

THERMOSTATIC EXPANSION VALVES

10 Outstanding Features & Benefits of Sporlan Thermostatic Expansion Valves

- **Selective Thermostatic Charges** Designed to provide optimum performance for all applications—air conditioning and heat pump, medium and low temperature refrigeration.
- **Thermostatic Element Design** Long lasting and field proven stainless steel diaphragm and welded element construction.
- **Diaphragm Design** Large flat diaphragm permits precise valve control.
- **Replaceable Thermostatic Elements** Field replaceable elements on all standard valves.
- **Balanced Port Design** Provides perfect pin and port alignment, and prevents changes in pressure drop across the valve from influencing valve operation. Provides excellent control on applications with widely varying operating conditions.
- **Pin Carrier Design (Conventional Valves)** Provides precise pin and port alignment, and tighter seating.
- **Accessible Internal Parts** Durable, leakproof body joint construction allows the valve to be disassembled, and the internal parts cleaned and inspected.
- **Materials of Construction** Pin and port materials offer maximum protection against corrosion and erosion.
- **Silver Soldered Connections** For leakproof, high strength connection-to-body joints.
- **Adjustable Superheat Design** All standard valves are externally adjustable.

Valve Nomenclature/Ordering Instructions

Combine the letters and numbers in the following manner to obtain the complete valve designation. Also include all connection sizes and the capillary tube length.

EXAMPLE

O	Z	E	35	GA	7/8" ODF SOLDER	X	1-1/8" ODF SOLDER	X	1/4" ODF SOLDER	X	5'
Body Type	Sporlan Code – Refrigerant Element Label Color Code V = R-22 Green J = R-134a Blue S = R-404A Orange N = R-407C Lt. Brown F = R-409A Yellow Z = R-410A Rose P = R-507 Teal	"E" specifies external equalizer. Omission of letter "E" indicates valve with internal equalizer.	Nominal Capacity in Tons	Thermostatic Charge	Inlet Connection Size and Style		Outlet Connection Size and Style		External Equalizer Connection Size and Style		Capillary Tubing Length Inches or Feet

Sporlan Selective Charges engineered for peak performance for each specific application Recommended Thermostatic Charges*







APPLICATION	REFRIGERANT							ACTUAL THERMOSTATIC CHARGES
	22	134a	404A	407C	409A	410A	507	
Air Conditioning	—	JCP60	—	—	FCP60	—	—	FCP60
	VCP100	—	—	NCP100	—	—	—	VCP100
	VGA	—	—	NGA	—	—	—	VGA
	—	—	SCP115	—	—	—	—	SCP115
	—	—	—	—	—	ZCP200	—	ZCP200
Commercial Refrigeration 10°C to -25°C	—	JC	—	—	FC	—	—	FC
	VC	—	—	NC	—	—	—	VC
	—	—	SC	—	—	—	—	SC
	—	—	—	—	—	—	PC	PC
Low Temperature Refrigeration -20°C to -40°C	—	—	—	—	FZ	—	—	FZ
	—	—	—	—	FZP	—	—	FZP
	VZ	—	—	—	—	—	—	VZ
	VZP40	—	—	—	—	—	—	VZP40
	—	—	SZ	—	—	—	PZ	SZ
Extreme Low Temperature Refrigeration -40°C to -75°C	—	—	SZP	—	—	—	PZP	SZP
	VX	—	—	—	—	—	—	VX
	—	—	SX	—	—	—	PX	SX

* APPLICATION FACTORS:

1. The Type ZP charges have essentially the same characteristics as the Type Z charge with one exception: they produce a pressure limit Maximum Operating Pressure (MOP). ZP charges are not intended as replacements for Z charges. Each should be selected for its own unique purpose.
2. All air conditioning and heat pump charges are intended for use with externally equalized valves.
3. Type L liquid charges are also available for most commonly used refrigerants in most element sizes.
4. If in doubt as to which charge to use, contact your nearest Sporlan Sales Office with complete system data.
5. The Type X charges are not to be used with "EBS" and "O" valves.








THERMOSTATIC EXPANSION VALVES

Quick Reference Guide

VALVE TYPE	SPECS	NOMINAL CAPACITY RANGE (kW)				CONNECTION TYPES	VALVE DESCRIPTION AND APPLICATION
		R-22	R-134a	R-404A & R-507	R-410A		
FB 	Page 6	0.88 thru 14	0.44 thru 10.5	0.44 thru 12.3	—	ODF Solder	Small brass body valve available only with straight through connections and external adjustment. The thermostatic element is not replaceable on valves manufactured prior to 1994. Current models use a replaceable No. 43 element. Typical applications: small capacity air conditioning and refrigeration applications where an external adjustment is desired. Not available for R-410A.
R 	Page 7	3.5 thru 42	1.8 thru 31.5	1.8 thru 31.5	4.2 thru 50.8	ODF Solder	Small brass body valve available with either angle style or straight through connection pattern. R valves are only available externally adjustable. The R has a balanced port construction, which makes it ideal for applications with a wide range of operating conditions. The design also provides exceptional control of refrigerant in both directions, making the R valve an excellent choice for heat pumps.
RC 	Page 8	3.5 thru 21	—	—	4.2 thru 25.2	ODF Solder	In addition to the features described above for the R valve, the RC has a built-in check valve to allow bypass flow in the reverse direction. This feature makes this valve type ideally suited for heat pump applications. RC valves are only available externally adjustable.
Q/BQ 	Page 9-11	1.2 thru 17.5	0.58 thru 8.8	0.58 thru 10.5	1.5* thru 21.8	SAE Flare	The brass body Q valve is externally adjustable with a removable cartridge or orifice. The valve body, cartridge and thermostatic element can be supplied as independent components. This allows body, cartridge and element to be assembled and matched to specific system requirements. Inlet connection has a 100 mesh removable strainer screen. Typical applications: Refrigeration applications and external equalized versions may be used on air conditioning. Type BQ same as above, with balanced port construction. *BQ only
EQ/EBQ 	Page 9-11	1.2 thru 17.5	0.58 thru 8.8	0.58 thru 10.5	1.5* thru 21.8	Extended ODF Solder	Type EQ same as the Type Q except it features extended ODF connections. A 100 mesh insert strainer is provided with the valve. Type EBQ same as EQ with balanced port construction. *EBQ only
SQ/SBQ 	Page 9-11	1.2 thru 17.5	0.58 thru 8.8	0.58 thru 10.5	1.5* thru 21.8	Extended ODF Solder	Type SQ same as the Type Q valve except it features ODF solder connections and a forged brass inlet fitting with a removable 100 mesh strainer screen which can be cleaned and/or replaced without removing the valve from the line. Type SBQ same as SQ with balanced port construction. *SBQ only

THERMOSTATIC EXPANSION VALVES

Quick Reference Guide

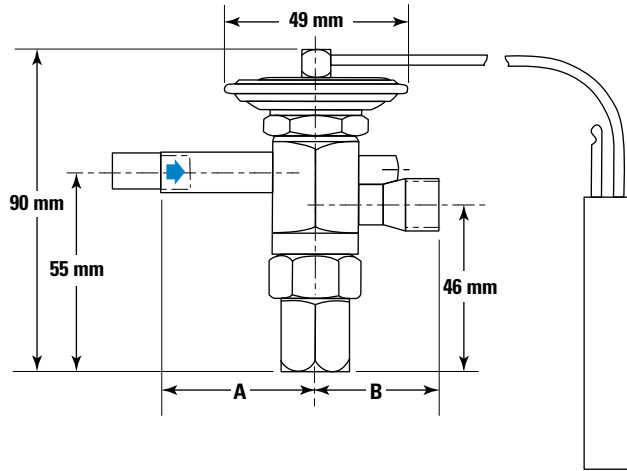
VALVE TYPE	SPECS	NOMINAL CAPACITY RANGE (kW)				CONNECTION TYPES	VALVE DESCRIPTION AND APPLICATION
		R-22	R-134a	R-404A & R-507	R-410A		
S 	Page 12	7 thru 52.5	7 thru 35	7 thru 35	—	ODF Solder	Brass bar body, externally adjustable valve. Inlet has a permanent 12 mesh strainer. General purpose valve for air conditioning and refrigeration applications.
EBS 	Page 13	28 thru 70	17.5 thru 42	21 thru 46	—	Extended ODF Solder	Same physical size as the Type S valve except it features extended ODF connections and a balanced port construction.
O 	Page 14	70 thru 315	42 thru 210	42 thru 193	70 thru 210	ODF Solder	Brass bar body, externally adjustable valve. Inlet has a permanent 12 mesh strainer. This valve features a balanced port construction, and it is suitable for both air conditioning and refrigeration applications. The valve can also be ordered as a bi-directional valve, allowing control of flow in both direction for use on heat pump applications.
H 	Page 16	8.8 thru 70	5.3 thru 42	5.3 thru 42	—	ODF Solder or FPT Flange	Brass bar body, externally adjustable valve with flange connections. Inlet flange bushing has a permanent 16 mesh strainer. The FPT flange connection requires the K-1178 adapter kit. This valve provides the smallest capacity TEVs with flange connections and it is suitable for both air conditioning and refrigeration applications.
M 	Page 17	73.5 thru 147	52.5 thru 87.5	52.5 thru 105	—	ODF Solder or FPT Flange	Cast bronze body, externally adjustable valve with flange connections. Inlet has a 12 mesh strainer. This valve type provides valve capacities greater than the Type H and it is suitable for air conditioning and refrigeration applications. Flanges for the Type M valve are interchangeable with the Type V valve.
V 	Page 18	182 thru 350	123 thru 193	133 thru 245	—	ODF Solder or FPT Flange	Cast bronze body, externally adjustable valve with flange connections. Inlet has a 12 mesh strainer. This valve type features a dual port semi-balanced design. This valve type provides valve capacities greater than the Type M and is suitable for air conditioning and refrigeration applications. Flanges for the Type V are interchangeable with the Type M.
W 	Page 19	473 thru 630	280 thru 385	—	—	ODF Solder Flange	Cast bronze body, externally adjustable valve with flange connections. Inlet has a 12 mesh strainer. This valve type features a dual port semi-balanced design and it is primarily for large capacity chillers. This valve type provides the largest valve capacities available for flange connection TEVs.

THERMOSTATIC EXPANSION VALVES

22, 134a, 404A, 407C, 409A 507

Type FB – Knife Edge Joint Standard Cap Tube Length 30 inches (760 mm)

The Type FB valve is an externally adjustable valve designed primarily for use in small capacity refrigeration applications. This valve may also be applied on residential and small commercial air conditioning, and heat pump units. Not available for R-410A.

