

# V246 Series 2-Way Pressure-Actuated Water-Regulating Valves for High-Pressure Refrigerants

## Product Bulletin

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The V246 Series 2-Way Pressure-Actuated Water-Regulating Valves for High-Pressure Refrigerants come in two types of control action: direct acting and reverse acting. V246 valves regulate water flow to control refrigerant head pressure in systems with water-cooled condensers.

The V246 Series Valves are available in 3/8 in. through 2 in. sizes and have a maximum allowable water pressure of 150 psi (10.3 bar). Direct acting V246 valves have an adjustable opening point in a refrigerant pressure range of 200 to 400 psi (13.8 to 27.6 bar), and reverse acting valves have a range of 135 to 300 psi (9.3 to 20.7 bar). V246 valves may be used with standard non-corrosive refrigerants.

Maritime models, which have nickel copper (Monel®) internal parts, are available for applications where the media may be corrosive to the internal parts.



Figure 1: V246 Series Valve

### **WARNING**

This product is made of copper alloy, which contains lead. The product is therefore not to be used on drinking water.

Table 1: Features and Benefits

Features	Benefits
No Close Fitting or Sliding Parts in Water Passages	Provides robust control in less than ideal conditions.
Accessible Range Spring	Allows easy manual flushing.
Take-Apart Construction	Allows access to valve interior without removing valve from refrigeration system or pumping down the system.
Pressure-Balanced Design	Resists changes to setpoint caused by gradual or sudden water pressure changes.
Corrosion-Resistant Material for Internal Parts	Promotes long valve life.



## Application

**IMPORTANT:** The V246 Series 2-Way Pressure-Actuated Water-Regulating Valves for High-Pressure Refrigerants is intended to control water or coolant flow under normal operating conditions. Where failure or malfunction of the V246 valve could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the V246 valve.

## Operation

The V246 valve controls refrigerant head pressure by sensing the condensing pressure and adjusting water flow as the condenser requirements change.

## Valve Sizing

Each application is unique and requires specific engineering data to properly size and design a system to fulfill the appropriate requirements. Typically, a valve is replaced with another valve of the same size in a properly sized and engineered system.

To make a rough field estimate of the size of valve for an application, find the valve size needed by locating a point on a flow chart (see Figure 6 through Figure 11) that satisfies these requirements:

- water flow required by the condenser (**Flow**)
- refrigerant head pressure rise (**P<sub>RISE</sub>**)
- available water pressure (**P<sub>AVAIL</sub>**)

Follow these steps, and use the information obtained to locate a point on one of the flowcharts (see Figure 6 through Figure 11) that satisfies all three steps.

1. Take the water flow required by the condenser (**Flow**) from information provided by the manufacturer of the condensing unit. If the manufacturer's information is unavailable, use the following information and Figure 2 to make a rough approximation of water flow in gallons per minute (gpm) [cubic meters per hour (m<sup>3</sup>/hr)]:
  - System Capacity (**Tons of Refrigeration**)
  - Outlet Water Temperature (**Temp. <sub>Outlet</sub>**)
  - Inlet Water Temperature (**Temp. <sub>Inlet</sub>**)

Calculate the flow using the following formula:

$$\text{Flow} = \frac{\text{Tons of Refrigeration} \times 30}{(\text{Temp.}_{\text{Outlet}} - \text{Temp.}_{\text{Inlet}})}$$

FIG.11w\_spp

**Figure 2: Flow Required**

**Note:** If the outlet temperature is unknown, assume it to be 10F° (6C°) above the inlet temperature.

2. Determine refrigerant head pressure rise above the valve opening point (**P<sub>RISE</sub>**) using Figure 4 and the following steps:
  - a. The **Valve Closing Pressure (P<sub>CLOSE</sub>)** is equal to the refrigerant pressure at the highest ambient temperature the refrigeration equipment experiences in the Off cycle. Use a Pressure-Temperature Chart for the refrigerant selected to find this pressure.
  - b. To approximate the **Valve Opening Pressure (P<sub>OPEN</sub>)**, add about 10 psi (0.7 bar) to the Valve Closing Pressure. See Figure 3.

**Note:** Add about 20 psi (1.4 bar) for 3/8 in. valves.

$$P_{\text{OPEN}} = P_{\text{CLOSE}} + 10 \text{ psi (0.7 bar)}$$

FIG.09p\_09m\_press

**Figure 3: Valve Opening Pressure**

- c. From the Pressure-Temperature Chart for the refrigerant selected, read the **Refrigerant Condensing Pressure (P<sub>COND</sub>)** (operating head pressure) corresponding to the selected condensing temperature.
- d. Subtract the Valve Opening Pressure from the Refrigerant Condensing Pressure. This gives the head pressure rise. See Figure 4.

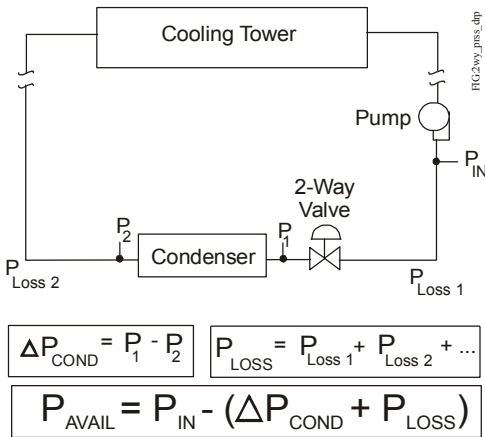
$$P_{\text{RISE}} = P_{\text{COND}} - P_{\text{OPEN}}$$

FIG.09p\_09m\_press\_15

**Figure 4: Refrigerant Head Pressure Rise**

3. Determine the available water pressure to the valve (**P<sub>AVAIL</sub>**) using the following steps and Figure 5. This is the actual water pressure available to force water through the valve.
  - a. Determine the inlet pressure (**P<sub>IN</sub>**). This is the water pressure from city water mains, pumps, or other sources.

- b. Pressure drop through condenser ( $\Delta P_{COND}$ ) is the difference in water pressure between the condenser inlet and the condenser outlet. Obtain this information from the condenser manufacturer.
- c. Estimate or calculate the pressure drop through all associated piping ( $P_{LOSS}$ ).
- d. Subtract the  $\Delta P_{COND}$  and  $P_{LOSS}$  from  $P_{IN}$ . The result is  $P_{AVAIL}$ .



**Figure 5: Available Water Pressure**

- 4. Select the proper valve size from the flowcharts by locating a point on a chart that satisfies the flow, the head pressure rise above opening point, and the pressure drop across the valve.

**Metric Conversions**

Use these equations to convert between U.S. and S.I. units.

