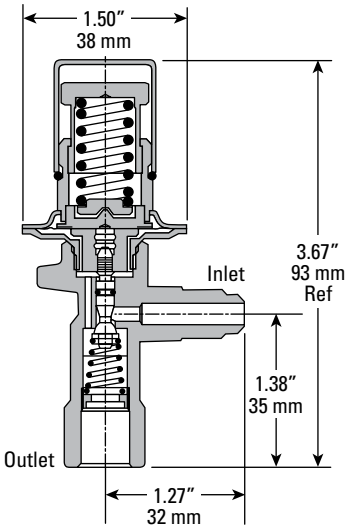
Model AS



Model AT

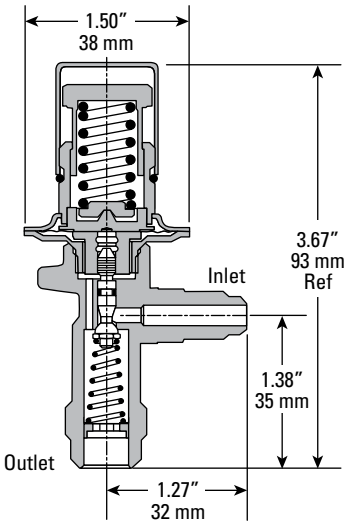


Model A1

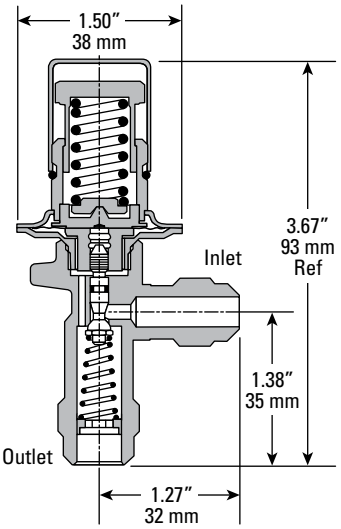


A Series Constant Pressure (Automatic) Valves

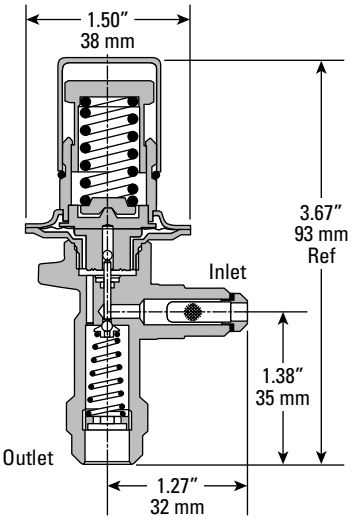
Model A2



Model A3



Model A4



Capacity Tables

R-134a Capacities in Tons (R-401A, R-409A Refrigerant & Liquid Temperature Correction Factor below)

Valve Type	Orifice	Nominal Capacity (Tons)	Capacity Range (Tons)	Evaporator Temperature °F																	
				40°F						20°F						0°F					
				Pressure Drop (PSI)																	
				40	60	80	100	120	140	60	80	100	120	140	160	60	80	100	120	140	160
A1, A2, AT	B	2	1 to 2	1.63	2.00	2.31	2.58	2.83	3.06	1.90	2.19	2.45	2.69	2.90	3.10	1.70	1.96	2.19	2.40	2.60	2.78
A4	—	1/2	1/4 to 3/4	0.61	0.75	0.87	0.97	1.06	1.15	0.71	0.82	0.92	1.01	1.09	1.16	0.64	0.74	0.82	0.90	0.97	1.04
A7-AA	AA	1/2	1/8 to 1/2	0.41	0.50	0.58	0.65	0.71	0.76	0.48	0.55	0.61	0.67	0.73	0.78	0.43	0.49	0.55	0.60	0.65	0.69
A7-A	A	1	1/4 to 1	0.82	1.00	1.15	1.29	1.41	1.53	0.95	1.10	1.23	1.34	1.45	1.55	0.85	0.98	1.10	1.20	1.30	1.39
A7-B	B	2	1 to 2	1.63	2.00	2.31	2.58	2.83	3.06	1.90	2.19	2.45	2.69	2.90	3.10	1.70	1.96	2.19	2.40	2.60	2.78
A7-C	C	3	1-1/2 to 3	2.45	3.00	3.46	3.87	4.24	4.58	2.85	3.29	3.68	4.03	4.35	4.65	2.55	2.94	3.29	3.61	3.90	4.16
AS, ASB20	—	1	1/4 to 1	0.82	1.00	1.15	1.29	1.41	1.53	0.95	1.10	1.23	1.34	1.45	1.55	0.85	0.98	1.10	1.20	1.30	1.39