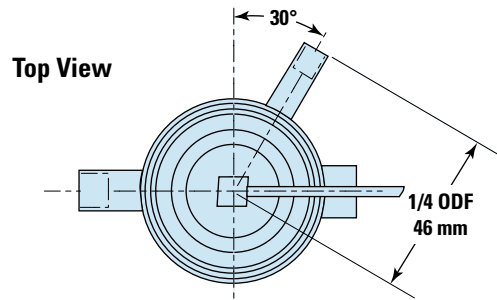


Dimensions – Connections

VALVE TYPE	FITTING SIZE Inches	mm	
		A	B
FB	1/4 ODF	43	—
	3/8 ODF	43	34
	1/2 ODF	—	34

Bulb Sizes

THERMOSTATIC CHARGE	mm			
	R-22	R-134a	R-404A	R-507
C	13 OD x 76			
Z & ZP	13 OD x 76	—	13 OD x 76	



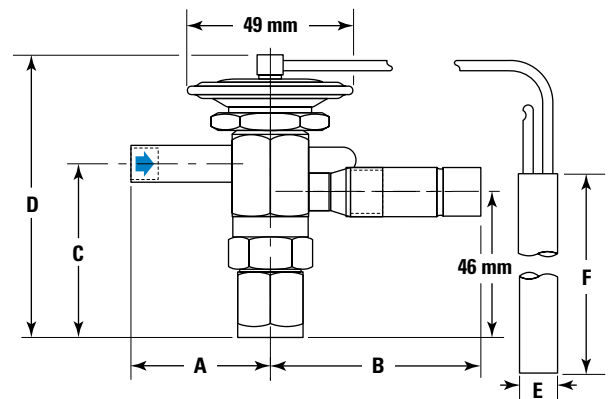
Specifications – Element Size No. 43, Knife Edge Joint

REFRIGERANT (Sporlan Code)	INTERNAL EQUALIZER	EXTERNAL EQUALIZER	NOMINAL CAPACITY kW of Refrigeration	THERMOSTATIC CHARGES AVAILABLE	STANDARD TUBING LENGTH mm	CONNECTION – Inches <small>Blue figures are standard and will be furnished unless otherwise specified.</small>		NET WEIGHT – kg	SHIPPING WEIGHT – kg
						INLET	OUTLET		
134a (J) 409A (F)	FBJ-1/8	FBJE-1/8	0.44	C	760	1/4, 3/8	3/8, 1/2	0.45	0.68
	FBJ-1/4	FBJE-1/4	0.88						
	FBJ-1/2	FBJE-1/2	1.75						
	FBJ-1	FBJE-1	3.5						
	FBJ-1-1/2	FBJE-1-1/2	5.25						
	FBJ-2	FBJE-2	7						
	FBJ-2-1/2	FBJE-2-1/2	8.75						
404A (S)	FBS-1/8	FBSE-1/8	0.44	C Z ZP	760	1/4, 3/8	3/8, 1/2	0.45	0.68
	FBS-1/4	FBSE-1/4	0.88						
	FBS-1/2	FBSE-1/2	1.75						
	FBS-1	FBSE-1	3.5						
	FBS-1-1/2	FBSE-1-1/2	5.25						
	FBS-2	FBSE-2	7						
	FBS-3	FBSE-3	10.5						
FBS-3-1/2	FBSE-3-1/2	12.25							
407C (N) 22 (V)	FBN-1/4	FBNE-1/4	0.88	C CP100 GA Z ZP40	760	1/4, 3/8	3/8, 1/2	0.45	0.68
	FBN-1/2	FBNE-1/2	1.75						
	FBN-1	FBNE-1	3.5						
	FBN-1-1/2	FBNE-1-1/2	5.25						
	FBN-2	FBNE-2	7						
	FBN-2-1/2	FBNE-2-1/2	8.75						
	FBN-3	FBNE-3	10.5						
FBN-4	FBNE-4	14							
507 (P)	FBP-1/8	FBPE-1/8	0.44	C Z ZP	760	1/4, 3/8	3/8, 1/2	0.45	0.68
	FBP-1/4	FBPE-1/4	0.88						
	FBP-1/2	FBPE-1/2	1.75						
	FBP-1	FBPE-1	3.5						
	FBP-1-1/2	FBPE-1-1/2	5.25						
	FBP-2	FBPE-2	7						
	FBP-3	FBPE-3	10.5						
FBP-3-1/2	FBPE-3-1/2	12.25							

THERMOSTATIC EXPANSION VALVES 22, 134a, 404A, 407C, 409A, 410A, 507

Type RE – Knife Edge Joint Standard Cap Tube Length 60 inches (1.5 m)

The Type RE valve is a small balanced port valve designed for use on refrigeration applications as well as residential and small commercial air conditioning and heat pump units. The balanced port design provides exceptional control of refrigerant in both directions, making this valve an excellent choice for heat pump systems.



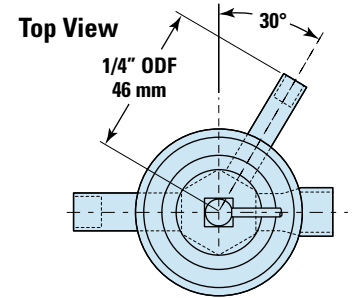
Dimensions – Connections

VALVE TYPE	FITTING SIZE Inches	mm			
		A	B	C	D
RE-1, 1-1/2 & 2*	3/8 ODF	43	63	55	90
	1/2 ODF	45	63	55	90
RE-3, 4, 5, 6 & 8	3/8 ODF	43	63	55	90
	1/2 ODF	45	63	55	90
	5/8 ODF	34	63	55	90
RE-12-1/2 & 15	7/8 ODF	—	61	55	90
	5/8 ODF	38	—	59	97
	7/8 ODF	53	—	59	97
	7/8 ODF Ext.	—	64	59	97

*1/2 ODF inlet available on 2 ton valves only.

Bulb Sizes

THERMOSTATIC CHARGE	mm	
	E	F
C	13	76
Z	13	76
CP100, CP200	13	76
GA	19	51
ZP	13	76



Specifications

REFRIGERANT (Sporlan Code)	VALVE TYPE	NOMINAL CAPACITY kW of Refrigeration	ELEMENT SIZE NO.	THERMOSTATIC CHARGES AVAILABLE	STANDARD TUBING LENGTH m	CONNECTION – Inches ^① ODF		NET WEIGHT – kg	SHIPPING WEIGHT – kg			
						Blue figures are standard and will be furnished unless otherwise specified.						
						INLET	OUTLET					
407C (N) 22 (V)	RNE-1	3.5	43	C CP100 GA Z ZP40	1.5	3/8	1/2	0.45	0.68			
	RNE-1-1/2	5.25										
	RNE-2	7										
	RNE-3	10.5										
	RNE-4	14										
	RNE-5	17.5										
	RNE-6	21										
	RNE-8	28										
RNE-10	35	45-5				5/8	7/8 Ext.					
RNE-12	42											
134a (J) 409A (F)	RJE-1/2	1.75	43	C			3/8			1/2		
	RJE-1	3.5										
	RJE-1-1/2	5.25										
	RJE-2	7										
	RJE-2-1/2	8.75										
	RJE-3	10.5										
RJE-4	14											
404A (S) 507 (P)	RSE-1/2	1.75	43	C Z ZP		1/2	5/8					
	RSE-1	3.5										
	RSE-1-1/2	5.25										
	RSE-2	7										
	RSE-3	10.5										
	RSE-3-1/2	12.25										
	RSE-4	14										
	RZE-1	4.20								45	CP200 GA	
RZE-1-1/2	7.35											
RZE-2	9.66											
RZE-3	13.4											
RZE-4	17.6											
RZE-5	21.0											
RZE-6	25.2											
RZE-8	33.6											
RZE-12-1/2	43.8											
RZE-15	50.8	45-5			5/8	7/8 Ext.						

① Valves are also available as special order with SAE connections.
 Note: Valves with SAE inlet and outlet fittings are available only with the 1/4" SAE flare external equalizer; valves with ODF fittings are available only with the 1/4" ODF external equalizer.
 Note: Valves can be supplied with internal equalizer on valves with nominal capacity of 2 or less.

THERMOSTATIC EXPANSION VALVES

22, 407C, 410A

Type RCE – Knife Edge Joint Standard Cap Tube Length 30 inches (760 mm)

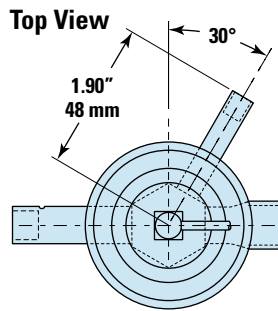
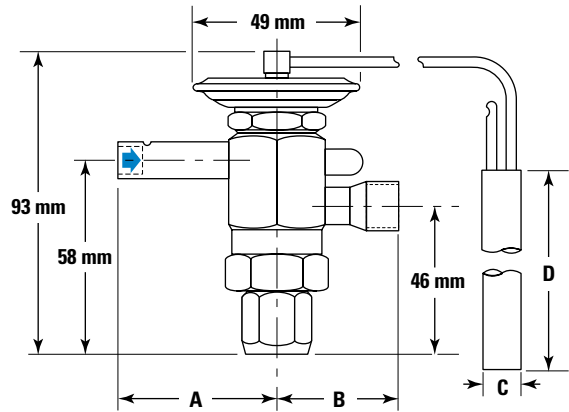


Type RC valves contain internal check valves to allow reverse flow on heat pump applications. This eliminates the need for an external check valve piped around the TEV for reverse flow. The RC valve can be used on Heat Pump and Air Conditioning (cooling only) applications.

Exact replacement valves for the CBI, CBBI, BI, and I valves are available from the OEM and should be ordered from the OEM during the warranty period of the equipment, or when special features such as specific bleed ports, connections, configurations, capillary tube lengths, etc. are required.

Replaceable elements available for these valves are the following: R-22, Element Kit Number KT-43-VGA-30", and R-410A, Element Kit Number KT-45-ZGA-30".

The Type RC thermostatic expansion valves are only available with the specifications shown below.



Dimensions – Connections

VALVE TYPE	FITTING SIZE – Inches	mm	
		A	B
RCE-1, 1-1/2 & 2	3/8 ODF	48.8	36.8
	1/2 ODF	50.3	36.8
	5/8 ODF	—	38.9
RCE-3, 4, 5 & 6	3/8 ODF	48.8	36.8
	1/2 ODF	50.3	36.8
	5/8 ODF	—	38.9

Bulb Sizes

THERMOSTATIC CHARGE	mm	
	C	D
NGA	19	51
NCP100	13	76
ZCP200	13	76
ZGA	19	51

*1/2 ODF inlet available on 2 ton valves only.

Specifications – Element Size No. 43 (No. 45 for R-410A), Knife Edge Joint

REFRIGERANT (Sporlan Code)	VALVE TYPE	EXTERNAL EQUALIZER ② ③	NOMINAL CAPACITY kW of Refrigeration	THERMOSTATIC CHARGES AVAILABLE	STANDARD TUBING LENGTH mm	CONNECTION – Inches ^① Blue figures are standard and will be furnished unless otherwise specified.		NET WEIGHT – kg	SHIPPING WEIGHT – kg
						INLET	OUTLET		
407C (N) 22 (V)	RCNE-1	1/4 SAE 1/4 ODF	3.5	CP100 GA	760	3/8	1/2	0.57	0.68
	RCNE-1-1/2		5.3						
	RCNE-2-GA		7.0						
	RCNE-3-GA		11						
	RCNE-4-GA		14						
	RCNE-5-GA		18						
RCNE-6-GA	21								
410A (Z)	RCZE-1	1/4 ODF	4.20	CP200 GA	760	3/8	1/2	0.57	0.68
	RCZE-1-1/2		7.36						
	RCZE-2-GA		9.66						
	RCZE-3-GA		13.4						
	RCZE-4-GA		17.6						
	RCZE-5-GA		21.0						
RCZE-6-GA	25.2								

① Valves are also available as special order with Chatleff connections.

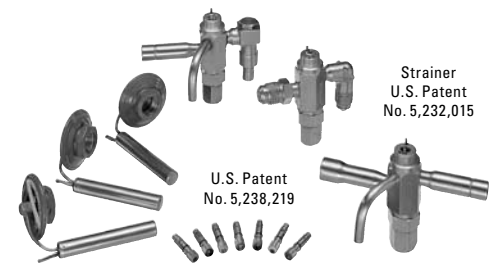
② Valves with SAE inlet and outlet fittings are available only with the 1/4" SAE flare external equalizer; valves with ODF fittings are available only with the 1/4" ODF external equalizer.

③ Valves with Chatleff fittings are available only with the 1/8" OD x 24" long tube with flare and nut external equalizer.

