

CONTROL VALVES



Kele Assembles Thousands of Custom Valves to Meet Your Actuator Preference, Most Build and Ship Same-Day. We Also Offer FREE Tagging.

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VALVE SOLUTIONS INC.



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Danfoss



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spartan PERIPHERAL DEVICES



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Kele

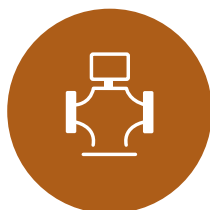




Products manufactured
in the United States



Products that are
new to the catalog



CONTROL VALVES

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VSI
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CONTROL VALVES

TWO-POSITION POPTOP™ ZONE VALVES KZ SERIES



DESCRIPTION

The **KZ Series** Two-Position PopTop™ zone valves offer a wide range of models to handle chilled water, hot water, and 15 psig (103 kPa) steam applications. PopTop™ valves feature removable actuators to aid in both installation and service. They are available in 2-way and 3-way body patterns and with normally open or normally closed actuators.

FEATURES

- *Two- or three-way mixing/diverting body patterns*
- *Removable and replaceable actuator*
- *NPT, sweat, or inverted flare connections*
- *2-position spring return control*

NEW!



KZG13A02A

Kele®



KZ23B020



KZT2221



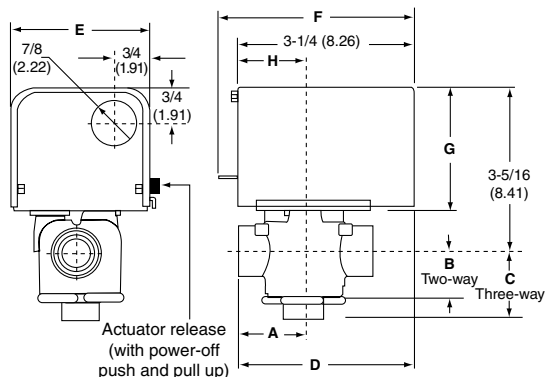
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CONTROL VALVES

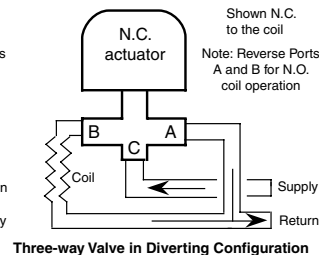
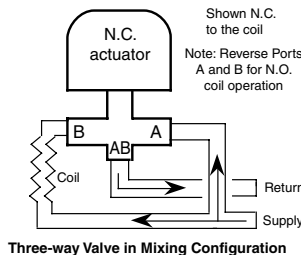
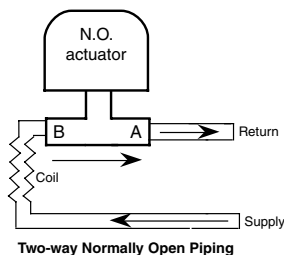
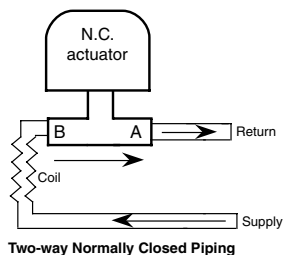
DIMENSIONS

VALVE BODY SIZE	DIMENSIONS - in (cm)			
	A	B	C	D
1/2" Sweat	1-5/16 (3.33)	7/8 (2.22)	1-5/16 (3.33)	3-5/16 (8.41)
3/4" Sweat	1-3/8 (3.49)	7/8 (2.22)	1-11/16 (4.29)	3-3/8 (8.57)
1" Sweat	1-11/16 (4.29)	7/8 (2.22)	1-11/16 (4.29)	3-5/8 (9.21)
1/2" NPT	1-3/8 (3.49)	7/8 (2.22)	1-5/16 (3.33)	3-3/8 (8.57)
3/4" NPT	1-11/16 (4.29)	7/8 (2.22)	1-7/16 (3.65)	3-5/8 (9.21)
1" NPT	1-7/8 (4.76)	1 (2.54)	1-3/4 (4.45)	3-7/8 (9.84)
Inverted flare union	1-3/8 (3.49)	7/8 (2.22)	1-5/16 (3.33)	4-1/8 (10.48)

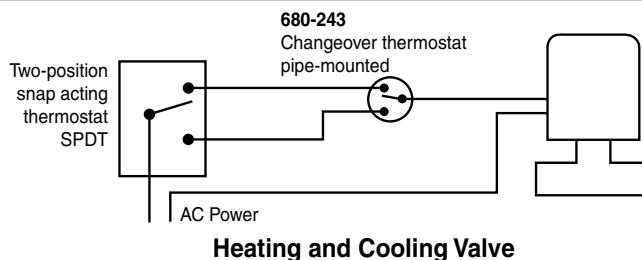
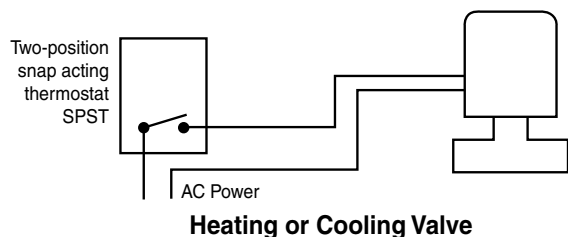
ACTUATOR	E	F	G	H
KZG	2-3/8 (6.03)	3-11/16 (9.36)	2-3/8 (6.03)	1-1/4 (3.18)
KZH	2-5/8 (6.67)	3-7/8 (9.84)	2-3/8 (6.03)	1-1/4 (3.18)



PIPING



WIRING



NEW!



CONTROL VALVES

TWO-POSITION POPTOP™ ZONE VALVES

KZ SERIES

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CONTROL VALVES

SPECIFICATIONS

Size	1/2", 3/4", 1"	Supply Voltage	24 VAC ±10%; 120 VAC ±10%, 50/60 Hz; 208-277V models also available
Cv Range	1.0 to 8.0	Supply VA	7 VA
Connections	FNPT, Sweat, or inverted flare (3/4" only)	Supply Watts	6.5 W
Flow Characteristic	Quick Opening	Control Signal	Two-position, two-wire
Leakage Rating	ANSI Class IV (0.01% of rated capacity)	Wiring	18" (45.2 cm) leads
Maximum Closeoff Pressure		Action	
Cv 1.0-1.5	60 psid (414 kPa) KZG actuator, 75 psid (517 kPa) KZH actuator	Two-Way Valves	N.O./N.C. determined by choice of actuator
Cv 2.5-3.0	40 psid (276 kPa) KZG actuator, 50 psid (345 kPa) KZH actuator	Three-Way Valves	N.C. actuator only
Cv 3.5-4.0	25 psid (172 kPa) KZG actuator, 30 psid (207 kPa) KZH actuator	Actuator Compatibility	KZG (general purpose) or KZH (high performance) type actuators only
Cv 5.0	20 psid (137 kPa) KZG actuator, 25 psid (172 kPa) KZH actuator	Actuator Mounting	PopTop™
Cv 7.5-8.0	17 psid (117 kPa) KZG actuator, 20 psid (137 kPa) KZH actuator	Auxiliary Contacts	N.O. contacts, 24-240 VAC, 5A
Maximum Pressure Rating	300 psig (2067 kPa)	Auxiliary Switch	Models with auxiliary switch available
Materials Of Construction	Brass valve body and seat, nickel-plated stem, BUNA N paddle; stainless steel base plate and aluminum cover on actuator	Drive Time	25 seconds maximum @ 60 Hz
Media Compatibility	Hot or chilled water; 50% or less ethylene glycol; 15 psig steam	Manual Override	N.C. actuators only
Media Temperature Range	32° to 200°F (0° to 93°C) for KZT valve; up to 250°F (121°C) with for KZS valve with KZxx4 actuator	Operating Temperature	
		KZG Actuator	Maximum ambient 104°F (40°C);
		KZxx4 Actuator	Maximum ambient 169°F (77°C)
		Spring Return Time	9 seconds maximum
		Weight	Valve bodies: <1.4 lb (0.64 kg)
			Actuators: 1.0 lb (0.45 kg)
		Approvals	UL and ULc Listed; CE
		Warranty	2 years

ORDERING INFORMATION

VALVE			
MODEL	DESCRIPTION		
KZ	Two-position PopTop electric valve		
	TEMPERATURE		
	T	Water	
	S	Steam (must use high temperature actuator)	
	CONFIGURATION		
	2	Two-way	
	3	Three-way	
	CV SIZE		
	2	1/2"	
	3	3/4"	
	4	1"	
	CONNECTION		
	1	Sweat - 1/2", 3/4", 1"	
	2	NPT - 1/2", 3/4", 1"	
	4	Inverted flare - 3/4" only	
CV CAPACITY			
	2-way	3-way	Size
1	1.0	1.5	1/2"
2	2.5	3.0	1/2", 3/4"
3	3.5	4.0	1/2", 3/4"
5	5.0	5.0	3/4", 1"
7	7.5	7.5	3/4"
7	8.0	8.0	1"

Note: Valve and actuator shipped separately.

*Inverted flare fittings not included with valve. They are field-supplied.

ACTUATOR	
MODEL	DESCRIPTION
KZ	VT Series actuator
CLOSEOFF	
G	General operation
H	High performance
VALVE OPERATION	
1	Normally closed*
2	Normally open**
TEMPERATURE	
3	Normal
4	Steam
VOLTAGE	
A	24 VAC, 50/60 Hz
B	120 VAC, 50/60 Hz
D	208 VAC, 60 Hz
T	277 VAC, 60 Hz
U	230/220 VAC, 50 Hz
LEADS	
02	18" Leads
OPTIONS	
0	None
A	End switch

Example: KZG13A020

* Three-way valves use N.C. actuator only; reverse ports for N.O.

** No manual override.

RELATED PRODUCTS

SSTAG
680-243-6

Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order
Changeover thermostat with conduit fitting

ACCESSORIES

30-158-A	KZG/KZH Series actuator replacement motor, 24 VAC
30-158-B	KZG/KZH Series actuator replacement motor, 110/120 VAC
30-158-D	KZG/KZH Series actuator replacement motor, 208 VAC
30-158-T	KZG/KZH Series actuator replacement motor, 277 VAC
30-158-U	KZG/KZH Series actuator replacement motor, 230/240 VAC
436-252	3/4" flare-to-sweat fitting

NEW!

CONTROL VALVES

TWO-POSITION ZONE VALVES Z200/Z300 SERIES



CALEFFI

DESCRIPTION

The **Z200/Z300 Series** zone valves are high-quality, cost-competitive, two-position, spring return valves made for chilled water, hot water, and 15 psig (103 kPa) steam applications. The **Z200/Z300 Series** zone valves feature, as standard, high temperature ratings and high close-off ratings. They are available in a full range of common sizes, connection types, and operating voltages.

FEATURES

- *High-quality, long-life design*
- *High close-off pressures standard*
- *Drop-in replacement for existing zone valves*
- *Manual override lever for N.C. actuators*
- *Actuators available with end switch*
- *Front-mount, push-button actuator release*
- *Anti-water hammer gear motion*
- *Knockout for 1/2" conduit*
- *Available assembled or separate valve/actuator*

NEW!



Z200411-Z12100



Z300411



3

CONTROL VALVES

SPECIFICATIONS			
Size	1/2", 3/4", 1", 1-1/4" (sweat connections only)	Conduit Connection	7/8" (2.2 cm) knockout for 1/2" conduit
Cv Range	1.0, 2.5, 3.5, 5.0, 7.5, 8.0	Wiring	
Connections	FNPT, Sweat (BSP, inverted flare and SAE flare available special order)	24 VAC Actuators	18" (45.7 cm) leads;
Body Pattern	2-way and 3-way (mixing/diverting)	120 VAC Actuators	6" (15.2 cm) leads
Flow Characteristic	Quick Opening	Auxiliary Switch	Model dependant; switch closes when actuator opens, operates with manual override
Leakage Class	ANSI Class III (0.1%)	Contact Rating	
Maximum Closeoff Pressure		24 VAC Actuators	0.4A @ 24 VAC
Cv = 1.0	75 psid (517 kPa)	120 VAC Actuators	5.0A @ 120-277 VAC
Cv = 2.5	50 psid (345 kPa)	Actuator Compatibility	
Cv = 3.5	30 psid (207 kPa)	2-way Valves	N.O. or N.C. actuator
Cv = 5.0	25 psid (172 kPa)	3-way Valves	N.C. actuator only
Cv = 7.5	20 psid (137 kPa)	Drive Time	10 to 60 seconds
Cv = 8.0	20 psid (137 kPa)	Spring Return Time	6 seconds
Maximum Pressure	300 psig (2067 kPa)	Manual Override	Included on N.C. actuators only
Materials Of Construction	Forged brass body, stainless steel stem, brass seat, EPDM paddle, aluminum actuator base, polycarbonate actuator housing	Operating Temperature	Maximum ambient 104°F (40°C) for models with auxiliary switches; maximum 169°F (77°C) for models without auxiliary switches
Media Compatibility	Hot and chilled water, up to 50% glycol; 15 psig (103 kPa) maximum steam (2-way valves only)	Weight	
Media Temperature Range	32° to 250°F (0° to 121°C)	1/2" Valves	0.70 lb (0.32 kg)
Supply Voltage	24 VAC models, 120 VAC models (208, 240, 277 VAC models available special order)	3/4" Valves	0.80 lb (0.36 kg)
Supply VA	7 VA	1" Valves	0.90 lb (0.41 kg)
		1-1/4" Valves	0.90 lb (0.41 kg)
		Actuators:	0.92 lb (0.42 kg)
		Approvals	ULC, CE, plenum rating, cULus File #239721868P
		Warranty	2 years

NEW!