Valve Type	Orifice	Nominal Capacity (Tons)	Capacity Range (Tons)	Evaporator Temperature °F																	
				-10°F						-20°F						-40°F					
				Pressure Drop (PSI)																	
				80	100	120	140	160	180	80	100	120	140	160	180	80	100	120	140	160	180
A1, A2, AT	B	2	1 to 2	1.64	1.83	2.01	2.17	2.32	2.46	1.34	1.50	1.64	1.77	1.89	2.01	0.88	0.98	1.07	1.16	1.24	1.32
A4	—	1/2	1/4 to 3/4	0.61	0.69	0.75	0.81	0.87	0.92	0.50	0.56	0.62	0.66	0.71	0.75	0.33	0.37	0.40	0.44	0.47	0.49
A7-AA	AA	1/2	1/8 to 1/2	0.41	0.46	0.50	0.54	0.58	0.61	0.33	0.37	0.41	0.44	0.47	0.50	0.22	0.25	0.27	0.29	0.31	0.33
A7-A	A	1	1/4 to 1	0.82	0.92	1.00	1.08	1.16	1.23	0.67	0.75	0.82	0.89	0.95	1.00	0.44	0.49	0.54	0.58	0.62	0.66
A7-B	B	2	1 to 2	1.64	1.83	2.01	2.17	2.32	2.46	1.34	1.50	1.64	1.77	1.89	2.01	0.88	0.98	1.07	1.16	1.24	1.32
A7-C	C	3	1-1/2 to 3	2.46	2.75	3.01	3.25	3.48	3.69	2.01	2.25	2.46	2.66	2.84	3.01	1.32	1.47	1.61	1.74	1.86	1.97
AS, ASB20	—	1	1/4 to 1	0.82	0.92	1.00	1.08	1.16	1.23	0.67	0.75	0.82	0.89	0.95	1.00	0.44	0.49	0.54	0.58	0.62	0.66

■ Gold areas are standard conditions.

Refrigerant	Liquid Temperature Entering AEV							
	0°F	20°F	40°F	60°F	80°F	100°F	120°F	140°F
	Correction Factor							
R-134a	1.69	1.56	1.42	1.29	1.14	1.00	0.85	0.71
R-401A	1.75	1.62	1.49	1.36	1.23	1.09	0.95	0.81
R-409A	1.65	1.54	1.42	1.31	1.19	1.06	0.94	0.81

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

AEV Capacity = AEV Rating x CF Liquid Temperature – Example: Actual capacity of an A7-B using R-409A at a 20°F evaporator, 120 psi pressure drop across the AEV, and a 80°F liquid temperature entering the AEV = 2.69 (from rating chart) x 1.19 (CF liquid temperature) = 3.20 tons

R-134a Capacities in Kilowatts (R-401A, R-409A Refrigerant & Liquid Temperature Correction Factor below)