THERMOSTATIC EXPANSION VALVES 22, 134a, 404A, 407C, 409A, 410A, 507

Type Q and BQ

The Series Q and BQ are replaceable cartridge style thermostatic expansion valves, available in both conventional (Type Q) and balanced port (Type BQ) configurations. These valves can be supplied as a complete valve or as three component parts, body, cartridge, and thermostatic element. They are designed for small refrigeration systems, including refrigerated cases, coolers and freezers, and are also well suited for air conditioning and heat pump duty.



	NOMINAL CAPACITY (kW)					CARTRIDGE		
	R-22 R-407C	R-134a	R-404A R-507	R-409A	R-410A	SIZE	CARTRIDGE CODE	COLOR CODE
SERIES Q	0.88	0.44	0.44	0.44	—	0	QC-0	Red
	2.63	0.88	0.88	0.88	—	1	QC-1	Yellow
	3.5	1.75	1.75	1.75	—	2	QC-2	Green
	5.25	3.5	3.5	3.5	—	3	QC-3	Blue
	8.75	5.25	5.25	5.25	—	4	QC-4	Pink
	10.5	7	7	7	—	5	QC-5	Black
	17.5	10.5	10.5	10.5	—	6	QC-6	White
SERIES BQ	1.16	0.7	0.7	0.7	1.17	AAA	BQC-AAA	Red
	2.35	1.16	1.16	1.16	2.64	AA	BQC-AA	Yellow
	5.25	3.5	3.5	3.5	6.15	A	BQC-A	Blue
	10.5	6.13	6.13	6.13	12.3	B	BQC-B	Pink
	19.25	10.5	10.5	10.5	21.1	C	BQC-C	White

Q valve not suitable for R-410A. BQ valve cartridges are available with 15% bleed port.

Q – Valve Nomenclature/Ordering Instructions

QE	O	(1/3T)	V	C	3/8"	X	1/2"	X	1/4"	X	5'
Valve Type Q, EQ, SQ = Internally Equalized QE, EQE, SQE = Externally Equalized	Cartridge Size	Nominal Capacity (Tons)	Refrigerant Code	Thermostatic Charge	Inlet Connection Size		Outlet Connection Size		External Equalizer Connection Size		Capillary Tubing Length Inches or Feet

BQ – Valve Nomenclature/Ordering Instructions

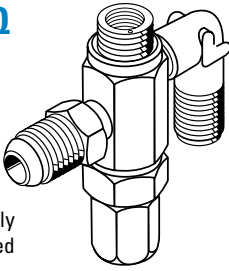
BQE	AAA	V	C	3/8"	X	1/2"	X	1/4"	X	5'
Valve Type BQ, EBQ, SBQ = Internally Equalized BQE, EBQE, SBQE = Externally Equalized	Cartridge Size	Refrigerant Code	Thermostatic Charge	Inlet Connection Size		Outlet Connection Size		External Equalizer Connection Size		Capillary Tubing Length Inches or Feet

THERMOSTATIC EXPANSION VALVES

Selecting Body Type

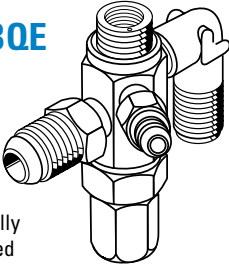
Q/BQ

SAE Internally Equalized



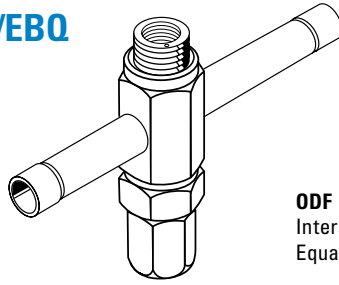
QE/BQE

SAE Externally Equalized



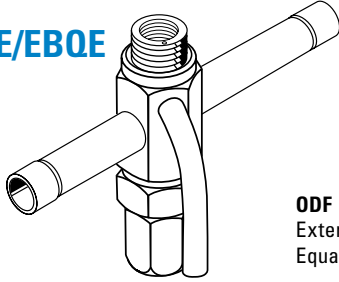
EQ/EBQ

ODF Internally Equalized



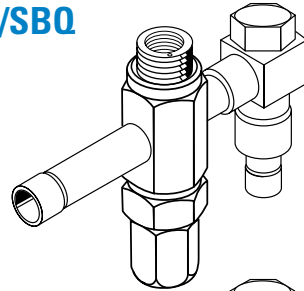
EQE/EBQE

ODF Externally Equalized



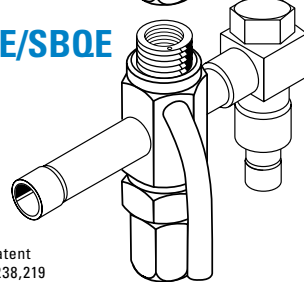
SQ/SBQ

ODF Internally Equalized



SQE/SBQE

ODF Externally Equalized



U.S. Patent No. 5,238,219

Replaceable Strainer
•U.S. Patent No. 5,232,015
•P/N 3427-000

Q/BQ & QE/BQE Options
Inlet x Outlet

1/4 x 3/8 SAE, 90° Angle Inlet
1/4 x 1/2 SAE, 90° Angle Inlet
3/8 x 1/2 SAE, 90° Angle Inlet

EQ & EBQ Options
Inlet x Outlet

3/8 x 1/2 ODF, Straight Thru
3/8 x 1/2 ODF, 90° Angle Inlet

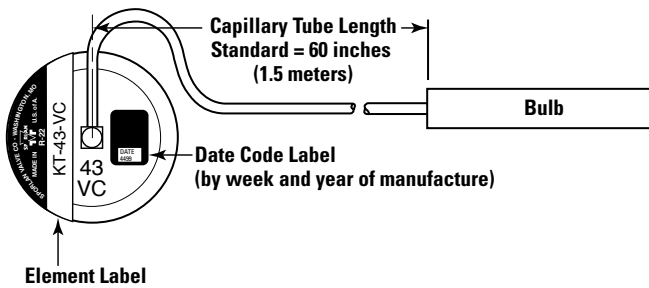
EQE & EBQE Options
Inlet x Outlet

3/8 x 1/2 ODF, Straight Thru
3/8 x 5/8 ODF, Straight Thru
1/2 x 5/8 ODF, Straight Thru
1/2 x 7/8 ODF, Straight Thru
3/8 x 1/2 ODF, 90° Angle Inlet

SQ/SBQ & SQE/SBQE Options
Inlet x Outlet

3/8 x 1/2 SAE, 90° Angle Inlet

Selecting The Element



KT	43	V	C
Abbreviation for "Kit"	Element Size Number	*Refrigerant Code	Thermostatic Charge

See page 3 for thermostatic charges available. BQ valves for R-410A, use KT-45 element.

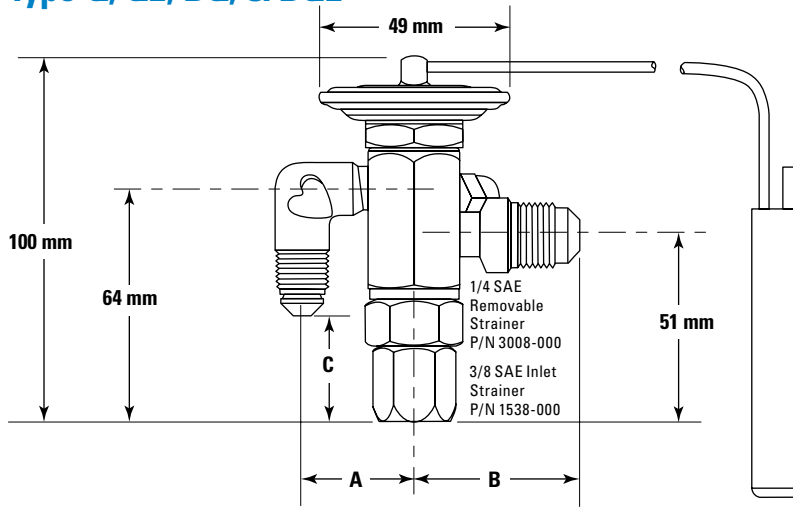
Selecting The Cartridge — See table on previous page for cartridge codes.

Q Valve Cartridge Service Kit — Part No. 184000

BQ Valve Cartridge Service Kit — Part No. 184007

THERMOSTATIC EXPANSION VALVES

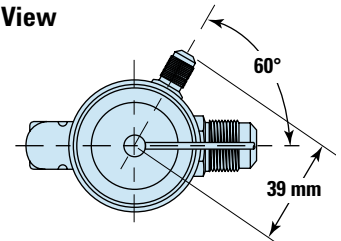
Type Q, QE, BQ, & BQE



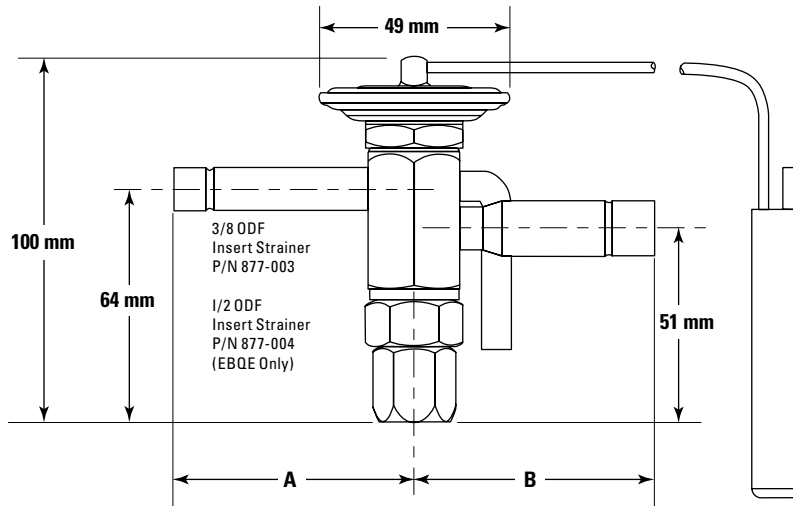
Dimensions – Connections

FITTING SIZE Inches	mm		
	A	B	C
1/4 SAE, 90° Angle	30	—	37
3/8 SAE, 90° Angle	34	—	27
3/8 SAE	—	41	—
1/2 SAE	—	46	—