CONTROL VALVES

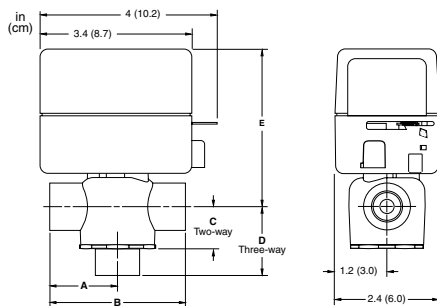
TWO-POSITION ZONE VALVES

Z200/Z300 SERIES

3

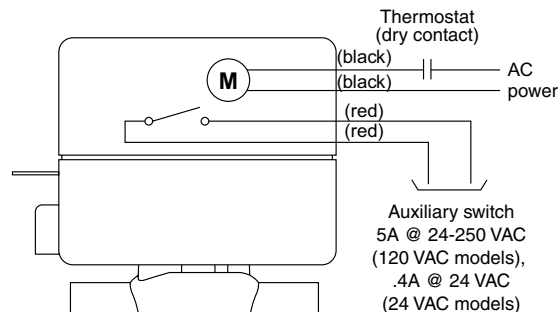
CONTROL VALVES

DIMENSIONS

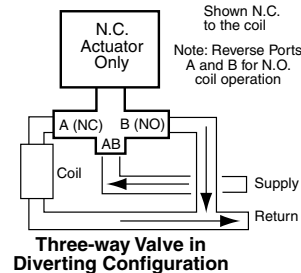
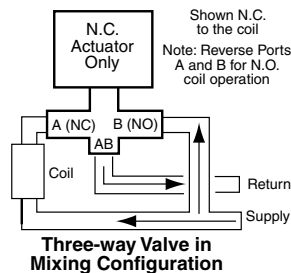
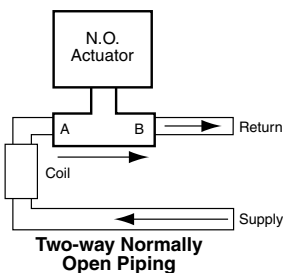
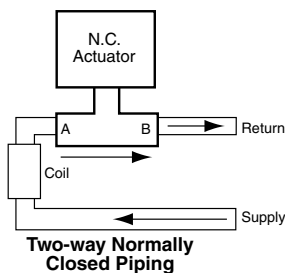


CONNECTION SIZE/TYPE	A	B	C	D	E
1/2" Sweat	1.3 (3.4)	2.6 (6.6)	0.9 (2.4)	1.3 (3.4)	3.5 (8.9)
3/4" Sweat	1.4 (3.5)	2.75 (7.0)	0.9 (2.4)	1.5 (3.8)	3.5 (8.9)
1" Sweat	1.7 (4.3)	3.4 (8.6)	0.9 (2.4)	1.6 (3.9)	3.7 (9.3)
1 1/4" Sweat	1.8 (4.6)	3.6 (9.2)	0.9 (2.4)	1.7 (4.3)	3.7 (9.3)
1/2" NPT	1.4 (3.6)	2.9 (7.2)	0.9 (2.4)	1.25 (3.2)	3.5 (8.9)
3/4" NPT	1.6 (3.9)	3.7 (9.3)	0.9 (2.4)	1.25 (3.2)	3.7 (9.3)
1" NPT	1.8 (4.6)	3.6 (9.2)	0.9 (2.4)	1.7 (4.3)	3.7 (9.3)

WIRING



PIPING



ORDERING INFORMATION

VALVE

MODEL	DESCRIPTION
Z200	Two-way
Z300	Three-way (requires N.C. actuator)
CONNECTION SIZE	
4	1/2"
5	3/4"
6	1"
7	1-1/4" (sweat connection only)
CONNECTION TYPE	
1	NPT
3	Sweat
CV RATING	
1	1.0 (1/2" only)
2	2.5 (1/2", 3/4")
3	3.5 (1/2", 3/4")
5	5.0 (3/4", 1")
7	7.5-8.0 (3/4", 1", 1-1/4")*

Z200 - 5 - 1 - 2

Example: Z200-512 Two-way, 3/4" NPT, Cv = 2.5

Note: Above combinations are regularly stocked at Kele. Valves are also available with BSP, inverted flare, and SAE flare connections; consult Kele for pricing and availability.

* 1-1/4" size only available with sweat connections.

ACTUATOR

MODEL	DESCRIPTION
Z1	Two-position spring return
FUNCTION	
1	N.C. with end switch, two- or three-way
2	N.C. without end switch, two- or three-way
3	N.O. with end switch, two-way only
4	N.O. without end switch, two-way only
VOLTAGE	
1000	24 VAC, 8" wire
3000	208 VAC, 6" wire
4000	230 VAC, 6" wire
5000	277 VAC, 6" wire
6000	120 VAC, 6" wire

Z1 - 2 - 3000 Example: Z123000 Normally closed, two-position, spring return, 208 VAC

To order a valve/actuator assembly, append the valve number with the actuator number, separated by a dash. Example: Z200512-Z122000 is a two-way, 3/4" NPT, Cv = 2.5 valve with a normally closed, two-position, spring return, 120 VAC actuator pre-assembled by Kele.

Other models available from Caleffi. Call Kele for more information.

NEW!



DESCRIPTION

The Kele **KVC Series** includes two- and three-way, hot and chilled water control valves and fail-in-place or power-fail return electric actuators. The unique cartridge design enables the valve to be piped mixing or diverting for the three-way valve, and either flow direction for the two-way valve. The actuator uses a unique twist-off mount for easy installation or servicing and is available with two-position, floating, or proportional control signals.

FEATURES

- **Three-way mixing and diverting in one body**
- **Two-way bi-directional flow for simple installation**
- **Linear flow characteristics**
- **Easily replaceable seat cartridge**
- **Twist-on low power/long life actuator**
- **Manual override**
- **Fail-in-place or power-fail return actuator models**
- **Selectable power fail return direction models**



KVC 2100N66 valve with
KVC 6936 actuator



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CONTROL VALVES

SPECIFICATIONS

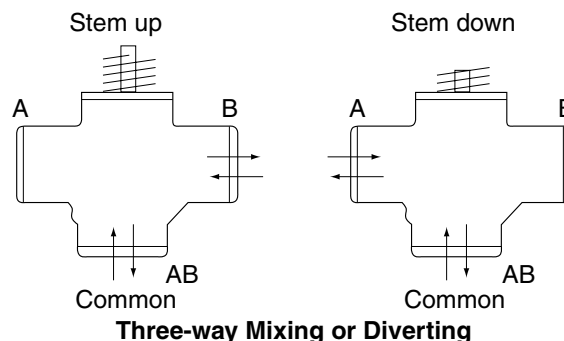
Size	1/2", 3/4", 1-1/4", 1"
Cv	0.7, 4.7, 0.7, 2.9, 4.7, 8.7
Connections	FNPT
Body Pattern	2-Way, 3-Way
Flow Characteristic	Linear
Maximum Closeoff Pressure	60 psid (414 kPa)
Pressure Rating	300 psig (2069 kPa)
Materials Of Construction	Bronze valve body, stainless steel stem, Ryton® and Noryl® trim, Noryl® and Ryton® plastic actuator housing
Media Compatibility	Hot water, chilled water
Media Temperature Range	34° to 203°F (1° to 95°C)
Supply Voltage	24 VAC, 50/60 Hz
Supply VA	6 VA
Control Signal	Two-position, floating, or proportional
Wiring	39" (99 cm) cable, 20 AWG conductors
Action	
2-way	Stem spring up on actuator removal, stem up to close (bi-directional flow)
3-way	Stem spring up on actuator removal, stem up closes port A, stem down closes port B
Connector	Twist-lock mount with latch
Manual Override	Combination override lever and position indicator
Stroke Time	
KVCx114	6 seconds
KVCx93x	120 seconds
Weight	
KVC2050	1.2 lb (.54 kg)
KVC2075	1.8 lb (.80 kg)
KVC2100	2.1 lb (.95 kg)
KVC2125	2.2 lb (1.0 kg)
KVC3050	1.4 lb (.61 kg)
KVC3075	1.5 lb (.68 kg)
KVC3100	1.6 lb (.70 kg)
KVCxxx4	0.9 lb (.39 kg)
KVCxxx6	1.1 lb (.50 kg)
Approvals	UL, CSA Listed, CE Certified
Warranty	1 year

TABLE 1. KVC REPLACEMENT CARTRIDGES

CARTRIDGE MODEL NO.	BODY PATTERN	VALVE SIZE AND CV			
		1/2"	3/4"	1"	1-1/4"
VCZZ1100	Two-way	3.2	4.7	6.6	7.1
VCZZ1400		2.9	3.9	4.2	4.3
VCZZ1500		0.7	0.8	0.8	0.8
VCZZ1600		1.3	1.5	1.5	1.5
VCZZ6100	Three-way	3.8	6.6	8.7	8.7

Note: **1000 Series** cartridges fit all two-way bodies.
6000 Series cartridges fit all three-way bodies.
Cartridge tool included with each cartridge.

THREE-WAY VALVE FLOW CHARACTERISTICS





CONTROL VALVES

ZONE VALVES KVC SERIES

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CONTROL VALVES

DIMENSIONS

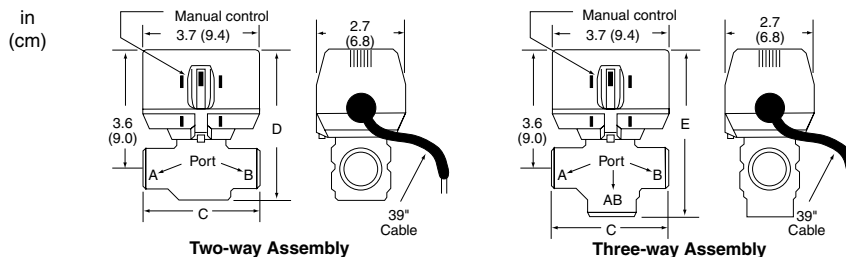
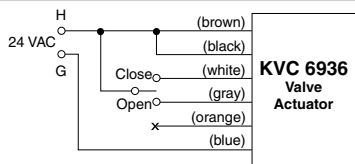


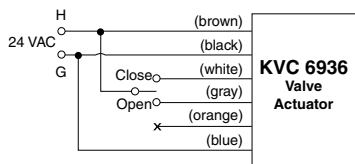
TABLE 2. SPECIFICATIONS AND DIMENSIONS

VALVE NUMBER	SIZE	PORT	BODY	Cv	C in (cm)	D in (cm)	E in (cm)
KVC2050N07	1/2"	two-way	FNPT	0.7	3.87 (9.8)	4.37 (11.1)	—
KVC2050N13	1/2"	two-way	FNPT	1.3	3.87 (9.8)	4.37 (11.1)	—
KVC2050N29	1/2"	two-way	FNPT	2.9	3.87 (9.8)	4.37 (11.1)	—
KVC2050N32	1/2"	two-way	FNPT	3.2	3.87 (9.8)	4.37 (11.1)	—
KVC2075N47	3/4"	two-way	FNPT	4.7	3.7 (9.4)	4.45 (11.3)	—
KVC2100N66	1"	two-way	FNPT	6.6	3.7 (9.4)	4.45 (11.3)	—
KVC2125N71	1-1/4"	two-way	FNPT	7.1	4.3 (11.0)	4.6 (11.8)	—
KVC3050N37	1/2"	three-way	FNPT	3.7	3.7 (9.4)	—	5.34 (13.6)
KVC3075N66	3/4"	three-way	FNPT	6.6	3.7 (9.4)	—	5.12 (13.0)
KVC3100N87	1"	three-way	FNPT	8.7	3.7 (9.4)	—	5.35 (13.6)
KVC3125N92	1-1/4"	three-way	FNPT	9.2	4.3 (11.0)	—	5.6 (14.2)

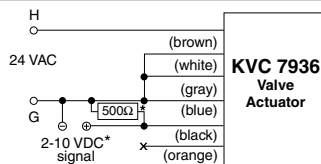
WIRING



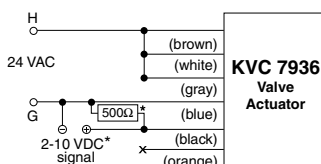
Power-Fail Close Port A



Power-Fail Open Port A

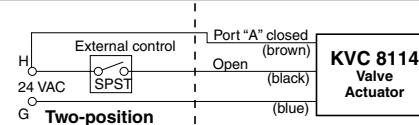


Power-Fail Open Port A

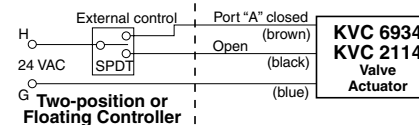


Power-Fail Close Port A
(see table 3 above)

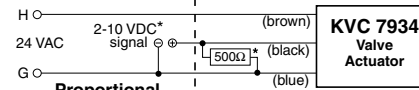
* Use 500Ω resistor when signal is 4-20 mA



Two-position



Two-position or
Floating Controller



Proportional

* Use 500Ω resistor when signal is 4-20 mA

ORDERING INFORMATION

MODEL

KVC8114
KVC2114
KVC6934
KVC6936
KVC7934
KVC7936

DESCRIPTION

Two-position, three-wire SPST control, six-second timing actuator
Two-position, three-wire SPDT control, six-second timing actuator
Three-wire floating control, 120-second timing actuator
Three-wire floating control, 120-second timing power-fail return actuator
Proportional 2-10 VDC control, 120-second timing actuator
Proportional 2-10 VDC control, 120-second timing power-fail return actuator

RELATED PRODUCTS

SSTAG

Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order



SIEMENS

DESCRIPTION

The **599 Series** zone valves work with any SFA/P Series or SSA/P Series electric actuator. The actuators provide two-position, three-position or 0-10 VDC control. Typical applications include hot or chilled water for zones with radiators, floor heating via manifolds, fan coil units, cooling ceilings, wall-mounted boilers, and VAV applications.

FEATURES

- **Direct-coupled universal bonnet**
- **Direct-coupled installation without tools**
- **Manual override with hex wrench**
- **Visual position indication**



Two-way

Three-way



3

CONTROL VALVES

SPECIFICATIONS			
Size	1/2", 3/4", 1"	Stroke Time	Two-position actuators: 35 seconds; three-position (floating) actuators: 150 seconds; proportional (0-10 VDC) actuators: 34 seconds
Cv Range	1, 2.5, 4, 4.1, 7	Operating Temperature	41° to 122°F (5° to 50°C)
Stroke	0.1" (2.5 mm)	Operating Humidity	0 to 90% RH non-condensing
Body Pattern	2-way, 3-way diverting	Weight	Two-position actuators: 1.2 lb (0.54 kg); three-position (floating) actuators: 0.5 lb (0.25 kg); proportional (0-10 VDC) actuators: 0.5 lb (0.25 kg)
Flow Characteristic	Linear	Enclosure Rating	NEMA 1 (indoor only)
Leakage Rating	ANSI Class III (0.1% of rated capacity)	Approvals	CE, EMC directive 89/336/EEC, 73/23/EEC low voltage; UL873, cUL Certified to Canadian Standard C22.2 No. 24-93
Body Rating	ANSI Class 125	Warranty	2 years
Media Temperature Range	34° to 230°F (1° to 110°C)		
Supply Voltage	24 VAC ±20%, 120 VAC ±20%, 50/60 Hz		
Supply VA	Two-position actuators: 9.8 VA; three-position (floating) actuators: 0.8 VA; proportional (0-10 VDC) actuators: 2.5 VA		
Control Signal	Two-position, three-position (floating), and 0-10 VDC proportional		
Action	Two-way valves are stem-up-to-open; three-way valves are diverting; normal position is determined by choice of actuator		