Valve Type	Orifice	Nominal Capacity (kW)	Capacity Range (kW)	Evaporator Temperature °C																	
				10°C						0°C						-10°C					
				Pressure Drop (BAR)																	
				3	4	6	7	8	10	4	6	7	8	10	11	4	6	7	8	10	11
A1, A2, AT	B	7	4 to 7	6.21	7.17	8.79	9.49	10.1	11.3	6.89	8.44	9.11	9.74	10.9	11.4	6.46	7.91	8.54	9.13	10.2	10.7
A4	—	3	1 to 3	2.33	2.69	3.30	3.56	3.80	4.25	2.58	3.16	3.42	3.65	4.08	4.28	2.42	2.97	3.20	3.42	3.83	4.02
A7-AA	AA	2	1/2 to 2	1.55	1.79	2.20	2.37	2.54	2.84	1.72	2.11	2.28	2.44	2.72	2.86	1.61	1.98	2.14	2.28	2.55	2.68
A7-A	A	4	1 to 4	3.11	3.59	4.39	4.75	5.07	5.67	3.44	4.22	4.56	4.87	5.45	5.71	3.23	3.95	4.27	4.57	5.10	5.35
A7-B	B	7	4 to 7	6.21	7.17	8.79	9.49	10.1	11.3	6.89	8.44	9.11	9.74	10.9	11.4	6.46	7.91	8.54	9.13	10.2	10.7
A7-C	C	11	5 to 11	9.32	10.8	13.2	14.2	15.2	17.0	10.3	12.7	13.7	14.6	16.3	17.1	9.69	11.9	12.8	13.7	15.3	16.1
AS, ASB20	—	4	1 to 4	3.11	3.59	4.39	4.75	5.07	5.67	3.44	4.22	4.56	4.87	5.45	5.71	3.23	3.95	4.27	4.57	5.10	5.35

Valve Type	Orifice	Nominal Capacity (kW)	Capacity Range (kW)	Evaporator Temperature°C																	
				-20°C						-30°C						-40°C					
				Pressure Drop (BAR)																	
				6	7	8	10	11	12	6	7	8	10	11	12	6	7	8	10	11	12
A1, A2, AT	B	7	4 to 7	6.77	7.31	7.81	8.74	9.16	9.57	5.01	5.41	5.78	6.47	6.78	7.08	3.25	3.51	3.75	4.20	4.40	4.60
A4	—	3	1 to 3	2.54	2.74	2.93	3.28	3.44	3.59	1.88	2.03	2.17	2.42	2.54	2.66	1.22	1.32	1.41	1.57	1.65	1.72
A7-AA	AA	2	1/2 to 2	1.69	1.83	1.95	2.18	2.29	2.39	1.25	1.35	1.45	1.62	1.70	1.77	0.81	0.88	0.94	1.05	1.10	1.15
A7-A	A	4	1 to 4	3.38	3.65	3.91	4.37	4.58	4.78	2.50	2.70	2.89	3.23	3.39	3.54	1.63	1.76	1.88	2.10	2.20	2.30
A7-B	B	7	4 to 7	6.77	7.31	7.81	8.74	9.16	9.57	5.01	5.41	5.78	6.47	6.78	7.08	3.25	3.51	3.75	4.20	4.40	4.60
A7-C	C	11	5 to 11	10.1	11.0	11.7	13.1	13.7	14.4	7.51	8.11	8.68	9.70	10.2	10.6	4.88	5.27	5.63	6.30	6.60	6.90
AS, ASB20	—	4	1 to 4	3.38	3.65	3.91	4.37	4.58	4.78	2.50	2.70	2.89	3.23	3.39	3.54	1.63	1.76	1.88	2.10	2.20	2.30

■ Gold areas are standard conditions.

Refrigerant	Liquid Temperature Entering AEV							
	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C
	Correction Factor							
R-134a	1.64	1.52	1.39	1.26	1.13	1.00	0.87	0.73
R-401A	1.70	1.59	1.46	1.34	1.22	1.09	0.96	0.83
R-409A	1.61	1.50	1.40	1.29	1.18	1.07	0.95	0.83

These factors include corrections for liquid refrigerant density and net refrigerating effect, and are based on an evaporator temperature of -15°C. However, they may be used for any evaporator temperature from -40°C to 10°C since the variation in the actual factors across this range is insignificant.