Top View



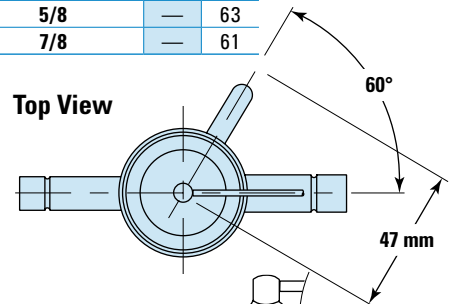
Type EQ, EQE, EBQ, & EBQE



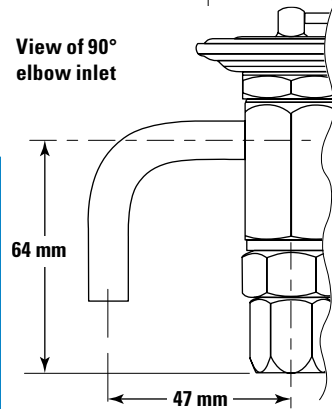
Dimensions – Connections

FITTING SIZE Inches	mm	
	A	B
3/8	64	—
1/2	61	63
5/8	—	63
7/8	—	61

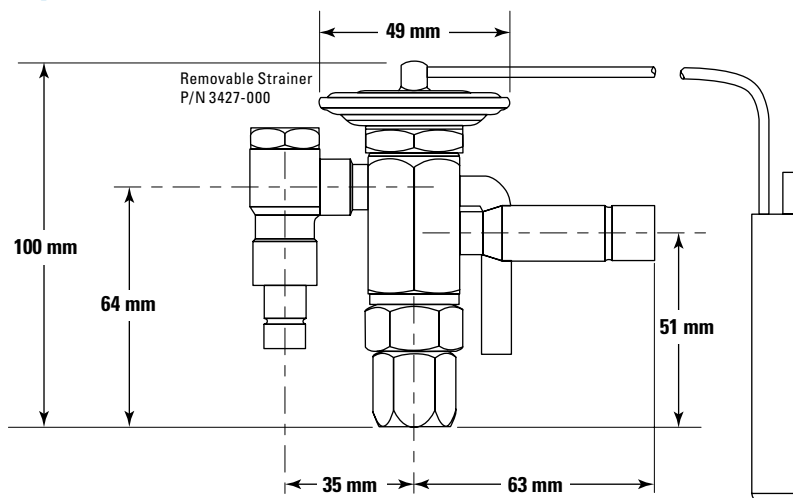
Top View



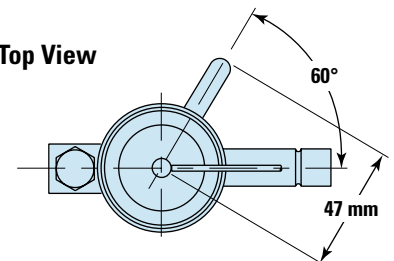
View of 90° elbow inlet



Type SQ, SQE, SBQ, & SBQE



Top View



Series Q & BQ Bulb Sizes – mm

STANDARD CHARGES	REFRIGERANT			
	22	134a	404A	507
C			13 OD x 76	
Z & ZP	13 OD x 76	—		13 OD x 76
CP			13 OD x 76	
VGA	19 OD x 51			—

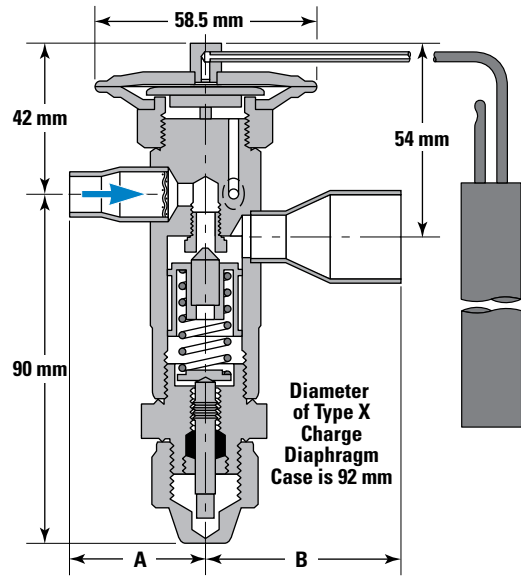
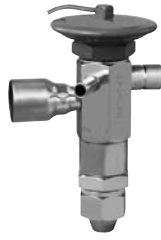
THERMOSTATIC EXPANSION VALVES

22, 134a, 404A, 507

Type S

Standard Cap Tube Length 60 inches (1.5 m)

Sporlan Type S valve is a brass bar body, externally adjustable valve with ODF solder connections. The thermostatic element is replaceable, and the inlet connection has a permanent 12 mesh strainer. This valve is designed for both air conditioning and refrigeration applications.

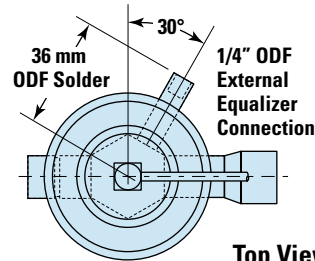


Dimensions — Connections

VALVE TYPE	FITTING SIZE Inches	mm	
		A	B
S	3/8 ODF	34	—
	1/2 ODF	33	34.5
	5/8 ODF	38	40
	7/8 ODF	—	54
	1-1/8 ODF	—	55.5

Bulb Sizes

STANDARD CHARGES	REFRIGERANT			
	22	134a	404A	507
C	13 OD x 89			
Z & ZP Series	13 OD x 89	—	13 OD x 89	
X	19 OD x 102	—	19 OD x 102	
CP Series	13 OD x 89			—
VGA	19 OD x 51	—	—	—



Top View

Specifications — Element Size No. 83, Knife Edge Joint

REFRIGERANT (Sporlan Code)	VALVE TYPE		NOMINAL CAPACITY kW of Refrigeration	THERMOSTATIC CHARGES AVAILABLE	STANDARD TUBING LENGTH m	CONNECTIONS - Inches ② ODF Solder Blue figures are standard and will be furnished unless otherwise specified.		NET WEIGHT - kg	SHIPPING WEIGHT - kg
	INTERNAL EQUALIZER ①	EXTERNAL EQUALIZER				INLET	OUTLET		
407C (N) 22 (V)	SN-2	SNE-2	7.0	Refer to Recommended Thermostatic Charges on page 3	1.5	3/8 or 1/2	5/8, 7/8 or 1-1/8	0.9	1.4
	SN-3	SNE-3	11			1/2	5/8, 7/8 or 1-1/8		
	SN-4	SNE-4	14			5/8	7/8 or 1-1/8		
	SN-5	SNE-5	18			7/8	1-1/8		
	—	SNE-8	28			3/8 or 1/2	5/8, 7/8 or 1-1/8		
—	SNE-10	35	1/2			5/8, 7/8 or 1-1/8			
—	SNE-15	56.5	5/8			7/8 or 1-1/8			
134a (J) 409A (F)	SJ-2	SJE-2	7.0			7/8	1-1/8		
	SJ-2-1/2	SJE-2-1/2	8.8			3/8 or 1/2	5/8, 7/8 or 1-1/8		
	SJ-3	SJE-3	11			1/2	5/8, 7/8 or 1-1/8		
	—	SJE-5	18			5/8	7/8 or 1-1/8		
	—	SJE-6	21			7/8	1-1/8		
404A (S)	—	SJE-10	35			3/8 or 1/2	5/8, 7/8 or 1-1/8		
	SS-2	SSE-2	7.0			1/2	5/8, 7/8 or 1-1/8		
	SS-3	SSE-3	11			5/8	7/8 or 1-1/8		
	SS-4	SSE-4	14	7/8	1-1/8				
	—	SSE-6	21	3/8 or 1/2	5/8, 7/8 or 1-1/8				
507 (P)	—	SSE-7	25	1/2	5/8, 7/8 or 1-1/8				
	—	SSE-10	35	5/8	7/8 or 1-1/8				
	SP-2	SPE-2	7.0	7/8	1-1/8				
	SP-3	SPE-3	11	3/8 or 1/2	5/8, 7/8 or 1-1/8				
	SP-4	SPE-4	14	1/2	5/8, 7/8 or 1-1/8				
—	SPE-6	21	5/8	7/8 or 1-1/8					
—	SPE-7	25	7/8	1-1/8					
—	SPE-10	35	7/8	1-1/8					

① Valves listed in this column NOT AVAILABLE with MOP Type air conditioning charges.

② ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 5/8" ODF will receive 5/8" OD tubing.

Note: S Valves not available for R-410A.

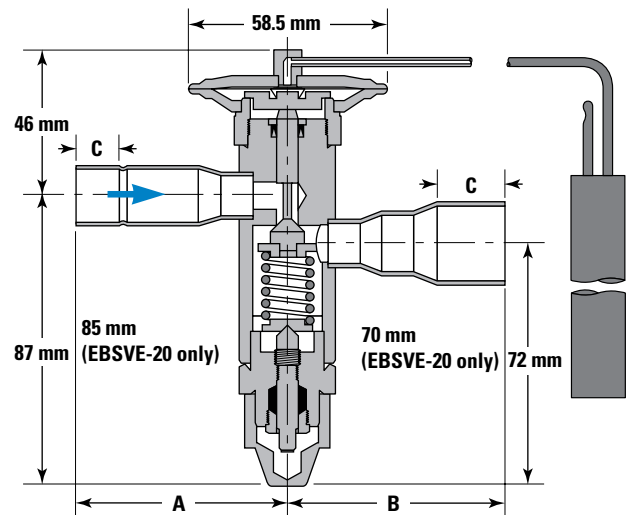
THERMOSTATIC EXPANSION VALVES

22, 134a, 404A, 407C, 409A, 507

Type EBS

Standard Cap Tube Length 60 inches (1.5 m)

Sporlan Type EBS valve is a brass bar body valve having the same physical size as the Type S valve except the Type EBS features a balanced port construction and extended ODF connections. The thermostatic element is replaceable. The balanced port construction makes this valve ideally suited for refrigeration and air conditioning applications which operate over widely varying conditions.

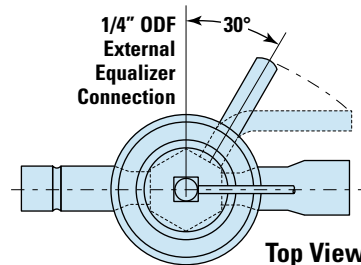


Dimensions — Connections

VALVE TYPE	FITTING SIZE Inches	mm		
		A	B	C
EBS	3/8 ODF	62	—	9
	1/2 ODF	62	—	13
	5/8 ODF	62	64	19
	7/8 ODF	—	64	20.5
	1-1/8 ODF	—	77	24.5

Bulb Sizes

STANDARD CHARGES	REFRIGERANT			
	22	134a	404A	507
C	13 OD x 89			
Z & ZP Series	13 OD x 89	—	13 OD x 89	
CP Series	13 OD x 89			
VGA	19 OD x 51	—	—	—



Specifications — Element Size No. 83, Knife Edge Joint

REFRIGERANT (Sporlan Code)	VALVE TYPE	EXTERNAL EQUALIZER	NOMINAL CAPACITY kW of Refrigeration	THERMOSTATIC CHARGES AVAILABLE	STANDARD TUBING LENGTH m	CONNECTIONS - Inches			NET WEIGHT - kg	SHIPPING WEIGHT - kg
						① Extended ODF Solder Blue figures are standard and will be furnished unless otherwise specified.				
						INLET	OUTLET	EXTERNAL EQUALIZER		
407C (N) 22 (V)	EBSNE-8	28	*Refer to Recommended Thermostatic Charges on page 3	1.5	1/2 or 5/8	7/8 or 1-1/8	1/4 Pointed Toward Bottom Cap or Parallel to Outlet Connection	0.9	1.4	
	EBSNE-11	39			1/2, 5/8 or 7/8	7/8, 1-1/8 or 1-3/8				
	EBSNE-15	53			5/8 or 7/8	7/8, 1-1/8 or 1-3/8				
	EBSNE-20	70			7/8	1-1/8 or 1-3/8				
134a (J) 409A (F)	EBSJE-5	18			1/2 or 5/8	7/8 or 1-1/8				
	EBSJE-7	25			1/2, 5/8 or 7/8	7/8, 1-1/8 or 1-3/8				
	EBSJE-9	32			5/8 or 7/8	7/8, 1-1/8 or 1-3/8				
	EBSJE-12	42			7/8	1-1/8 or 1-3/8				
404A (S)	EBSSE-6	21			1/2 or 5/8	7/8 or 1-1/8				
	EBSSE-7-1/2	26			1/2, 5/8 or 7/8	7/8, 1-1/8 or 1-3/8				
	EBSSE-10	35			5/8 or 7/8	7/8, 1-1/8 or 1-3/8				
	EBSSE-13	46			7/8	1-1/8 or 1-3/8				
507 (P)	EBSPE-6	21	1/2 or 5/8	7/8 or 1-1/8						
	EBSPE-7-1/2	26	1/2, 5/8 or 7/8	7/8, 1-1/8 or 1-3/8						
	EBSPE-10	35	5/8 or 7/8	7/8, 1-1/8 or 1-3/8						
	EBSPE-13	46	7/8	1-1/8 or 1-3/8						

① ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 5/8" ODF will receive 5/8" OD tubing.

