

J Series Electric Zone Valves

Product Bulletin

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J Series Electric Zone Valves accurately control the flow of saturated steam, hot water, or chilled water through coils and heat exchangers of all types, in a wide range of Heating, Ventilating, and Air Conditioning (HVAC) applications. The synchronous motor design has been proven reliable in millions of installations worldwide. The actuator can be removed from the valve body quickly and easily, simplifying installation and servicing. No special linkage kit or commissioning is required.



Figure 1: J Series Electric Zone Valves

Table 1: Features and Benefits

Features	Benefits
Quick and Simple Actuator Removal	Eases installation and provides quick actuator replacement during service.
Bubble-Tight Shutoff	Conserves energy and accurately controls zone temperature for increased comfort.
High Closeoff Pressure Actuator Option Available	Satisfies demanding requirements of high-rise buildings and high-pressure pumping systems.
Interchangeable Actuators	Allow field conversion from normally open to normally closed without re-piping.
Choice of End Connections	Provides increased versatility and replacement capability.
Choice of Control Signals (On/Off, Floating, or 0-10 VDC/0-20 mA Signals)	Meets the needs of most applications.

Application Overview

J Series Electric Zone Valves control the flow of saturated steam, hot water, and chilled water through coils and heat exchangers of all types, in a wide range of HVAC applications. A variety of models handle all water system control needs as well as saturated steam applications of 15 psig (103 kPa) or lower. The J Series valves are designed to withstand the high moisture conditions found in many concealed fan coil installations.

Valve Body Features

The J Series valve body features an integral seat, and is available in normally open, normally closed, and three-way mixing/diverting styles. The one-piece body design permits high pressure ratings of 300 psig (2,067 kPa).

The valves are available with the following end connections:

- 1/2, 3/4, 1, and 1-1/4 in. OD sweat (solder joints for copper tubing)
- 1/2, 3/4, and 1 in. internal threaded (NPT)
- inverted flare fittings (copper tubing with a flare nut for union connections)

Valve Action

JT and JS Series On/Off Electric Zone Valves are operated by a hysteresis synchronous motor. When the thermostat is satisfied, a spring returns the valve to the normal position. On two-way valves, the paddle assembly closes against the flow as illustrated in Figure 2. For three-way valves, see Figure 3.

JM Series Modulating Electric Zone Valves feature a magnetic clutch to extend the life of the motor and gear train, a manual operating lever/position indicator, and easy-to-use terminal blocks. All floating models come with a time-out feature, which automatically cuts off the control signal after 3 minutes of continuous operation. Proportional models are provided with jumper selectable operating range and action. All units are shipped with the action jumper in the Direct Acting (DA) position.

Temperature Ratings

JS and JT On/Off Series Electric Zone Valves

JS and JT On/Off Series Electric Zone Valves are available in two temperature ranges:

Standard Temperature Rating for chilled water (up to 50% glycol) and hot water from 32 to 200°F (0 to 93°C), in an ambient temperature of 32 to 104°F (0 to 40°C).

High Temperature Rating for chilled water, hot water up to 250°F (121°C) in an ambient temperature of 169°F (76°C), and saturated steam 250°F at 15 psig (121°C at 103 kPa).

JM Series Modulating Electric Zone Valves

JM Series Modulating Electric Zone Valves are available in a single temperature range:

Standard Temperature Rating for chilled water (up to 50% glycol) and hot water from 32 to 200°F (0 to 93°C), in an ambient temperature of 32 to 125°F (0 to 52°C).

Manual Operating Lever

All J Series Electric Zone Valves (except normally open two-way models) are equipped with a manual operating lever. This lever:

- allows the valve to be opened for system flushing before it is put into operation
- prevents damage to the paddle on three-way valves, and allows flushing of the system by maintaining the valve in the mid-position
- resets to normal position the first time the valve is cycled

Note: The manual lever cannot be used to close the bypass port on three-way valves.

End Connections for Inverted Flare Valves

Inverted flare fittings must be ordered separately to adapt inverted flare J Series Electric Zone Valves to 1/2, 3/4, and 1 in. copper piping. See Table 58 for a list of fittings available. This style of end connection eliminates the need for precision-cut lengths of copper tubing. These close-quarter fittings make installation easy without the use of tube benders or flaring tools. The inverted flare fittings are sweated onto the copper tubing; valve installation consists of simple wrench connections.

Advantages of the inverted flare construction include:

- installation with no possibility of heat damage during the soldering operation
- easy removal, if necessary, to clean the system or make repairs
- fittings that can withstand the high temperatures of silver soldering
- labor savings when used for replacement work, because the old valve can be removed using the fittings, rather than cutting or unsweating

Flow Diagrams

JS and JT Series Zone valves may be piped in mixing or diverting applications. See Figure 2 and Figure 3.

JM Series Modulating Electric Zone Valves must be piped in a mixing configuration only. See Figure 4 and Figure 5.

Installation

All wiring must comply with local, regional, and national electrical code requirements. The actuator housing must be protected from moisture. In horizontal piping applications, we recommend that the valve be mounted within 85 degrees of the upright position. When mounted in vertical piping, the valve must be protected from moisture.

Solder connections require a lead- or tin-based solder with a melting point below 600°F (316°C). Avoid overheating the end connections.

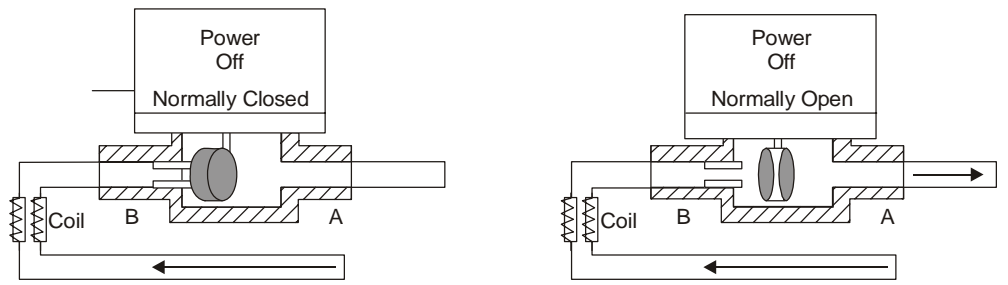


Figure 2: Flow Diagrams for Two-Way JT and JS Series On/Off Electric Zone Valves

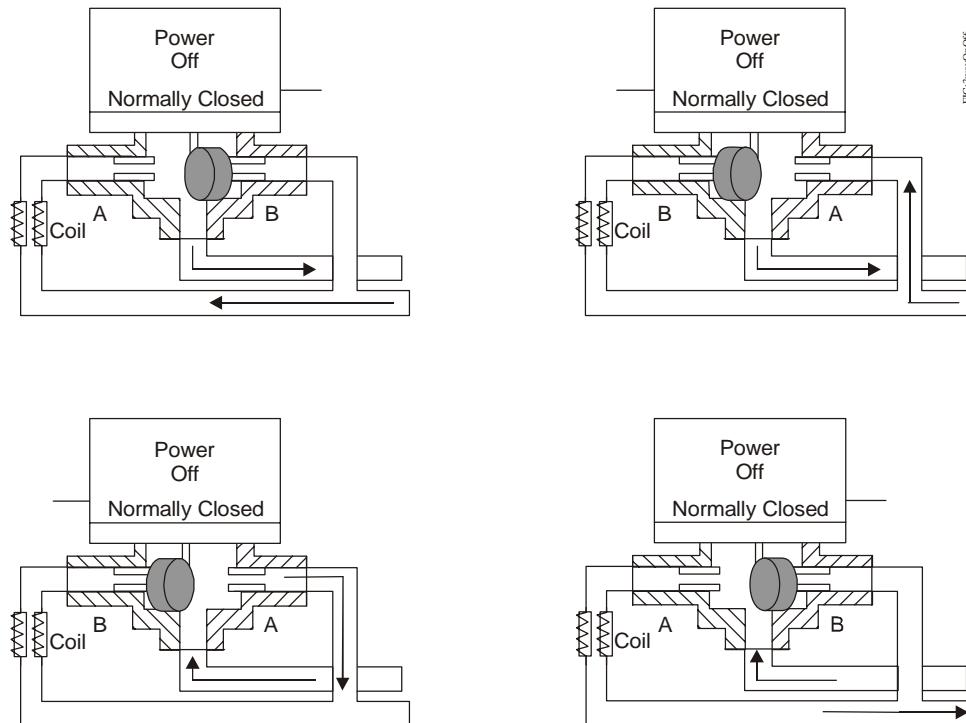


Figure 3: Flow Diagrams for Three-Way JS and JT Series On/Off Electric Zone Valves

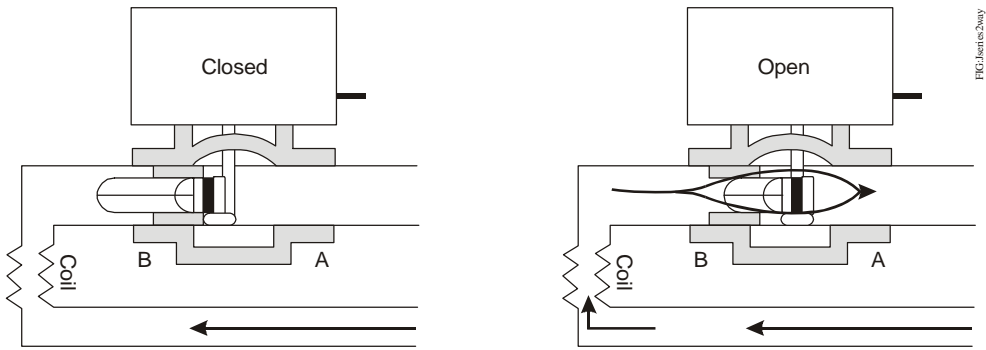


Figure 4: Flow Diagrams for Two-Way JM Series Modulating Electric Zone Valves

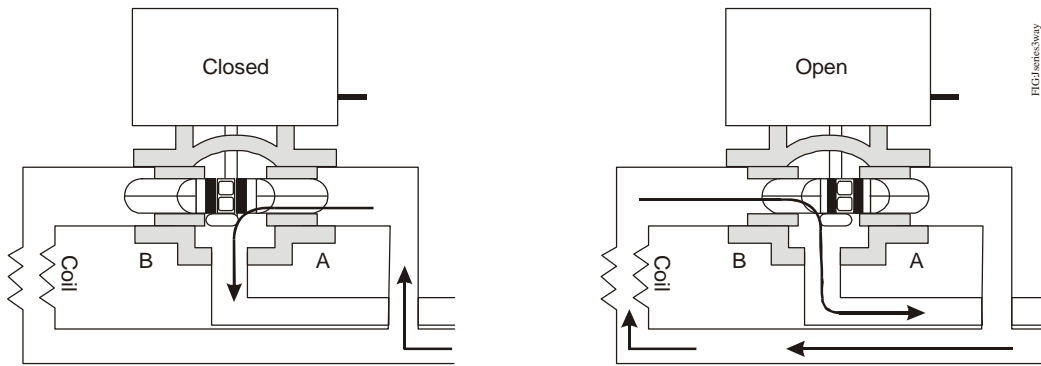


Figure 5: Flow Diagrams for Three-Way JM Series Modulating Electric Zone Valves

Dimensions

Figure 6 and Table 2 provide information on dimensions for JM Series valves.