DIMENSIONS										
in (cm)										
	Valve Line Size	H1		H		W1		W		
		2-way	3-way	2-way	3-way	2-way	3-way	2-way	3-way	
SR	0.5 (1.5)	4.38 (11.2)	4.38 (11.2)	12.38 (31.5)	12.38 (31.5)	4.38 (11.2)	4.38 (11.2)	12.38 (31.5)	12.38 (31.5)	
	0.75 (2)	4.38 (11.2)	4.38 (11.2)	12.38 (31.5)	12.38 (31.5)	4.38 (11.2)	4.38 (11.2)	12.38 (31.5)	12.38 (31.5)	
	1 (2.5)	4.38 (11.2)	4.38 (11.2)	12.38 (31.5)	12.38 (31.5)	4.38 (11.2)	4.38 (11.2)	12.38 (31.5)	12.38 (31.5)	
NSR	0.5 (1.5)	4.26 (10.8)	4.26 (10.8)	12.26 (31.1)	12.26 (31.1)	3.26 (8.3)	3.26 (8.3)	11.26 (28.6)	11.26 (28.6)	
	0.75 (2)	4.26 (10.8)	4.26 (10.8)	12.26 (31.1)	12.26 (31.1)	3.26 (8.3)	3.26 (8.3)	11.26 (28.6)	11.26 (28.6)	
	1 (2.5)	4.26 (10.8)	4.26 (10.8)	12.26 (31.1)	12.26 (31.1)	3.26 (8.3)	3.26 (8.3)	11.26 (28.6)	11.26 (28.6)	



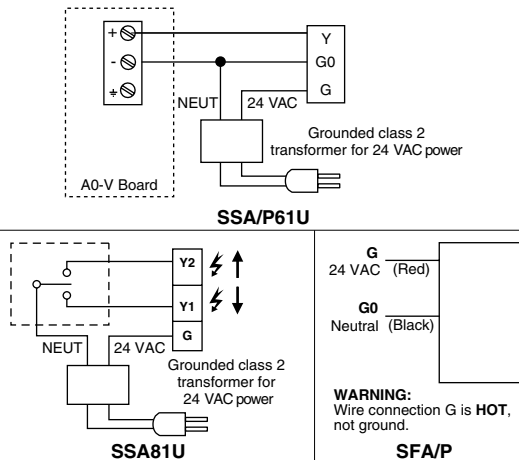
CONTROL VALVES

ZONE VALVES 599 SERIES

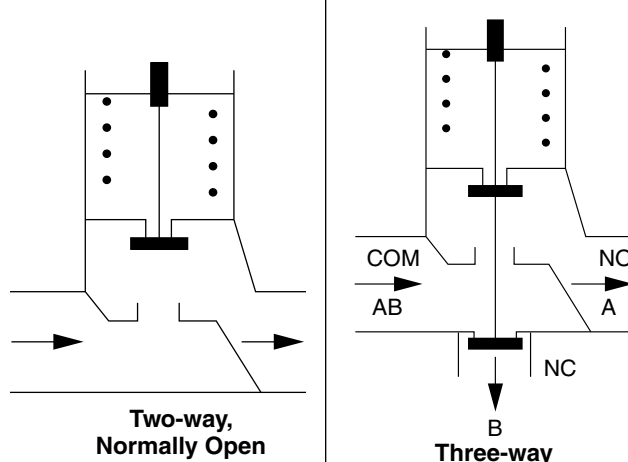
3

CONTROL VALVES

WIRING



FLOW



ORDERING INFORMATION

2-Way	Line Size		Close Off		Flow Rate		Valve Body Only	120 VAC		24 VAC					
								Spring Return		Spring Return		Non-Spring Return			
								2 position		2-Position		3-position	0 to 10 VDC Modulating		
								Normally Closed	Normally Open	Normally Closed	Normally Open	Normally Closed	Normally Closed	Normally Open	
								SFA11U*	SFP11U*	SFA71U*	SFP71U*	SSA81U*	SSA61U*	SSP61U*	
NPT	Inch	cm	psi	kPa	Cv	Kvs		Actuator Code 240	Actuator Code 241	Actuator Code 242	Actuator Code 243	Actuator Code 244	Actuator Code 245	Actuator Code 248	
	0.5	1.5	44	303	1	0.85	599-00210	240-00210	241-00210	242-00210	243-00210	244-00210	245-00210	248-00210	
	0.5	1.5	44	303	2.5	2	599-00211	240-00211	241-00211	242-00211	243-00211	244-00211	245-00211	248-00211	
	0.5	1.5	44	303	4	3.4	599-00214	240-00214	241-00214	242-00214	243-00214	244-00214	245-00214	248-00214	
	0.75	2	44	303	4.1	3.5	599-00212	240-00212	241-00212	242-00212	243-00212	244-00212	245-00212	248-00212	
	1	2.5	22	152	7	6	599-00213	240-00213	241-00213	242-00213	243-00213	244-00213	245-00213	248-00213	
	0.5	1.5	44	303	1	0.85	599-00510	240-00510	241-00510	242-00510	243-00510	244-00510	245-00510	248-00510	
	0.5	1.5	44	303	2.5	2	599-00511	240-00511	241-00511	242-00511	243-00511	244-00511	245-00511	248-00511	
Sweat	0.5	1.5	44	303	4	3.4	599-00514	240-00514	241-00514	242-00514	243-00514	244-00514	245-00514	248-00514	
	0.75	2	44	303	4.1	3.5	599-00512	240-00512	241-00512	242-00512	243-00512	244-00512	245-00512	248-00512	
	1	2.5	22	152	7	6	599-00513	240-00513	241-00513	242-00513	243-00513	244-00513	245-00513	248-00513	

3-Way	Line Size		Close Off		Flow Rate		Valve Body Only	120 VAC		24 VAC					
								2 position		2-Position		3-position	0 to 10 VDC Modulating		
								SR AB → B	SR AB → A	SR AB → B	SR AB → A	Non-Spring Return	Non-Spring Return		
								SFA11U*	SFP11U*	SFA71U*	SFP71U*	SSA81U*	SSA61U*	SSP61U*	
	Inch	cm	psi	kPa	Cv	Kvs		Actuator Code 240	Actuator Code 241	Actuator Code 242	Actuator Code 243	Actuator Code 244	Actuator Code 245	Actuator Code 246	
NPT	0.5	1.5	44	303	1	0.85	599-00230	240-00230	241-00230	242-00230	243-00230	244-00230	245-00230	248-00230	
	0.5	1.5	44	303	2.5	2	599-00231	240-00231	241-00231	242-00231	243-00231	244-00231	245-00231	248-00231	
	0.5	1.5	44	303	4	3.4	599-00234	240-00234	241-00234	242-00234	243-00234	244-00234	245-00234	248-00234	
	0.75	2	44	303	4.1	3.5	599-00232	240-00232	241-00232	242-00232	243-00232	244-00232	245-00232	248-00232	
Sweat	1	2.5	22	152	7	6	599-00233	240-00233	241-00233	242-00233	243-00233	244-00233	245-00233	248-00233	
	0.5	1.5	44	303	1	0.85	599-00530	240-00530	241-00530	242-00530	243-00530	244-00530	245-00530	248-00530	
	0.5	1.5	44	303	2.5	2	599-00531	240-00531	241-00531	242-00531	243-00531	244-00531	245-00531	248-00531	
	0.5	1.5	44	303	4	3.4	599-00534	240-00534	241-00534	242-00534	243-00534	244-00534	245-00534	248-00534	
	0.75	2	44	303	4.1	3.5	599-00532	240-00532	241-00532	242-00532	243-00532	244-00532	245-00532	248-00532	
	1	2.5	22	303	7	6	599-00533	240-00533	241-00533	242-00533	243-00533	244-00533	245-00533	248-00533	

*Actuator only

Example: A 240-00210 is a 599-00210 valve body and SFA11U actuator assembly.
The valve and actuator can also be ordered separately.

RELATED PRODUCTS

SSTAG

Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order



DESCRIPTION

The Spartan **V200** two-way and **V300** three-way zone valve product line is a complete offering in zone valves with a wide variety of connection sizes and types, and a wide selection of actuators, including electric, thermostatic, thermo-electric, and pneumatic. All the valve bodies are interchangeable with all the actuators for complete flexibility and easy selection.

FEATURES

- Valves are fully interchangeable with all actuators
- Complete selection of NPT/Sweat/Union fittings
- Electric, thermostatic, thermo-electric and pneumatic actuators
- Interchangeable cartridges for multiple Cvs
- Full service from the top of the valve body



3

CONTROL VALVES

SPECIFICATIONS			
Size	1/2", 3/4", 1"	Control Signal	OT-11, -21, -51: thermostatic, modulating, temperature up = stem down MP-5100: pneumatic, SR, 3-6 psi modulating or 2-position MP-5300: pneumatic, SR, 7-11 psi modulating or 2-position ME-16, -17: 2-position, SR, two-wire, wax technology, can be pulsed ME-44, -45: 2-position, SR two-wire ME-4640: floating, SR ME-4740: PWM, SR, 0.2 to 5 second pulse, 5 seconds full stroke ME-48, -49: proportional, SR, 2-10/10-2 VDC or 4-20 mA ME-4140: floating, NSR, triac or low energy gold contacts ME-4240: PWM, NSR ME-4340: proportional, NSR, 2-10 VDC ME-46, -47: 2 kΩ ME-48, -49: 200 kΩ ME-41, -42: 2 kΩ ME-4340: 200 kΩ ME-16, -17: 40" (100 cm) leads ME-44, -45: 4" (10 cm) leads ME-46, -47, -48, -49: 32" plenum-rated cable ME-41, -42, -43: 32" plenum-rated cable Cartridges spring return valve stem up; valve body designs are either stem-up-to-open (SUTO) or stem-up-to-close (SUTC); spring return actuators available in fail-stem-up or fail-stem-down
Cv Range	0.15 to 9.0	Input Impedance	
Connections	NPT, solder, union	Wiring	
Stroke	2-way valves: 0.16" (4.0 mm) 3-way valves: 0.11" (2.8 mm)	Action	
Life Expectancy	1.5 million cycles, 3 million full strokes	(Continued on next page)	
Body Pattern	2-way, 3-way diverting (mixing OK if pressure drop <5 psid)		
Leakage Class	ANSI Class III (0.1%)		
Body Rating	ANSI 250 (400 psi @ 150°F, 250 psi @ 250°F), PN16		
Maximum Closeoff Pressure	OT-11, -21, -51: 30 psid (207 kPa); all others 45 psid (311 kPa); EB cartridges 100 psid (689 kPa)		
Materials Of Construction	Low zinc bronze valve body alloy C84400, stainless steel stem and spring, integral bronze seat, EPDM/brass disc/plunger, double EPDM o-rings		
Media Compatibility	Hot and chilled water, up to 50% glycol; 15 psig (103 kPa) steam (1" valve not rated for steam)		
Media Temperature Range	250°F (120°C) maximum media temperature		
Supply Voltage	ME-16, -17: 24 VAC, 50/60 Hz ME-4430, -4530: 24 VAC, 50/60 Hz ME-4431, -4531: 110 VAC, 50/60 Hz ME-46, -47, -48, -49: 24 VAC, 50/60 Hz ME-41, -42, -43: 24 VAC, 50/60 Hz ME-44, -45, -46, -47, -48, -49: 8 VA ME-16, -17: 2W holding, 5W running ME-41, -42, -43: 1W		
Supply VA			
Supply Watts			



CONTROL VALVES

ZONE VALVES

V200, V300 SERIES

3

CONTROL VALVES

SPECIFICATIONS (continued)

Actuator Compatibility

All actuators: compatible with all valve bodies (exception: V222 valves use MP actuators only)

Actuator Mounting

Air Connections

Knurled mounting ring, hand tighten
Brass barbs for 5/32" or 1/4" OD flexible tubing (MP actuators, maximum 60 psig)

Dimensions

OT-11, -21, -51: 3.4"H x 2.4" Dia.
(8.6 x 6.0 cm)
MP-51, -53: 2.5"H x 3.1" Dia.
(6.4 x 7.8 cm)
ME-16, -17: 3.1"H x 1.8"W x 1.8"D
(7.9 x 4.6 x 4.6 cm)
ME-44, -45: 3.5"H x 2.8"W x 2.5"D
(8.9 x 7.1 x 6.3 cm)
ME-46, -47, -48, -49: 3.5"H x 3.0"W x 3.5"D
(8.9 x 7.6 x 8.9 cm)
ME-41, -42, -43: 3.1"H x 2.5"W x 3.3"D
(7.9 x 6.4 x 8.5 cm)

Drive Time

OT-11, -21, -51: variable
MP-51, -53: variable
ME-16, -17: <5 minutes
ME-44, -45: 10 seconds;
ME-46, -47, -48, -49: 60 seconds drive, 25 seconds spring
ME-41, -42: 90 seconds
ME-4340: 60 seconds

Enclosure Rating

Feedback

NEMA 1 (IP20)
ME-46, -47, -48, -49: 1-5 VDC, 100 k Ω impedance
ME-41, -42, -43: 1-5 VDC, 33 k Ω impedance

Manual Override

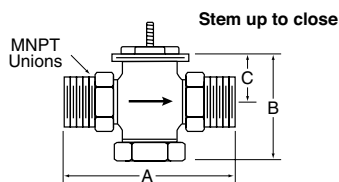
Operating Temperature

ME-16, -17 actuators only
OT-11, -21, -51: 40° to 85°F (4° to 29°C)
MP-51, -53: 41° to 122°F (5° to 50°C)
ME-16, -17: 46° to 122°F (8° to 50°C)
ME-44, -45: 41° to 122°F (5° to 50°C)
ME-46, -47, -48, -49: 32° to 122°F (0° to 50°C)
ME-41, -42, -43: 40° to 122°F (5° to 50°C)
OT-11, -21, -51: 40° to 85°F (4° to 29°C)
V222-12, -34: 1.5 lb (.68 kg)
V241-12: .60 lb (.27 kg)
V241-34: 1.0 lb (.45 kg)
V243-12: .55 lb (.25 kg)
V243-34: .75 lb (.34 kg)
V243-10: 2.1 lb (.95 kg)
V245-12: .50 lb (.23 kg)
V245-34: .70 lb (.32 kg)
V320-12: .95 lb (.43 kg)
V320-34: 1.0 lb (.45 kg)
V345-10: 2.1 lb (.95 kg)
V325-12: .60 lb (.27 kg)
V325-34: .80 lb (.35 kg)
OT-1100: .30 lb (.14 kg)
MP-51, -53: .40 lb (.18 kg)
ME-16, -17: .30 lb (.14 kg)
ME-44, -45: .75 lb (.34 kg)
ME-46, -47, -48, -49: .95 lb (.43 kg)
ME-41, -42: .55 lb (.25 kg)
CE
Valves: 5 years;
Actuators: 2 years

Setpoint Range Weight

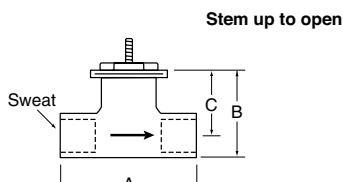
Approvals Warranty

DIMENSIONS - in (cm)



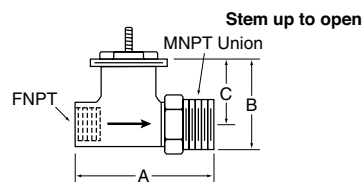
	A	B	C
V222-12	4.3 (10.9)	2.4 (6.2)	1.1 (2.8)
V222-34	5.2 (13.2)	2.4 (6.2)	1.1 (2.8)