- $1 \text{ dm}^3/\text{s} = 3.6 \text{ m}^3/\text{h} = 15.9 \text{ U.S. gal. /min.} = 13.2 \text{ U.K. gal. /min.}$
- $1 \text{ bar} = 100 \text{ kPa} = 0.1 \text{ MPa} = 1.02 \text{ kg/cm}^2 = 0.987 \text{ atm} = 14.5 \text{ psi}$

**Valve Sizing Example**

A 12-ton capacity R410A system has an inlet water temperature of 85°F (29°C) and an outlet water temperature of 95°F (35°C).

The manufacturer’s recommended condensing temperature is 105°F (41°C), which corresponds to a pressure of 340 psi (23.4 bar). The maximum ambient temperature is estimated at 90°F (32°C).

City water pressure is 40 psi (2.8 bar) and the manufacturer’s table gives a pressure drop through the condenser at 15 psi (1 bar). The combined pressure loss due to piping is approximately 4 psi (0.3 bar).

Use the valve sizing process to find the correctly sized valve for this application:

1. Find or calculate the water flow required by the condenser. See Figure 2.
  - **Flow:** According to the data provided, the required flow is 36 GPM (8.2 m<sup>3</sup>/h).
2. Determine the refrigerant head pressure rise above the valve opening point. See Figure 3 and Figure 4.
  - **P<sub>CLOSE</sub>:** Closing point is refrigerant pressure corresponding to 90°F (32°C) = 274 psi (18.9 bar). Using a refrigerant pressure-temperature charts for the refrigerant (R410A), the refrigerant is 274 psi at 90°F (18.9 bar at 32°C).
  - **P<sub>OPEN</sub>:** Opening point = 274 psi + 10 psi = 284 psi (18.9 bar + 0.7 bar = 19.6 bar)
  - **P<sub>COND</sub>:** Condensing pressure = 340 psi (23.4 bar)
  - **P<sub>RISE</sub>:** Head pressure rise = 340 psi - 284 psi = 56 psi (23.4 bar - 19.6 bar = 3.9 bar)

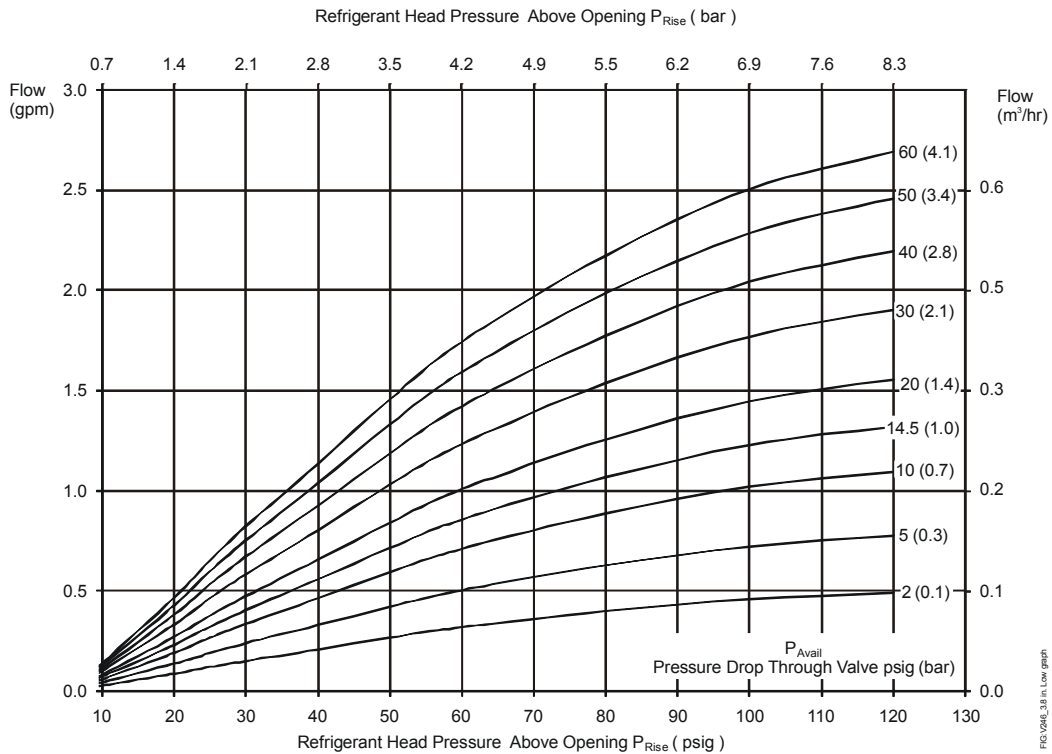
3. Determine the available water pressure to the valve. See Figure 5.
- **P<sub>IN</sub>**: Inlet water pressure = 40 psi (2.8 bar)
  - **ΔP<sub>COND</sub>**: Pressure drop through the condenser = 15 psi (1 bar)
  - **P<sub>LOSS</sub>**: Combined piping pressure loss = 4 psi (0.3 bar)
  - **P<sub>AVAIL</sub>**: Available water pressure to the valve = 40 psi - (15 psi + 4 psi) = 21 psi (2.8 bar - [1 bar + 0.3 bar] = 1.4 bar)

4. Using the following data and the flowcharts, the only valve that comes close to meeting all the criteria (without being oversized) is a 1-1/4 in. valve (see Figure 11):

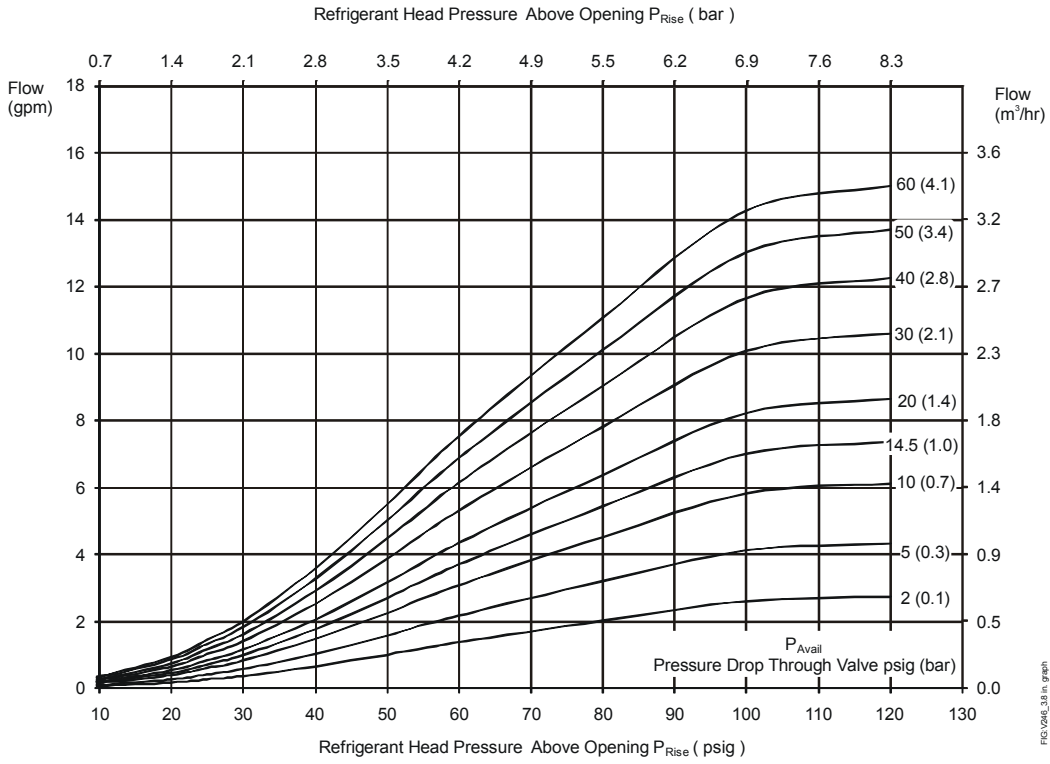
- **Flow** = 36 GPM (8.2 m<sup>3</sup>/h)
- **P<sub>RISE</sub>** = a head pressure rise of 56 psi (3.9 bar)
- **P<sub>AVAIL</sub>** = available water pressure to the valve is 21 psi (1.4 bar)