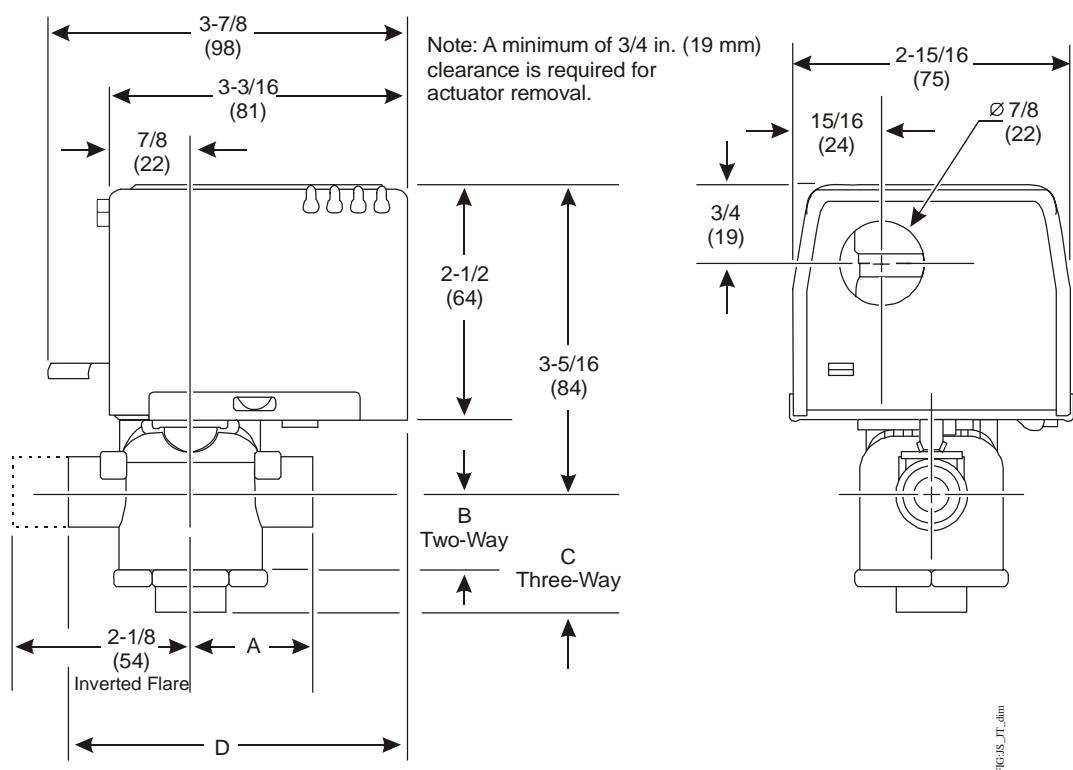


Figure 6: JT and JS Series On/Off Electric Zone Valve Dimensions, in. (mm)

Table 2: JT and JS Series On/Off Electric Zone Valve Dimensions, in. (mm)

Valve Size	A	B (Two-Way Models)	C (Three-Way Models)	D (Standard Closeoff Models)	D (High Closeoff Models)
1/2 in. Sweat	1-5/16 (33)	15/16 (24)	1-5/16 (33)	3-5/16 (84)	3-5/8 (92)
3/4 in. Sweat	1-3/8 (35)	15/16 (24)	1-11/16 (43)	3-3/8 (86)	3-3/4 (95)
1 in. Sweat	1-11/16 (43)	15/16 (24)	1-11/16 (43)	3-5/8 (92)	4 (102)
1-1/4 in. Sweat	1-7/8 (48)	1 (25)	1-13/16 (46)	3-11/16 (94)	4-1/8 (105)
1/2 in. Threaded (NPT)	1-3/8 (35)	15/16 (24)	1-5/16 (33)	3-3/8 (86)	3-5/8 (92)
3/4 in. Threaded (NPT)	1-11/16 (43)	15/16 (24)	1-7/16 (37)	3-5/8 (92)	4 (102)
1 in. Threaded (NPT)	1-7/8 (48)	1 (25)	1-11/16 (43)	3-11/16 (94)	4-1/8 (105)
3/4 in. Inverted Flare	1-3/8 (35)	15/16 (24)	1-5/16 (33)	4-1/8 (105)	4-1/8 (105)

Figure 7, Figure 8, and Table 3 provide information on dimensions for JM Series valves.

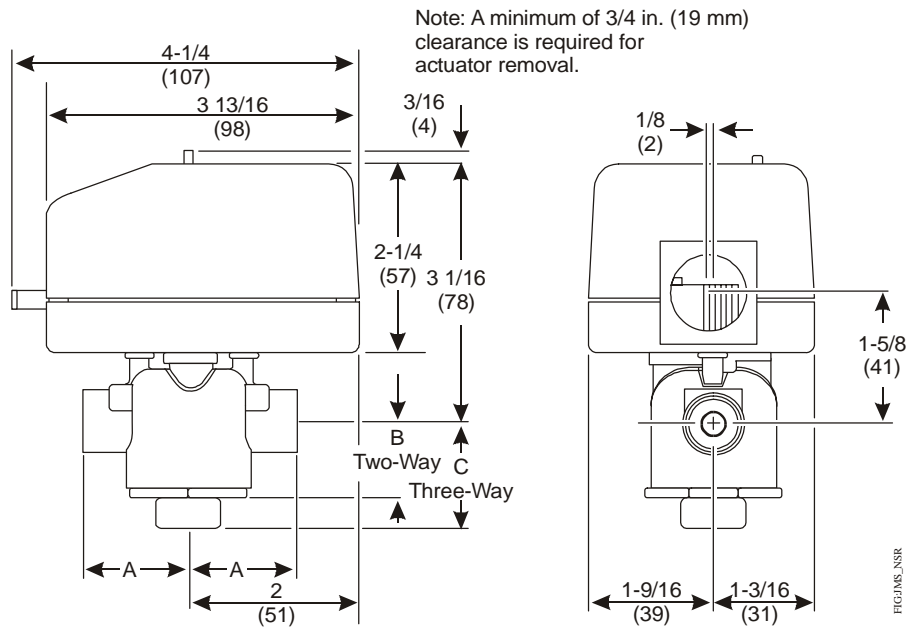


Figure 7: JM Series Non-Spring Return Modulating Electric Zone Valve Dimensions, in. (mm)

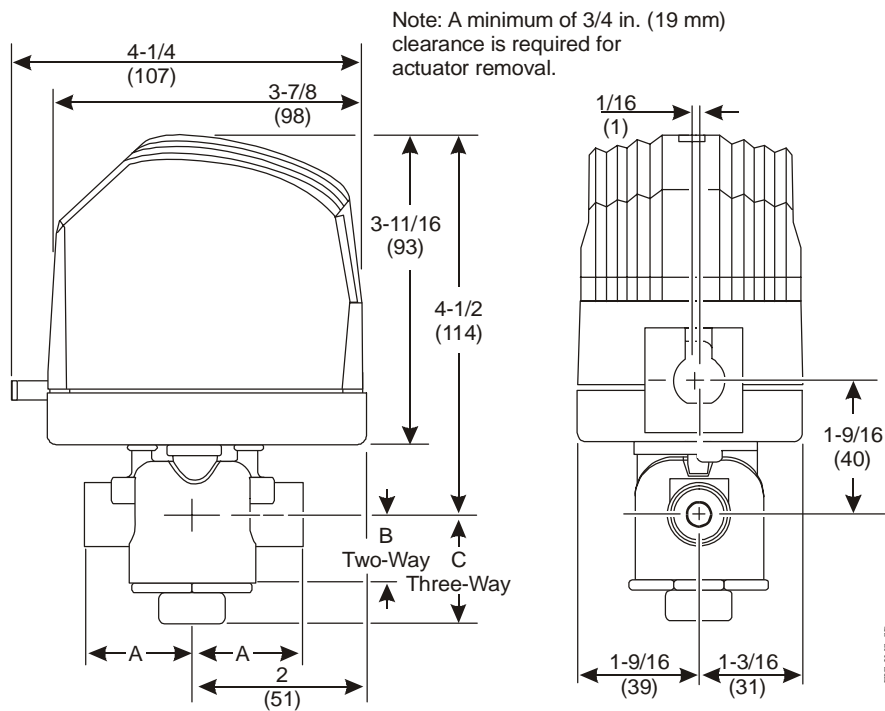


Figure 8: JM Series Spring Return Modulating Electric Zone Valve Dimensions, in. (mm)

Table 3: JM Series Modulating Electric Zone Valve Dimensions, in. (mm)

Valve Size	A	B	C
1/2 in. Sweat	1-5/16 (33)	15/16 (24)	1-5/16 (33)
3/4 in. Sweat	1-3/8 (35)	15/16 (24)	1-11/16 (43)
1 in. Sweat	1-11/16 (43)	15/16 (24)	1-11/16 (43)
1-1/4 in. Sweat	1-7/8 (48)	1 (25)	1-13/16 (46)
1/2 in. Threaded (NPT)	1-3/8 (35)	15/16 (24)	1-5/16 (33)
3/4 in. Threaded (NPT)	1-11/16 (43)	15/16 (24)	1-7/16 (37)
1 in. Threaded (NPT)	1-7/8 (48)	1 (25)	1-11/16 (43)

Ordering Information

See *Valve Configurations* for possible valve and actuator configurations. See *Available Factory Assemblies* for available factory assemblies. See *Valid Combinations for Field Assembly* for valid combinations of valves and actuators that may be field-assembled.