MP actuator only



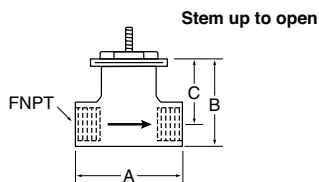
	A	B	C
V245-12	2.2 (5.9)	1.6 (4.1)	1.1 (2.8)
V245-34	2.3 (5.8)	1.6 (4.1)	1.1 (2.8)

Mounts to any Spartan actuator



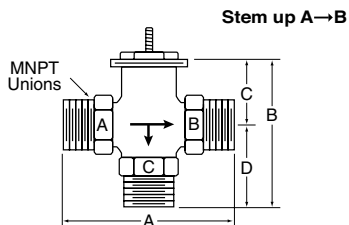
	A	B	C
V241-12	3.3 (8.4)	1.6 (4.1)	1.1 (2.8)
V241-34	3.8 (9.6)	2.2 (5.6)	1.1 (2.8)

Mounts to any Spartan actuator



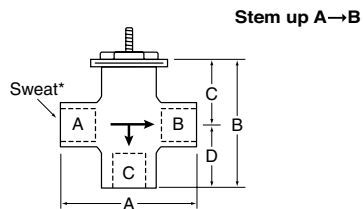
	A	B	C
V243-12	2.3 (5.8)	1.6 (4.1)	1.1 (2.8)
V243-34	2.7 (6.9)	2.2 (5.6)	1.1 (2.8)
V243-10	3.9 (9.9)	2.8 (7.1)	1.8 (4.6)

Mounts to any Spartan actuator



	A	B	C	D
V320-12	4.3 (10.8)	3.2 (8.1)	1.1 (2.8)	2.1 (5.3)
V320-34	5.2 (13.2)	3.7 (9.4)	1.1 (2.8)	2.6 (6.6)
V345-10	6.2 (15.8)	4.6 (11.7)	1.5 (4.0)	3.1 (7.9)

Mounts to any Spartan actuator



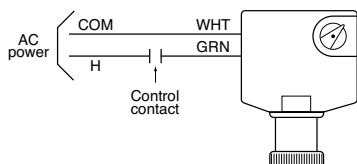
	A	B	C	D
V325-12	3.0 (7.7)	2.6 (6.7)	1.1 (2.8)	1.5 (3.8)
V325-34	2.2 (5.7)	2.2 (5.7)	1.1 (2.8)	1.1 (2.8)

* V325-12 is the same valve body as V325-34 (3/4"); it has inserts for 1/2" sweat.

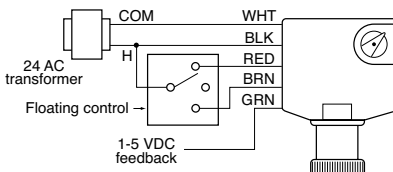
Mounts to any Spartan actuator



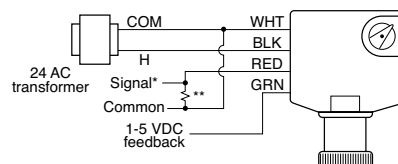
ELECTRICAL ACTUATOR WIRING



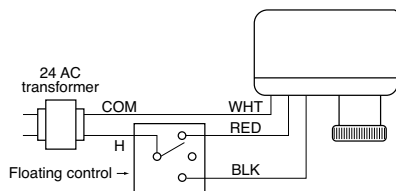
Two-position Spring Return Actuators
(ME-4430, -4431, -4530, -4531)



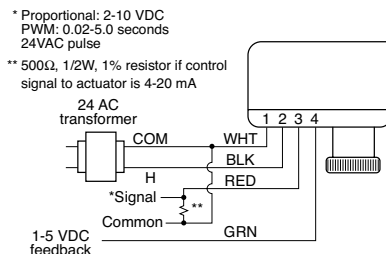
Floating Spring Return Actuator
(ME-4640)



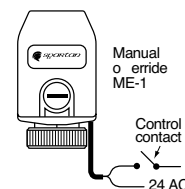
* Proportional: 2-10 VDC
PWM: 0.02-5.0 seconds 24 AC pulse
** 500Ω, 1/2W, 1% resistor if control signal to actuator is 4-20 mA
PWM and Proportional Spring Return Actuators
(ME-4740, -4840, -4940)



Floating Non-Spring Return Actuators
(ME-4140, -4142)



* Proportional: 2-10 VDC
PWM: 0.02-5.0 seconds 24VAC pulse
** 500Ω, 1/2W, 1% resistor if control signal to actuator is 4-20 mA
Proportional and PWM Non-Spring Return Actuator
(ME-4240, -4340)



Two-position Wax Actuators
(ME1605, ME1705)

ORDERING INFORMATION

Valve Model No.	Cv	Description
V222-12-ER1.0	1.0	1/2", 2W, SUTC, MNPT unions (MP actuators only)*
V222-12-ER2.0	2.0	
V222-12-ER3.0	3.0	
V222-34-ER1.0	1.0	3/4", 2W, SUTC, MNPT unions (MP actuators only)*
V222-34-ER2.0	2.0	
V222-34-ER3.0	3.0	
V241-12-BC0.15	0.15	1/2", 2W, SUTO, FNPT X MNPT union (Change "-EPxxx" to "-EVxxx" for steam applications)
V241-12-BC0.25	0.25	
V241-12-EP0.5	0.5	
V241-12-EP1.0	1	
V241-12-EP1.5	1.5	
V241-12-EP2.0	2	
V241-12-EP2.5	2.5	
V241-12-EP3.0	3	
V241-12-EP3.5	3.5	
V241-34-EP1.0	1	
V241-34-EP1.5	1.5	3/4", 2W, SUTO, FNPT X MNPT union (Change "-EPxxx" to "-EVxxx" for steam applications)
V241-34-EP2.0	2	
V241-34-EP2.5	2.5	
V241-34-EP4.5	4.5	
V243-12-BC0.15	0.15	1/2", 2W, SUTO, FNPT (Change "-EPxxx" to "-EVxxx" for steam applications)
V243-12-BC0.25	0.25	
V243-12-EP0.5	0.5	
V243-12-EP1.0	1	
V243-12-EP1.5	1.5	
V243-12-EP2.0	2	
V243-12-EP2.5	2.5	
V243-12-EP3.0	3	
V243-12-EP3.5	3.5	
V243-34-EP1.0	1	
V243-34-EP1.5	1.5	3/4", 2W, SUTO, FNPT (Change "-EPxxx" to "-EVxxx" for steam applications)
V243-34-EP2.0	2	
V243-34-EP2.5	2.5	
V243-34-EP4.5	4.5	
V243-10-EB6.0	6	1", 2W, SUTO, FNPT (Use EV6.4 or EV9.0 for steam)
V243-10-EB6.4	6.4	
V243-10-EB8.0	8	
V243-10-EB9.0	9	
V245-12-BC0.15	0.15	1/2", 2W, SUTO, sweat (Change "-EPxxx" to "-EVxxx" for steam applications)
V245-12-BC0.25	0.25	
V245-12-EP0.5	0.5	
V245-12-EP1.0	1	
V245-12-EP1.5	1.5	1/2", 2W, SUTO, sweat (Change "-EPxxx" to "-EVxxx" for steam applications)
V245-12-EP2.0	2	
V245-12-EP2.5	2.5	
V245-12-EP3.0	3	
V245-12-EP3.5	3.5	

* Change "ER..." to "EV..." for steam applications

Valve Model No.	Cv	Description
V245-34-EP1.0	1	3/4", 2W, SUTO, sweat (Change "-EPxxx" to "-EVxxx" for steam applications)
V245-34-EP1.5	1.5	
V245-34-EP2.0	2	
V245-34-EP2.5	2.5	
V245-34-EP3.0	3	
V245-34-EP3.5	3.5	1/2", 3W, diverting valve, MNPT unions
V320-12-ED1.0	1.0	
V320-12-ED2.0	2.0	
V320-12-ED3.0	3.0	
V320-12-ED3.5	3.5	
V320-34-ED1.0	1.0	3/4", 3W, diverting valve, MNPT unions
V320-34-ED2.0	2.0	
V320-34-ED3.0	3.0	
V320-34-ED3.5	3.5	
V345-10-ED5.5	5.5	1", 3W, diverting valve, MNPT unions
V325-12-ED1.0	1.0	
V325-12-ED2.0	2.0	
V325-12-ED3.0	3.0	
V325-12-ED3.5	3.5	
V325-34-ED1.0	1.0	3/4", 3W, diverting valve, sweat (uses 3/4" → 1/2" bushing)
V325-34-ED2.0	2.0	
V325-34-ED3.0	3.0	
V325-34-ED3.5	3.5	

Actuator Model No.	Description
THERMO-ELECTRIC	
ME-1605	Two-position SR, two-wire, 24 VAC, wax, fail stem up
ME-1705	Two-position SR, two-wire, 24 VAC, wax, fail stem down
ELECTRIC	
ME-4140	Floating, NSR, 24 VAC with timeout
ME-4240	PWM 0.25-5 sec, NSR, 24 VAC
ME-4340	Proportional 2-10 VDC, NSR, 24 VAC
ME-4430	Two-position SR, two-wire, 24 VAC, fail stem up
ME-4431	Two-position SR, two-wire, 110 VAC, fail stem up
ME-4530	Two-position SR, two-wire, 24 VAC, fail stem down
ME-4531	Two-position SR, two-wire, 110 VAC, fail stem down
ME-4640	Floating, SR, 24 VAC, fail stem up
ME-4840	Proportional 2-10 VDC, SR, 24 VAC, fail stem up
ME-4940	Proportional 2-10 VDC, SR, 24 VAC, fail stem down
ME-4740	PWM 0.25-5 sec, SR, 24 VAC, fail stem up
SELF-CONTAINED THERMOSTATIC	
OT-1100	Valve mount thermostatic top 40° to 85°F (5° to 30°C)
OT-2100	6 -1/2" capillary, remote bulb 40° to 85°F (5° to 30°C)
OT-5100	6 -1/2" capillary, remote wall mount 40° to 85°F (5° to 30°C)
OM-1200	Locking cover for OT-1100
PNEUMATIC	
MP-5100	4 sq in actuator, modulating 3-6 psi spring, fail stem up
MP-5300	4 sq in actuator, modulating 7-11 psi spring, fail stem up



CONTROL VALVES

ZONE VALVES

V200, V300 SERIES

3

CONTROL VALVES

VALVE SELECTION CHART

Size/Connections	Flow Pattern (SUTO/C = stem up to open/close)	
	Two-way	Three-way
1/2" FNPT	V243 (SUTO)	—
3/4" FNPT		
1" FNPT		
1/2" sweat	V245 (SUTO)	V325
3/4" sweat		
1/2" unions/MNPT	V222 (SUTC) V240 (SUTO)	V320
3/4" unions/MNPT		
1" unions/MNPT		
1/2" FNPT x union/MNPT	V241 (SUTO)	—
3/4" FNPT x union/MNPT		

Note: Match valve stem action to the action of the actuator to achieve desired assembly action.

For example: a V243 (stem up to open) with an ME-4430 actuator (fail up) will be a normally open assembly. That valve with an ME-4530 would be normally closed.

ACTUATOR SELECTION CHART

Control	Fail Mode	
	Fail-in-Place	Spring Return
Two-position electric	—	ME-4430 (24V, fail up) ME-4431 (115V, fail up) ME-4530 (24V, fail down) ME-4531 (115V, fail down)
Floating electric	ME-4140 (with timeout) ME-4142 (with timeout)	ME-4640 (fail up)
PWM electric	ME-4240	ME-4740 (fail up)
Proportional electric	ME-4340	ME-4840 (fail up) ME-4940 (fail down)
Pneumatic	—	MP-5100 (3-6 psi, fail up) MP-5300 (7-11 psi, fail up)
Two-position thermo-electric	—	ME-1605 (fail up) ME-1705 (fail down)
Thermostatic	OT-1100 (valve mount) OT-2100 (remote bulb) OT-5100 (wall mount)	—

ACCESSORIES

MODEL	DESCRIPTION
BC0.15	Cartridge for two-way 1/2" or 3/4" SUTO; Cv = 0.15
BC0.25	Cartridge for two-way 1/2" or 3/4" SUTO; Cv = 0.25
EB6.0	Cartridge for two-way 1" SUTO; Cv = 6.0
EB6.4	Cartridge for two-way 1" SUTO; Cv = 6.4
EB8.0	Cartridge for two-way 1" SUTO; Cv = 8.0
EB9.0	Cartridge for two-way 1" SUTO; Cv = 9.0
ED1.0	Cartridge for three-way; Cv = 1.0
ED2.0	Cartridge for three-way; Cv = 2.0
ED3.0	Cartridge for three-way; Cv = 3.0
ED3.5	Cartridge for three-way; Cv = 3.5
EP0.5	Cartridge for two-way 1/2" or 3/4" SUTO; Cv = 0.5
EP1.0	Cartridge for two-way 1/2" or 3/4" SUTO; Cv = 1.0
EP1.5	Cartridge for two-way 1/2" or 3/4" SUTO; Cv = 1.5
EP2.0	Cartridge for two-way 1/2" or 3/4" SUTO; Cv = 2.0
EP2.5	Cartridge for two-way 1/2" or 3/4" SUTO; Cv = 2.5
EP3.0	Cartridge for two-way 1/2" or 3/4" SUTO; Cv = 3.0
EP3.5	Cartridge for two-way 1/2" or 3/4" SUTO; Cv = 3.5
EP4.5	Cartridge for two-way 1/2" or 3/4" SUTO; Cv = 4.5
EV1.5	Cartridge for steam Cv=1.5, for 2W 1/2" or 3/4" valve
EV2.0	Cartridge for steam Cv=2.0, for 2W 1/2" or 3/4" valve
EV0.5	Cartridge for steam Cv=0.5, for 2W 1/2" valve
EV2.5	Cartridge for steam Cv=2.5, for 2W 1/2" or 3/4" valve
EV3.5	Cartridge for steam Cv=3.5, for 2W 1/2" or 3/4" valve
EV4.5	Cartridge for steam Cv=4.5, for 2W 3/4" valve
EV1.0	Cartridge for steam Cv=1.0, for 2W 1/2" or 3/4" valve
EV6.4	Cartridge for steam Cv=6.4, for 2W 1" valve
EV9.0	Cartridge for steam Cv=9.0, for 2W 1" valve
EV3.0	Cartridge for steam Cv=3.0, for 2W 1/2" or 3/4" valve
AV-6112	1/2" union MNPT, for V320, 222
AV-6134	3/4" union MNPT, for V320, 222
AV-6312	1/2" union sweat, for V320, 222
AV-6334	3/4" union sweat, for V320, 222
AV07	Cartridge tool, 3/4" and 1/2" hex

CONTROL VALVES

MODULATING ZONE VALVES V5860 SERIES



DESCRIPTION

The **V5860 Series** valve is designed specifically for use in small hot water or chilled water applications. The **V5860** comes in two-way and three-way configurations in 1/2" and 3/4" FNPT. The wide selection of Cv's offer precise equal percentage control, which is ideal for fan coils, baseboards, and small AHUs. The field-mounted, non-spring return screw-on actuators offer easy installation and modulating control using floating or proportional signals.