* X charge not available.

Note: Not suitable for bi-directional flow control.

THERMOSTATIC EXPANSION VALVES 22, 134a, 404A, 407C, 409A, 410A, 507

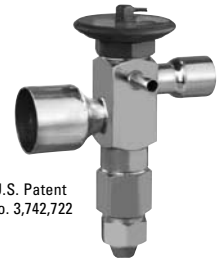
Type O

Standard Cap Tube Length 60 inches (1.5 m)

Sporlan Type O valve is a brass bar body, externally adjustable valve with ODF solder connections. The thermostatic element is replaceable, and the inlet connection has a permanent 12 mesh strainer. This valve type features a balanced port construction, and it is designed for both air conditioning and refrigeration applications. A synthetic seating surface provides tight shut-off during system off periods.

This valve type has two body styles: a small body which provides capacities up to 133 kW R-407C, and a large body which extends capacities to 315 kW R-407C.

The valve can also be ordered as a bi-directional valve, allowing control of flow in both directions for use on heat pump applications.



U.S. Patent No. 3,742,722

Specifications – Element Size No. 83, No. 33, No. 85 (R-410A), and No. 85-3 (R-410A), Knife Edge Joint

REFRIGERANT (Sporlan Code)	VALVE TYPE	NOMINAL CAPACITY kW of Refrigeration	THERMOSTATIC ELEMENT SIZE NO.	THERMOSTATIC CHARGES AVAILABLE	STANDARD TUBING LENGTH m	CONNECTIONS - Inches ② ODF Solder		NET WEIGHT - kg	SHIPPING WEIGHT - kg	
	① EXTERNAL EQUALIZER					Blue figures are standard and will be furnished unless otherwise specified.				
						INLET	OUTLET			
134a (J) 409A (F)	OJE-12	42	83	<i>*Refer to Recommended Thermostatic Charges on page 3</i>	1.5	7/8	1-1/8	0.9	1.4	
	OJE-16	56					1-3/8			
	OJE-23	81	33			1-1/8	1-3/8 or 1-5/8	1.8	2.3	
	OJE-32	112								
	OJE-38	133								
OJE-40	140									
404A (S) 507 (P)	OSE-12	42	83				7/8	1-1/8	0.9	1.4
	OSE-21	74				1-3/8				
	OSE-30	105	33			1-1/8	1-3/8 or 1-5/8	1.8	2.3	
	OSE-35	123								
	OSE-38	133								
OSE-45	158									
407C (N) 22 (V)	ONE-20	70	83				7/8	1-1/8	0.9	1.4
	ONE-30	105				1-3/8				
	ONE-38	133	33-8			1-1/8	1-3/8 or 1-5/8	1.8	2.3	
	ONE-40	140								
	ONE-55	193								
ONE-70	215									
ONE-90	315	63-3								
410A (Z)	OZE-20	70	85		7/8	1-1/8	0.9	1.4		
	OZE-25	84		1-3/8						
	OZE-35	116	85-3	1-1/8	1-3/8	1.8	2.3			
	OZE-50	175								
OZE-60	210									

① Standard External Equalizer Connection 1/4" ODF Solder, 1/4" SAE flare connection available on request.

② ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 5/8" ODF will receive 5/8" OD tubing.

* X charge not available.

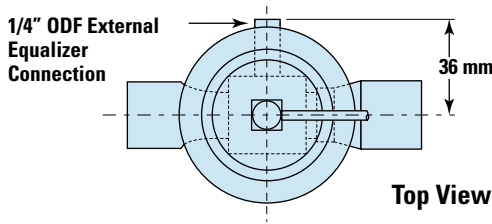
O – Valve Nomenclature/Ordering Instructions

O	V	E	B	20	GA	X	7/8"	X	1-3/8"	X	1/4"	X	5'
Valve Type	Refrigerant Code	External Equalizer	Optional Bi-Directional Feature	Nominal Capacity	Thermostatic Charge		Inlet Connection Size		Outlet Connection Size		External Equalizer Connection Size		Capillary Tubing Length Inches or Feet

THERMOSTATIC EXPANSION VALVES

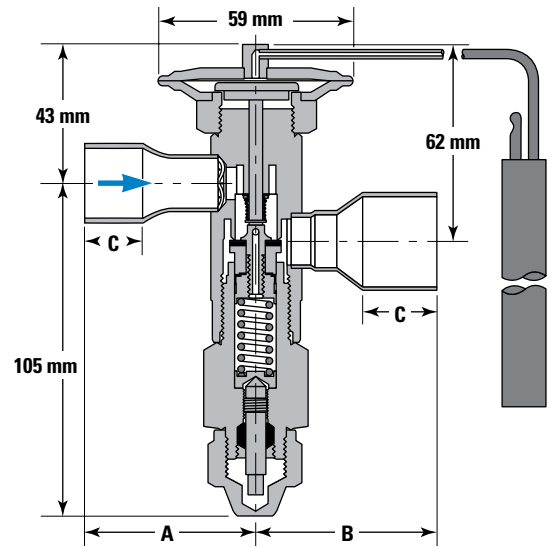
22, 134a, 404A, 410A, 507

Type O with Number 83 or 85 Element



Dimensions — Connections

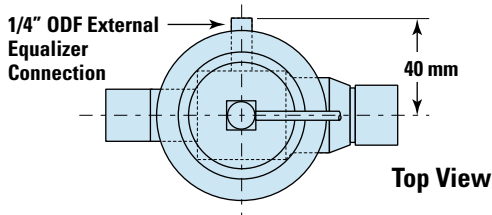
VALVE TYPE	FITTING SIZE Inches	mm		
		A	B	C
O	7/8 ODF	53	—	19
	1-1/8 ODF	56	57	25
	1-3/8 ODF	—	61	25



Bulb Sizes

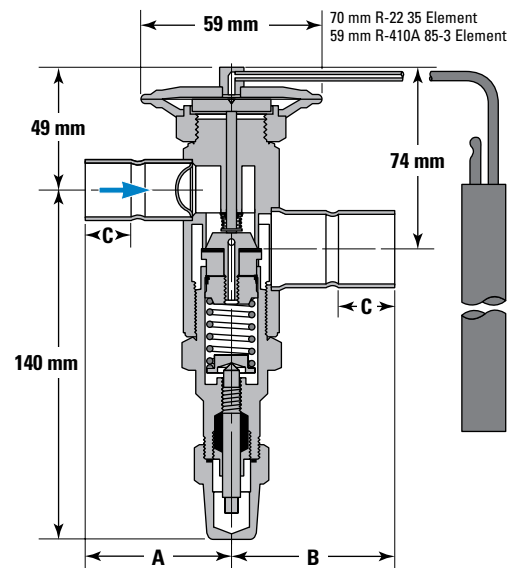
STANDARD CHARGES	REFRIGERANT				
	22	134a	404A	410A	507
C	—	13 OD x 89	—	—	13 OD x 89
Z & ZP Series	13 OD x 89	—	13 OD x 89	—	13 OD x 89
CP Series	—	13 OD x 89	—	—	—
VGA	19 OD x 51	—	—	—	—
ZGA	—	—	—	19 OD x 51	—

Type O with Number 33 or 85-3 Element



Dimensions — Connections

VALVE TYPE	FITTING SIZE Inches	mm		
		A	B	C
O	1-1/8 ODF	68	—	23
	1-3/8 ODF	—	76	25
	1-5/8 ODF	—	79	28



Bulb Sizes

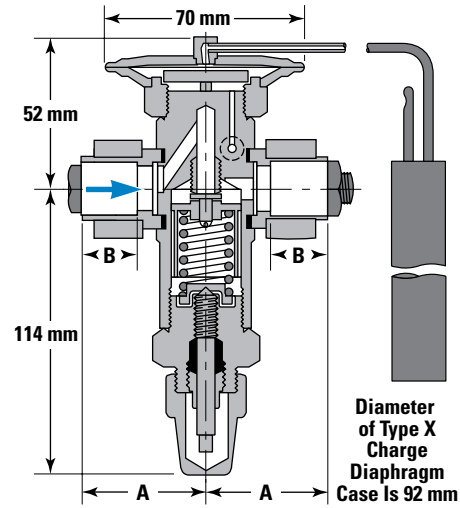
STANDARD CHARGES	REFRIGERANT				
	22	134a	404A	410A	507
C	19 OD x 102	13 OD x 127	19 OD x 102	—	19 OD x 102
Z & ZP Series	19 OD x 102	—	19 OD x 102	—	19 OD x 102
CP Series	—	19 OD x 102	—	—	—
VGA	19 OD x 102	—	—	—	—
ZGA	—	—	—	19 OD x 51	—

THERMOSTATIC EXPANSION VALVES

22, 134a, 404A, 407C, 409A, 507

Type H

Brass bar body, externally adjustable valve with flange connections. Inlet flange bushing has a permanent 16 mesh strainer. The FPT flange connection requires the K-1178 adapter kit. This valve provides the smallest capacity TEVs with flange connections and it is suitable for both air conditioning and refrigeration applications.



Dimensions – Connections

VALVE TYPE	SOLDERING BUSHING	mm	
		A	B
H	1/2	51	22
	5/8	51	22
	7/8	51	22
	1-1/8	52	24

Bulb Sizes

STANDARD CHARGES	REFRIGERANT			
	22	134a	404A	507
C	19 OD x 102	13 OD x 127	19 OD x 102	
Z & ZP Series	19 OD x 102	—	19 OD x 102	
X	19 OD x 102	—	19 OD x 102	
CP Series		19 OD x 102		—
VGA	19 OD x 102	—	—	—

Specifications – Element Size No. 33, Gasket Joint, Standard Tubing Length 1.5 Meters[Ⓢ] Flange Ring Size – 1-1/4" OD x 1" ID.

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY		THERMOSTATIC CHARGES AVAILABLE	①STANDARD CONNECTIONS Inches	
	②INTERNAL EQUALIZER	③EXTERNAL EQUALIZER		④ODF SOLDER FLANGE	④ODF SOLDER FLANGE
134a (J) 409A (F)	HJ-1-1/2	HJE-1-1/2	Refer to Recommended Thermostatic Charges on Page 3	1/2	5/8
	HJ-3	HJE-3		5/8	7/8
	HJ-4	HJE-4		7/8	1-1/8
	HJ-5	HJE-5		1/2	5/8
	—	HJE-8		5/8	7/8
404A (S) 507 (P)	HS-1-1/2	HSE-1-1/2		7/8	1-1/8
	HS-3	HSE-3		1/2	5/8
	HS-4	HSE-4		5/8	7/8
	—	HSE-6-1/2		7/8	1-1/8
	—	HSE-9		1/2	5/8
407C (N) 22 (V)	HN-2-1/2	HVE-2-1/2		5/8	7/8
	HN-5-1/2	HVE-5-1/2		7/8	1-1/8
	—	HVE-7		1/2	5/8
	—	HVE-11		5/8	7/8
	—	HVE-16		7/8	1-1/8
	—	HVE-20			

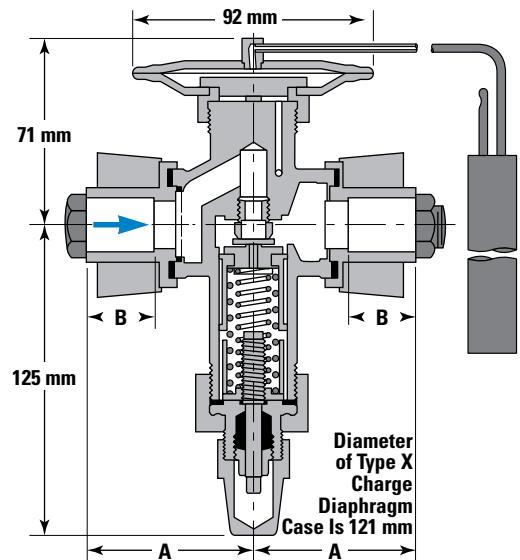
① Connections shown are most readily available. Connections shown in Bulletin 10-10 are also available on special order.
 ② Valves listed in this column NOT AVAILABLE with MOP Type air conditioning charges.
 ③ Standard External Equalizer Connection 1/4" SAE Flare, 1/4" ODF Solder connection available on request.
 ④ ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 1/2" ODF will receive 1/2" OD tubing.
 ⑤ Tubing lengths other than standard available upon special order at an additional cost.
 NOTE: The H valve is not available for R-410A.
 External Equalizer Connection is required whenever valves are used with Sporlan Refrigerant Distributors.