Valve Configurations

Use Table 4 and Table 5 to select the desired valve configuration.

Table 4: Ordering Data, J Series Electric Zone Valves

J		Electric Zone Valve			
1	T	Valve Type and	T = On/Off, Standard Temperature		
	2	Temperature Rating	S = On/Off, High Temperature M = Modulating, Standard Temperature		
2	3	Valve Configuration	2 = Two-Way		
			3 = Three-Way Mixing/Diverting		
3	4	Valve Size	2 = 1/2 in.		
			3 = 3/4 in.		
			4 = 1 in.		
			5 = 1-1/4 in.		
1	5	Valve End	1 = Sweat: 1/2, 3/4, 1, and 1-1/4 in.		
		Connections	2 = Threaded (NPT): 1/2, 3/4, and 1 in. 4 = Inverted Flare: 3/4 in. Only (On/Off Valves Only)		
Note: Inverted flare fittings are sold separately; refer to Table 2 for ordering details.					
3	6	Cv	Valve Size	Two-Way	Three-Way
		(Kv = Cv x 0.857)	On/Off Valve Types		
			1/2 in. Threaded and Sweat Only	1 = 1.0 2 = 2.5 3 = 3.5	3 = 4.0
			3/4 in. Threaded and Sweat Only	2 = 2.5 3 = 3.5	5 = 5.0
			3/4 in. Inverted Flare Only	3 = 3.5	3 = 4.0
			1 in. Sweat Only	7 = 8.0	7 = 8.0
			1 in. Threaded Only, and 1-1/4 in. Sweat Only	7 = 8.0	7 = 8.0
Modulating Valve Types					
			1/2 in. Threaded and Sweat Only	1 = 1.0 2 = 2.0 3 = 4.0	1 = 1.0 2 = 2.0 3 = 4.0
			3/4 in. Threaded and Sweat Only	2 = 2.0 3 = 4.0 7 = 7.5	2 = 2.0 3 = 4.0 7 = 7.5
			1 in. Threaded and Sweat Only	3 = 4.0 7 = 8.0	3 = 4.0 7 = 8.0
			1-1/4 in. Sweat Only	7 = 8.0	7 = 8.0

1 2 3 4 5 6 7 8 9 10 11 12 13 Field

Example: Electric zone valve, On/Off, standard temperature, two-way, 3/4 in. sweat ends, 3.5 Cv

J	T	2	3	1	3							
Valve					Actuator							

Table 5: Ordering Data – Adding a Factory Mounted Electric Actuator

J	T	2	3	1	3	G							Actuator Type and Pressure Rating	G = Standard Closeoff Pressure (On/Off Valve Types Only) H = High Closeoff Pressure (On/Off Valve Types Only) T = Three Wire Floating (Modulating Valve Types Only) P = Proportional (Modulating Valve Types Only)		
1	2	3	4	5	6	7							1	Spring Action	1 = Spring Return Normally Closed (Two-Way and Three-Way Valves) 2 = Spring Return Normally Open (Two-Way Valves Only) 3 = Non-Spring Return (Modulating Valve Types Only) Note: Three-way spring return valves are shipped from the factory in the normally closed configuration (Port B closed); for normally open configuration, simply turn the valve around.	
							3							Actuator Temperature	3 = Standard Temp (JT and JM Series Valves Only)	
							9							Rating	4 = High Temp (JS Series Valves Only)	
							A							Voltage	A = 24 VAC, 60 Hz (All Valve Types) B = 120 VAC, 60 Hz (On/Off Valve Types Only)	
									0	2					Electrical	02 = 18 in. Wire Leads (On/Off Valves Only)
									11	12					Leads	00 = No Leads (Modulating Valves Only)
											0				Options	0 = None T = Three-Wire Signal Time-out (Non-Spring Modulating Valve Types Only)
											13					

1	2	3	4	5	6	7	8	9	10	11	12	13	= Field
J	T	2	3	1	3	G	1	3	A	0	2	0	
Valve							Actuator						

Example: Electric zone valve, On/Off, standard temperature, two-way, 3/4 in. sweat ends, 3.5 Cv, standard closeoff pressure spring return electric actuator, normally closed, 24 VAC, 60 Hz, 18 in. wire leads.

When ordering an actuator only, add a J to the beginning of the actuator code. To order only the actuator shown in the example in Table 5, use JG13A020.

Available Factory Assemblies

See Table 6 through Table 38 for available factory assemblies of valves and actuators.

Two-Way, Spring Return, On/Off Control – Standard Closeoff Pressure Valves

Two-Way, Spring Return, On/Off Control – Standard Closeoff Pressure Valves are available in standard-temperature and high-temperature versions.

Standard Temperature

Standard temperature valves operate at 32 to 200°F fluid temperature and 32 to 104°F ambient temperature. For information on these valve and actuator assemblies, see Table 6 through Table 8.

Table 6: Sweat End Connections

Valve	Size, in.	Cv	Closeoff psig ¹	Spring Return Closed		Spring Return Open	
				24 VAC	120 VAC	24 VAC	120 VAC
JT2211	1/2	1	60	JT2211G13A020	JT2211G13B020	JT2211G23A020	JT2211G23B020
JT2212	1/2	2.5	40	JT2212G13A020	JT2212G13B020	JT2212G23A020	JT2212G23B020
JT2213	1/2	3.5	25	JT2213G13A020	JT2213G13B020	JT2213G23A020	JT2213G23B020
JT2312	3/4	2.5	40	JT2312G13A020	JT2312G13B020	JT2312G23A020	JT2312G23B020
JT2313	3/4	3.5	25	JT2313G13A020	JT2313G13B020	JT2313G23A020	JT2313G23B020
JT2417	1	8.0	17	JT2417G13A020	JT2417G13B020	JT2417G23A020	JT2417G23B020
JT2517	1-1/4	8.0	17	JT2517G13A020	JT2517G13B020	JT2517G23A020	JT2517G23B020

1. Closeoff Pressures listed are for units date coded 0301 or later. For dated codes 0252 and earlier, see Table 62.

Table 7: NPT End Connections

Valve	Size, in.	Cv	Closeoff psig ¹	Spring Return Closed		Spring Return Open	
				24 VAC	120 VAC	24 VAC	120 VAC
JT2221	1/2	1	60	JT2221G13A020	JT2221G13B020	JT2221G23A020	JT2221G23B020
JT2222	1/2	2.5	40	JT2222G13A020	JT2222G13B020	JT2222G23A020	JT2222G23B020
JT2223	1/2	3.5	25	JT2223G13A020	JT2223G13B020	JT2223G23A020	JT2223G23B020
JT2322	3/4	2.5	40	JT2322G13A020	JT2322G13B020	JT2322G23A020	JT2322G23B020
JT2323	3/4	3.5	25	JT2323G13A020	JT2323G13B020	JT2323G23A020	JT2323G23B020
JT2427	1	8.0	17	JT2427G13A020	JT2427G13B020	JT2427G23A020	JT2427G23B020

1. Closeoff Pressures listed are for units date coded 0301 or later. For dated codes 0252 and earlier, see Table 63.

Table 8: Inverted Flare End Connections

Valve	Size, in.	Cv	Closeoff psig ¹	Spring Return Closed		Spring Return Open	
				24 VAC	120 VAC	24 VAC	120 VAC
JT2343	3/4	3.5	25	JT2343G13A020	JT2343G13B020	JT2343G23A020	JT2343G23B020
JS2322	3/4	2.5	40	JS2322G14A020	JS2322G14B020	JS2322G24A020	JS2322G24B020
JS2323	3/4	3.5	25	JS2323G14A020	JS2323G14B020	JS2323G24A020	JS2323G24B020
JS2427	1	8.0	17	JS2427G14A020	JS2427G14B020	JS2427G24A020	JS2427G24B020

1. Closeoff Pressures listed are for units date coded 0301 or later. For dated codes 0252 and earlier, see Table 64.

High Temperature

High temperature valves operate at 32 to 250°F fluid temperature, 15 psi steam, and 32 to 169°F ambient temperature. For information on these valve and actuator assemblies, see Table 9 through Table 11.

Table 9: Sweat End Connections

Valve	Size, in.	Cv	Closeoff psig ¹	Spring Return Closed		Spring Return Open	
				24 VAC	120 VAC	24 VAC	120 VAC
JS2211	1/2	1	60	JS2211G14A020	JS2211G14B020	JS2211G24A020	JS2211G24B020
JS2212	1/2	2.5	40	JS2212G14A020	JS2212G14B020	JS2212G24A020	JS2212G24B020
JS2213	1/2	3.5	25	JS2213G14A020	JS2213G14B020	JS2213G24A020	JS2213G24B020
JS2312	3/4	2.5	40	JS2312G14A020	JS2312G14B020	JS2312G24A020	JS2312G24B020
JS2313	3/4	3.5	25	JS2313G14A020	JS2313G14B020	JS2313G24A020	JS2313G24B020
JS2417	1	8.0	17	JS2417G14A020	JS2417G14B020	JS2417G24A020	JS2417G24B020
JS2517	1-1/4	8.0	17	JS2517G14A020	JS2517G14B020	JS2517G24A020	JS2517G24B020

1. Closeoff Pressures listed are for units date coded 0301 or later. For dated codes 0252 and earlier, see Table 62.

Table 10: NPT End Connections

Valve	Size, in.	Cv	Closeoff psig ¹	Spring Return Closed		Spring Return Open	
				24 VAC	120 VAC	24 VAC	120 VAC
JS2221	1/2	1	60	JS2221G14A020	JS2221G14B020	JS2221G24A020	JS2221G24B020
JS2222	1/2	2.5	40	JS2222G14A020	JS2222G14B020	JS2222G24A020	JS2222G24B020
JS2223	1/2	3.5	25	JS2223G14A020	JS2223G14B020	JS2223G24A020	JS2223G24B020
JS2322	3/4	2.5	40	JS2322G14A020	JS2322G14B020	JS2322G24A020	JS2322G24B020
JS2323	3/4	3.5	25	JS2323G14A020	JS2323G14B020	JS2323G24A020	JS2323G24B020
JS2427	1	8.0	17	JS2427G14A020	JS2427G14B020	JS2427G24A020	JS2427G24B020

1. Closeoff Pressures listed are for units date coded 0301 or later. For dated codes 0252 and earlier, see Table 63.

Table 11: Inverted Flare Connections

Valve	Size, in.	Cv	Closeoff psig ¹	Spring Return Closed		Spring Return Open	
				24 VAC	120 VAC	24 VAC	120 VAC
JS2343	3/4	3.5	25	JS2343G14A020	JS2343G14B020	JS2343G24A020	JS2343G24B020

1. Closeoff Pressures listed are for units date coded 0301 or later. For dated codes 0252 and earlier, see Table 64.

Two-Way, Spring Return, On/Off Control – High Closeoff Pressure Valves

Two-Way, Spring Return, On/Off Control – High Closeoff Pressure valves are available in standard-temperature and high-temperature versions.