**V246 Flowcharts**

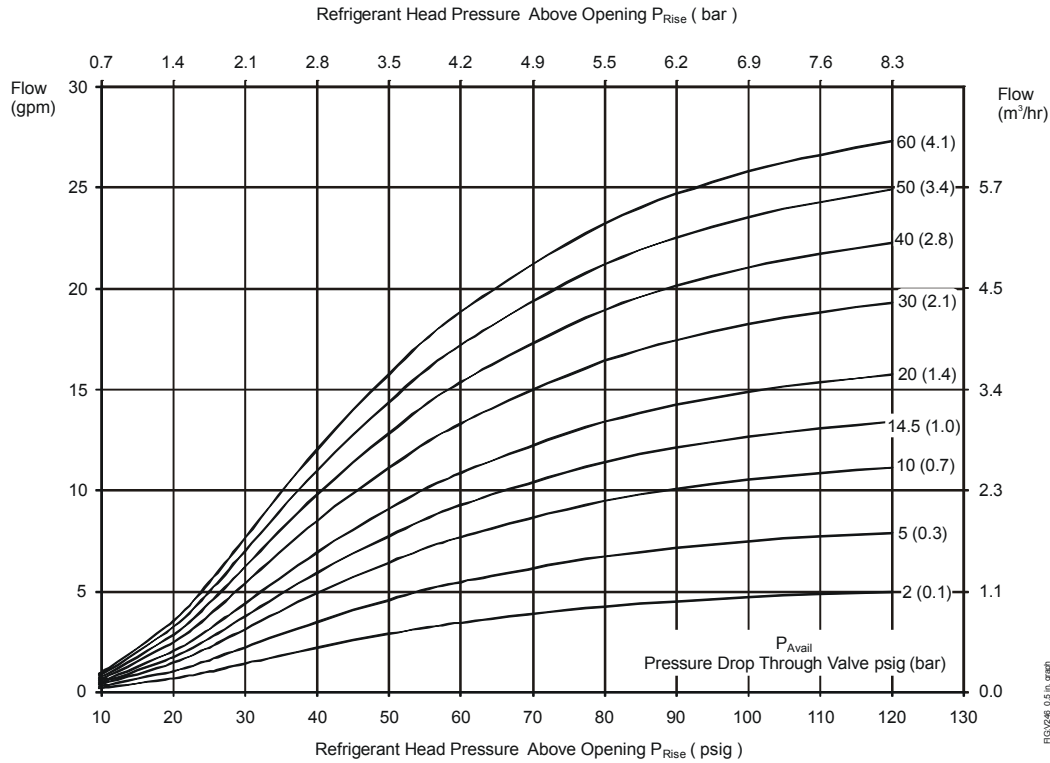
The maximum recommended differential water pressure across a valve is 60 psi (4.1 bar).



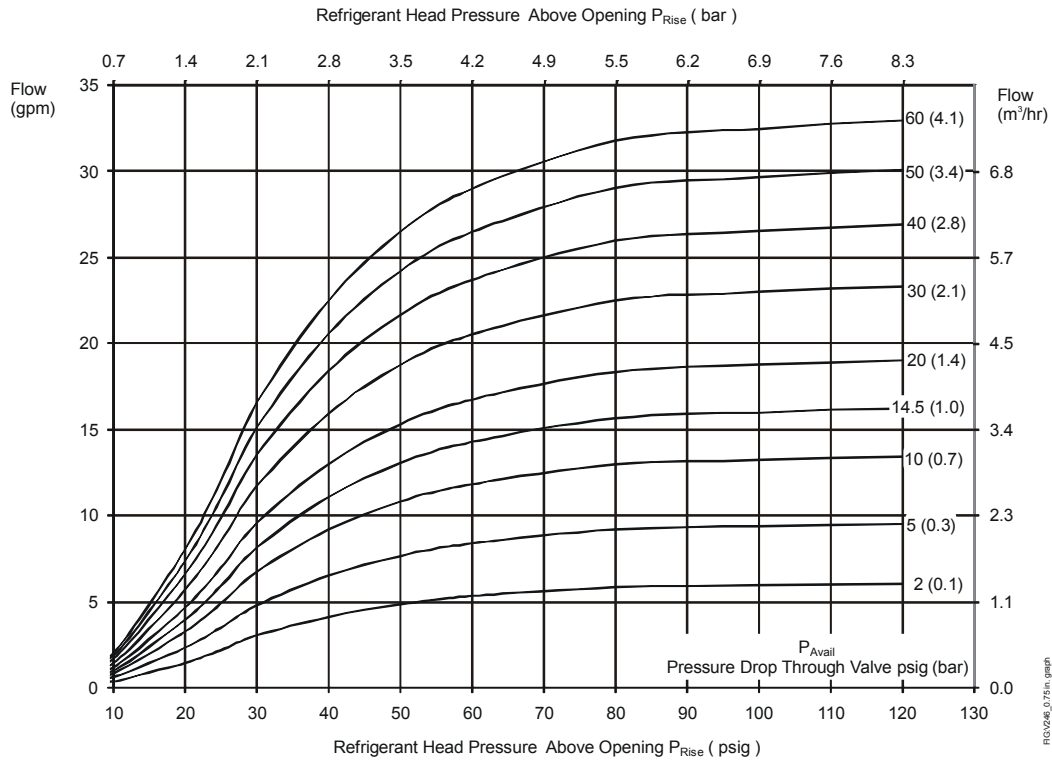
**Figure 6: 3/8 in. Direct Acting Low-Flow Valve Flowchart**