THERMOSTATIC EXPANSION VALVES

22, 134a, 404A, 407C, 409A, 507

Type M

Cast bronze body, externally adjustable valve with flange connections. Inlet has a 12 mesh strainer. This valve type provides valve capacities greater than the Type H and it is suitable for air conditioning and refrigeration applications. Flanges for the Type M valve are interchangeable with the Type V valve.



Dimensions — Connections

VALVE TYPE	SOLDERING BUSHING	mm	
		A	B
H	7/8	60	22
	1-1/8	70	24
	1-3/8	70	24
	1-5/8	82	31

Bulb Sizes

STANDARD CHARGES	REFRIGERANT			
	22	134a	404A	507
C	22 OD x 152			
Z & ZP Series	22 OD x 152	—	22 OD x 152	—
X	22 OD x 152	—	22 OD x 152	—
CP Series	19 OD x 102			—
VGA	19 OD x 102	—	—	—

Specifications — Element Size No. 63, Gasket Joint, Standard Tubing Length 1.5 MetersⓄ, Flange Ring Size — 1-3/4" OD x 1-1/4" ID.

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	THERMOSTATIC CHARGES AVAILABLE	①STANDARD CONNECTIONS Inches	
	②EXTERNAL EQUALIZER		③ODF SOLDER FLANGE	INLET
134a (J) 409A (F)	MJE-15	Refer to Recommended Thermostatic Charges on Page 3	7/8	1-1/8
	MJE-20		1-1/8	
	MJE-25		7/8	
404A (S) 507 (P)	MSE-15		1-1/8	
	MSE-20		7/8	
	MSE-25		1-1/8	
407C (N) 22 (V)	MSE-30		7/8	
	MNE-21		1-1/8	
	MNE-26		7/8	
	MNE-34		1-1/8	
	MNE-42			

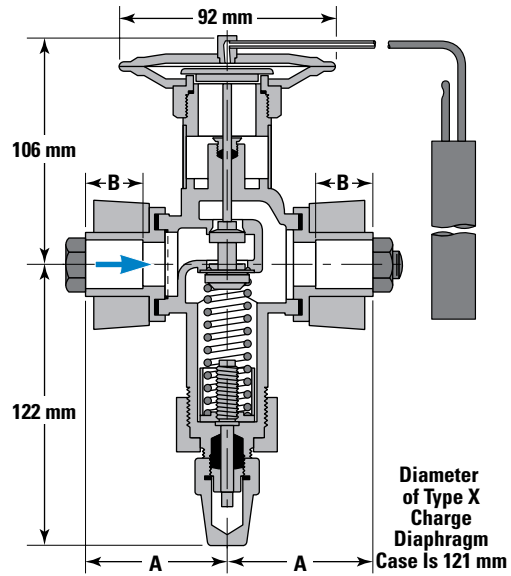
① Connections shown are most readily available. Connections shown in Bulletin 10-10 are also available on special order.
 ② Standard External Equalizer Connection 1/4" SAE Flare, 1/4" ODF Solder connection available on request.
 ③ ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 1/2" ODF will receive 1/2" OD tubing.
 ④ Tubing lengths other than standard available upon special order at an additional cost.
 NOTE: The M valve is not available for R-410A.
 External Equalizer Connection is required whenever valves are used with Sporlan Refrigerant Distributors.

THERMOSTATIC EXPANSION VALVES

22, 134a, 404A, 407C, 409A, 507

Type V

Cast bronze body, externally adjustable valve with flange connections. Inlet has a 12 mesh strainer. This valve type features a dual port semi-balanced design. This valve type provides valve capacities greater than the Type M and is suitable for air conditioning and refrigeration applications. Flanges for the Type V are interchangeable with the Type M.



Dimensions – Connections

VALVE TYPE	SOLDERING BUSHING	mm	
		A	B
V	7/8	60	22
	1-1/8	70	24
	1-3/8	70	24
	1-5/8	82	31

Bulb Sizes

STANDARD CHARGES	REFRIGERANT			
	22	134a	404A	507
C	22 OD x 152			
Z & ZP Series	22 OD x 152	—	22 OD x 152	
X	22 OD x 152	—	22 OD x 152	
CP Series	19 OD x 102			—
VGA	19 OD x 102	—	—	—

Specifications – Element Size No. 63,
Gasket Joint, Standard Tubing Length 1.5 Meters^④
Flange Ring Size – 1-3/4" OD x 1-1/2" ID.

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	THERMOSTATIC CHARGE AVAILABLE	①STANDARD CONNECTION Inches ③ODF SOLDER FLANGE Blue figures are standard and will be furnished unless otherwise specified.	
	②EXTERNAL EQUALIZER		INLET	OUTLET
134a (J) 409A (F)	VJE-35	Refer to Recommended Thermostatic Charges on Page 3	1-3/8	1-3/8
	VJE-45			
	VJE-55			
404A (S) 507 (P)	VSE-38			
	VSE-50			
	VSE-70			
407C (N) 22 (V)	VNE-52			
	VNE-70			
	VNE-100			

① Connections shown are most readily available. Connections shown in Bulletin 10-10 are also available on special order.
 ② Standard External Equalizer Connection 1/4" SAE Flare, 1/4" ODF Solder connection available on request.
 ③ ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 1/2" ODF will receive 1/2" OD tubing.
 ④ Tubing lengths other than standard available upon special order at an additional cost.
 NOTE: The V valve is not available for R-410A.
 External Equalizer Connection is required whenever valves are used with Sporlan Refrigerant Distributors.

THERMOSTATIC EXPANSION VALVES

22, 134a, 407C, 409A

Type W

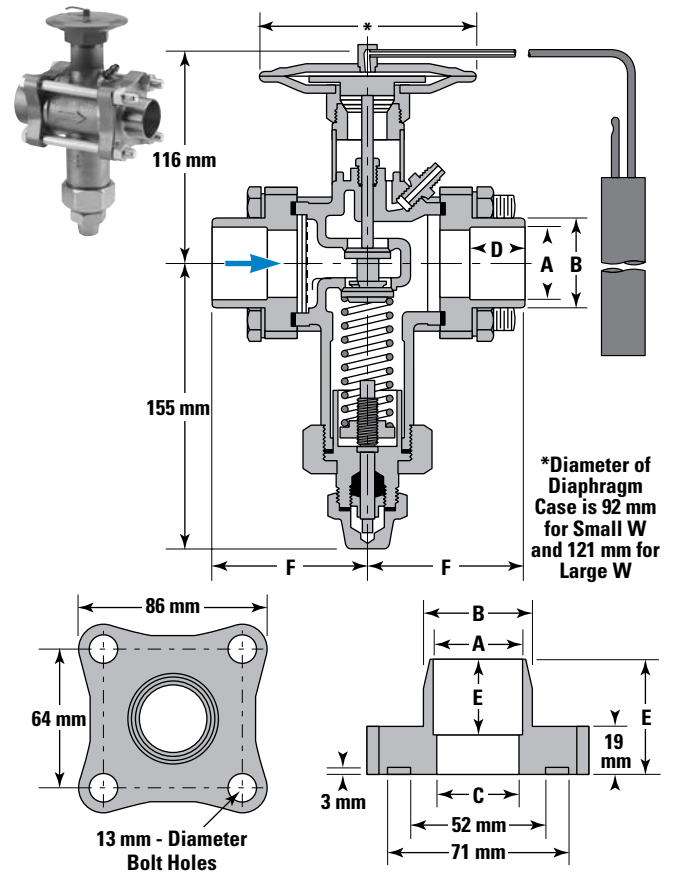
Cast bronze body, externally adjustable valve with flange connections. Inlet has a 12 mesh strainer. This valve type features a dual port semi-balanced design and it is primarily for large capacity chillers. This valve type provides the largest valve capacities available for flange connection TEVs.

Dimensions — Connections

VALVE TYPE	FITTING SIZE	mm					
		A	B	C	D	E	F
W	1-1/8	28	32	27	23	40	78
	1-3/8	35	39	33	25	41	80
	1-5/8	41	45	38	28	44	83
	2-1/8	54	62	49	34	39	83

Bulb Sizes

STANDARD CHARGES	ELEMENT SIZE NUMBER	REFRIGERANT	
		22	134a
C	63	22 OD x 152	
Z & ZP Series		22 OD x 152	—
X		22 OD x 152	—
CP Series		19 OD x 102	
VGA	7	19 OD x 102	—
G		19 OD x 102	—



Specifications – Element Size No. 63, Small Capacity No. 7 Large Capacity – Gasket Joint, Standard Tubing Length 3 Meters[Ⓞ]
 Flange Ring Size – 2-3/4" OD x 2-3/16" ID.

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	ELEMENT SIZE NUMBER	THERMOSTATIC CHARGES AVAILABLE	①STANDARD CONNECTIONS Inches	
	②EXTERNAL EQUALIZER			③ODF SOLDER FLANGE	INLET
134a (J) 409A (F)	WJE-80	63	④	1-5/8	2-1/8
	WJE-110	7	G only		
407C (N) 22 (V)	WNE-135	63	④		
	WNE-180	7	G only		

① Connections shown are most readily available. Connections shown in Bulletin 10-10 are also available on special order.
 ② Standard External Equalizer Connection 1/4" SAE Flare, 1/4" ODF Solder connection available on request.
 ③ ODF Solder indicates a female connection on the valve of proper diameter to receive copper tubing of corresponding OD size. Thus 1/2" ODF will receive 1/2" OD tubing.
 ④ Refer to Recommended Thermostatic Charges, Page 3.
 ⑤ Tubing lengths other than standard available upon special order at an additional cost.
 NOTE: The W valve is not available for R-410A.
 External Equalizer Connection is required whenever valves are used with Sporlan Refrigerant Distributors.