Standard Temperature

Standard temperature valves operate at 32 to 200°F fluid temperature and 32 to 104°F ambient temperature. For information on these valve and actuator assemblies, see Table 12 through Table 14.

Table 12: Sweat End Connections

Valve	Size, in.	Cv	Closeoff psig	Spring Return Closed		Spring Return Open	
				24 VAC	120 VAC	24 VAC	120 VAC
JT2211	1/2	1	75	JT2211H13A020	JT2211H13B020	JT2211H23A020	JT2211H23B020
JT2212	1/2	2.5	50	JT2212H13A020	JT2212H13B020	JT2212H23A020	JT2212H23B020
JT2213	1/2	3.5	30	JT2213H13A020	JT2213H13B020	JT2213H23A020	JT2213H23B020
JT2312	3/4	2.5	50	JT2312H13A020	JT2312H13B020	JT2312H23A020	JT2312H23B020
JT2313	3/4	3.5	30	JT2313H13A020	JT2313H13B020	JT2313H23A020	JT2313H23B020
JT2417	1	8.0	20	JT2417H13A020	JT2417H13B020	JT2417H23A020	JT2417H23B020
JT2517	1-1/4	8.0	20	JT2517H13A020	JT2517H13B020	JT2517H23A020	JT2517H23B020

Table 13: NPT End Connections

Valve	Size, in.	Cv	Closeoff psig	Spring Return Closed		Spring Return Open	
				24 VAC	120 VAC	24 VAC	120 VAC
JT2221	1/2	1	75	JT2221H13A020	JT2221H13B020	JT2221H23A020	JT2221H23B020
JT2222	1/2	2.5	50	JT2222H13A020	JT2222H13B020	JT2222H23A020	JT2222H23B020
JT2223	1/2	3.5	30	JT2223H13A020	JT2223H13B020	JT2223H23A020	JT2223H23B020
JT2322	3/4	2.5	50	JT2322H13A020	JT2322H13B020	JT2322H23A020	JT2322H23B020
JT2323	3/4	3.5	30	JT2323H13A020	JT2323H13B020	JT2323H23A020	JT2323H23B020
JT2427	1	8.0	20	JT2427H13A020	JT2427H13B020	JT2427H23A020	JT2427H23B020

Table 14: Inverted Flare End Connections

Valve	Size, in.	Cv	Closeoff psig	Spring Return Closed		Spring Return Open	
				24 VAC	120 VAC	24 VAC	120 VAC
JT2343	3/4	3.5	30	JT2343H13A020	JT2343H13B020	JT2343H23A020	JT2343H23B020

High Temperature

High temperature valves operate at 32 to 250°F fluid temperature, 15 psi steam, and 32 to 169°F ambient temperature. For information on these valve and actuator assemblies, see Table 15 through Table 17.

Table 15: Sweat End Connections

Valve	Size, in.	Cv	Closeoff psig	Spring Return Closed		Spring Return Open	
				24 VAC	120 VAC	24 VAC	120 VAC
JS2211	1/2	1	75	JS2211H14A020	JS2211H14B020	JS2211H24A020	JS2211H24B020
JS2212	1/2	2.5	50	JS2212H14A020	JS2212H14B020	JS2212H24A020	JS2212H24B020
JS2213	1/2	3.5	30	JS2213H14A020	JS2213H14B020	JS2213H24A020	JS2213H24B020
JS2312	3/4	2.5	50	JS2312H14A020	JS2312H14B020	JS2312H24A020	JS2312H24B020
JS2313	3/4	3.5	30	JS2313H14A020	JS2313H14B020	JS2313H24A020	JS2313H24B020
JS2417	1	8.0	20	JS2417H14A020	JS2417H14B020	JS2417H24A020	JS2417H24B020
JS2517	1-1/4	8.0	20	JS2517H14A020	JS2517H14B020	JS2517H24A020	JS2517H24B020

Table 16: NPT End Connections

Valve	Size, in.	Cv	Closeoff psig	Spring Return Closed		Spring Return Open	
				24 VAC	120 VAC	24 VAC	120 VAC
JS2221	1/2	1	75	JS2221H14A020	JS2221H14B020	JS2221H24A020	JS2221H24B020
JS2222	1/2	2.5	50	JS2222H14A020	JS2222H14B020	JS2222H24A020	JS2222H24B020
JS2223	1/2	3.5	30	JS2223H14A020	JS2223H14B020	JS2223H24A020	JS2223H24B020
JS2322	3/4	2.5	50	JS2322H14A020	JS2322H14B020	JS2322H24A020	JS2322H24B020
JS2323	3/4	3.5	30	JS2323H14A020	JS2323H14B020	JS2323H24A020	JS2323H24B020
JS2427	1	8.0	20	JS2427H14A020	JS2427H14B020	JS2427H24A020	JS2427H24B020

Table 17: Inverted Flare Connections

Valve	Size, in.	Cv	Closeoff psig	Spring Return Closed		Spring Return Open	
				24 VAC	120 VAC	24 VAC	120 VAC
JS2343	3/4	3.5	30	JS2343H14A020	JS2343H14B020	JS2343H24A020	JS2343H24B020

Three-Way, Spring Return, On/Off Control – Standard Closeoff Pressure Valves

Three-Way, Spring Return, On/Off Control – Standard Closeoff Pressure valves are available in standard-temperature and high-temperature versions.

Standard Temperature

Standard temperature valves operate at 32 to 200°F fluid temperature and 32 to 104°F ambient temperature. For information on these valve and actuator assemblies, see Table 18 through Table 20.

Table 18: Sweat End Connections

Valve	Size, in.	Cv	Closeoff psig ¹	Spring Return – Port B Closed	
				24 VAC	120 VAC
JT3213	1/2	4.0	25	JT3213G13A020	JT3213G13B020
JT3315	3/4	5.0	20	JT3315G13A020	JT3315G13B020
JT3417	1	8.0	17	JT3417G13A020	JT3417G13B020
JT3517	1-1/4	8.0	17	JT3517G13A020	JT3517G13B020

1. Closeoff Pressures listed are for units date coded 0301 or later. For date codes 0252 and earlier, see Table 62.

Table 19: NPT End Connections

Valve	Size, in.	Cv	Closeoff psig ¹	Spring Return – Port B Closed	
				24 VAC	120 VAC
JT3223	1/2	4.0	25	JT3223G13A020	JT3223G13B020
JT3325	3/4	5.0	20	JT3325G13A020	JT3325G13B020
JT3427	1	8.0	17	JT3427G13A020	JT3427G13B020

1. Closeoff Pressures listed are for units date coded 0301 or later. For date codes 0252 and earlier, see Table 63.

Table 20: Inverted Flare End Connections

Valve	Size, in.	Cv	Closeoff psig ¹	Spring Return – Port B Closed	
				24 VAC	120 VAC
JT3343	3/4	4.0	25	JT3343G13A020	JT3343G13B020

1. Closeoff Pressures listed are for units date coded 0301 or later. For date codes 0252 and earlier, see Table 64.

High Temperature

High temperature valves operate at 32 to 250°F fluid temperature, 15 psi steam, and 32 to 169°F ambient temperature. For information on these valve and actuator assemblies, see Table 21 through Table 23.

Table 21: Sweat End Connections

Valve	Size, in.	Cv	Closeoff psig ¹	Spring Return – Port B Closed	
				24 VAC	120 VAC
JS3213	1/2	4.0	25	JS3213G14A020	JS3213G14B020
JS3315	3/4	5.0	20	JS3315G14A020	JS3315G14B020
JS3417	1	8.0	17	JS3417G14A020	JS3417G14B020
JS3517	1-1/4	8.0	17	JS3517G14A020	JS3517G14B020

1. Closeoff Pressures listed are for units date coded 0301 or later. For date codes 0252 and earlier, see Table 62.

Table 22: NPT End Connections

Valve	Size, in.	Cv	Closeoff psig ¹	Spring Return – Port B Closed	
				24 VAC	120 VAC
JS3223	1/2	4.0	25	JS3223G14A020	JS3223G14B020
JS3325	3/4	5.0	20	JS3325G14A020	JS3325G14B020
JS3427	1	8.0	17	JS3427G14A020	JS3427G14B020

1. Closeoff Pressures listed are for units date coded 0301 or later. For date codes 0252 and earlier, see Table 63.

Table 23: Inverted Flare Connections

Valve	Size, in.	Cv	Closeoff psig ¹	Spring Return – Port B Closed	
				24 VAC	120 VAC
JS3343	3/4	4.0	25	JS3343G14A020	JS3343G14B020

1. Closeoff Pressures listed are for units date coded 0301 or later. For date codes 0252 and earlier, see Table 64.

Three-Way, Spring Return, On/Off Control – High Closeoff Pressure Valves

Three-Way, Spring Return, On/Off Control – High Closeoff Pressure Valves are available in standard-temperature and high-temperature versions.

Standard Temperature

Standard temperature valves operate at 32 to 200°F fluid temperature and 32 to 104°F ambient temperature. For information on these valve and actuator assemblies, see Table 24 through Table 26.

Table 24: Sweat End Connections

Valve	Size, in.	Cv	Closeoff psig	Spring Return – Port B Closed	
				24 VAC	120 VAC
JT3213	1/2	4.0	30	JT3213H13A020	JT3213H13B020
JT3315	3/4	5.0	25	JT3315H13A020	JT3315H13B020
JT3417	1	8.0	20	JT3417H13A020	JT3417H13B020
JT3517	1-1/4	8.0	20	JT3517H13A020	JT3517H13B020

Table 25: NPT End Connections

Valve	Size, in.	Cv	Closeoff psig	Spring Return – Port B Closed	
				24 VAC	120 VAC
JT3223	1/2	4.0	30	JT3223H13A020	JT3223H13B020
JT3325	3/4	5.0	25	JT3325H13A020	JT3325H13B020
JT3427	1	8.0	20	JT3427H13A020	JT3427H13B020

Table 26: Inverted Flare End Connections

Valve	Size, in.	Cv	Closeoff psig	Spring Return – Port B Closed	
				24 VAC	120 VAC
JT3343	3/4	4.0	30	JT3343H13A020	JT3343H13B020

High Temperature

High temperature valves operate at 32 to 250°F fluid temperature, 15 psi steam, and 32 to 169°F ambient temperature. For information on these valve and actuator assemblies, see Table 27 through Table 29.