AEV Capacity = AEV Rating x CF Liquid Temperature – Example: Actual capacity of an A7-B using R-409A at a 0°C evaporator, 8 bar pressure drop across the AEV, and a 30°C liquid temperature entering the AEV = 9.74 (from rating chart) x 1.18 (CF liquid temperature) = 11.5 kW

Capacity Tables

R-22 Capacities in Tons (R-407C Refrigerant & Liquid Temperature Correction Factor below)

Valve Type	Orifice	Nominal Capacity (Tons)	Capacity Range (Tons)	Evaporator Temperature°F																	
				40°F						20°F						0°F					
				Pressure Drop (PSI)																	
				75	100	125	150	175	200	75	100	125	150	175	200	75	100	125	150	175	200
A1, A2, AT	B	3	1-1/2 to 3	2.60	3.00	3.35	3.67	3.97	4.24	2.55	2.94	3.29	3.60	3.89	4.16	2.29	2.64	2.95	3.23	3.49	3.73
A4	—	1	1/2 to 1	0.87	1.00	1.12	1.22	1.32	1.41	0.85	0.98	1.10	1.20	1.30	1.39	0.76	0.88	0.98	1.08	1.16	1.24
A7-AA	AA	3/4	1/5 to 3/4	0.65	0.75	0.84	0.92	0.99	1.06	0.64	0.74	0.82	0.90	0.97	1.04	0.57	0.66	0.74	0.81	0.87	0.93
A7-A	A	1-1/2	1/2 to 1-1/2	1.30	1.50	1.68	1.84	1.98	2.12	1.27	1.47	1.64	1.80	1.94	2.08	1.14	1.32	1.48	1.62	1.75	1.87
A7-B	B	3	1-1/2 to 3	2.60	3.00	3.35	3.67	3.97	4.24	2.55	2.94	3.29	3.60	3.89	4.16	2.29	2.64	2.95	3.23	3.49	3.73
A7-C	C	5	3-1/2 to 5	4.33	5.00	5.59	6.12	6.61	7.07	4.24	4.90	5.48	6.00	6.48	6.93	3.81	4.40	4.92	5.39	5.82	6.22
AS, ASB20	—	1-1/2	1/2 to 1-1/2	1.30	1.50	1.68	1.84	1.98	2.12	1.27	1.47	1.64	1.80	1.94	2.08	1.14	1.32	1.48	1.62	1.75	1.87

Valve Type	Orifice	Nominal Capacity (Tons)	Capacity Range (Tons)	Evaporator Temperature °F																	
				-10°F						-20°F						-40°F					
				Pressure Drop (PSI)																	
				100	125	150	175	200	225	125	150	175	200	225	250	125	150	175	200	225	250
A1, A2, AT	B	3	1-1/2 to 3	2.22	2.48	2.72	2.94	3.14	3.33	2.05	2.24	2.42	2.59	2.75	2.89	1.38	1.51	1.63	1.74	1.85	1.94
A4	—	1	1/2 to 1	0.74	0.83	0.91	0.98	1.05	1.11	0.68	0.75	0.81	0.86	0.92	0.96	0.46	0.50	0.54	0.58	0.62	0.65
A7-AA	AA	3/4	1/5 to 3/4	0.56	0.62	0.68	0.73	0.78	0.83	0.51	0.56	0.61	0.65	0.69	0.72	0.34	0.38	0.41	0.43	0.46	0.49
A7-A	A	1-1/2	1/2 to 1-1/2	1.11	1.24	1.36	1.47	1.57	1.67	1.02	1.12	1.21	1.29	1.37	1.45	0.69	0.75	0.81	0.87	0.92	0.97
A7-B	B	3	1-1/2 to 3	2.22	2.48	2.72	2.94	3.14	3.33	2.05	2.24	2.42	2.59	2.75	2.89	1.38	1.51	1.63	1.74	1.85	1.94
A7-C	C	5	3-1/2 to 5	3.70	4.14	4.53	4.89	5.23	5.55	3.41	3.74	4.03	4.31	4.58	4.82	2.29	2.51	2.71	2.90	3.08	3.24
AS, ASB20	—	1-1/2	1/2 to 1-1/2	1.11	1.24	1.36	1.47	1.57	1.67	1.02	1.12	1.21	1.29	1.37	1.45	0.69	0.75	0.81	0.87	0.92	0.97