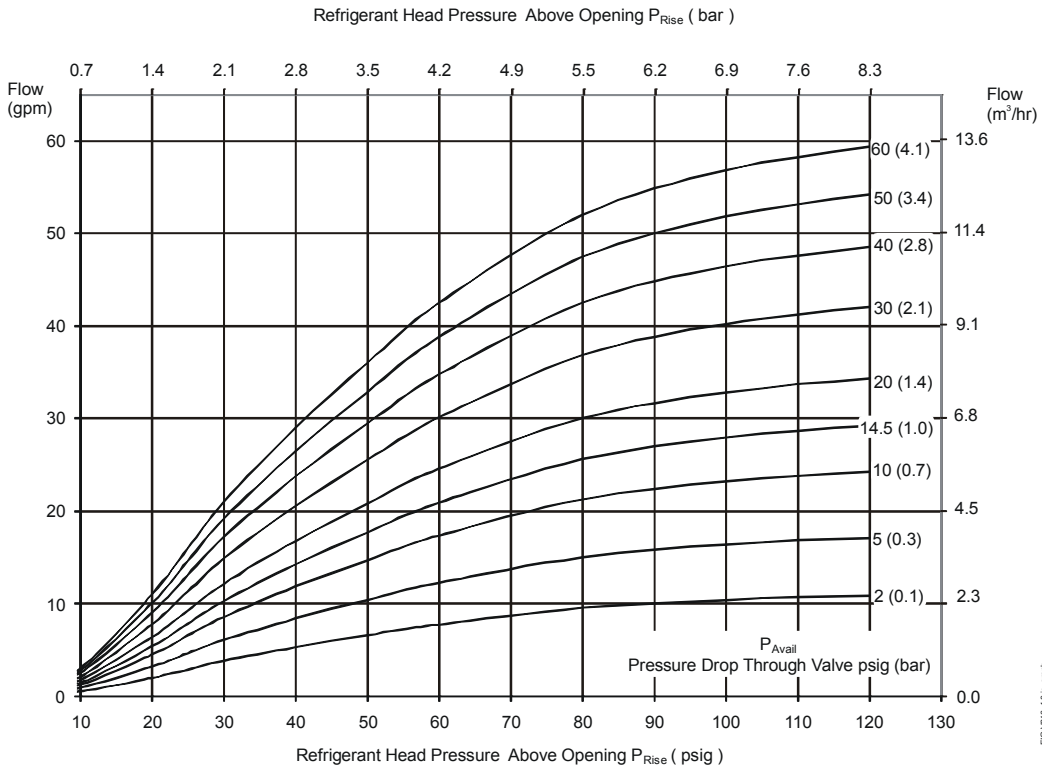
**Figure 7: 3/8 in. Direct Acting Valve Flowchart**



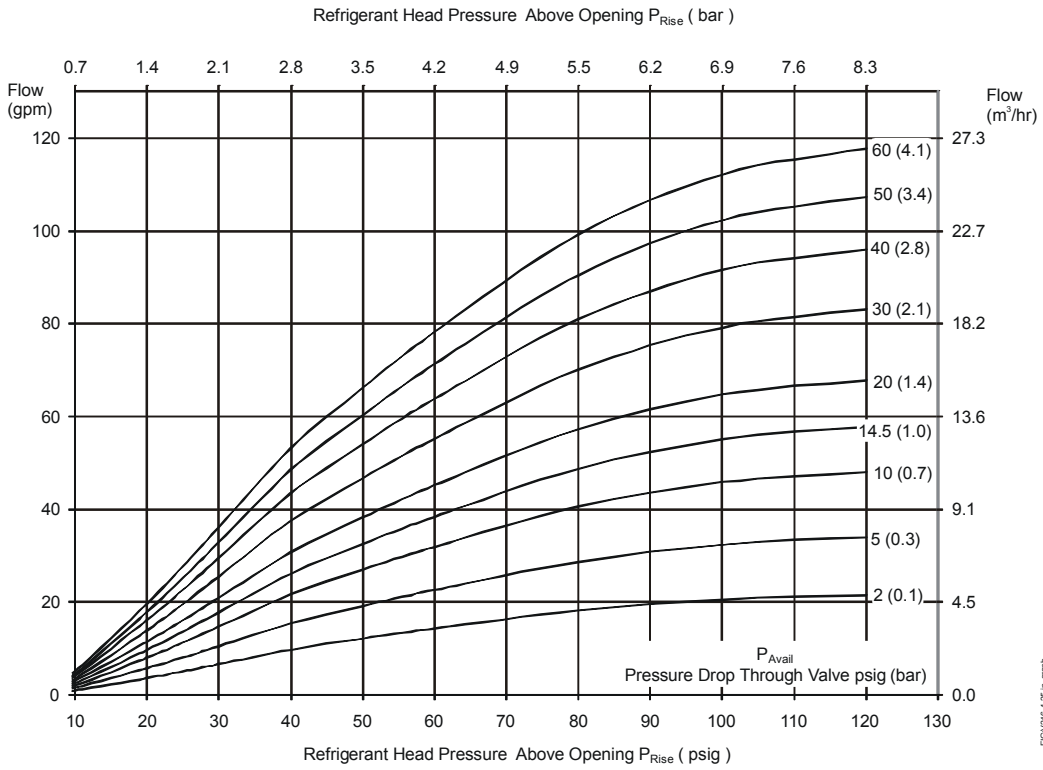
**Figure 8: 1/2 in. Direct Acting Valve Flowchart**



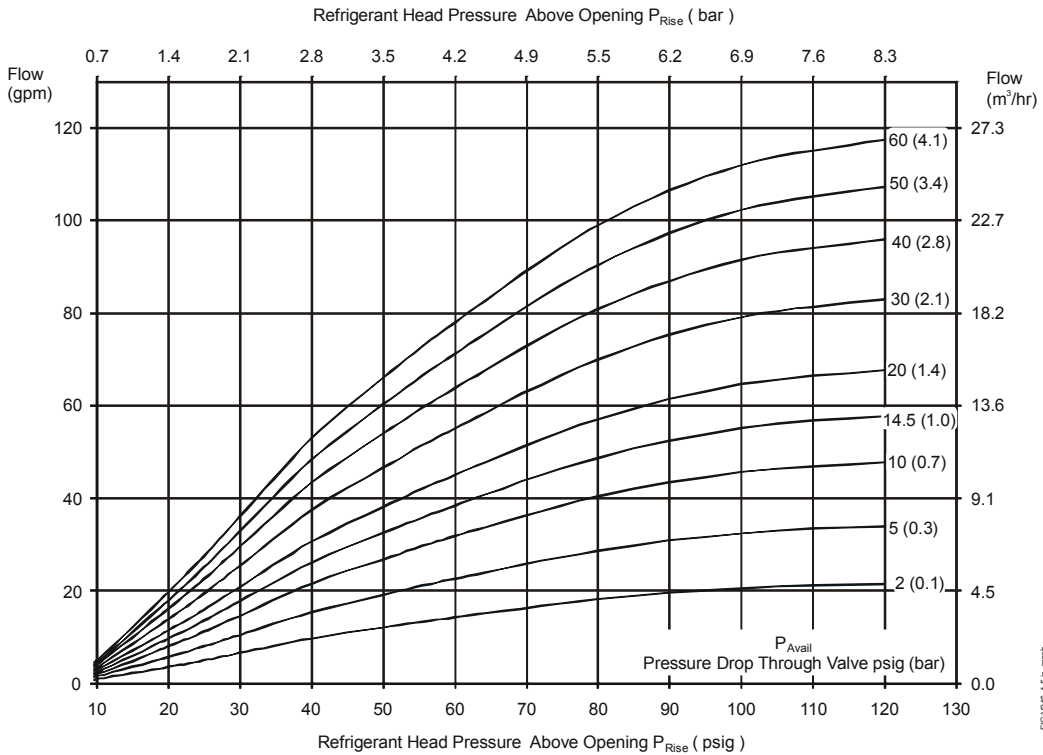
**Figure 9: 3/4 in. Direct Acting Valve Flowchart**