FEATURES

- *Very small Cv's from 0.19 up to 4.9*
- *High quality plug-seat design for precise control*
- *Very quiet operation*
- *Floating or proportional control*
- *Non-spring return actuators*

Honeywell



V5863A1006/M7410F1000

M6410A1029

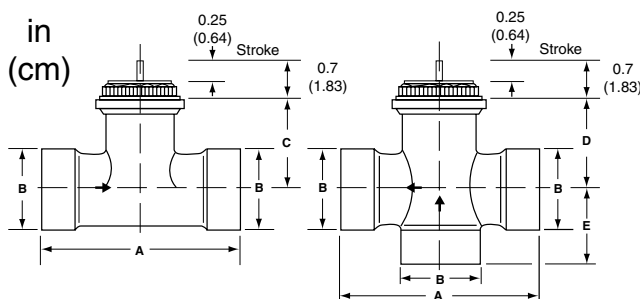
V5862A2013



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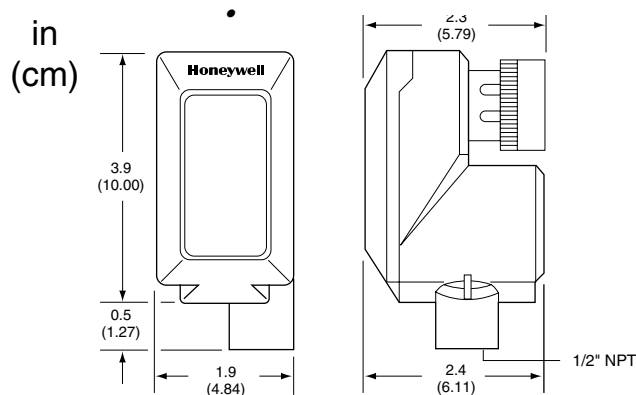
CONTROL VALVES

DIMENSIONS



DIMENSION					
PIPE SIZE	A	B	C	D	E
1/2	3	3/4	1-5/16	1-5/16	1-5/16
3/4	3-1/2	1	1-1/4	1-1/4	1-1/2

Valve



Actuator

INDIVIDUAL SPECIFICATIONS

Model	Size	Cv	Maximum Closeoff Pressure	Action	Weight
V5862A2005	1/2"	0.19	65 psid	Stem up on actuator removal, valve open	0.6 lb (.27 kg)
V5862A2013	1/2"	0.29	65 psid	Stem up on actuator removal, valve open	0.6 lb (.27 kg)
V5862A2021	1/2"	0.47	65 psid	Stem up on actuator removal, valve open	0.6 lb (.27 kg)
V5862A2039	1/2"	0.74	65 psid	Stem up on actuator removal, valve open	0.6 lb (.27 kg)
V5862A2047	1/2"	1.2	65 psid	Stem up on actuator removal, valve open	0.6 lb (.27 kg)
V5862A2054	1/2"	1.9	65 psid	Stem up on actuator removal, valve open	0.6 lb (.27 kg)
V5862A2062	3/4"	2.9	45 psid	Stem up on actuator removal, valve open	0.9 lb (.41 kg)
V5862A2070	3/4"	4.9	45 psid	Stem up on actuator removal, valve open	0.9 lb (.41 kg)
V5863A2004	1/2"	0.29	55 psid	Stem up on actuator removal, ports B-AB open	0.7 lb (.32 kg)
V5863A2012	1/2"	0.47	55 psid	Stem up on actuator removal, ports B-AB open	0.7 lb (.32 kg)
V5863A2020	1/2"	0.74	55 psid	Stem up on actuator removal, ports B-AB open	0.7 lb (.32 kg)
V5863A2038	1/2"	1.2	22 psid	Stem up on actuator removal, ports B-AB open	0.7 lb (.32 kg)
V5863A2046	1/2"	1.9	22 psid	Stem up on actuator removal, ports B-AB open	0.7 lb (.32 kg)
V5863A1006	3/4"	2.9	26 psid	Stem up on actuator removal, ports B-AB open	1.0 lb (.45 kg)
V5863A1014	3/4"	4.9	26 psid	Stem up on actuator removal, ports B-AB open	1.0 lb (.45 kg)
M6410A1029	NA	NA	NA	Drive open, drive closed, fail-in-place	1.0 lb (.45 kg)
M7410F1000	NA	NA	NA	Direct or reverse acting, switch selectable, fail-in-place	.55 lb (.25 kg)



CONTROL VALVES

MODULATING ZONE VALVES

V5860 SERIES

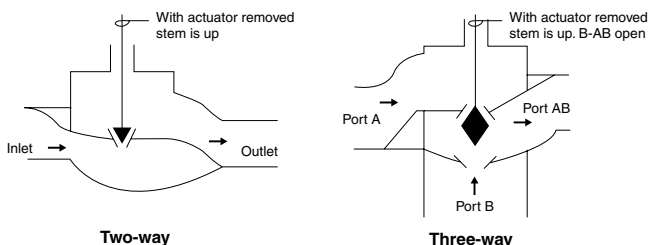
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CONTROL VALVES

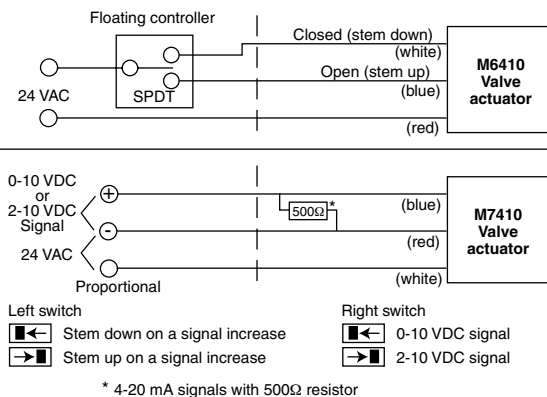
COMMON SPECIFICATIONS

Connections	FNPT
Stroke	1/4"
Body Pattern	2-Way, 3-Way mixing
Flow Characteristic	Equal Percentage (two-way), Linear (three-way)
Pressure Rating	230 psig (1586 kPa)
Materials Of Construction	Brass valve body and trim, stainless steel stem
Media Compatibility	Hot or chilled water, 50% maximum glycol
Media Temperature Range	36° to 230°F (2° to 110°C)
Supply Voltage	24 VAC, 50/60 Hz
Supply VA	0.7 VA (M6410), 1.4 VA (M7410)
Control Signal	Tri-state (floating) (M6410), 0/2-10 VDC or 4-20 mA (M7410)
Conduit Connection	1/2" FNPT hub
Wiring	4.9' (1.5 m) cable
Action	Stem up on actuator removal, valve open (B-AB open for 3-way)
Stroke Time	125 seconds @ 60 Hz, 150 seconds @ 50 Hz
Operating Temperature	32° to 140°F (0° to 60°C)
Enclosure Rating	UL Listed for plenum use, UL94-5V
Warranty	1 year

VALVE FLOW CHARACTERISTICS



WIRING



ORDERING INFORMATION

Model	Description	Maximum Closeoff Pressure	Weight
V5862A2005	1/2", 2W, NPT, Cv=0.19	65 psid	0.6 lb (0.27 kg)
V5862A2013	1/2", 2W, NPT, Cv=0.29	65 psid	0.6 lb (0.27 kg)
V5862A2021	1/2", 2W, NPT, Cv=0.47	65 psid	0.6 lb (0.27 kg)
V5862A2039	1/2", 2W, NPT, Cv=0.74	65 psid	0.6 lb (0.27 kg)
V5862A2047	1/2", 2W, NPT, Cv=1.2	65 psid	0.6 lb (0.27 kg)
V5862A2054	1/2", 2W, NPT, Cv=1.9	65 psid	0.6 lb (0.27 kg)
V5862A2062	3/4", 2W, NPT, Cv=2.9	45 psid	0.9 lb (0.41 kg)
V5862A2070	3/4", 2W, NPT, Cv=4.9	45 psid	0.9 lb (0.41 kg)
V5863A2004	1/2", 3W, NPT, Cv=0.29	55 psid	0.7 lb (0.32 kg)
V5863A2012	1/2", 3W, NPT, Cv=0.47	55 psid	0.7 lb (0.32 kg)
V5863A2020	1/2", 3W, NPT, Cv=0.74	55 psid	0.7 lb (0.32 kg)
V5863A2038	1/2", 3W, NPT, Cv=1.2	22 psid	0.7 lb (0.32 kg)
V5863A2046	1/2", 3W, NPT, Cv=1.9	22 psid	0.7 lb (0.32 kg)
V5863A1006	3/4", 3W, NPT, Cv=2.9	26 psid	1.0 lb (0.45 kg)
V5863A1014	3/4", 3W, NPT, Cv=4.9	26 psid	1.0 lb (0.45 kg)
M6410A1029	Two-position or tri-state (floating), 24 VAC, fail-in-place		1.0 lb (0.45 kg)
M7410F1000	Proportional (0/2-10 VDC, 4-20 mA), 24 VAC, fail-in-place		0.55 lb (0.25 kg)

SSTAG

RELATED PRODUCTS

Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order

CONTROL VALVES

MODULATING POPTOP™ ZONE VALVES VM SERIES



Schneider
Electric



DESCRIPTION

The **VM Series** Modulating PopTop™ Zone Valves offer a wide variety of Cv ranges and control signal options for hot and chilled water. The PopTop™ valves are designed with removable actuators with tri-state or proportional control and either non-spring or spring return action. The valves are available in two- and three-way body patterns, 1/2" to 1-1/4" sizes, and in NPT or sweat pipe connections. An optional motor timeout actuator is available for controllers that do not automatically turn off their signals after the full stroke of the valve.

FEATURES

- *Two- or three-way mixing body patterns*
- *Removable and replaceable actuator*
- *NPT or sweat connections*
- *Manual override*
- *Time-out option (tri-state actuator)*
- *Non-spring or spring return actuators*



AP23A000
with VM2313



VM2211



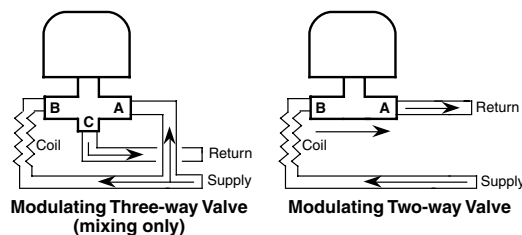
AT33A000



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CONTROL VALVES

PIPING



Note: Piping is the same for N.O. or N.C. type valves.
Normal (Open, Closed) position refers to flow through the coil.

SPECIFICATIONS

Size	1/2", 3/4", 1", 1-1/4"	Supply VA	1 VA (AT non-spring); 1.2 VA (AT w/ timeout); 1.7 VA (AP non-spring); 10 VA (AT/AP spring-return)
Cv Range	1.0 to 8.0	Control Signal	AT actuators: tri-state (floating); AP actuators: proportional (0-5, 0-10, 5-10 VDC or 4-20 mA) jumper selectable
Connections	FNPT, Sweat, or 1/2" SAE flare valve body connections	Input Impedance	200 kΩ (0-10 VDC); 300Ω (4-20 mA)
Flow Characteristic	Equal Percentage for Cv 1 to 4; linear for Cv 8.0	Wiring	Terminals
Leakage Rating	ANSI Class IV (0.01% of rated capacity)	Action	Two-way valves: N.O./N.C. determined by choice of actuator; three-way valves: use only N.C. actuator
Maximum Closeoff Pressure	Cv 1.0: 50 psid (344 kPa) Cv 2.0: 50 psid (344 kPa), 20 psid (137 kPa) spring return Cv 4.0: 35 psid (241 kPa), 20 psid (137 kPa) spring return Cv 8.0: 35 psid (241 kPa), 15 psid (103 kPa) spring return	Actuator Compatibility	AT (tri-state) or AP (proportional 0-10 VDC, 4-20 mA) type actuators only
Maximum Pressure Rating	300 psig (2067 kPa)	Actuator Mounting	PopTop®
Materials Of Construction	Brass valve body and seat, chrome-plated stem, thermoplastic plug; high-temperature plastic actuator housing	Drive Time	150 seconds @ 60 Hz
Media Compatibility	Hot or chilled water; 50% or less ethylene glycol	Spring Return Time	9 seconds maximum
Media Temperature Range	32° to 200°F (0° to 93°C)	Manual Override	Combination override lever and position indicator, all actuators
Supply Voltage	24 VAC ±15%, 50/60 Hz	Operating Temperature	Maximum ambient 125°F (52°C)
		Operating Humidity	5 to 95% RH non-condensing
		Weight	Valve plus actuator assembly, <1.9 lb (0.86 kg)
		Enclosure Rating	NEMA 1
		Approvals	UL873, File #E9429 Class 2; CUL Canadian Standards C22.2 No. 24; CE Approved; C-Tick
		Warranty	2 years



CONTROL VALVES

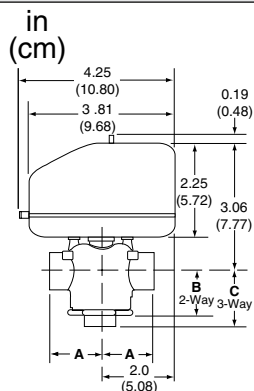
MODULATING POPTOP™ ZONE VALVES

VM SERIES

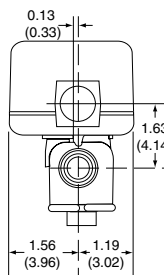
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CONTROL VALVES

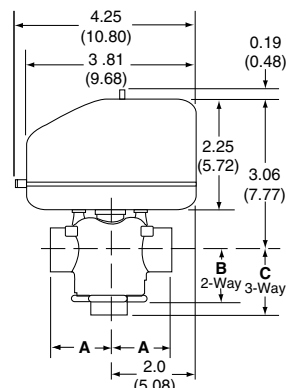
DIMENSIONS



Spring Return

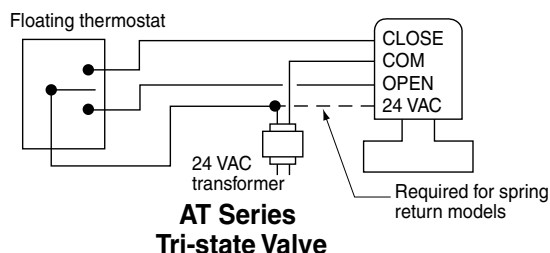


VALVE BODY SIZE	DIMENSIONS		
	A	B	C
1/2" sweat	1-5/16 (3.33)	15/16 (2.38)	1-5/16 (3.33)
3/4" NPT	1-3/8 (3.49)	15/16 (2.38)	1-11/16 (3.33)
1" sweat	1-11/16 (4.29)	15/16 (2.38)	1-11/16 (3.33)
1-1/4" sweat	1-7/8 (4.76)	1 (2.54)	1-13/16 (4.76)
1/2" NPT/BSP	1-2/8 (3.49)	15/16 (2.38)	1-5/16 (3.33)
3/4" NPT/BSP	1-11/16 (4.29)	15/16 (2.38)	1-7/16 (3.65)
1" NPT/BSP	1-7/8 (4.76)	1 (2.54)	1-11/16 (4.29)
1/2" SAE flare	4-9/16 (11.59)	5/16 (0.31)	2-1/4 (5.72)