■ Gold areas are standard conditions.

Refrigerant	Liquid Temperature Entering AEV							
	0°F	20°F	40°F	60°F	80°F	100°F	120°F	140°F
	Correction Factor							
R-22	1.57	1.45	1.34	1.23	1.12	1.00	0.88	0.76
R-407C	1.58	1.45	1.32	1.18	1.04	0.89	0.74	0.57

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

AEV Capacity = AEV Rating x CF Liquid Temperature – Example: Actual capacity of an A7-B using R-407C at a 40°F evaporator, 125 psi pressure drop across the AEV, and a 80°F liquid temperature entering the AEV = 3.35 (from rating chart) x 1.04 (CF liquid temperature) = 3.48 tons

R-22 Capacities in Kilowatts (R-407C Refrigerant & Liquid Temperature Correction Factor below)

Valve Type	Orifice	Nominal Capacity (kW)	Capacity Range (kW)	Evaporator Temperature °C																	
				10°C						0°C						-10°C					
				Pressure Drop (BAR)																	
				5	7	9	10	12	14	5	7	9	10	12	14	7	9	10	12	14	16
A1, A2, AT	B	11	5 to 11	9.01	10.7	12.1	12.7	14.0	15.1	8.83	10.4	11.8	12.5	13.7	14.8	10.1	11.5	12.1	13.3	14.3	15.3
A4	—	4	2 to 4	3.00	3.55	4.03	4.25	4.65	5.02	2.94	3.48	3.95	4.16	4.56	4.92	3.37	3.83	4.03	4.42	4.77	5.10
A7-AA	AA	3	3/4 to 3	2.25	2.66	3.02	3.18	3.49	3.77	2.21	2.61	2.96	3.12	3.42	3.69	2.53	2.87	3.03	3.31	3.58	3.83
A7-A	A	5	2 to 5	4.50	5.33	6.04	6.37	6.98	7.54	4.41	5.22	5.92	6.24	6.84	7.38	5.06	5.74	6.05	6.63	7.16	7.65
A7-B	B	11	5 to 11	9.01	10.7	12.1	12.7	14.0	15.1	8.83	10.4	11.8	12.5	13.7	14.8	10.1	11.5	12.1	13.3	14.3	15.3
A7-C	C	18	12 to 18	15.0	17.8	20.1	21.2	23.3	25.1	14.7	17.4	19.7	20.8	22.8	24.6	16.9	19.1	20.2	22.1	23.9	25.5
AS, ASB20	—	5	2 to 5	4.50	5.33	6.04	6.37	6.98	7.54	4.41	5.22	5.92	6.24	6.84	7.38	5.06	5.74	6.05	6.63	7.16	7.65