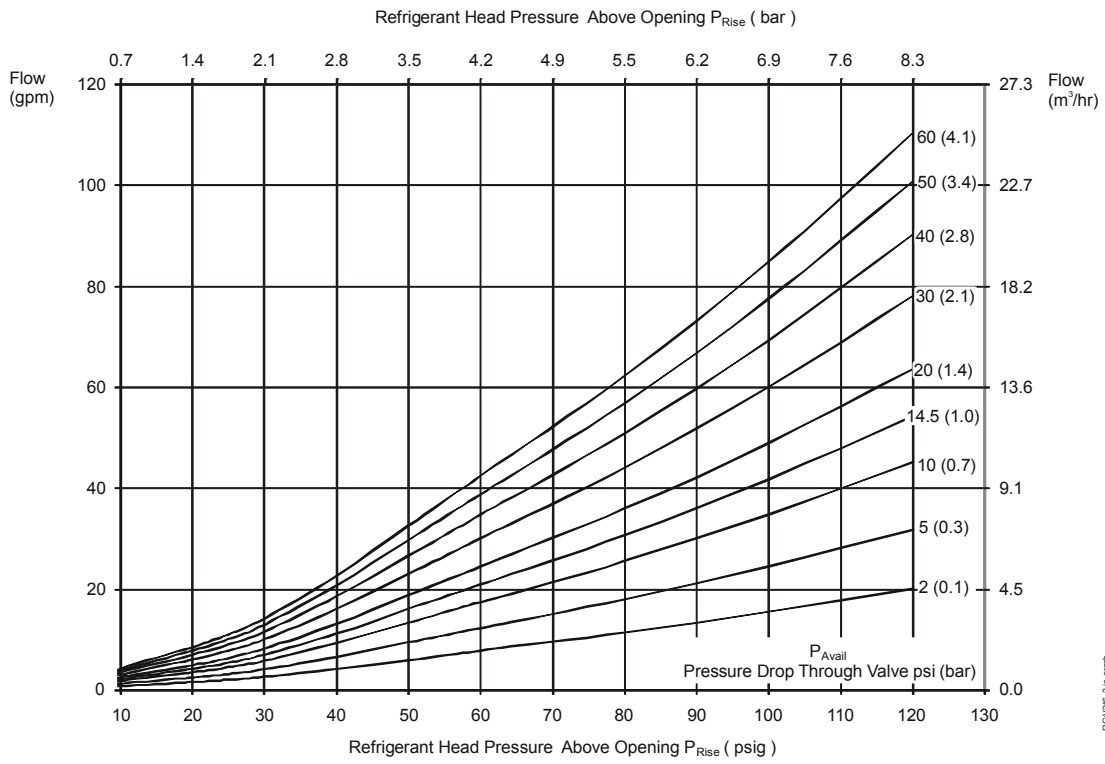
**Figure 10: 1 in. Direct Acting Valve Flowchart**



**Figure 11: 1-1/4 in. Direct Acting Valve Flowchart**



**Figure 12: 1-1/2 in. Direct Acting Valve Flowchart**



**Figure 13: 2 in. Direct Acting Valve Flowchart**

R13V246\_2 in. gmm



## Dimensions

### V246 Screw Connection Valves Dimensions

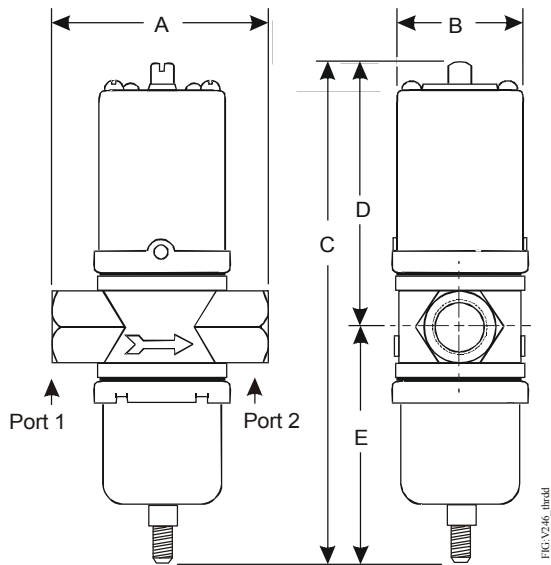


Figure 14: V246 Screw Connection Valves Dimensions

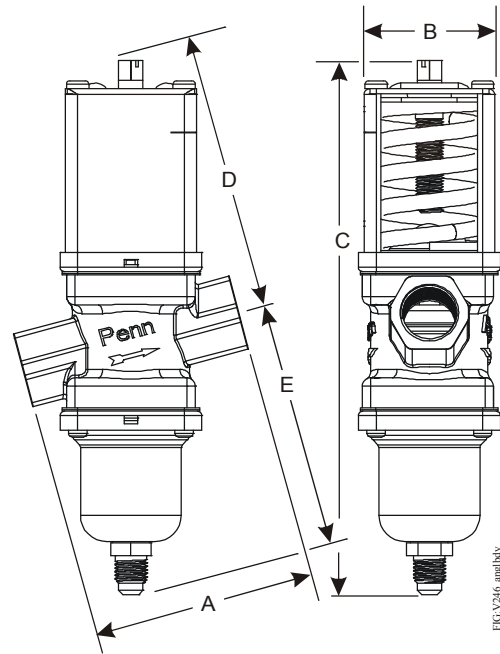


Figure 15: V246 Angle-Body Screw Connection Valves Dimensions

Table 2: V246 Screw Connection Valves Dimensions

Valve Size	Dimensions in Inches (Millimeters)				
	A	B	C	D	E
3/8 in.	2-5/8 (67)	1-5/8 (41)	6-1/2 (166)	3-1/2 (89)	3 (77)
1/2 in.	3-1/16 (78)	2 (51)	7-3/16 (182)	3-13/16 (96)	3-3/8 (86)
3/4 in.	3-3/8 (86)	2-3/16 (55)	8 (203)	4-3/16 (106)	3-13/16 (98)
1 in.	4-3/4 (121)	2-13/16 (71)	10-1/2 (267)	5-15/16 (151)	4-9/16 (116)
1-1/4 in.	4-3/4 (121)	2-13/16 (71)	10-7/8 (276)	6-1/8 (156)	4-3/4 (121)