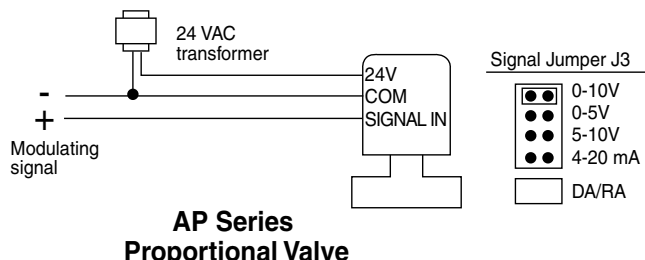


Non-Spring Return

WIRING



AT Series
Tri-state Valve



AP Series
Proportional Valve

ORDERING INFORMATION

VALVE

MODEL	DESCRIPTION
VM	Modulating PopTop electric valve
CONFIGURATION	
2	Two-way
3	Three-way
VALVE SIZE	
2	1/2"
3	3/4"
4	1"
5	1-1/4"
CONNECTION	
1	Sweat - 1/2", 3/4", 1", 1-1/4"
2	Threaded NPT - 1/2", 3/4", 1"
5	1/2" SAE flare
CV SIZE	
1	1.0 1/2"
2	2.0 1/2", 3/4"
3	4.0 1/2", 3/4", 1"
7	8.0 1", 1-1/4"

VM - 2 - 2 - 2 - 1 Example: VM2221

ACTUATOR

MODEL	DESCRIPTION
A	VM Series actuator
CONTROL	
T	Three-wire floating
P	Proportional, 0-10 VDC, 4-20 mA
ACTION	
1	Normally closed spring return*
2	Normally open spring return
3	Non-spring return
TEMPERATURE RATINGS	
3	General temperature only
VOLTAGE	
A	24 VAC only
LEADS	
00	No leads
TIMEOUT CONFIGURATION	
T	Time-out for AT models
0	No timeout for AT models
All AP models	

A - T - 3 - 3 - A - 00 - 0 Example: AT33A000

* Three-way valves are compatible only with N.C. actuators.
For N.O. simply turn the valve around.

BODY AND ACTUATOR REQUIREMENTS

Spring Return Action Configurations

Body Configuration

V X 3 X X X

2 = Two-way
3 = Three-way
If body configuration is 2, actuator action can be 1 or 2.
If body configuration is 3, actuator action must be 1.

Actuator Spring Return Mode

A X 1 X X X X

1 = Normally Closed
2 = Normally Open
If actuator action is 1, body configuration can be 2 or 3.
If actuator action is 2, body configuration must be 2.

CONTROL VALVES

TWO-POSITION POPTOP™ ZONE VALVES VT SERIES



DESCRIPTION

The **VT Series** Two-Position PopTop™ zone valves offer a wide range of models to handle chilled water, hot water, and 15 psig (103 kPa) steam applications. PopTop™ valves feature removable actuators to aid in both installation and service. They are available in 2-way and 3-way body patterns and with normally open or normally closed actuators.

FEATURES

- **Two- or three-way mixing/diverting body patterns**
- **Removable and replaceable actuator**
- **NPT, sweat, or inverted flare connections**
- **2-position spring return control**

Schneider
Electric



3

CONTROL VALVES



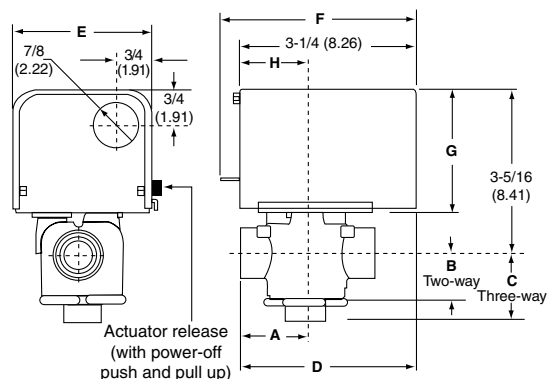
VT2221



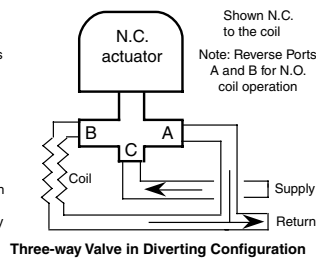
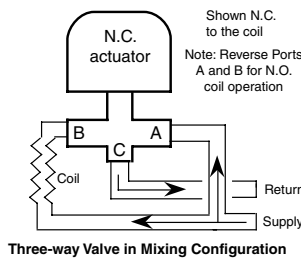
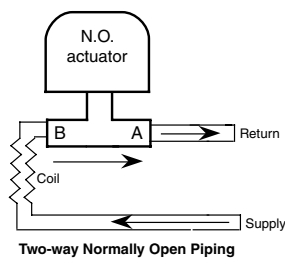
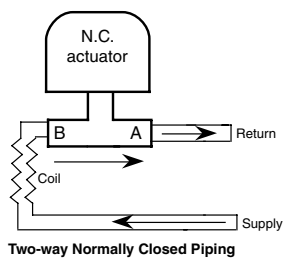
DIMENSIONS

in
(cm)

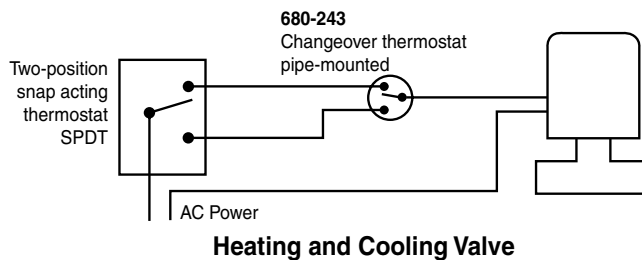
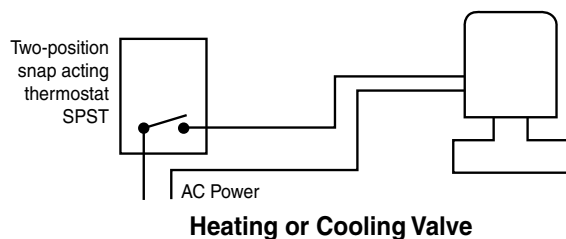
VALVE BODY SIZE	DIMENSIONS			
	A	B	C	D
1/2" Sweat	1-5/16 (3.33)	7/8 (2.22)	1-5/16 (3.33)	3-5/16 (8.41)
3/4" Sweat	1-3/8 (3.49)	7/8 (2.22)	1-11/16 (4.29)	3-3/8 (8.57)
1" Sweat	1-11/16 (4.29)	7/8 (2.22)	1-11/16 (4.29)	3-5/8 (9.21)
1/2" NPT	1-3/8 (3.49)	7/8 (2.22)	1-5/16 (3.33)	3-3/8 (8.57)
3/4" NPT	1-11/16 (4.29)	7/8 (2.22)	1-7/16 (3.65)	3-5/8 (9.21)
1" NPT	1-7/8 (4.76)	1 (2.54)	1-3/4 (4.45)	3-7/8 (9.84)
Inverted flare union	1-3/8 (3.49)	7/8 (2.22)	1-5/16 (3.33)	4-1/8 (10.48)
ACTUATOR	E	F	G	H
AG	2-3/8 (6.03)	3-11/16 (9.36)	2-3/8 (6.03)	1-1/4 (3.18)
AH	2-5/8 (6.67)	3-7/8 (9.84)	2-3/8 (6.03)	1-1/4 (3.18)



PIPING



WIRING





CONTROL VALVES

TWO-POSITION POPTOP™ ZONE VALVES

VT SERIES

3

CONTROL VALVES

SPECIFICATIONS

Size	1/2", 3/4", 1"	Supply Voltage	24 VAC ±10%; 120 VAC ±10%, 50/60 Hz; 208-277V models also available
Cv Range	1.0 to 8.0	Supply VA	7 VA
Connections	FNPT, Sweat, or inverted flare (3/4" only)	Supply Watts	6.5 W
Flow Characteristic	Quick Opening	Control Signal	Two-position, two-wire
Leakage Rating	ANSI Class IV (0.01% of rated capacity)	Wiring	18" (45.2 cm) leads
Maximum Closeoff Pressure	Cv 1.0-1.5: 60 psid (414 kPa) AG actuator, 75 psid (517 kPa) AH actuator Cv 2.5-3.0: 40 psid (276 kPa) AG actuator, 50 psid (345 kPa) AH actuator Cv 3.5-4.0: 25 psid (172 kPa) AG actuator, 30 psid (207 kPa) AH actuator Cv 5.0: 20 psid (137 kPa) AG actuator, 25 psid (172 kPa) AH actuator Cv 7.5-8.0: 17 psid (117 kPa) AG actuator, 20 psid (137 kPa) AH actuator	Action	Two-way valves: N.O./N.C. determined by choice of actuator; three-way valves: N.C. actuator only
Maximum Pressure Rating	300 psig (2067 kPa)	Actuator Compatibility	AG (general purpose) or AH (high performance) type actuators only
Materials Of Construction	Brass valve body and seat, nickel-plated stem, BUNA N paddle; stainless steel base plate and aluminum cover on actuator	Actuator Mounting	Poptop®
Media Compatibility	Hot or chilled water; 50% or less ethylene glycol; 15 psig steam	Auxiliary Contacts	N.O. contacts, 24-240 VAC, 5A
Media Temperature Range	32° to 200°F (0° to 93°C) with AG actuator; up to 250°F (121°C) with AH actuator	Auxiliary Switch	Models with auxiliary switch available
		Drive Time	25 seconds maximum @ 60 Hz
		Manual Override	N.C. actuators only
		Operating Temperature	AG actuator: maximum ambient 104°F (40°C); AH actuator: maximum ambient 169°F (77°C)
		Spring Return Time	9 seconds maximum
		Weight	Valve bodies: <1.4 lb (.64 kg) Actuators: 1.0 lb (.45 kg)
		Approvals	UL and ULc Listed; CE
		Warranty	2 years

ORDERING INFORMATION

VALVE			
MODEL	DESCRIPTION		
V	Two-position PopTop electric valve		
TEMPERATURE			
T	Water		
S	Steam (must use high temperature actuator)		
CONFIGURATION			
2	Two-way		
3	Three-way		
CV SIZE			
2	1/2"		
3	3/4"		
4	1"		
CONNECTION			
1	Sweat - 1/2", 3/4", 1"		
2	NPT - 1/2", 3/4", 1"		
4	Inverted flare - 3/4" only		
CV CAPACITY			
	2-way	3-way	Size
1	1.0	1.5	1/2"
2	2.5	3.0	1/2", 3/4"
3	3.5	4.0	1/2", 3/4"
5	5.0	5.0	3/4", 1"
7	7.5	7.5	3/4"
7	8.0	8.0	1"

V - T - 2 - 2 - 1 - 1
Note: Valve and actuator shipped separately.

*Inverted flare fittings not included with valve. They are field-supplied.

ACTUATOR	
MODEL	DESCRIPTION
A	VT Series actuator
CLOSEOFF	
G	General operation
H	High performance
VALVE OPERATION	
1	Normally closed*
2	Normally open**
TEMPERATURE	
3	Normal
4	Steam
VOLTAGE	
A	24 VAC, 50/60 Hz
B	120 VAC, 50/60 Hz
D	208 VAC, 60 Hz
T	277 VAC, 60 Hz
U	230/220 VAC, 50 Hz
LEADS	
02	18" Leads
OPTIONS	
0	None
A	End switch

A - G - 1 - 3 - A - 02 - 0 Example: AG13A020

* Three-way valves use N.C. actuator only; reverse ports for N.O.

** No manual override.

RELATED PRODUCTS

SSTAG
680-243-6

Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order
Changeover thermostat with conduit fitting

ACCESSORIES

30-158-A	AG/AH Series actuator replacement motor, 24 VAC
30-158-B	AG/AH Series actuator replacement motor, 110/120 VAC
30-158-D	AG/AH Series actuator replacement motor, 208 VAC
30-158-T	AG/AH Series actuator replacement motor, 277 VAC
30-158-Y	AG/AH Series actuator replacement motor, 230/240 VAC
436-252	3/4" flare-to-sweat fitting



ASCO®

DESCRIPTION

The **ASCO 8210 Series** solenoid valves are general service, pilot operated, two-way solenoid valves for liquid and air/inert gas applications. They are available in normally closed or normally open operation with coil voltages to meet any typical application. The **8210 Series** come completely assembled with conduit connection and wire leads.

FEATURES

- **Industry standard Red Hat II**
- **Wide range of sizes and options**
- **High flow rates, low pressure drop**
- **Long service life**
- **For hot or chilled water, air or inert gases**
- **1/2" NPT conduit connection standard**
- **Lead wires standard**
- **Not polarity sensitive**

APPLICATION

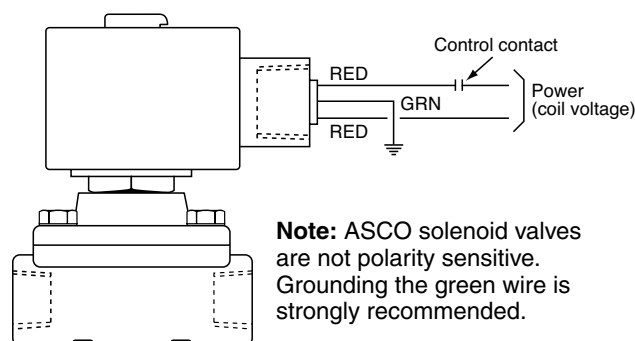
The **8210 Series** valves are general purpose, and the standard models are suitable for most clean liquids (hot and chilled water, light oils), air and inert gas applications. They are ideal for boiler and cooling tower fill valves. There are also many options available for the **8210 Series**, such as explosionproof enclosures, manual operators, junction box/terminal block wiring connections, and different seal materials for more demanding media.

Many solenoid valves are pilot-operated and require a differential pressure to open/close. Applications such as gravity drain for tanks or vacuum applications may not generate enough differential pressure across the valve for the valve to operate. In these applications, choose a direct-acting valve which is indicated in the ASCO catalog with a minimum differential pressure of zero.

Other types of ASCO valves, also available through Kele, include valves for hot water/steam service, cryogenic service, fuel service, intrinsically safe applications, and pneumatic control systems.