Valve Type	Orifice	Nominal Capacity (kW)	Capacity Range (kW)	Evaporator Temperature °C																	
				-20°C						-30°C						-40°C					
				Pressure Drop (BAR)																	
				9	10	12	14	16	17	9	10	12	14	16	17	9	10	12	14	16	17
A1, A2, AT	B	11	5 to 11	9.79	10.3	11.3	12.2	13.1	13.5	7.25	7.64	8.37	9.04	9.67	9.96	4.83	5.09	5.58	6.03	6.44	6.64
A4	—	4	2 to 4	3.26	3.44	3.77	4.07	4.35	4.48	2.42	2.55	2.79	3.01	3.22	3.32	1.61	1.70	1.86	2.01	2.15	2.21
A7-AA	AA	3	3/4 to 3	2.45	2.58	2.83	3.05	3.26	3.36	1.81	1.91	2.09	2.26	2.42	2.49	1.21	1.27	1.40	1.51	1.61	1.66
A7-A	A	5	2 to 5	4.89	5.16	5.65	6.10	6.53	6.73	3.63	3.82	4.19	4.52	4.83	4.98	2.42	2.55	2.79	3.01	3.22	3.32
A7-B	B	11	5 to 11	9.79	10.3	11.3	12.2	13.1	13.5	7.25	7.64	8.37	9.04	9.67	9.96	4.83	5.09	5.58	6.03	6.44	6.64
A7-C	C	18	12 to 18	16.3	17.2	18.8	20.3	21.8	22.4	12.1	12.7	14.0	15.1	16.1	16.6	8.06	8.49	9.30	10.0	10.7	11.1
AS, ASB20	—	5	2 to 5	4.89	5.16	5.65	6.10	6.53	6.73	3.63	3.82	4.19	4.52	4.83	4.98	2.42	2.55	2.79	3.01	3.22	3.32

■ Gold areas are standard conditions.

Refrigerant	Liquid Temperature Entering AEV							
	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C
	Correction Factor							
R-22	1.52	1.42	1.32	1.21	1.11	1.00	0.89	0.78
R-407C	1.53	1.41	1.28	1.15	1.02	0.88	0.74	0.59

These factors include corrections for liquid refrigerant density and net refrigerating effect, and are based on an evaporator temperature of -15°C. However, they may be used for any evaporator temperature from -40°C to 10°C since the variation in the actual factors across this range is insignificant.

AEV Capacity = AEV Rating x CF Liquid Temperature – Example: Actual capacity of an A7-B using R-407C at a 10°C evaporator, 7 bar pressure drop across the AEV, and a 30°C liquid temperature entering the AEV = 10.7 (from rating chart) x 1.02 (CF liquid temperature) = 10.9 kW

Capacity Tables

R-404A Capacities in Tons (R-507 Refrigerant & Liquid Temperature Correction Factor below)

Valve Type	Orifice	Nominal Capacity (Tons)	Capacity Range (Tons)	Evaporator Temperature °F																	
				40°F						20°F						0°F					
				Pressure Drop (PSI)																	
				75	100	125	150	175	200	75	100	125	150	175	200	75	100	125	150	175	200
A1, A2, AT	B	2	1 to 2	1.73	2.00	2.24	2.45	2.65	2.83	1.66	1.92	2.15	2.35	2.54	2.72	1.51	1.74	1.95	2.13	2.30	2.46
A4	—	1/2	1/4 to 3/4	0.65	0.75	0.84	0.92	0.99	1.06	0.62	0.72	0.80	0.88	0.95	1.02	0.57	0.65	0.73	0.80	0.86	0.92
A7-AA	AA	1/2	1/8 to 1/2	0.43	0.50	0.56	0.61	0.66	0.71	0.42	0.48	0.54	0.59	0.63	0.68	0.38	0.44	0.49	0.53	0.58	0.62
A7-A	A	1	1/4 to 1	0.87	1.00	1.12	1.22	1.32	1.41	0.83	0.96	1.07	1.18	1.27	1.36	0.75	0.87	0.97	1.07	1.15	1.23
A7-B	B	2	1 to 2	1.73	2.00	2.24	2.45	2.65	2.83	1.66	1.92	2.15	2.35	2.54	2.72	1.51	1.74	1.95	2.13	2.30	2.46
A7-C	C	4	1-1/2 to 4	3.46	4.00	4.47	4.90	5.29	5.66	3.33	3.84	4.29	4.70	5.08	5.43	3.01	3.48	3.89	4.26	4.60	4.92
AS, ASB20	—	1	1/4 to 1	0.87	1.00	1.12	1.22	1.32	1.41	0.83	0.96	1.07	1.18	1.27	1.36	0.75	0.87	0.97	1.07	1.15	1.23