Table 27: Sweat End Connections

Valve	Size, in.	Cv	Closeoff psig	Spring Return – Port B Closed	
				24 VAC	120 VAC
JS3213	1/2	4.0	30	JS3213H14A020	JS3213H14B020
JS3315	3/4	5.0	25	JS3315H14A020	JS3315H14B020
JS3417	1	8.0	20	JS3417H14A020	JS3417H14B020
JS3517	1-1/4	8.0	20	JS3517H14A020	JS3517H14B020

Table 28: NPT End Connections

Valve	Size, in.	Cv	Closeoff psig	Spring Return – Port B Closed	
				24 VAC	120 VAC
JS3223	1/2	4.0	30	JS3223H14A020	JS3223H14B020
JS3325	3/4	5.0	25	JS3325H14A020	JS3325H14B020
JS3427	1	8.0	20	JS3427H14A020	JS3427H14B020

Table 29: Inverted Flare Connections

Valve	Size, in.	Cv	Closeoff psig	Spring Return – Port B Closed	
				24 VAC	120 VAC
JS3343	3/4	4.0	30	JS3343H14A020	JS3343H14B020

Non-Spring Return, Modulating Control Valves

Non-Spring Return, Modulating Control Valves are available in standard-temperature and high-temperature versions.

Standard Temperature

Standard temperature valves operate at 32 to 200°F fluid temperature and 32 to 104°F ambient temperature. For information on these valve and actuator assemblies, see Table 30 through Table 33.

Table 30: Two-Way – Sweat End Connections

Valve	Size, in.	Cv	Closeoff psig	24 VAC	
				Three Wire Floating	0 to 10 VDC or 4 to 20 mA Proportional
JM2211	1/2	1.0	50	JM2211T33A00T	JM2211P33A000
JM2212	1/2	2.0	50	JM2212T33A00T	JM2212P33A000
JM2213	1/2	4.0	35	JM2213T33A00T	JM2213P33A000
JM2312	3/4	2.0	50	JM2312T33A00T	JM2312P33A000
JM2313	3/4	4.0	35	JM2313T33A00T	JM2313P33A000
JM2317	3/4	7.5	35	JM2317T33A00T	JM2317P33A000
JM2413	1	4.0	35	JM2413T33A00T	JM2413P33A000
JM2417	1	8.0	35	JM2417T33A00T	JM2417P33A000
JM2517	1-1/4	8.0	35	JM2517T33A00T	JM2517P33A000

Table 31: Two Way – NPT End Connections

Valve	Size, in.	Cv	Closeoff psig	24 VAC	
				Three Wire Floating	0 to 10 VDC or 4 to 20 mA Proportional
JM2221	1/2	1.0	50	JM2221T33A00T	JM2221P33A000
JM2222	1/2	2.0	50	JM2222T33A00T	JM2222P33A000
JM2223	1/2	4.0	35	JM2223T33A00T	JM2223P33A000
JM2322	3/4	2.0	50	JM2322T33A00T	JM2322P33A000
JM2323	3/4	4.0	35	JM2323T33A00T	JM2323P33A000
JM2327	3/4	7.5	35	JM2327T33A00T	JM2327P33A000
JM2427	1	8.0	35	JM2427T33A00T	JM2427P33A000
JM3223	1/2	4.0	35	JM3223T33A00T	JM3223P33A000
JM3322	3/4	2.0	50	JM3322T33A00T	JM3322P33A000
JM3323	3/4	4.0	35	JM3323T33A00T	JM3323P33A000
JM3327	3/4	7.5	35	JM3327T33A00T	JM3327P33A000
JM3427	1	8.0	35	JM3427T33A00T	JM3427P33A000

Table 32: Three Way – Sweat End Connections¹

Valve	Size, in.	Cv	Closeoff psig	24 VAC	
				Three Wire Floating	0 to 10 VDC or 4 to 20 mA Proportional
JM3211	1/2	1.0	50	JM3211T33A00T	JM3211P33A000
JM3212	1/2	2.0	50	JM3212T33A00T	JM3212P33A000
JM3213	1/2	4.0	35	JM3213T33A00T	JM3213P33A000
JM3312	3/4	2.0	50	JM3312T33A00T	JM3312P33A000
JM3313	3/4	4.0	35	JM3313T33A00T	JM3313P33A000
JM3317	3/4	7.5	35	JM3317T33A00T	JM3317P33A000
JM3413	1	4.0	35	JM3413T33A00T	JM3413P33A000
JM3417	1	8.0	35	JM3417T33A00T	JM3417P33A000
JM3517	1-1/4	8.0	35	JM3517T33A00T	JM3517P33A000

1. JM Series Modulating Three-Way Electric Zone Valves must be piped in a mixing configuration only.

Table 33: Three Way – NPT End Connections¹

Valve	Size, in.	Cv	Closeoff psig	24 VAC	
				Three Wire Floating	0 to 10 VDC or 4 to 20 mA Proportional
JM3221	1/2	1.0	50	JM3221T33A00T	JM3221P33A000
JM3222	1/2	2.0	50	JM3222T33A00T	JM3222P33A000
JM3223	1/2	4.0	35	JM3223T33A00T	JM3223P33A000
JM3322	3/4	2.0	50	JM3322T33A00T	JM3322P33A000
JM3323	3/4	4.0	35	JM3323T33A00T	JM3323P33A000
JM3327	3/4	7.5	35	JM3327T33A00T	JM3327P33A000
JM3427	1	8.0	35	JM3427T33A00T	JM3427P33A000

1. JM Series Modulating Three-Way Electric Zone Valves must be piped in a mixing configuration only.

Spring Return Closed, Modulating Control Valves

Spring Return Closed, Modulating Control Valves are available in standard-temperature and high-temperature versions.

Standard Temperature

Standard temperature valves operate at 32 to 200°F fluid temperature and 32 to 104°F ambient temperature. For information on these valve and actuator assemblies, see Table 34 through Table 37.

Table 34: Two-Way – Sweat End Connections – Spring Return Closed

Valve	Size, in.	Cv	Closeoff (psig) Operating/Power Failure	24 VAC	
				Three Wire Floating	0 to 10 VDC or 4 to 20 mA Proportional
JM2211	1/2	1.0	50/50	JM2211T13A000	JM2211P13A000
JM2212	1/2	2.0	50/20	JM2212T13A000	JM2212P13A000
JM2213	1/2	4.0	35/20	JM2213T13A000	JM2213P13A000
JM2312	3/4	2.0	50/20	JM2312T13A000	JM2312P13A000
JM2313	3/4	4.0	35/20	JM2313T13A000	JM2313P13A000
JM2317	3/4	7.5	35/15	JM2317T13A000	JM2317P13A000
JM2413	1	4.0	35/20	JM2413T13A000	JM2413P13A000
JM2417	1	8.0	35/15	JM2417T13A000	JM2417P13A000
JM2517	1-1/4	8.0	35/15	JM2517T13A000	JM2517P13A000

Table 35: Two Way – NPT End Connections – Spring Return Closed

Valve	Size, in.	Cv	Closeoff (psig) Operating/Power Failure	24 VAC	
				Three Wire Floating	0 to 10 VDC or 4 to 20 mA Proportional
JM2221	1/2	1.0	50/50	JM2221T13A000	JM2221P13A000
JM2222	1/2	2.0	50/20	JM2222T13A000	JM2222P13A000
JM2223	1/2	4.0	35/20	JM2223T13A000	JM2223P13A000
JM2322	3/4	2.0	50/20	JM2322T13A000	JM2322P13A000
JM2323	3/4	4.0	35/20	JM2323T13A000	JM2323P13A000
JM2327	3/4	7.5	35/15	JM2327T13A000	JM2327P13A000
JM2427	1	8.0	35/15	JM2427T13A000	JM2427P13A000

Table 36: Three Way – Sweat End Connections – Spring Return Port B Closed¹

Valve	Size, in.	Cv	Closeoff (psig) Operating/Power Failure	24 VAC	
				Three Wire Floating	0 to 10 VDC or 4 to 20 mA Proportional
JM3211	1/2	1.0	50/50	JM3211T13A000	JM3211P13A000
JM3212	1/2	2.0	50/20	JM3212T13A000	JM3212P13A000
JM3213	1/2	4.0	35/20	JM3213T13A000	JM3213P13A000
JM3312	3/4	2.0	50/20	JM1312T13A000	JM1312P13A000
JM3313	3/4	4.0	35/20	JM1313T13A000	JM1313P13A000
JM3317	3/4	7.5	35/15	JM1317T13A000	JM1317P13A000
JM3413	1	4.0	35/20	JM3413T13A000	JM3413P13A000
JM3417	1	8.0	35/15	JM3417T13A000	JM3417P13A000
JM3517	1-1/4	8.0	35/15	JM3517T13A000	JM3517P13A000

1. JM Series Modulating Three-Way Electric Zone Valves must be piped in a mixing configuration only.

Table 37: Three Way – NPT End Connections – Spring Return Port B Closed¹

Valve	Size, in.	Cv	Closeoff (psig) Operating/Power Failure	24 VAC	
				Three Wire Floating	0 to 10 VDC or 4 to 20 mA Proportional
JM3221	1/2	1.0	50/50	JM3221T13A000	JM3221P13A000
JM3222	1/2	2.0	50/20	JM3222T13A000	JM3222P13A000
JM3223	1/2	4.0	35/20	JM3223T13A000	JM3223P13A000
JM3322	3/4	2.0	50/20	JM1322T13A000	JM1322P13A000
JM3323	3/4	4.0	35/20	JM1323T13A000	JM1323P13A000
JM3327	3/4	7.5	35/15	JM1327T13A000	JM1327P13A000
JM3427	1	8.0	35/15	JM3427T13A000	JM3427P13A000

1. JM Series Modulating Three-Way Electric Zone Valves must be piped in a mixing configuration only.

Spring Return Open, Modulating Control Valves

Spring Return Open, Modulating Control valves are available in standard-temperature and high-temperature versions.