WIRING



SPECIFICATIONS

Size	1/2" NPT to 2" NPT	Action	N.C., N.O. (valve body determines action)
Cv	4.0, 5.0, 13, 15, 22, 43, 5.5	Operating Pressure	Minimum 5 psid (35 kPa), maximum 125 to 150 psid (862 to 1034 kPa), varies by model
Materials Of Construction	Brass body, NBR or PTFE seals and discs	Operating Temperature	32° to 125°F (0° to 52°C)
Media Compatibility	Clean hot or chilled water, air or inert gas	Enclosure Rating	NEMA 4 (standard Red Hat II enclosure)
Media Temperature Range	Maximum 180°F (82°C) water temperature	Approvals	CSA, UL Listed, CE
Supply Voltage	120 VAC, 60 Hz, 24 VAC, 60 Hz	Warranty	1 year



CONTROL VALVES

RED HAT SOLENOID VALVES

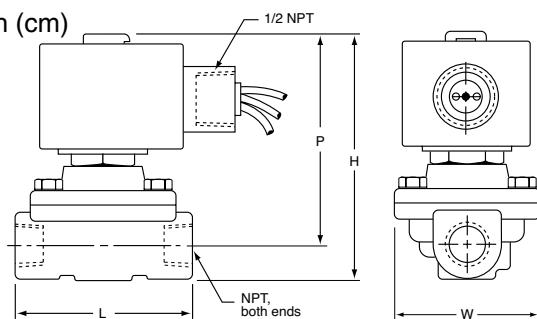
8210 SERIES

3

CONTROL VALVES

DIMENSIONS

in (cm)



Model	Size	H	L	P	Width	Weight lb (kg)
8210G2	1/2" NPT	3.1 (8.6)	2.8 (7.0)	2.8 (7.2)	2.3 (5.9)	1.9 (.86)
8210G9	3/4" NPT	3.6 (9.2)	2.8 (7.1)	3.0 (7.6)	2.3 (5.9)	2.7 (1.2)
8210G4	1" NPT	5.6 (14.3)	3.8 (9.5)	4.0 (10.2)	2.9 (7.5)	4.4 (2.0)
8218G8	1-1/4" NPT	5.6 (14.3)	3.7 (9.3)	4.0 (10.2)	3.4 (8.6)	5.6 (2.5)
8210G22	1-1/2" NPT	6.1 (15.6)	4.4 (11.1)	4.2 (10.6)	3.4 (8.6)	5.8 (2.6)
8210G100	2" NPT	7.3 (18.6)	5.1 (12.9)	4.7 (11.9)	4.7 (11.9)	7.2 (3.3)
8210G34	1/2" NPT	4.3 (11.0)	2.8 (7.0)	3.8 (9.6)	2.3 (5.8)	1.9 (.86)
8210G35	3/4" NPT	4.6 (11.6)	2.8 (7.1)	3.9 (10.0)	2.3 (5.8)	2.7 (1.2)
8210G14	1" NPT	6.5 (16.6)	3.7 (9.3)	4.9 (12.5)	3.4 (8.6)	4.4 (2.0)
8210G18	1-1/4" NPT	6.5 (16.6)	3.7 (9.3)	4.9 (12.5)	3.4 (8.6)	5.6 (2.5)
8210G32	1-1/2" NPT	7.0 (17.9)	4.4 (11.1)	5.1 (12.9)	3.8 (9.5)	5.8 (2.6)
8210G103	2" NPT	8.2 (20.9)	5.1 (12.9)	4.7 (11.9)	4.7 (11.9)	7.2 (3.3)

ORDERING INFORMATION

MODEL

8210G2-120/60
8210G2-24/60
8210G9-120/60
8210G9-24/60
8210G4-120/60
8210G4-24/60
8210G8-120/60
8210G8-24/60
8210G22-120/60
8210G22-24/60
8210G100-120/60
8210G100-24/60
8210G34-120/60
8210G34-24/60
8210G35-120/60
8210G35-24/60
8210G14-120/60
8210G14-24/60
8210G18-120/60
8210G18-24/60
8210G32-120/60
8210G32-24/60
8210G103-120/60
8210G103-24/60

DESCRIPTION

1/2" NPT solenoid valve, N.C., 120 VAC coil
1/2" NPT solenoid valve, N.C., 24 VAC coil
3/4" NPT solenoid valve, N.C., 120 VAC coil
3/4" NPT solenoid valve, N.C., 24 VAC coil
1" NPT solenoid valve, N.C., 120 VAC coil
1" NPT solenoid valve, N.C., 24 VAC coil
1-1/4" NPT solenoid valve, N.C., 120 VAC coil
1-1/4" NPT solenoid valve, N.C., 24 VAC coil
1-1/2" NPT solenoid valve, N.C., 120 VAC coil
1-1/2" NPT solenoid valve, N.C., 24 VAC coil
2" NPT solenoid valve, N.C., 120 VAC coil
2" NPT solenoid valve, N.C., 24 VAC coil
1/2" NPT solenoid valve, N.O., 120 VAC coil
1/2" NPT solenoid valve, N.O., 24 VAC coil
3/4" NPT solenoid valve, N.O., 120 VAC coil
3/4" NPT solenoid valve, N.O., 24 VAC coil
1" NPT solenoid valve, N.O., 120 VAC coil
1" NPT solenoid valve, N.O., 24 VAC coil
1-1/4" NPT solenoid valve, N.O., 120 VAC coil
1-1/4" NPT solenoid valve, N.O., 24 VAC coil
1-1/2" NPT solenoid valve, N.O., 120 VAC coil
1-1/2" NPT solenoid valve, N.O., 24 VAC coil
2" NPT solenoid valve, N.O., 120 VAC coil
2" NPT solenoid valve, N.O., 24 VAC coil

RELATED PRODUCTS

SSTAG

Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order

ACCESSORIES

238210-005-D 24 VAC coil N.C., (1/2"-2")
238210-032-D 120 VAC coil N.C., (1/2"-2")
238610-005-D 24 VAC coil N.O., (1/2"-3/4")
238610-032-D 120 VAC coil N.O., (1/2"-3/4")
272610-005-D 24 VAC coil N.O., (1"-2")
272610-032-D 120 VAC coil N.O., (1"-2")



Danfoss

DESCRIPTION

The **EVSI Series** solenoid valves are two-way, two-position valves for clean water or low pressure steam applications and are available in normally closed or normally open operation. **EVSI Series** valves are pilot-operated and designed for non-water hammer operation. They come completely assembled with coil and are UL recognized and CSA listed. The coils also include a gasketed conduit connector for NEMA 4 (IP65) environmental rating.

FEATURES

- **Anti-water hammer design**
- **For hot or chilled water and low pressure steam**
- **Fully encapsulated molded coils**
- **1/2" threaded conduit connection**
- **Enclosed screw terminals**
- **NEMA 4 (IP56) environmental rating**
- **Modular conduit connection for easy installation**
- **Unique snap-on coil, no tools required**



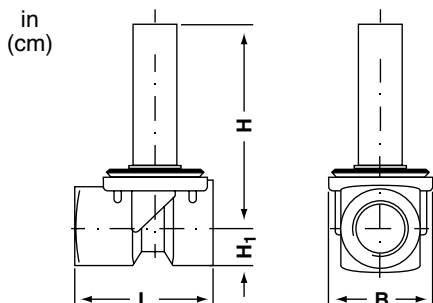
EVSI-20-NC-24



3

CONTROL VALVES

DIMENSIONS



TYPE	NPT	L in (cm)	B in (cm)	H ₁ in (cm)	H* in (cm)	Weight w/o coil lbs (kg)
EVSI 15	0.5"	3.25 (8.3)	2.1 (5.2)	0.6 (1.5)	3.7 (9.4)	1.8 (0.80)
EVSI 20	0.75"	3.7 (9.4)	2.25 (5.8)	0.7 (1.8)	3.9 (9.8)	2.2 (1.0)
EVSI 25	1"	4.6 (11.6)	2.75 (7.0)	0.9 (2.2)	4.25 (10.8)	3.1 (1.4)
EVSI 32	1.25"	4.8 (12.2)	3.25 (8.2)	0.7 (2.7)	4.5 (11.5)	4.4 (2.0)
EVSI 40	1.5"	5.2 (13.2)	3.75 (9.5)	1.25 (3.2)	4.9 (12.4)	7.1 (3.2)
EVSI 50	2"	6.4 (16.2)	4.4 (11.3)	1.4 (3.7)	5.1 (13.0)	9.6 (4.3)

* For normally open valves + 3/16" (0.5 cm). 018F coil weight = 0.75 (0.34)

SPECIFICATIONS

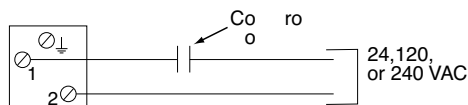
Size	1/2" FNPT to 2" FNPT	Supply Watts	14 W
Cv	4.6, 9.3, 12.3, 21, 28, 46.7	Conduit Connection	1/2" NPT
Life Expectancy	800,000 cycles minimum	Wiring Terminations	Screw terminals inside DIN connector accept 16 to 18 AWG wire; DIN spades on encapsulated coil
Maximum System Pressure	225 psig (1550 kPa) for 1/2" and 3/4" valves; 180 psig (1240 kPa) for 1" to 2" valves	Action	N.C., N.O. (valve body determines action)
Pressure Drop	Minimum differential pressure 4.3 psid (30 kPa) to operate the pilot; maximum differential pressure 142 psid (980 kPa)	Stroke Time	.04 seconds opening time, 0.35 seconds closing time for 1/2" valves; up to 5.0 seconds opening time, 10.0 seconds closing time for 2" valves
Materials Of Construction	Brass valve body, EPDM gasket	Manual Override	EVSI-MOM manual override magnet, order separately
Media Compatibility	Clean hot or chilled water or glycol, steam ≤15 psig	Operating Temperature	32° to 120°F (0° to 50°C)
Media Temperature Range	-22° to 248°F (-30° to 120°C)	Dimensions	Coil, 2.5"H x 1.8"W x 2.4"D (5.7 x 4.6 x 6.1 cm)
Supply Voltage	120 VAC, 50/60 Hz; 24 VAC, 50/60 Hz; 240 VAC, 50/60 Hz	Enclosure Rating	NEMA 4 (IP65) with waterproof conduit connection
		Warranty	1 year



CONTROL VALVES

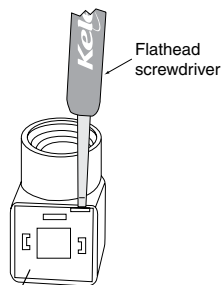
SOLENOID VALVES EVSI SERIES

WIRING

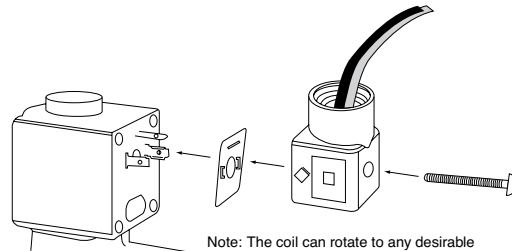
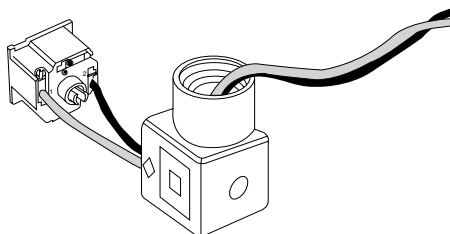


3

CONTROL VALVES



Flathead screwdriver



Note: The coil can rotate to any desirable direction, and the conduit connector can be oriented up, down, or to either side.

Conduit Connector Assembly

ORDERING INFORMATION

MODEL	DESCRIPTION
EVSI	Solenoid valve
	SIZE (NPT)
15	1/2", Cv = 4.6, opening time 0.04 sec, closing time 0.35 sec
20	3/4", Cv = 9.3, opening time 0.04 sec, closing time 1.0 sec
25	1", Cv = 12.3, opening time 0.30 sec, closing time 1.0 sec
32	1-1/4", Cv = 21.0, opening time 1.0 sec, closing time 2.5 sec
40	1-1/2", Cv = 28.0, opening time 1.5 sec, closing time 4.0 sec
50	2", Cv = 46.7, opening time 5.0 sec, closing time 10.0 sec
	NORMAL MODE
NC	Normally closed
NO	Normally open
	COIL VOLTAGE
24	24 VAC, 50/60 Hz
120	120 VAC, 50/60 Hz
240	240 VAC, 50/60 Hz

Example: EVSI-15-NC-24 Solenoid valve with 1/2" NPT, normally closed, and 24 VAC coil

ACCESSORIES

018F7655	24 VAC, 50/60 Hz replacement coil only
018F7663	120 VAC, 50/60 Hz replacement coil only
018F7658	208/240 VAC, 60 Hz replacement coil only

RELATED PRODUCTS

EVSI-MOM	Solenoid valve manual override magnet
SSTAG	Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order

CONTROL VALVES

599 SERIES BALL VALVES 599 BALL VALVE SERIES



DESCRIPTION

The **Siemens 599 Series** ball valves and valve actuators deliver comprehensive control solutions for almost any chilled water, hot water, or 50% glycol applications. Available in spring return, non-spring return, 2-position, floating, and proportional control these valves and actuators suit most applications. Two-way valves are available with chrome-plated brass ball and brass stem or stainless steel ball and stem for harsher conditions. The **599 Series** has a wide variety of Cv ranges to help you size the control of your application correctly.

FEATURES

- 200 psi close-off
- 0.4 to 160 Cv ranges depending on valve size
- 600/WOG/ANSI 250 pressure rating
- Double o-ring stem packing
- Blow-out proof stem for high pressure safety
- Thermal barrier on universal mounting bracket

NEW!



599 Series
2-way Ball Valve



599 Series
3-way Ball Valve

SIEMENS



3

CONTROL VALVES

SPECIFICATIONS			
Connections	Female NPT	Ball seals	Reinforced PTFE seals with EPDM O-rings
Body Pattern	3 Way, 2 Way	Female end connections	Brass
Leakage Class	ANSI Class 1V	Stem	Brass or stainless steel
Body Rating	Forged Brass ASTM B283, C37733	Stem seals	EPDM O-rings
Maximum Closeoff Pressure	200 PSI	Angle of rotation	0 to 90 degrees
Materials Of Construction	Forged Brass or Stainless Steel	Close-off ratings per ANSI/FCI 70-2	Class IV for A-AB, Class III for B-AB
Media Compatibility	50% Water, Glycol Solution	Maximum operating differential pressure	60 psi
Media temperature	35° to 250°F (2° to 121°C)	Dimensions	See Dimensions table
Actuator Compatibility	Siemens GDE, GLB, GMA, GQD,	Weight	See Dimensions tables
Static pressure	360 psi (2482 kPa)	Warranty	2 Years
Flow Optimizer	Glass filled polymer		
Ball	Nickel-plated brass or Stainless Steel		

NEW!