Valve Type	Orifice	Nominal Capacity (Tons)	Capacity Range (Tons)	Evaporator Temperature °F																	
				-10°F						-20°F						-40°F					
				Pressure Drop (PSI)																	
				100	125	150	175	200	225	125	150	175	200	225	250	125	150	175	200	225	250
A1, A2, AT	B	2	1 to 2	1.48	1.65	1.81	1.96	2.09	2.22	1.36	1.49	1.61	1.73	1.83	1.93	0.87	0.96	1.03	1.10	1.17	1.23
A4	—	1/2	1/4 to 3/4	0.56	0.62	0.68	0.73	0.78	0.83	0.51	0.56	0.61	0.65	0.69	0.72	0.33	0.36	0.39	0.41	0.44	0.46
A7-AA	AA	1/2	1/8 to 1/2	0.37	0.41	0.45	0.49	0.52	0.56	0.34	0.37	0.40	0.43	0.46	0.48	0.22	0.24	0.26	0.28	0.29	0.31
A7-A	A	1	1/4 to 1	0.74	0.83	0.91	0.98	1.05	1.11	0.68	0.75	0.81	0.86	0.92	0.96	0.44	0.48	0.52	0.55	0.59	0.62
A7-B	B	2	1 to 2	1.48	1.65	1.81	1.96	2.09	2.22	1.36	1.49	1.61	1.73	1.83	1.93	0.87	0.96	1.03	1.10	1.17	1.23
A7-C	C	4	1-1/2 to 4	2.96	3.31	3.63	3.92	4.19	4.44	2.73	2.99	3.23	3.45	3.66	3.86	1.74	1.91	2.06	2.21	2.34	2.47
AS, ASB20	—	1	1/4 to 1	0.74	0.83	0.91	0.98	1.05	1.11	0.68	0.75	0.81	0.86	0.92	0.96	0.44	0.48	0.52	0.55	0.59	0.62

■ Gold areas are standard conditions.

Refrigerant	Liquid Temperature Entering AEV							
	0°F	20°F	40°F	60°F	80°F	100°F	120°F	140°F
	Correction Factor							
R-404A	2.04	1.84	1.64	1.43	1.22	1.00	0.77	0.53
R-507	1.95	1.76	1.56	1.37	1.18	0.98	0.76	0.50

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

AEV Capacity = AEV Rating x CF Liquid Temperature – Example: Actual capacity of an A7-B using R-507 at a 20°F evaporator, 175 psi pressure drop across the AEV, and a 80°F liquid temperature entering the AEV = 2.54 (from rating chart) x 1.18 (CF liquid temperature) = 3.00 tons

R-404A Capacities in Kilowatts (R-507 Refrigerant & Liquid Temperature Correction Factor below)