Table 3: V246 Angle-Body Screw Connection Valves Dimensions

Valve Size	Dimensions in Inches (Millimeters)				
	A	B	C	D	E
3/8 in.	2-3/4 (70)	1-5/8 (41)	6-15/16 (176)	3-5/8 (92)	3-1/8 (80)
1/2 in.	3-1/8 (80)	2 (51)	7-1/2 (191)	3-7/8 (98)	3-1/2 (88)
3/4 in.	3-9/16 (90)	2-1/8 (55)	8-9/16 (217)	4-5/16 (110)	4 (101)

## V246 Union Sweat Connection Valves

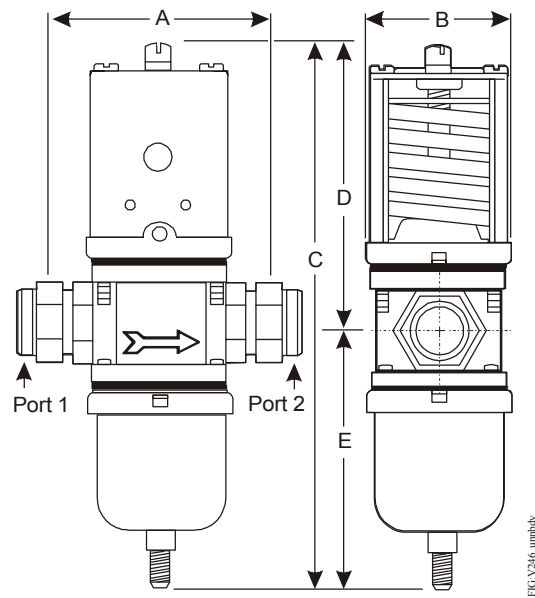


Figure 16: V246 Union Sweat Connection Valves Dimensions

Table 4: V246 Union Sweat Connection Valves Dimensions

Valve Size	Dimensions in Inches (Millimeters)				
	A	B	C	D	E
1-1/4 in.	4-3/4 (121)	2-13/16 (71)	10-7/8 (276)	6-1/8 (156)	4-3/4 (121)

## V246 Flange Valve

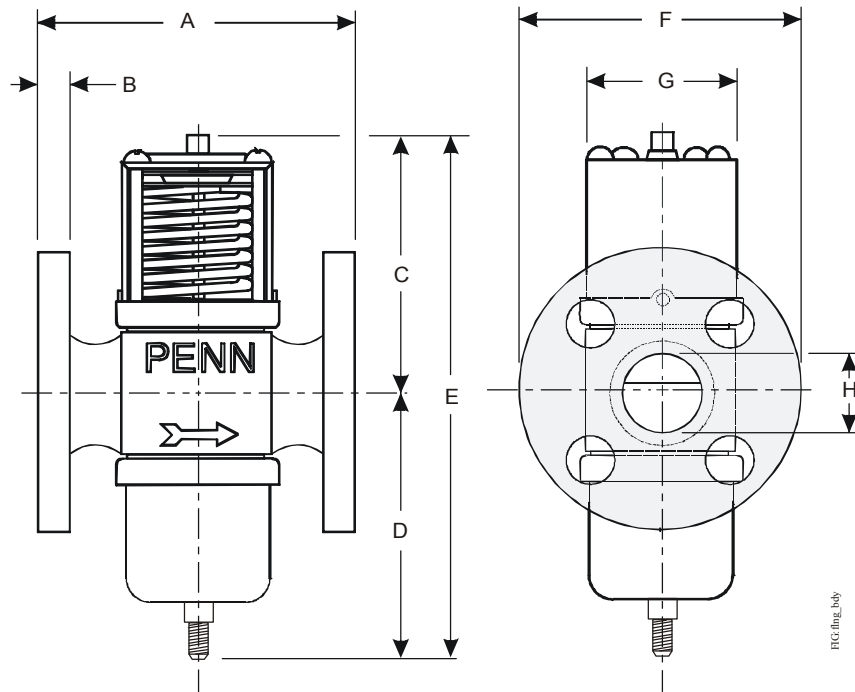


Figure 17: V246 Flange Valve Dimensions

Table 5: V246 Flange Valve, Commercial Service - Dimensions

Valve Size	Dimensions in Inches (Millimeters)							
	A	B	C	D	E	F	G	H
1-1/2 in.	5-5/16 (135)	9/16 (14)	6 -1/8 (156)	4-3/4 (121)	10-7/8 (276)	5-1/4 (133) <sup>1</sup>	2-5/8 (67)	1-7/8 (48)
2 in.	6-5/8 (168)	5/8 (16)	7-1/8 (181)	6-1/8 (156)	13-1/4 (336)	6-3/16 (157) <sup>2</sup>	3-1/2 (89)	2-1/4 (57)

1. The dimensions on the European versions are 5-29/32 in. (150 mm).
2. The dimensions on the European versions are 6-1/2 in. (165 mm).

Table 6: V246 Flange Valve, Commercial Service - Flange Specifications

Valve Size	Regional Version	Number of Holes	Hole Size	Bolt Circle
1-1/2 in.	North American	4	5/8 in. (16 mm)	3-7/8 in. (98 mm)
2 in.			3/4 in. (19 mm)	4-3/4 in. (121 mm)
1-1/2 in.	European, DIN2533 Flanges	4	18 mm	110 mm
2 in.				125 mm

Table 7: V246 Flange Valve, Maritime Service - Dimensions

Valve Size	Dimensions in Inches (Millimeters)							
	A	B	C	D	E	F	G	H
1-1/2 in.	5-5/16 (135)	9/16 (14)	6 -1/8 (156)	4-3/4 (121)	10-7/8 (276)	5-1/4 (133) <sup>1</sup>	2-5/8 (67)	1-7/8 (48)
2 in.	6-3/8 (162)	5/8 (16)	7-1/8 (181)	6-1/8 (156)	13-1/4 (337)	6 (152) <sup>2</sup>	3-1/2 (89)	2-3/4 (70)

1. The dimensions on the European versions are 5-29/32 in. (150 mm).
2. The dimensions on the European versions are 6-1/2 in. (165 mm).

**Table 8: V246 Flange Valve, Maritime Service - Flange Specifications**

Valve Size	Regional Version	Number of Holes	Hole Size	Bolt Circle
1-1/2 in.	North American	4	5/8 in. (16 mm)	3-7/8 in. (98 mm)
2 in.			3/4 in. (19 mm)	4-3/4 in. (121 mm)
1-1/2 in.	European, DIN86021 Flanges	4	18 mm	110 mm
2 in.				125 mm

## Selection

### Stock Models

When ordering V246 valves, specify the complete product code number. See Table 9 and Table 10.