Standard Temperature

Standard temperature valves operate at 32 to 200°F fluid temperature and 32 to 104°F ambient temperature. For information on these valve and actuator assemblies, see Table 38 and Table 39.

Table 38: Two-Way – Sweat End Connections – Spring Return Open

Valve	Size, in.	Cv	Closeoff, psig	24 VAC	
				Three Wire Floating	0 to 10 VDC or 4 to 20 mA Proportional
JM2211	1/2	1.0	50	JM2211T23A000	JM2211P23A000
JM2212	1/2	2.0	50	JM2212T23A000	JM2212P23A000
JM2213	1/2	4.0	35	JM2213T23A000	JM2213P23A000
JM2312	3/4	2.0	50	JM2312T23A000	JM2312P23A000
JM2313	3/4	4.0	35	JM2313T23A000	JM2313P23A000
JM2317	3/4	7.5	35	JM2317T23A000	JM2317P23A000
JM2413	1	4.0	35	JM2413T23A000	JM2413P23A000
JM2417	1	8.0	35	JM2417T23A000	JM2417P23A000
JM2517	1-1/4	8.0	35	JM2517T23A000	JM2517P23A000

Table 39: Two Way – NPT End Connections – Spring Return Open

Valve	Size, in.	Cv	Closeoff, psig	24 VAC	
				Three Wire Floating	0 to 10 VDC or 4 to 20 mA Proportional
JM2221	1/2	1.0	50	JM2221T23A000	JM2221P23A000
JM2222	1/2	2.0	50	JM2222T23A000	JM2222P23A000
JM2223	1/2	4.0	35	JM2223T23A000	JM2223P23A000
JM2322	3/4	2.0	50	JM2322T23A000	JM2322P23A000
JM2323	3/4	4.0	35	JM2323T23A000	JM2323P23A000
JM2327	3/4	7.5	35	JM2327T23A000	JM2327P23A000
JM2427	1	8.0	35	JM2427T23A000	JM2427P23A000

Valid Combinations for Field Assembly

Use Table 40 through Table 57 to determine valid combinations for assembly in the field.

J Series On/Off Valves – Standard Closeoff Valves

J Series On/Off Valves – Standard Closeoff Valves are available in standard-temperature and high-temperature versions.

Standard Temperature

Standard temperature valves operate at 32 to 200°F fluid temperature and 32 to 104°F ambient temperature. For information on these valve and actuator assemblies, see Table 40 through Table 42.

Table 40: Two-Way, Spring Closed

Size, in.	Cv	Close off psig	Valve – End Connections			Actuators			
			NPT	Sweat	Inverted Flare	AC 24 V	AC 120 V	AC 208 V	AC 230 V
1/2	1	60	JT2221	JT2211	—	JG13A020	JG13B020	JG13D020	JG13U020
	2.5	40	JT2222	JT2212	—				
	3.5	25	JT2223	JT2213	—				
3/4	2.5	40	JT2322	JT2312	—				
	3.5	25	JT2323	JT2313	JT2343				
1	8	17	JT2427	JT2417	—				
1-1/4	8	17	—	JT2515	—				

Table 41: Two-Way, Spring Open

Size, in.in.	Cv	Close off psig	Valve – End Connections			Actuators			
			NPT	Sweat	Inverted Flare	AC 24 V	AC 120 V	AC 208 V	AC 230 V
1/2	1	60	JT2221	JT2211	—	JG23A020	JG23B020	JG23D020	JG23U020
	2.5	40	JT2222	JT2212	—				
	3.5	25	JT2223	JT2213	—				
3/4	2.5	40	JT2322	JT2312	—				
	3.5	25	JT2323	JT2313	JT2343				
1	8	17	JT2427	JT2417	—				
1-1/4	8	17	—	JT2515	—				

Table 42: Three-Way, Spring Return Port B Closed

Size, in.	Cv	Close off psig	Valve – End Connections			Actuators			
			NPT	Sweat	Inverted Flare	AC 24 V	AC 120 V	AC 208 V	AC 230 V
1/2	4	30	JT3223	JT3213	—	JG13A020	JG13B020	JG13D020	JG13U020
3/4	5	25	JT3325	JT3315	JT3343				
1	8	20	JT3427	JT3417	—				
1-1/4	8	20	—	JT3517	—				

High Temperature

High temperature valves operate at 32 to 250°F fluid temperature, 15 psi steam, and 32 to 169°F ambient temperature. For information on these valve and actuator assemblies, see Table 43 through Table 45.

Table 43: Two-Way, Spring Closed

Size, in.	Cv	Close off psig	Valve – End Connections			Actuators			
			NPT	Sweat	Inverted Flare	AC 24 V	AC 120 V	AC 208 V	AC 230 V
1/2	1	60	JS2221	JS2211	—	JG14A020	JG14B020	JG14D020	JG14U020
	2.5	40	JS2222	JS2212	—				
	3.5	25	JS2223	JS2213	—				
3/4	2.5	40	JS2322	JS2312	—				
	3.5	25	JS2323	JS2313	JT2343				
1	8	17	JS2427	JS2417	—				
1-1/4	8	17	—	JS2515	—				

Table 44: Two-Way, Spring Open

Size, in.	Cv	Close off psig	Valve – End Connections			Actuators			
			NPT	Sweat	Inverted Flare	AC 24 V	AC 120 V	AC 208 V	AC 230 V
1/2	1	60	JS2221	JS2211	—	JG24A020	JG24B020	JG24D020	JG24U020
	2.5	40	JS2222	JS2212	—				
	3.5	25	JS2223	JS2213	—				
3/4	2.5	40	JS2322	JS2312	—				
	3.5	25	JS2323	JS2313	JT2343				
1	8	17	JS2427	JS2417	—				
1-1/4	8	17	—	JS2515	—				

Table 45: Three-Way, Spring Return Port B Closed

Size, in.	Cv	Close off psig	Valve – End Connections			Actuators			
			NPT	Sweat	Inverted Flare	AC 24 V	AC 120 V	AC 208 V	AC 230 V
1/2	4	30	JS3223	JS3213	—	JG14A020	JG14B020	JG14D020	JG14U020
3/4	5	25	JS3325	JS3315	JT3343				
1	8	20	JS3427	JS3417	—				
1-1/4	8	20	—	JS3517	—				

J Series On/Off Valves – High Closeoff

J Series On/Off Valves – High Closeoff are available in standard-temperature and high-temperature versions.

Standard Temperature

Standard temperature valves operate at 32 to 200°F fluid temperature and 32 to 104°F ambient temperature. For information on these valve and actuator assemblies, see Table 46 through Table 48.

Table 46: Two-Way, Spring Closed

Size, in.	Cv	Closeoff psig	Valve – End Connections			Actuators	
			NPT	Sweat	Inverted Flare	AC 24 V	AC 120 V
1/2	1	75	JT2221	JT2211	—	JH13A020	JH13B020
	2.5	50	JT2222	JT2212	—		
	3.5	30	JT2223	JT2213	—		
3/4	2.5	50	JT2322	JT2312	—		
	3.5	30	JT2323	JT2313	JT2343		
1	8	20	JT2427	JT2417	—		
1-1/4	8	20	—	JT2515	—		

Table 47: Two-Way, Spring Open

Size, in.	Cv	Closeoff psig	Valve – End Connections			Actuators	
			NPT	Sweat	Inverted Flare	AC 24 V	AC 120 V
1/2	1	75	JT2221	JT2211	—	JH23A020	JH23B020
	2.5	50	JT2222	JT2212	—		
	3.5	30	JT2223	JT2213	—		
3/4	2.5	50	JT2322	JT2312	—		
	3.5	30	JT2323	JT2313	JT2343		
1	8	20	JT2427	JT2417	—		
1-1/4	8	20	—	JT2515	—		

Table 48: Three-Way, Spring Return Port B Closed

Size, in.	Cv	Closeoff psig	Valve – End Connections			Actuators	
			NPT	Sweat	Inverted Flare	AC 24 V	AC 120 V
1/2	4	30	JT3223	JT3213	—	JH13A020	JH13B020
3/4	5	25	JT3325	JT3315	JT3343		
1	8	20	JT3427	JT3417	—		
1-1/4	8	20	—	JT3517	—		

High Temperature

High temperature valves operate at 32 to 250°F fluid temperature, 15 psi steam, and 32 to 169°F ambient temperature. For information on these valve and actuator assemblies, see Table 49 through Table 51.

Table 49: Two-Way, Spring Closed

Size, in.	Cv	Closeoff psig	Valve – End Connections			Actuators	
			NPT	Sweat	Inverted Flare	AC 24 V	AC 120 V
1/2	1	75	JS2221	JS2211	—	JH14A020	JH14B020
	2.5	50	JS2222	JS2212	—		
	3.5	30	JS2223	JS2213	—		
3/4	2.5	50	JS2322	JS2312	—		
	3.5	30	JS2323	JS2313	JT2343		
1	8	20	JS2427	JS2417	—		
1-1/4	8	20	—	JS2515	—		

Table 50: Two-Way, Spring Open

Size, in.	Cv	Closeoff psig	Valve – End Connections			Actuators	
			NPT	Sweat	Inverted Flare	AC 24 V	AC 120 V
1/2	1	75	JS2221	JS2211	—	JH24A020	JH24B020
	2.5	50	JS2222	JS2212	—		
	3.5	30	JS2223	JS2213	—		
3/4	2.5	50	JS2322	JS2312	—		
	3.5	30	JS2323	JS2313	JT2343		
1	8	20	JS2427	JS2417	—		
1-1/4	8	20	—	JS2515	—		

Table 51: Three-Way, Spring Return Port B Closed

Size, in.	Cv	Closeoff psig	Valve – End Connections			Actuators	
			NPT	Sweat	Inverted Flare	AC 24 V	AC 120 V
1/2	4	30	JS3223	JS3213	—	JH14A020	JH14B020
3/4	5	25	JS3325	JS3315	JT3343		
1	8	20	JS3427	JS3417	—		
1-1/4	8	20	—	JS3517	—		

Spring Return J Series Modulating Valves

Spring Return J Series Modulating Valves are available in two-way and three-way spring-return varieties.

Two-Way

Two-way valves are available in spring-return open and spring-return closed varieties. For information on these valve and actuator assemblies, see Table 52 and Table 53.