THERMOSTATIC EXPANSION VALVES

134a, 409A

Air Conditioning, Heat Pump and Commercial Refrigeration Applications

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT						
		134a			409A			
		RECOMMENDED THERMOSTATIC CHARGE						
		JC, JCP60			FC, FCP60			
EVAPORATOR TEMPERATURE °C								
	kW	5°	-5°	-15°	5°	-5°	-15°	
FB	0.44	0.76	0.89	0.80	0.76	0.90	0.81	
FB	0.88	1.51	1.77	1.59	1.52	1.80	1.62	
FB	1.8	2.85	3.35	3.01	2.87	3.39	3.06	
FB	3.5	4.80	5.64	5.07	4.83	5.71	5.15	
FB	5.3	5.97	7.01	6.30	6.01	7.10	6.41	
FB-S	7.0	8.17	8.73	8.01	8.23	8.84	8.15	
FB-S	8.8	10.2	10.9	10.0	10.3	11.0	10.2	
S	11	12.3	13.1	12.0	12.3	13.3	12.2	
S	18	20.6	18.8	15.6	20.7	19.0	15.8	
S	21	24.7	22.5	18.7	24.9	22.8	19.0	
S	35	38.2	36.3	31.1	38.4	36.7	31.7	
H	5.3	6.54	6.99	6.40	6.58	7.07	6.52	
H	11	12.3	13.1	11.3	12.3	13.3	11.5	
H	14	16.3	17.5	15.1	16.4	17.7	15.3	
H	18	20.4	21.8	18.8	20.6	22.1	19.1	
H	28	30.6	32.8	28.2	30.8	33.1	28.7	
H	42	47.8	51.1	44.0	48.1	51.7	44.8	
M	53	63.3	67.7	56.7	63.7	68.5	57.7	
M	70	81.7	87.3	73.2	82.3	88.4	74.5	
M	88	102	109	91.5	103	110	93.1	
BALANCED PORT THERMOSTATIC EXPANSION VALVES								
R	1.8	2.44	2.86	2.57	2.45	2.90	2.62	
R	3.5	4.27	5.01	4.50	4.29	5.07	4.58	
R	5.3	5.61	6.58	5.91	5.64	6.66	6.02	
R	7.0	7.80	9.16	8.23	7.85	9.27	8.37	
R	8.8	10.2	12.0	10.8	10.3	12.2	11.0	
R	11	12.2	14.3	12.9	12.3	14.5	13.1	
R	14	14.6	17.2	14.3	14.7	17.4	14.6	
EBS	18	20.8	20.7	17.8	21.0	21.0	18.1	
EBS	25	28.7	28.6	24.6	28.9	28.9	25.0	
EBS	32	38.1	36.3	29.5	38.4	36.7	30.0	
EBS-O	42	47.8	51.1	41.5	48.1	51.7	42.3	
O	56	63.3	67.7	59.4	63.7	68.5	60.4	
O	81	96.6	108	92.6	94.2	109	94.2	
O	110	130	150	129	131	152	131	
O	140	163	188	161	164	190	164	
V	120	143	153	126	144	155	128	
V	160	184	197	162	185	199	164	
V	190	225	240	198	226	243	201	
W	280	347	371	291	350	376	296	
W	390	486	—	—	490	—	—	
CONVENTIONAL CARTRIDGE THERMOSTATIC EXPANSION VALVES								
Q-EQ-SQ	0	0.59	0.82	0.87	0.80	0.88	0.82	
Q-EQ-SQ	1	0.88	1.84	1.97	1.80	1.85	1.83	
Q-EQ-SQ	2	1.8	2.65	2.84	2.60	2.67	2.65	
Q-EQ-SQ	3	3.5	4.08	4.37	4.00	4.11	4.07	
Q-EQ-SQ	4	5.3	5.72	6.11	5.60	5.76	5.70	
Q-EQ-SQ	5	7.0	8.17	8.73	8.01	8.23	8.15	
Q-EQ-SQ	6	8.8	11.0	11.8	10.8	11.1	11.0	
BALANCED PORT CARTRIDGE THERMOSTATIC EXPANSION VALVES								
BQ-EBQ-SBQ	AAA	0.70	0.85	0.99	0.95	0.85	1.00	0.97
BQ-EBQ-SBQ	AA	1.2	1.84	1.97	1.80	1.85	1.99	1.83
BQ-EBQ-SBQ	A	3.5	4.08	4.37	4.00	4.11	4.42	4.07
BQ-EBQ-SBQ	B	7.0	6.94	7.42	6.80	6.99	7.51	6.92
BQ-EBQ-SBQ	C	11	12.3	13.1	12.0	12.3	13.3	12.2

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °C							
	-10°	0°	10°	20°	30°	40°	50°	60°
134a	1.64	1.52	1.39	1.26	1.13	1.00	0.87	0.73
409A	1.51	1.41	1.31	1.21	1.11	1.00	0.89	0.78

EVAPORATOR TEMPERATURE °C	PRESSURE DROP ACROSS TEV (bar)							
	2	4	6	8	10	12	14	16
5°	0.71	1.00	1.22	1.41	1.58	1.73	1.87	2.00
-5° & -15°	0.58	0.82	1.00	1.15	1.29	1.41	1.53	1.63

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 x CF Pressure Drop — Example: Actual capacity of a nominal 1-1/2 ton R-134a Type FB valve at -5°C evaporator, 8 bar pressure drop across the TEV, and a 30°C liquid temperature entering the TEV = 7.01 (from rating chart) x 1.13 (CF liquid temperature) x 1.15 (CF pressure drop) = 9.11 kW.

THERMOSTATIC EXPANSION VALVES

22, 407C

Air Conditioning, Heat Pump and Commercial Refrigeration Applications

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT									
		22						407C			
		RECOMMENDED THERMOSTATIC CHARGE									
		VC, VCP100, VGA			VZ, VZP40			NC, NCP100, NGA			
kW	EVAPORATOR TEMPERATURE °C										
	5°	-5°	-15°	-20°	-30°	-40°	5°	-5°	-15°		
FB	0.88	1.00	1.12	1.03	1.04	0.80	0.63	0.91	1.01	0.91	
FB	1.8	1.99	2.25	2.06	2.08	1.61	1.25	1.81	2.02	1.82	
FB	3.5	3.76	4.24	3.88	3.69	2.52	1.96	3.42	3.80	3.43	
FB	5.3	6.01	6.78	6.21	5.68	3.57	2.78	5.47	6.08	5.48	
FB-S	7.0	6.87	7.75	7.10	6.78	4.68	3.65	6.26	6.96	6.27	
FB-S	11	10.9	12.3	11.3	10.6	7.17	5.59	9.94	11.1	9.97	
FB-S	14	13.4	15.1	13.9	13.1	8.77	6.84	12.2	13.6	12.3	
S	18	16.7	18.8	17.0	16.4	11.8	9.22	15.2	16.9	15.0	
S	28	25.7	29.0	24.6	23.4	15.9	12.3	23.4	26.0	21.8	
S	35	32.1	36.2	30.8	29.3	19.8	15.3	29.2	32.5	27.2	
S	53	49.8	56.2	47.7	46.1	31.2	24.9	45.3	50.4	42.2	
H	8.8	8.04	8.90	8.12	8.12	5.09	4.28	7.32	7.99	7.17	
H	19	18.0	19.9	18.2	18.0	11.1	9.34	16.4	17.9	16.1	
H	25	22.5	24.9	22.7	21.7	12.5	10.5	20.5	22.4	20.1	
H	39	33.8	37.4	34.1	31.6	17.0	14.3	30.7	33.5	30.1	
H	56	48.9	54.1	49.4	45.6	24.3	20.4	44.5	48.6	43.6	
H	70	71.4	79.1	72.1	68.9	39.5	33.2	65.0	70.9	63.7	
M	74	69.0	77.9	75.3	74.8	53.6	45.2	62.9	69.9	66.5	
M	91	85.1	96.0	92.9	96.7	75.7	63.9	77.5	86.1	82.0	
M	120	109	123	119	120	89.1	75.2	99.4	111	105	
M	150	135	152	147	151	107	86.2	123	137	130	
BALANCED PORT THERMOSTATIC EXPANSION VALVES											
R-RC	3.5	3.21	3.62	3.32	3.32	2.52	1.96	2.92	3.25	2.93	
R-RC	5.3	5.62	6.34	5.81	5.42	3.57	2.78	5.12	5.69	5.13	
R-RC	7.0	7.39	8.33	7.63	7.12	4.68	3.65	6.72	7.48	6.74	
R-RC	11	10.3	11.6	10.6	10.0	6.73	5.25	9.35	10.4	9.38	
R-RC	14	13.5	15.2	13.9	13.1	8.77	6.84	12.3	13.7	12.3	
R-RC	18	16.1	18.1	16.6	15.4	10.0	7.83	14.6	16.3	14.7	
R-RC	21	19.3	21.7	18.5	16.8	10.4	8.00	17.5	19.5	16.3	
R	28	25.7	29.0	26.5	23.2	12.0	9.27	23.4	26.0	23.4	
R	35	33.5	37.8	34.6	—	—	—	30.5	33.9	30.6	
R	44	38.9	43.8	40.1	—	—	—	35.4	39.3	35.5	
EBS	28	27.4	29.5	25.4	24.5	16.8	13.0	24.9	26.5	22.4	
EBS	39	37.0	39.9	34.3	33.1	22.7	17.5	33.7	35.8	30.3	
EBS	53	49.7	54.4	43.7	42.0	29.1	23.4	45.3	48.8	38.6	
EBS-O	70	71.9	76.7	60.8	58.3	40.2	29.6	65.5	68.8	53.7	
O	110	98.2	106	91.8	84.8	56.5	49.1	89.4	94.9	81.1	
O	130	122	132	110	102	70.3	60.9	111	118	97.3	
O	140	129	145	115	111	86.1	74.6	118	130	102	
O	190	177	198	157	150	98.2	83.0	161	177	139	
O	250	235	262	209	198	111	90.4	214	235	184	
O	320	289	323	255	243	137	111	263	290	226	
V	180	167	187	180	190	121	101	152	168	159	
V	250	235	262	253	265	167	138	214	235	224	
V	350	321	359	347	355	214	178	292	322	306	
W	470	459	514	496	507	307	255	418	461	438	
W	630	607	—	—	—	—	—	553	—	—	
CONVENTIONAL CARTRIDGE THERMOSTATIC EXPANSION VALVES											
Q-EQ-SQ	0	1.2	1.12	1.27	1.14	1.10	0.79	0.62	1.02	1.14	1.01
Q-EQ-SQ	1	2.6	2.41	2.72	2.45	2.50	1.99	1.55	2.19	2.44	2.16
Q-EQ-SQ	2	3.5	3.21	3.62	3.27	3.27	2.52	1.96	2.92	3.25	2.88
Q-EQ-SQ	3	5.3	4.82	5.43	4.90	4.65	3.22	2.51	4.39	4.88	4.33
Q-EQ-SQ	4	8.8	8.03	9.06	8.16	8.25	6.43	5.02	7.31	8.13	7.21
Q-EQ-SQ	5	12	11.2	12.7	11.4	11.4	8.77	6.84	10.2	11.4	10.1
Q-EQ-SQ	6	18	15.4	17.4	15.7	15.1	10.7	8.33	14.0	15.6	13.8
BALANCED PORT CARTRIDGE THERMOSTATIC EXPANSION VALVES											
BQ-EBQ-SBQ	AAA	1.2	1.12	1.27	1.14	1.10	0.79	0.62	1.02	1.14	1.01
BQ-EBQ-SBQ	AA	2.3	2.41	2.72	2.45	2.50	1.99	1.55	2.19	2.44	2.16
BQ-EBQ-SBQ	A	5.3	5.14	5.80	5.23	5.03	3.57	2.78	4.68	5.20	4.61
BQ-EBQ-SBQ	B	11	8.99	10.1	9.14	8.95	6.58	5.13	8.19	9.10	8.08
BQ-EBQ-SBQ	C	18	16.7	18.8	17.0	16.4	11.8	9.22	15.2	16.9	15.0

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °C							
	-10°	0°	10°	20°	30°	40°	50°	60°
22	1.52	1.42	1.32	1.21	1.11	1.00	0.89	0.78
407C	1.73	1.59	1.45	1.30	1.15	1.00	0.84	0.67

EVAPORATOR TEMPERATURE °C	PRESSURE DROP ACROSS TEV (bar)							
	2	4	6	8	10	12	14	16
5°	0.58	0.82	1.00	1.15	1.29	1.41	1.53	1.63
-5° & -15°	0.50	0.71	0.87	1.00	1.12	1.22	1.32	1.41
-20° & -30°	0.45	0.63	0.77	0.89	1.00	1.10	1.18	1.26
-40°	0.41	0.58	0.71	0.82	0.91	1.00	1.08	1.15

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 x CF Pressure Drop — Example: Actual capacity of a nominal 1-1/2 ton R-22 Type FB valve at -5°C evaporator, 10 bar pressure drop across the TEV, and a 30°C liquid temperature entering the TEV = 6.78 (from rating chart) x 1.11 (CF liquid temperature) x 1.12 (CF pressure drop) = 8.43 kW.