**Table 9: North American Standard Production Models**

Product Code Number	Construction	Valve Size and Connection	Element Style	Shipping Weight, lb (kg)
V246GA1-001C	Direct Acting <sup>1</sup> , Commercial	3/8 in. NPT Screw	Style 5	1.8 (0.8)
V246GB1-001C	Direct Acting <sup>1</sup> , Commercial	1/2 in. NPT Screw	Style 5	3.0 (1.4)
V246GC1-001C	Direct Acting <sup>1</sup> , Commercial	3/4 in. NPT Screw	Style 5	3.7 (1.7)
V246GD1-001C	Direct Acting <sup>1</sup> , Commercial	1 in. NPT Screw	Style 5	9.3 (4.2)
V246GE1-001C	Direct Acting <sup>1</sup> , Commercial	1-1/4 in. NPT Screw	Style 5	10 (4.5)
V246GM1-001C	Direct Acting <sup>1</sup> , Commercial	1-1/4 in. Union Sweat	Style 5	10 (4.5)
V246GR1-001C	Direct Acting <sup>1</sup> , Commercial	1-1/2 in. Flange	Style 5	13.6 (6.2)
V246GS1-001C	Direct Acting <sup>1</sup> , Commercial	2 in. Flange	Style 5	27 (12.3)
V246HA1-001C	Direct Acting <sup>1</sup> , Maritime	3/8 in. NPT Screw	Style 5	1.8 (0.8)
V246HB1-001C	Direct Acting <sup>1</sup> , Maritime	1/2 in. NPT Screw	Style 5	3.0 (1.4)
V246HC1-001C	Direct Acting <sup>1</sup> , Maritime	3/4 in. NPT Screw	Style 5	4.3 (2.0)
V246HD1-001C	Direct Acting <sup>1</sup> , Maritime	1 in. NPT Screw	Style 5	9.5 (4.3)
V246HE1-001C	Direct Acting <sup>1</sup> , Maritime	1-1/4 in. NPT Screw	Style 5	10.3 (4.7)
V246HR1-001C	Direct Acting <sup>1</sup> , Maritime	1-1/2 in. ASME Flange	Style 5	13.6 (6.2)
V246HS1-001C	Direct Acting <sup>1</sup> , Maritime	2 in. ASME Flange	Style 5	27 (12.3)
V246KA1-001C	Direct Acting <sup>1</sup> , Commercial, Low Flow	3/8 in. NPT Screw	Style 5	1.8 (0.8)
V246NA1-001C	Reverse Acting <sup>2</sup> , Commercial	3/8 in. NPT Screw	Style 5	1.8 (0.8)
V246NB1-001C	Reverse Acting <sup>2</sup> , Commercial	1/2 in. NPT Screw	Style 5	3.0 (1.4)
V246NC1-001C	Reverse Acting <sup>2</sup> , Commercial	3/4 in. NPT Screw	Style 5	3.7 (1.7)
V246ND1-001C	Reverse Acting <sup>2</sup> , Commercial	1 in. NPT Screw	Style 5	9.3 (4.2)

1. The range is 200 to 400 psi (13.8 to 27.6 bar).

2. The range is 135 to 300 psi (9.3 to 20.7 bar).

**Table 10: European Standard Production Models (Part 1 of 2)**

Product Code Number	Construction	Valve Size and Connection	Element Style	Shipping Weight, kg (lb)
V246GA1A001C	Direct Acting, Commercial	3/8 in. BSPP Screw, ISO 228	Style 5	0.8 (1.8)
V246GB1A001C	Direct Acting, Commercial	1/2 in. BSPP Screw, ISO 228	Style 5	1.4 (3.0)
V246GC1A001C	Direct Acting, Commercial	3/4 in. BSPP Screw, ISO 228	Style 5	1.7 (3.7)
V246GD1B001C	Direct Acting, Commercial	1 in. BSPT Screw, ISO 7	Style 5	4.2 (9.3)
V246GE1B001C	Direct Acting, Commercial	1-1/4 in. BSPT Screw, ISO 7	Style 5	4.5 (10)
V246GR1B001C	Direct Acting, Commercial	1-1/2 in. Flange, DIN2533	Style 5	6.2 (13.6)
V246GS1B001C	Direct Acting, Commercial	2 in. Flange, DIN2533	Style 5	12.3 (27)
V246HA1B001C	Direct Acting, Maritime	3/8 in. BSPP Screw, ISO 228	Style 5	0.8 (1.8)
V246HB1B001C	Direct Acting, Maritime	1/2 in. BSPP Screw, ISO 228	Style 5	1.4 (3.0)
V246HC1B001C	Direct Acting, Maritime	3/4 in. BSPP Screw, ISO 228	Style 5	2.0 (4.3)

**Table 10: European Standard Production Models (Part 2 of 2)**

Product Code Number	Construction	Valve Size and Connection	Element Style	Shipping Weight, kg (lb)
V246HD1B001C	Direct Acting, Maritime	1 in. BSPP Screw, ISO 228	Style 5	4.3 (9.5)
V246HE1B001C	Direct Acting, Maritime	1-1/4 in. BSPP Screw, ISO 228	Style 5	4.7 (10.3)
V246HR1B001C	Direct Acting, Maritime	1-1/2 in. Flange, DIN86021	Style 5	6.2 (13.6)
V246HS1B001C	Direct Acting, Maritime	2 in. Flange, DIN86021	Style 5	12.3 (27)

**Custom Versions**

For applications that call for valves not listed in Standard Production Models, use Table 11 through Table 17 to specify a custom valve.

**Table 11: V246 Valves Selection Chart**

V	2	4	6									
<b>Two-Way refrigeration water valves with projection-welded sensing elements</b>				Construction - See Table 12	Valve Size and Connection Type - See Table 13	Element Style - See Table 14	Body Style - See Table 15	Model - See Table 16				Packaging - See Table 17

**Table 12: Construction and Pressure Range**

Symbol	Construction and Pressure Range
G	Direct Acting, Commercial, High Pressure Range 200 to 400 psi (13.8 to 27.6 bar)
H	Direct Acting, Maritime, High Pressure Range 200 to 400 psi (13.8 to 27.6 bar)
J	Direct Acting, Navy-Certified, High Pressure Range 200 to 400 psi (13.8 to 27.6 bar)
K	Direct Acting, Commercial, Low Flow, High Pressure Range 200 to 400 psi (13.8 to 27.6 bar)
N	Reverse Acting, Commercial, High Pressure Range 135 to 300 psi (9.3 to 20.7 bar)
V	Other