Table 52: Two-Way Spring Return Open J Series Modulating Valves

Size, in.	Cv	Valves – End Connections		Actuators		
		NPT	Sweat	Closeoff psig	AC 24 V Floating Control	DC 0 – 10 V Proportional
1/2	1	JM2221	JM2211	50	JT23A000	JP23A000
	2	JM2222	JM2212	50		
	4	JM2223	JM2213	35		
3/4	2	JM2322	JM2312	50		
	4	JM2323	JM2313	35		
	7.5	JM2327	JM2317	35		
1	4	—	JM2413	35		
	8	JM2427	JM2417	35		
1-1/4	8	—	JM2517	35		

Table 53: Two-Way Spring Return Closed J Series Modulating Valves

Size, in.	Cv	Valves – End Connections		Actuators		
		NPT	Sweat	Closeoff psig (Operating/ Power Failure)	AC 24 V Floating Control	DC 0 – 10 V Proportional
1/2	1	JM2221	JM2211	50/50	JT13A000	JP13A000
	2	JM2222	JM2212	50/20		
	4	JM2223	JM2213	35/20		
3/4	2	JM2322	JM2312	50/20		
	4	JM2323	JM2313	35/20		
	7.5	JM2327	JM2317	35/15		
1	4	—	JM2413	35/20		
	8	JM2427	JM2417	35/15		
1-1/4	8	—	JM2517	35/15		

Three-Way

Three-way valves are available in spring-return open and spring-return closed varieties. For information on these valve and actuator assemblies, see Table 54 and Table 55.

Table 54: Three-Way Spring Return Open J Series Modulating Valves

Size, in.	Cv	Valves – End Connections		Actuators		
		NPT	Sweat	Closeoff psig	AC 24 V Floating Control	DC 0 – 10 V Proportional
1/2	1	JM3221	JM3211	50	JT23A000	JP23A000
	2	JM3222	JM3212	50		
	4	JM3223	JM3213	35		
3/4	2	JM3322	JM3312	50		
	4	JM3323	JM3313	35		
	7.5	JM3327	JM3317	35		
1	4	—	JM3413	35		
	8	JM3427	JM3417	35		
1-1/4	8	—	JM3517	35		

Table 55: Three-Way Spring Return Closed J Series Modulating Valves

Size, in.	Cv	Valves – End Connections		Actuators		
		NPT	Sweat	Closeoff psig (Operating/ Power Failure)	AC 24 V Floating Control	DC 0 – 10 V Proportional
1/2	1	JM3221	JM3211	50/50	JT13A000	JP13A000
	2	JM3222	JM3212	50/20		
	4	JM3223	JM3213	35/20		
3/4	2	JM3322	JM3312	50/20		
	4	JM3323	JM3313	35/20		
	7.5	JM3327	JM3317	35/15		
1	4	—	JM3413	35/20		
	8	JM3427	JM3417	35/15		
1-1/4	8	—	JM3517	35/15		

Non Spring Return J Series Modulating Valves

Non Spring Return J Series Modulating Valves are available in two-way and three-way versions. For information on these valve and actuator assemblies, see Table 56 through Table 57.

Table 56: Two-Way Non Spring Return J Series Modulating Valves

Size, in.	Cv	Valve – End Connection		Non-Spring Return		
		NPT	Sweat	Closeoff psig	AC 24 V Floating Control	DC 0 – 10 V Proportional
1/2	1	JM2221	JM2211	50	JT33A00T	JP33A000
	2	JM2222	JM2212	50		
	4	JM2223	JM2213	35		
3/4	2	JM2322	JM2312	50		
	4	JM2323	JM2313	35		
	7.5	JM2327	JM2317	35		
1	4	—	JM2413	35		
	8	JM2427	JM2417	35		
1-1/4	8	—	JM2517	35		

Table 57: Three-Way Non Spring Return J Series Modulating Valves

Size, in.	Cv	Valve – End Connection		Non-Spring Return		
		NPT	Sweat	Closeoff psig	AC 24 V Floating Control	DC 0 – 10 V Proportional
1/2	1	JM3221	JM3211	50	JT33A00T	JP33A000
	2	JM3222	JM3212	50		
	4	JM3223	JM3213	35		
3/4	2	JM3322	JM3312	50		
	4	JM3323	JM3313	35		
	7.5	JM3327	JM3317	35		
1	4	—	JM3413	35		
	8	JM3427	JM3417	35		
1-1/4	8	—	JM3517	35		

Repair Information

Available repair parts for J Series electric zone valves include replacement valve bodies, replacement actuators, and the inverted flare fitting end connections included in Table 58. No other field repairs should be attempted.

To order a replacement valve body only, create the required code number using fields 1 through 6 from Table 4. To order a replacement actuator only, create the required code number using fields 7 through 13 from Table 5, and add the letter **J** to the front of the resulting code number.

Table 58: Inverted Flare Fitting End Connections (Order Separately)

Product Code Number	Description	Length, in. (mm)
J647-601	For 1/2 in. (5/8 in. O.D.) Copper Tubing	15/16 (24)
J647-602	For 1/2 in. (5/8 in. O.D.) Copper Tubing	1-11/16 (43)
J647-603	For 1/2 in. (5/8 in. O.D.) Copper Tubing	3 (76)
J647-604	For 3/4 in. (7/8 in. O.D.) Copper Tubing	1-27/32 (47)
J647-605	For 1/2 in. (5/8 in. O.D.) Copper Tubing	1-15/16 (49)
J647-606	For 1 in. (1-1/8 in. O.D.) Copper Tubing	2-3/8 (60)
J647-607	Inverted Flare Nut	-----

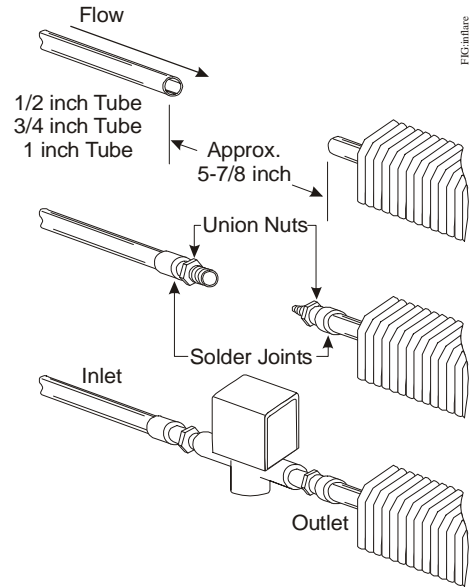


Figure 9: Installation of Inverted Flare J Series Electric Zone Valves



Figure 10: Inverted Flare Fittings (Order Separately)

Maximum Closeoff Pressures by Date Code

Date codes use the format WWYY, where WW is the week of the year and YY indicates the year. For example, a date code of 2603 indicates the item was produced on the 26th week of 2003.

JT and JS Series On/Off Zone Valves (Date Code 0301 or Later)

Table 59 through Table 61 give maximum closeoff pressures for JT and JS Series On/Off zone valves with date codes 0301 or later.

Table 59: Sweat End Connections

Valve Size	Two-Way		Three-Way	
	Cv (Kv)	Close Off psig (kPa)	Cv (Kv)	Close Off psig (kPa)
1/2 in.	1.0 (0.9)	60 (413)	4.0 (3.4)	25 (172)
	2.5 (2.2)	40 (275)		
	3.5 (3.0)	25 (172)		
3/4 in.	2.5 (2.2)	40 (275)	5.0 (4.3)	20 (138)
	3.5 (3.0)	25 (172)		
1 in.	8.0 (7.5)	17 (117)	8.0 (7.5)	17 (117)
1-1/4 in.	8.0 (7.5)	17 (117)	8.0 (7.5)	17 (117)

Table 60: Threaded (NPT) End Connections

Valve Size	Two-Way		Three-Way	
	Cv (Kv)	Close Off psig (kPa)	Cv (Kv)	Close Off psig (kPa)
1/2 in.	1.0 (0.9)	60 (413)	4.0 (3.4)	25 (172)
	2.5 (2.2)	40 (275)		
	3.5 (3.0)	25 (172)		
3/4 in.	2.5 (2.2)	40 (275)	5.0 (4.3)	20 (138)
	3.5 (3.0)	25 (172)		
1 in.	8.0 (7.5)	17 (117)	8.0 (7.5)	17 (117)

Table 61: Inverted Flare End Connections

Valve Size	Two-Way		Three-Way	
	Cv (Kv)	Close Off psig (kPa)	Cv (Kv)	Close Off psig (kPa)
3/4 in.	3.5 (3.0)	25 (172)	4.0 (3.4)	25 (172)

JT and JS Series On/Off Electric Zone Valves – Standard Closeoff (Date Code 0252 or earlier)

Table 62 through Table 64 give maximum closeoff pressures for JT and JS Series On/Off electric zone valves with standard closeoff and date codes 0252 or earlier.

Table 62: Sweat End Connections

Valve Size	Two-Way		Three-Way	
	Cv (Kv)	Close Off psig (kPa)	Cv (Kv)	Close Off psig (kPa)
1/2 in.	1.0 (0.9)	50 (350)	4.0 (3.4)	20 (137)
	2.5 (2.2)	30 (210)		
	3.5 (3.0)	20 (137)		
3/4 in.	2.5 (2.2)	30 (210)	5.0 (4.3)	13 (90)
	3.5 (3.0)	20 (137)		
1 in.	8.0 (7.5)	15 (103)	8.0 (7.5)	15 (103)
1-1/4 in.	8.0 (7.5)	15 (103)	8.0 (7.5)	15 (103)

Table 63: Threaded (NPT) End Connections

Valve Size	Two-Way		Three-Way	
	Cv (Kv)	Close Off psig (kPa)	Cv (Kv)	Close Off psig (kPa)
1/2 in.	1.0 (0.9)	50 (350)	4.0 (3.4)	20 (137)
	2.5 (2.2)	30 (210)		
	3.5 (3.0)	20 (137)		
3/4 in.	2.5 (2.2)	30 (210)	5.0 (4.3)	13 (90)
	3.5 (3.0)	20 (138)		
1 in.	8.0 (7.5)	15 (103)	8.0 (7.5)	15 (103)

Table 64: Inverted Flare End Connections

Valve Size	Two-Way		Three-Way	
	Cv (Kv)	Close Off psig (kPa)	Cv (Kv)	Close Off psig (kPa)
3/4 in.	3.5 (3.0)	20 (137)	4.0 (3.4)	20 (140)

JT and JS Series On/Off Electric Zone Valves – High Closeoff

Table 65 through Table 67 gives maximum closeoff pressures for JT and JS Series On/Off electric zone valves with high closeoff.