THERMOSTATIC EXPANSION VALVES

404A, 507

Air Conditioning, Heat Pump and Commercial Refrigeration Applications

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT												
		404A						507						
		RECOMMENDED THERMOSTATIC CHARGE												
		SCP115, SC			SZ, SZP			PC			PZ, PZP			
kW	EVAPORATOR TEMPERATURE °C													
	5°	-5°	-15°	-20°	-30°	-40°	5°	-5°	-15°	-20°	-30°	-40°		
FB	0.44	0.65	0.71	0.63	0.62	0.45	0.33	0.64	0.70	0.62	0.61	0.44	0.33	
FB	0.88	1.12	1.24	1.10	1.12	0.86	0.65	1.10	1.21	1.08	1.10	0.85	0.64	
FB	1.8	2.25	2.47	2.20	2.11	1.47	1.10	2.21	2.43	2.16	2.07	1.45	1.09	
FB	3.5	3.90	4.29	3.81	3.43	2.08	1.56	3.83	4.21	3.75	3.38	2.05	1.54	
FB	5.3	4.46	4.91	4.36	4.12	2.78	2.09	4.39	4.82	4.29	4.05	2.74	2.06	
FB-S	7.0	6.43	7.01	6.17	6.42	4.17	3.13	6.32	6.88	6.06	6.44	4.11	3.09	
FB-S	11	8.72	9.59	8.49	7.90	5.12	3.84	8.57	9.41	8.34	7.77	5.05	3.79	
S	14	12.9	14.0	12.1	12.3	9.45	8.15	12.6	13.8	11.9	12.1	9.31	8.05	
S	21	17.8	17.1	14.4	15.2	12.3	9.89	17.5	16.8	14.2	14.9	12.1	9.77	
S	25	22.7	21.8	18.4	19.3	15.6	12.6	22.3	21.4	18.0	19.0	15.4	12.4	
S	35	32.5	31.8	28.4	30.3	26.2	23.5	31.9	31.3	27.9	29.8	25.8	23.2	
H	5.3	4.84	4.85	4.54	4.94	3.99	3.30	4.76	4.76	4.46	4.86	3.93	3.26	
H	11	9.04	9.05	7.80	8.23	6.65	5.51	8.88	8.88	7.66	8.09	6.55	5.44	
H	14	12.9	12.9	10.7	11.3	9.31	7.71	12.7	12.7	10.5	11.1	9.17	7.62	
H	23	21.0	21.0	17.4	18.0	14.5	12.0	20.6	20.6	17.1	17.7	14.3	11.8	
H	32	30.7	30.7	25.5	24.1	16.6	13.8	30.1	30.1	25.0	23.7	16.4	13.6	
H	42	42.0	42.0	34.9	34.9	26.6	22.0	41.2	41.3	34.2	34.4	26.2	21.8	
M	53	50.8	55.8	45.3	46.4	39.6	33.2	49.9	54.8	44.5	45.6	39.0	32.8	
M	70	66.2	72.8	57.5	58.2	49.7	41.7	65.0	71.4	56.5	57.2	48.9	41.2	
M	88	82.6	90.8	71.7	70.9	58.3	48.9	81.1	89.1	70.4	69.7	57.4	48.3	
M	110	99.6	110	86.5	84.2	67.5	56.6	97.9	108	85.0	82.8	66.5	55.9	
BALANCED PORT THERMOSTATIC EXPANSION VALVES														
R	1.8	1.92	2.11	1.88	1.91	1.47	1.10	1.89	2.07	1.85	1.87	1.45	1.09	
R	3.5	3.65	4.01	3.57	3.28	2.08	1.56	3.59	3.94	3.51	3.22	2.05	1.54	
R	5.3	4.80	5.28	4.69	4.30	2.71	2.03	4.71	5.18	4.61	4.22	2.67	2.01	
R	7.0	6.65	7.31	6.50	6.04	3.92	2.94	6.54	7.18	6.39	5.93	3.86	2.90	
R	11	8.76	9.63	8.56	7.93	5.12	3.84	8.61	9.46	8.41	7.80	5.05	3.79	
R	12	10.4	11.5	10.2	9.32	5.85	4.39	10.2	11.3	10.0	9.17	5.77	4.34	
R	14	12.5	13.8	11.4	10.2	6.14	4.55	12.3	13.5	11.2	10.0	6.05	4.50	
EBS	21	18.1	18.6	15.7	15.4	10.6	9.87	17.7	18.3	15.4	15.2	10.5	9.75	
EBS	26	24.5	25.3	21.3	20.5	13.5	12.6	24.1	24.8	21.0	20.2	13.3	12.4	
EBS	35	30.2	31.7	25.3	24.6	17.9	15.4	29.6	31.2	24.9	24.2	17.6	15.3	
EBS	46	43.1	45.9	36.0	34.7	25.5	20.5	42.3	45.1	35.3	34.1	25.2	20.2	
O	42	42.0	42.0	34.2	34.3	27.2	23.5	41.2	41.3	33.6	33.7	26.8	23.2	
O	74	67.8	67.9	51.1	46.3	32.6	28.1	66.6	66.6	50.2	45.5	32.1	27.8	
O	110	97.1	106	81.7	72.8	48.8	42.1	95.4	104	80.3	71.6	48.0	41.6	
O	120	113	123	94.7	82.6	52.9	45.7	111	120	93.1	81.2	52.2	45.2	
O	160	145	158	122	103	61.0	52.7	142	155	120	101	60.1	52.1	
V	130	122	130	113	117	97.5	80.2	120	127	111	115	96.1	79.2	
V	180	164	174	152	160	139	114	161	171	149	158	137	113	
V	250	225	239	211	223	195	160	221	235	207	220	192	158	
CONVENTIONAL CARTRIDGE THERMOSTATIC EXPANSION VALVES														
Q-EQ-SQ	0	0.59	0.64	0.71	0.67	0.70	0.55	0.48	0.63	0.69	0.66	0.69	0.54	0.47
Q-EQ-SQ	1	0.88	1.45	1.59	1.50	1.58	1.24	1.07	1.42	1.56	1.48	1.56	1.22	1.06
Q-EQ-SQ	2	1.8	2.09	2.33	2.21	2.23	1.63	1.40	2.05	2.29	2.18	2.20	1.60	1.39
Q-EQ-SQ	3	3.5	3.22	3.50	3.03	3.06	2.34	2.02	3.16	3.44	2.98	3.00	2.31	2.00
Q-EQ-SQ	4	5.3	5.14	5.60	4.85	5.04	4.05	3.49	5.05	5.50	4.77	4.95	3.99	3.45
Q-EQ-SQ	5	7.0	6.75	7.36	6.37	6.65	5.40	4.66	6.63	7.22	6.26	6.54	5.32	4.60
Q-EQ-SQ	6	11	9.00	9.81	8.49	8.65	6.75	5.82	8.84	9.63	8.34	8.51	6.65	5.75
BALANCED PORT CARTRIDGE THERMOSTATIC EXPANSION VALVES														
BQ-EBQ-SBQ	AAA	0.70	0.72	0.80	0.75	0.82	0.67	0.58	0.71	0.78	0.74	0.80	0.66	0.57
BQ-EBQ-SBQ	AA	1.2	1.45	1.59	1.50	1.58	1.24	1.07	1.42	1.56	1.48	1.56	1.22	1.06
BQ-EBQ-SBQ	A	3.5	3.21	3.59	3.41	3.70	3.03	2.61	3.15	3.53	3.35	3.63	2.99	2.58
BQ-EBQ-SBQ	B	7.0	5.95	6.48	5.61	5.69	4.41	3.80	5.84	6.36	5.51	5.60	4.34	3.76
BQ-EBQ-SBQ	C	11	9.00	9.81	8.49	8.65	6.75	5.82	8.84	9.63	8.34	8.51	6.65	5.75

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °C							
	-10°	0°	10°	20°	30°	40°	50°	60°
404A	1.98	1.79	1.60	1.41	1.21	1.00	0.79	0.56
507	1.92	1.74	1.56	1.37	1.19	1.00	0.79	0.54

EVAPORATOR TEMPERATURE °C	PRESSURE DROP ACROSS TEV (bar)							
	2	4	6	8	10	12	14	16
5°	0.58	0.82	1.00	1.15	1.29	1.41	1.53	1.63
-5° & -15°	0.50	0.71	0.87	1.00	1.12	1.22	1.32	1.41
-20° & -30°	0.45	0.63	0.77	0.89	1.00	1.10	1.18	1.26
-40°	0.41	0.58	0.71	0.82	0.91	1.00	1.08	1.15

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 x CF Pressure Drop — Example: Actual capacity of a nominal 1-1/2 ton R-404A Type FB valve at -5°C evaporator, 10 bar pressure drop across the TEV, and a 30°C liquid temperature entering the TEV = 4.91 (from rating chart) x 1.21 (CF liquid temperature) x 1.12 (CF pressure drop) = 6.65 kW.

THERMOSTATIC EXPANSION VALVES

410A

Air Conditioning and Heat Pump Applications

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT			
		410A			
		RECOMMENDED THERMOSTATIC CHARGE			
		ZGA			
		EVAPORATOR TEMPERATURE °C			
		kW	5°	-5°	-15°
BALANCED PORT THERMOSTATIC EXPANSION VALVES					
R-RC	3.5	4.08	4.50	4.12	
R-RC	5.3	7.14	7.88	7.21	
R-RC	7.0	9.38	10.4	9.48	
R-RC	11	13.1	14.4	13.2	
R-RC	14	17.1	18.9	17.3	
R-RC	18	20.4	22.5	20.6	
R-RC	21	24.5	27.0	23.0	
R	28	32.6	36.0	33.0	
R	44	42.5	46.9	43.0	
R	53	49.4	54.4	49.9	
O	70	68.1	75.1	71.5	
O	88	81.7	90.1	85.8	
O	120	112	124	118	
O	180	170	188	179	
O	210	204	225	215	
VALVE TYPE	CARTRIDGE	BALANCED PORT CARTRIDGE THERMOSTATIC EXPANSION VALVES			
BQ-EBQ-SBQ	AAA	1.2	1.43	1.58	1.42
BQ-EBQ-SBQ	AA	2.6	3.06	3.38	3.04
BQ-EBQ-SBQ	A	5.3	6.53	7.20	6.49
BQ-EBQ-SBQ	B	11	11.4	12.6	11.4
BQ-EBQ-SBQ	C	18	21.2	23.4	21.1

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV °C				
	20°	30°	40°	50°	60°
410A	1.30	1.15	1.00	0.84	0.65

EVAPORATOR TEMPERATURE °C	PRESSURE DROP ACROSS TEV (bar)				
	8	11	14	17	20
5°	0.85	1.00	1.13	1.24	1.35
-5° & -15°	0.76	0.89	1.00	1.10	1.20

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 x CF Pressure Drop — Example: Actual capacity of a nominal 4 ton R-410A Type RC valve at -15°C evaporator, 17 bar pressure drop across the TEV, and a 30°C liquid temperature entering the TEV = 17.3 (from rating chart) x 1.15 (CF liquid temperature) x 1.10 (CF pressure drop) = 21.9 kW.