**Table 13: Valve Size and Connection Type**

Symbol	Valve Size and Connection Type
A	3/8 in. Screw Connection
B	1/2 in. Screw Connection
C	3/4 in. Screw Connection
D	1 in. Screw Connection
E	1-1/4 in. Screw Connection
L	1 in. Union, Sweat Connection
M	1-1/4 in. Union, Sweat Connection
R	1-1/2 in. tradesize, Flange Connection
S	2 in. tradesize, Flange Connection
V	Other

**Table 14: Element Style**

Symbol	Element Style	Description
1	Style 5	1/4 in. male flare (7/16 - 20 UNF)
7	Other	Reference Custom Model Number for information

**Table 15: Body Style**

Symbol	Body Style
--	Inches, Straight Body
A	Metric, Angle Body
B	Metric, Straight Body

**Table 16: Model**

Symbol	Model
001	Standard Construction
002 (and above)	Deviation from Standard

**Table 17: Packaging**

Symbol	Packaging
C	Individual
D	Bulk

**Repair Information**

Repairs can be made. Replacement sensing elements, internal parts and diaphragms are available. To obtain replacement parts kits instructions and details:

- In North America, contact Johnson Controls® Product Sales Operations Team at 1-800-275-5676.
- In Europe, contact your local sales office.

For North American replacement parts kits product code numbers, see Table 18. For European replacement parts kits product code numbers, see Table 19.

**Table 18: North American Replacement Parts Kits (Part 1 of 2)**

Nominal Valve Size	Valve Type	Seat Replacement Parts Kit Product Code Number	Diaphragm Replacement Parts Kit Product Code Number	Sensing Element Replacement Parts Kit Product Code Number
3/8 in.	Commercial	STT14A-600R	DPM14A-600R	SEP93A-600R
	Maritime/Navy	STT14A-601R		
3/8 in. Low Flow	Commercial	STT14A-603R	DPM14A-600R	SEP93A-600R
	Maritime/Navy	Not Applicable		
1/2 in.	Commercial	STT15A-602R	DPM15A-602R	SEP93A-601R
	Maritime/Navy	STT15A-603R		
3/4 in.	Commercial	STT16A-601R	DPM16A-601R	SEP93A-602R
	Maritime/Navy	STT17A-613R		
1 in.	Commercial	STT17A-609R	DPM17A-600R	SEP93A-603R
	Maritime/Navy	STT17A-611R		
1-1/4 in.	Commercial	STT17A-610R	DPM17A-600R	SEP93A-603R
	Maritime/Navy	STT17A-612R		

**Table 18: North American Replacement Parts Kits (Part 2 of 2)**

Nominal Valve Size	Valve Type	Seat Replacement Parts Kit Product Code Number	Diaphragm Replacement Parts Kit Product Code Number	Sensing Element Replacement Parts Kit Product Code Number
1-1/2 in.	Commercial	STT17A-610R	DPM17A-600R	SEP93A-603R
	Maritime/Navy	STT17A-612R		
2 in.	Commercial	STT18A-620R	DPM17A-601R	SEP93A-604R
	Maritime/Navy	STT18A-622R		

**Table 19: European Replacement Parts Kits**

Nominal Valve Size	Valve Type	Seat Replacement Parts Kit Product Code Number	Diaphragm Replacement Parts Kit Product Code Number	Sensing Element Replacement Parts Kit Product Code Number
3/8 in.	Commercial	STT002N600R	DPM14A-600R	SEP93A-600R
	Maritime/Navy	STT14A-601R		
1/2 in.	Commercial	STT003N600R	DPM15A-602R	SEP93A-601R
	Maritime/Navy	STT15A-603R		
3/4 in.	Commercial	STT004N600R	DPM16A-601R	SEP93A-602R
	Maritime/Navy	STT17A-613R		
1 in.	Commercial	STT17A-609R	DPM17A-600R	SEP93A-603R
	Maritime/Navy	STT17A-611R		
1-1/4 in.	Commercial	STT17A-610R	DPM17A-600R	SEP93A-603R
	Maritime/Navy	STT17A-612R		
1-1/2 in.	Commercial	STT17A-610R	DPM17A-600R	SEP93A-603R
	Maritime/Navy	STT17A-612R		
2 in.	Commercial	STT18A-620R	DPM17A-601R	SEP93A-604R
	Maritime/Navy	STT18A-622R		

**Materials**

**Table 20: North American V246 Materials**

Nominal Valve Size:		3/8 in. to 3/4 in. (Commercial)	1 in. to 2 in. (Commercial)	Maritime (All Sizes)
Material				
Body		Cast Brass	Cast Iron/Rust Resisting Finish	Cast Bronze
Seat		Aluminum Bronze	Aluminum Bronze	Monel
Disc		BUNA-N	BUNA-N	BUNA-N
Disc Cup		Brass	Brass	Monel
Disc Stud		Brass	Brass	Monel
Stem/Extension Sleeve		Brass	Brass	Monel
Diaphragms		Nylon Reinforced BUNA-N	Nylon Reinforced BUNA-N	Nylon Reinforced BUNA-N
<b>Refrigerant Contact</b>				
Pressure Element	Cup	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
	Bellows	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
	Bellows Ring	Steel/Nickel Plated	Steel/Nickel Plated	Steel/Nickel Plated



**Table 21: European V246 Materials**

Nominal Valve Size:		3/8 in. to 3/4 in. (Commercial)	1 in. to 2 in. (Commercial)	Maritime (All Sizes)
Material				
Body		Hot Forged Brass	Cast Iron/Rust Resisting Finish	Cast Bronze
Seat		Aluminum Bronze	Aluminum Bronze	Monel
Disc		BUNA-N	BUNA-N	BUNA-N
Disc Cup		Brass	Brass	Monel
Disc Stud		Brass	Brass	Monel
Stem/Extension Sleeve		Brass	Brass	Monel
Diaphragms		Nylon Reinforced BUNA-N	Nylon Reinforced BUNA-N	Nylon Reinforced BUNA-N
<b>Refrigerant Contact</b>				
Pressure Element	Cup	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
	Bellows	300 Series Stainless Steel	300 Series Stainless Steel	300 Series Stainless Steel
	Bellows Ring	Steel/Nickel Plated	Steel/Nickel Plated	Steel/Nickel Plated

**Technical Specifications**

**V246 Series 2-Way Pressure-Actuated Water-Regulating Valves for High-Pressure Refrigerants**

Factory-Set Opening Point	Direct Acting 200 psi (13.8 bar), Reverse Acting 165 psi (11.4 bar)
Maximum Working Pressure	630 psi (43.4 bar)
Opening Point Adjustment Range	Direct Acting 200 to 400 psi (13.8 to 27.6 bar), Reverse Acting 135 to 300 psi (9.3 to 20.7 bar)
Media	150 psi (10.3 bar) Maximum, -4°F to 170°F (-20°C to 77°C) glycol/water or liquids with low freezing points that are compatible with valve materials

*The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, contact Johnson Controls/PENN Refrigeration Technical Support at 1-800-275-5676. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.*



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