Table 65: Sweat End Connections

Valve Size	Two-Way		Three-Way	
	Cv (Kv)	Close Off psig (kPa)	Cv (Kv)	Close Off psig (kPa)
1/2 in.	1.0 (0.9)	75 (525)	4.0 (3.4)	30 (210)
	2.5 (2.2)	50 (350)		
	3.5 (3.0)	30 (210)		
3/4 in.	2.5 (2.2)	50 (350)	5.0 (4.3)	25 (172)
	3.5 (3.0)	30 (210)		
1 in.	8.0 (7.5)	20 (137)	7.0 (6.0)	15 (103)
1-1/4 in.	8.0 (7.5)	20 (137)	7.5 (6.5)	20 (137)

Table 66: Threaded (NPT) End Connections

Valve Size	Two-Way		Three-Way	
	Cv (Kv)	Close Off psig (kPa)	Cv (Kv)	Close Off psig (kPa)
1/2 in.	1.0 (0.9)	75 (525)	4.0 (3.4)	30 (210)
	2.5 (2.2)	50 (350)		
	3.5 (3.0)	30 (210)		
3/4 in.	2.5 (2.2)	50 (350)	5.0 (4.3)	25 (172)
	3.5 (3.0)	30 (210)		
1 in.	8.0 (7.5)	20 (137)	8.0 (7.5)	20 (137)

Table 67: Inverted Flare End Connections

Valve Size	Two-Way		Three-Way	
	Cv (Kv)	Close Off psig (kPa)	Cv (Kv)	Close Off psig (kPa)
3/4 in.	3.5 (3.0)	20 (137)	4.0 (3.4)	20 (137)

JM Series Modulating Electric Zone Valves

Table 68 through Table 70 gives maximum closeoff pressure for JM Series modulating electric valves.

Table 68: JM Series Modulating Electric Zone Valves – Non-Spring Return

Valve Size	Sweat End Connections			Threaded (NPT) End Connections		
	Cv (Kv)		Closeoff psig (kPa)	Cv (Kv)		Closeoff psig (kPa)
	Two-Way	Three-Way	Operating Mode	Two-Way	Three-Way	Operating Mode
1/2 in.	1.0 (0.9)	1.0 (0.9)	50 (344)	1.0 (0.9)	1.0 (0.9)	1.0 (0.9)
	2.0 (1.8)	2.0 (1.8)	50 (344)	2.0 (1.8)	2.0 (1.8)	2.0 (1.8)
	4.0 (3.5)	4.0 (3.5)	35 (242)	4.0 (3.5)	4.0 (3.5)	4.0 (3.5)
3/4 in.	2.0 (1.8)	2.0 (1.8)	50 (344)	2.0 (1.8)	2.0 (1.8)	2.0 (1.8)
	4.0 (3.5)	4.0 (3.5)	35 (242)	4.0 (3.5)	4.0 (3.5)	4.0 (3.5)
	7.5 (6.4)	7.5 (6.4)	35 (242)	7.5 (6.4)	7.5 (6.4)	7.5 (6.4)
1 in.	4.0 (3.4)	4.0 (3.4)	35 (242)	8.0 (7.5)	8.0 (7.5)	8.0 (6.9)
	8.0 (7.5)	8.0 (7.5)	35 (242)	N/A	N/A	N/A
1-1/4 in.	8.0 (7.5)	8.0 (7.5)	35 (242)	N/A	N/A	N/A

Table 69: JM Series Modulating Electric Zone Valves – Spring Return Closed

Valve Size	Sweat End Connections			Threaded (NPT) End Connections		
	Cv (Kv)		Closeoff psig (kPa)	Cv (Kv)		Closeoff psig (kPa)
	Two-Way	Three-Way	Operating Mode/ Power Failure Mode	Two-Way	Three-Way	Operating Mode/ Power Failure Mode
1/2 in.	1.0 (0.9)	1.0 (0.9)	50 (344)/50 (344)	1.0 (0.9)	1.0 (0.9)	50 (344)/50 (344)
	2.0 (1.8)	2.0 (1.8)	50 (344)/20 (137)	2.0 (1.8)	2.0 (1.8)	50 (344)/20 (137)
	4.0 (3.5)	4.0 (3.5)	35 (240)/20 (137)	4.0 (3.5)	4.0 (3.5)	35 (240)/20 (137)
3/4 in.	2.0 (1.8)	2.0 (1.8)	50 (344)/20 (137)	2.0 (1.8)	2.0 (1.8)	50 (344)/20 (137)
	4.0 (3.5)	4.0 (3.5)	35 (240)/20 (137)	4.0 (3.5)	4.0 (3.5)	35 (240)/20 (137)
	7.5 (6.4)	7.5 (6.4)	35 (240)/15 (103)	7.5 (6.4)	7.5 (6.4)	35 (240)/15 (103)
1 in.	4.0 (3.4)	4.0 (3.4)	35 (240)/20 (137)	8.0 (7.5)	8.0 (7.5)	35 (240)/15 (103)
	8.0 (7.5)	8.0 (7.5)	35 (240)/15 (103)	N/A	N/A	N/A
1-1/4 in.	8.0 (7.5)	8.0 (7.5)	35 (240)/15 (103)	N/A	N/A	N/A

Table 70: JM Series Modulating Electric Zone Valves – Spring Return Open (Part 1 of 2)

Valve Size	Sweat End Connections		Threaded (NPT) End Connections	
	Cv (Kv)	Closeoff psig (kPa)	Cv (Kv)	Closeoff psig (kPa)
	Two-Way	Operating Mode	Two-Way or Three-Way	Operating Mode
1/2 in.	1.0 (0.9)	50 (344)	1.0 (0.9)	50 (344)
	2.0 (1.8)	50 (344)	2.0 (1.8)	50 (344)
	4.0 (3.5)	35 (240)	4.0 (3.5)	35 (240)

Table 70: JM Series Modulating Electric Zone Valves – Spring Return Open (Part 2 of 2)

Valve Size	Sweat End Connections		Threaded (NPT) End Connections	
	Cv (Kv)	Closeoff psig (kPa)	Cv (Kv)	Closeoff psig (kPa)
	Two-Way	Operating Mode	Two-Way or Three-Way	Operating Mode
3/4 in.	2.0 (1.8)	50 (344)	2.0 (1.8)	50 (344)
	4.0 (3.5)	35 (240)	4.0 (3.5)	35 (240)
	7.5 (6.4)	35 (240)	7.5 (6.4)	35 (240)
1 in.	4.0 (3.4)	35 (240)	8.0 (7.5)	35 (240)
	8.0 (7.5)	35 (240)	N/A	N/A
1-1/4 in.	8.0 (7.5)	35 (240)	N/A	N/A

Technical Specifications

J Series Electric Zone Valves (Part 1 of 2)

Service¹	Hot Water, Chilled Water, 50% Glycol Solutions, and 15 psig (103 kPa) Saturated Steam for HVAC Systems
End Connections	Threaded (NPT), Sweat (all Models) Inverted Flare (JT and JS On/Off Series Only)
Fluid Temperature Limits	Standard JT Series 32 to 200°F (0 to 93°C) Water in an Ambient Temperature of 32 to 104°F (0 to 40°C)
	Standard JM Series 32 to 200°F (0 to 93°C) Water in an Ambient Temperature of 32 to 125°F (0 to 52°C)
	High JS Series 32 to 250°F (0 to 121°C) Water in an Ambient Temperature of 32 to 169°F (0 to 76°C) or 15 psig (103 kPa) Steam at 250°F (121°C)
Valve Body Pressure Rating	300 psig (2,067 kPa) System Operating Pressure
Valve Cv (Kv) and Closeoff Pressure Ratings	JT and JS On/Off: See Table 59. JM Modulating: See Table 68.
Cycle Times	JT and JS Series: Power Stroke: 9 to 11 Seconds, Spring Return: 4 to 5 Seconds JM Series: Full Open to Full Close: 150 Seconds
Leakage	JT and JS Series: Bubble-Tight Shutoff JM Series: 0.01% of Maximum Flow per ANSI/FCI 70-2 Class IV
Materials	Body: Forged Brass Stem: Brass (Hard Chrome Plated) Base Plate and Bearing Plate: Stainless Steel Actuator Housing (JT and JS Series): Stainless Steel Actuator Cover (JT and JS Series): Aluminum Actuator Housing (JM Series): High Temperature Plastic Valve Operating Paddle (JT and JS Series): Standard Temperature Models - Buna-N Rubber, High Temperature Models - Saturated Nitrile Valve Plug/Paddle (JM Series): High Temperature Thermoplastic/Rubber Stem Assembly O-Ring Seals: Viton™

J Series Electric Zone Valves (Part 2 of 2)

Control Signal	JT and JS On/Off: AC 24, 120, 208, or 230 V, Two-wire On/Off JM Modulating: T Type, Three-Wire Floating, 24 VAC at 60 Hz P Type Proportional Control Factory Setting: 0 to 10 VDC (1 to 9 VDC Actual), 0 to 5 VDC, 5 to 10 VDC jumper selectable
Control Action	JM Modulating: P Type Proportional Control Factory Setting: Direct Acting valve opens port B as signal increases. Jumper selectable
Input Impedance	JM Modulating: P Type Proportional Control Voltage Input: 200,000 ohms Current Input: 300 ohms
Compliance	JT and JS Series All actuators UL listed, File E6688 or E27734 CNN XAPX (U.S.) XAPX7 (Canada), CE Mark JM Series Actuator UL Listed, CE Mark
Power Requirements	JT and JS Series: AC 24 V, 60 Hz (6.5 W), 7 VA AC 120 V, 60 Hz (6.5 W), 7 VA AC 208 V, 60 Hz (6.5 W), 7 VA AC 230 V, 60 Hz (6.5 W), 7 VA JM Series: AC 24 V, 60 Hz, 1.6 VA
Electrical Connections	JT and JS Series: 18 in. (457 mm) Wire Leads JM Series: Terminal Block
Shipping Weight	JT and JS Series: 1.0 lbs (454 g), maximum, actuator and valve body JM Series: 1.9 lbs (860 g), maximum, actuator and valve body

1. Use proper water treatment; refer to VDI 2035 Standard.

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls® office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



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