Valve Type	Orifice	Nominal Capacity (kW)	Capacity Range (kW)	Evaporator Temperature °C																	
				10°C						0°C						-10°C					
				Pressure Drop (BAR)																	
				5	7	9	10	12	14	5	7	9	10	12	14	5	7	9	10	12	14
A1, A2, AT	B	7	4 to 7	6.06	7.17	8.14	8.58	9.39	10.1	5.88	6.96	7.89	8.32	9.11	9.84	5.58	6.60	7.48	7.89	8.64	9.33
A4	—	3	1 to 3	2.27	2.69	3.05	3.22	3.52	3.80	2.21	2.61	2.96	3.12	3.42	3.69	2.09	2.48	2.81	2.96	3.24	3.50
A7-AA	AA	2	1/2 to 2	1.52	1.79	2.03	2.14	2.35	2.54	1.47	1.74	1.97	2.08	2.28	2.46	1.39	1.65	1.87	1.97	2.16	2.33
A7-A	A	4	1 to 4	3.03	3.59	4.07	4.29	4.70	5.07	2.94	3.48	3.95	4.16	4.56	4.92	2.79	3.30	3.74	3.94	4.32	4.67
A7-B	B	7	4 to 7	6.06	7.17	8.14	8.58	9.39	10.1	5.88	6.96	7.89	8.32	9.11	9.84	5.58	6.60	7.48	7.89	8.64	9.33
A7-C	C	14	5 to 14	12.1	14.3	16.3	17.2	18.8	20.3	11.8	13.9	15.8	16.6	18.2	19.7	11.2	13.2	15.0	15.8	17.3	18.7
AS, ASB20	—	4	1 to 4	3.03	3.59	4.07	4.29	4.70	5.07	2.94	3.48	3.95	4.16	4.56	4.92	2.79	3.30	3.74	3.94	4.32	4.67

Valve Type	Orifice	Nominal Capacity (kW)	Capacity Range (kW)	Evaporator Temperature °C																	
				-20°C						-30°C						-40°C					
				Pressure Drop (BAR)																	
				7	9	10	12	14	16	9	10	12	14	16	17	9	10	12	14	16	17
A1, A2, AT	B	7	4 to 7	5.67	6.43	6.77	7.42	8.02	8.57	4.80	5.06	5.54	5.99	6.40	6.60	3.09	3.26	3.57	3.86	4.12	4.25
A4	—	3	1 to 3	2.13	2.41	2.54	2.78	3.01	3.21	1.80	1.90	2.08	2.24	2.40	2.47	1.16	1.22	1.34	1.45	1.55	1.59
A7-AA	AA	2	1/2 to 2	1.42	1.61	1.69	1.86	2.00	2.14	1.20	1.26	1.39	1.50	1.60	1.65	0.77	0.81	0.89	0.96	1.03	1.06
A7-A	A	4	1 to 4	2.83	3.21	3.39	3.71	4.01	4.28	2.40	2.53	2.77	2.99	3.20	3.30	1.55	1.63	1.78	1.93	2.06	2.12
A7-B	B	7	4 to 7	5.67	6.43	6.77	7.42	8.02	8.57	4.80	5.06	5.54	5.99	6.40	6.60	3.09	3.26	3.57	3.86	4.12	4.25
A7-C	C	14	5 to 14	11.3	12.9	13.5	14.8	16.0	17.1	9.60	10.1	11.1	12.0	12.8	13.2	6.18	6.52	7.14	7.71	8.24	8.50
AS, ASB20	—	4	1 to 4	2.83	3.21	3.39	3.71	4.01	4.28	2.40	2.53	2.77	2.99	3.20	3.30	1.55	1.63	1.78	1.93	2.06	2.12

■ Gold areas are standard conditions.

Refrigerant	Liquid Temperature Entering AEV							
	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C
	Correction Factor							
R-404A	1.98	1.79	1.60	1.41	1.21	1.00	0.79	0.56
R-507	1.89	1.71	1.53	1.35	1.17	0.98	0.78	0.53

These factors include corrections for liquid refrigerant density and net refrigerating effect, and are based on an evaporator temperature of -15°C. However, they may be used for any evaporator temperature from -40°C to 10°C since the variation in the actual factors across this range is insignificant.

AEV Capacity = AEV Rating x CF Liquid Temperature – Example: Actual capacity of an A7-B using R-507 at a 0°C evaporator, 12 bar pressure drop across the AEV, and a 30°C liquid temperature entering the AEV = 9.11 (from rating chart) x 1.17 (CF liquid temperature) = 10.7 kW

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17. Governing Law. This agreement and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

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