CONTROL VALVES

599 SERIES BALL VALVES

599 BALL VALVE SERIES

3

CONTROL VALVES

DIMENSIONS, 2-WAY REFERENCE GUIDE (See Figure 1)

Line Size Inch (cm)	Cv Range	A Length	C Length* Actuator Codes 171A-D, 173A-D	C Length* Actuator Codes 171H,J,K,L, N	C Length* Actuator Codes 171E,F,G,M,P 172E,F,G,M,P Fail-Safe	F Height	Weight lbs (kg)
			GDE/GLB	GQD	GMA		
1/2 (1.5)	0.4 to 10.0	2-7/16 (61)	6-11/16 (170)	6 (153)	—	7-5/8 (193)	0.50 (0.23)
3/4 (20)	6.3 to 25	2-3/4 (70)	6-11/16 (170)	6 (153)	—	8 (204)	0.78 (0.35)
1 (25)	10	3 (77)	6-11/16 (170)	—	8-3/8 (213)	8 (204)	.97 (.44)
	16	3-1/4 (82)		—	8-3/8 (213)	8-5/15 (212)	1.75 (0.79)
	40, 63			—			1.19 (54)
	25	3-7/8 (98)	7 (178)	—	8-11/16 (221)	8-13/16 (223)	1.19 (0.54)
1-1/4 (3.2)	16	3-3/8(86)	6-11/16 (170)	—	8-7/16 (214)	8-3/8 (213)	1.41 (0.64)
	25 to 100	3-11/16 (94)		—	8-11/16 (221)	8-13/16 (223)	1.81 (0.82)
1-1/2 (4.0)	25, 63	3-5/8 (92)	6-15/16 (176)	—	8-7/16 (214)	8-13/16 (223)	1.19 (0.54)
	40, 100, 160	3-15/16 (100)	7-1/16 (180)	—	8-3/4 (223)	9-1/4 (235)	2.50 (1.13)
2 (5.0)	40, 100	4 (102)	7-1/16 (180)	—	8-3/4 (223)	9-3/8 (238)	2.53 (1.14)
	63	4-5/8 (11.8)	7-1/2 (190)	—	9-1/8 (223)	10-1/16 (255)	4.66 (2.11)
	160			—			4.69 (2.13)

*Dimension "C" is maximum length, measured from the actuator, end fitting, or mounting plate, whichever extends the furthest.

DIMENSIONS, 3-WAY REFERENCE GUIDE (See Figure 2)

Line Size Inches (mm)	Product Number	A Length	C Length * for Actuator Codes 171A-D Codes 173A-D	C Length * for Actuator Codes 171E-G	B Height	G Height	F Height	Weight lb (kg)
1/2 (15)	599-10350(S) through 599-10357(S)	2-9/16 (65)	6-11/16 (170)	8-3/8 (213)	3-1/4 (83)	1-3/8 (35)	8-5/8 (219)	1.50 (0.68)
3/4 (20)	599-10358(S)	2-3/4 (70)	6-11/16 (170)	8-3/8 (213)	3-1/4 (83)	1-3/8 (35)	8-5/8 (219)	1.60 (0.73)
	599-10359(S) 599-10360(S)	3-1/8 (79)				1-11/16 (43)		2.20 (1.00)
1 (25)	599-10361(S)	3-1/4 (83)	6-11/16 (170)	8-3/8 (213)	3-3/4 (95)	1-11/16 (43)	9-1/8 (232)	2.37 (1.08)
	599-10362(S) 599-10363(S)	3-13/16 (77)	6-15/16 (176)	8-5/8 (219)	4 (102)	2 (51)	9-5/8 (244)	2.74 (1.24)
1-1/4 (32)	599-10364(S) 599-10365(S)	3-5/8 (92)	6-7/8 (174)	8-9/16 (217)	4 (102)	2-1/8 (54)	9-3/4 (248)	2.85 (1.29)
	599-10366(S)	3-15/16 (100)	7 (178)	8-11/16 (221)		2-5/16 (59)	10-1/4 (260)	4.30 (1.95)
1-1/2 (40)	599-10367(S) 599-10368(S)	3-15/16 (100)	7 (178)	8-11/16 (221)	4 (102)	2-5/16 (59)	10-1/4 (260)	3.90 (1.76)
	599-10369(S)	4-5/8 (117)	7-1/4 (184)	7-7/8 (200)	4-1/2 (114)	2-13/16 (71)	11 (279)	7.83 (17.16)
2 (50)	599-10370(S)	4-5/8 (117)	7-1/4 (184)	8-11/16 (221)	4-1/2 (114)	2-7/8 (73)	10-3/8 (264)	6.70 (3.04)
	599-10371(S) 599-10372(S)			9-1/16 (230)	5-3/4 (146)		11-3/16 (284)	

*Dimension C is maximum length, measured from the actuator, end fitting, or mounting plate, whichever extends the furthest.

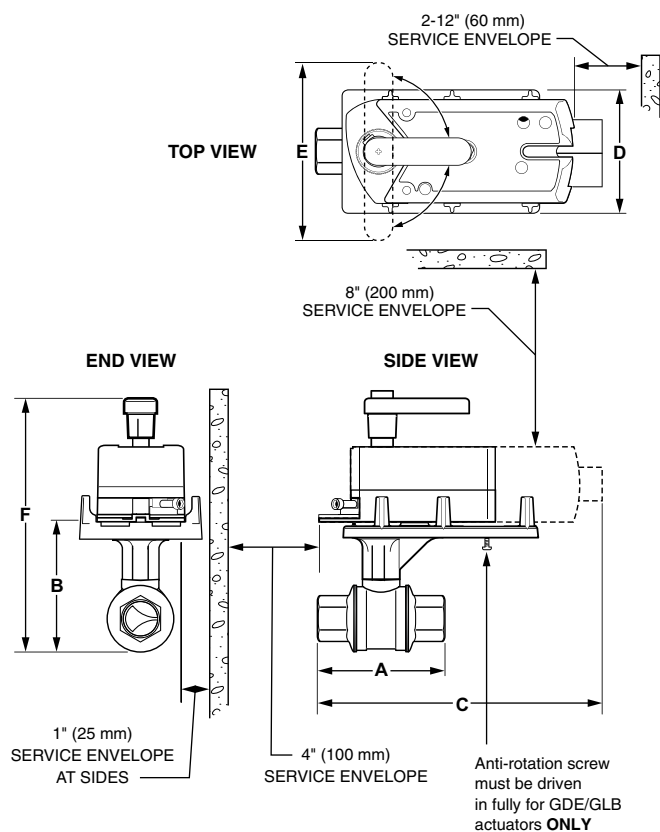
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DIMENSIONS

FIGURE 1. DIMENSIONS WITH ACTUATOR

2-WAY

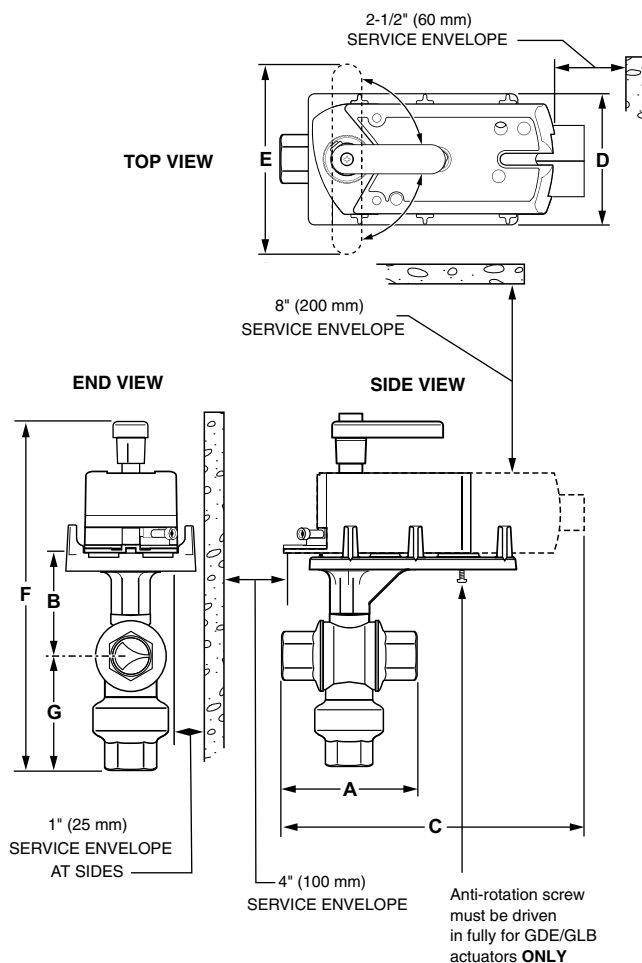


NOTES:

1. All dimensions are in inches (mm) and weights are in pounds (kg)
2. Dimension D, Depth, is 3.7 inches (94.5mm)
3. Dimension E, Handle, is 5.3 inches (135.9 mm)

FIGURE 2. DIMENSIONS WITH ACTUATOR

3-WAY



NOTES:

1. All dimensions are in inches (mm) and weights are in pounds (kg)
2. Dimension D, Depth, is 3 inches (76 mm)
3. Dimension E, Handle, is 4 inches (102 mm)



CONTROL VALVES

599 SERIES BALL VALVES

599 BALL VALVE SERIES

3

CONTROL VALVES

2-WAY Cv GUIDE

Product Numbers: 2-Way, Full-Port (No Flow Characterizer) Chrome-Plated Ball with Brass Stems or Stainless Steel Ball with Stainless Steel Stems and Flow Coefficients

Valve Line Size in Inches (mm)	Valve Product Number*	Effective (Installed) Cv (Kvs)										
		Supply Line Size in Inches (mm)										
		1/2 (13)	3/4 (20)	1 (25)	1-1/4 (32)	1-1/2 (38)	2 (51)	2-1/2 (63)	3 (76)	4 (102)	5 (127)	6 (152)
1/2 (15)	599-10307 599-10307S	10.00 (8.62)	6.94 (5.93)	6.19 (5.29)	—	—	—	—	—	—	—	—
3/4 (20)	599-10311 599-10311S	—	25.00 (21.55)	18.66 (15.95)	15.35 (13.12)	—	—	—	—	—	—	—
1 (25)	599-10316 599-10316S	—	—	63.00 (54.31)	39.78 (34.00)	33.56 (28.69)	—	—	—	—	—	—
1-1/4 (32)	599-10321 599-10321S	—	—	—	100.00 (86.21)	69.19 (59.13)	51.45 (43.98)	—	—	—	—	—
1-1/2 (40)	599-10324 599-10324S	—	—	—	—	63.00 (54.31)	55.34 (47.30)	51.00 (43.59)	—	—	—	—
	599-10326 599-10326S	—	—	—	—	160.00 (137.93)	93.80 (80.17)	76.34 (65.25)	—	—	—	—
2 (50)	599-10329 599-10329S	—	—	—	—	—	100.00 (86.21)	94.30 (80.60)	86.12 (73.61)	—	—	—

☐ = Valve may be oversized
 ☐ = Optimal valve size
 ☐ = Valve may be undersized

*S suffix = Stainless Steel

3-WAY Cv GUIDE

Product Numbers: 3-Way, Full-Port (No Flow Characterizer) Chrome-Plated Ball with Brass Stems or Stainless Steel Ball with Stainless Steel Stems and Flow Coefficients

Valve Line Size in Inches (mm)	Valve Product Number*	Effective (Installed) Cv (Kvs)										
		Supply Line Size in Inches (mm)										
		1/2 (13)	3/4 (20)	1 (25)	1-1/4 (32)	1-1/2 (38)	2 (51)	2-1/2 (63)	3 (76)	4 (102)	5 (127)	6 (152)
1/2 (15)	599-10357 599-10357S	10.00 (8.62)	6.94 (5.93)	6.19 (5.29)	—	—	—	—	—	—	—	—
3/4 (20)	599-10360 599-10360S	—	16.00 (13.79)	13.9 (11.98)	12.4 (10.69)	—	—	—	—	—	—	—
1 (25)	599-10363 599-10363S	—	—	25.00 (21.55)	22.5 (19.40)	21.2 (18.27)	—	—	—	—	—	—
1-1/4 (32)	599-10366 599-10366S	—	—	—	40.00 (34.48)	36.9 (31.81)	33.3 (28.70)	—	—	—	—	—
1-1/2 (40)	599-10369 599-10369S	—	—	—	—	63.00 (54.31)	55.3 (47.67)	51.00 (43.96)	—	—	—	—
2 (50)	599-10372 599-10372S	—	—	—	—	—	100 (86.21)	94.3 (81.29)	86.1 (74.23)	—	—	—

☐ = Valve may be oversized
 ☐ = Optimal valve size
 ☐ = Valve may be undersized

*S suffix = Stainless Steel

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CONTROL VALVES

599 SERIES BALL VALVES 599 BALL VALVE SERIES



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CONTROL VALVES

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VALVE SELECTION INFORMATION

2-WAY					3-WAY				
Valve Body	Valve Size in (mm)	Close-Off PSI	Flow Rate Cv	Weight Lbs	Valve Body	Valve Size in (mm)	Close-Off PSI	Flow Rate Cv	Weight (lbs)
599-10300	0.5 (15)	200 psi	0.4	0.5	599-10350	0.5 (15)	200 psi	0.4	1.64
599-10301	0.5 (15)	200 psi	0.63	0.5	599-10351	0.5 (15)	200 psi	0.63	1.64
599-10302	0.5 (15)	200 psi	1	0.5	599-10352	0.5 (15)	200 psi	1	1.64
599-10303	0.5 (15)	200 psi	1.6	0.5	599-10353	0.5 (15)	200 psi	1.6	1.64
599-10304	0.5 (15)	200 psi	2.5	0.5	599-10354	0.5 (15)	200 psi	2.5	1.64
599-10305	0.5 (15)	200 psi	4	0.5	599-10355	0.5 (15)	200 psi	4	1.64
599-10306	0.5 (15)	200 psi	6.3	0.5	599-10356	0.5 (15)	200 psi	6.3	1.64
599-10307*	0.5 (15)	200 psi	10	0.5	599-10357*	0.5 (15)	200 psi	10	1.64
599-10308	0.75 (20)	200 psi	6.3	0.78	599-10358	0.75 (20)	200 psi	6.3	2.26
599-10309	0.75 (20)	200 psi	10	0.78	599-10359	0.75 (20)	200 psi	10	2.26
599-10310	0.75 (20)	200 psi	16	0.78	599-10360*	0.75 (20)	200 psi	16	2.26
599-10311	0.75 (20)	200 psi	25	0.78	599-10361	1.0 (25)	200 psi	10	3.5
599-10312	1.0 (25)	200 psi	10	1.19	599-10362	1.0 (25)	200 psi	16	3.5
599-10313	1.0 (25)	200 psi	16	1.19	599-10363*	1.0 (25)	200 psi	25	3.5
599-10314	1.0 (25)	200 psi	25	1.19	599-10364	1.25 (32)	200 psi	16	5.16
599-10315	1.0 (25)	200 psi	40	1.19	599-10365	1.25 (32)	200 psi	25	5.16
599-10316*	1.0 (25)	200 psi	63	1.19	599-10366*	1.25 (32)	200 psi	40	5.16
599-10317	1.25 (32)	200 psi	16	1.81	599-10367	1.5 (40)	200 psi	25	5.16
599-10318	1.25 (32)	200 psi	25	1.81	599-10368	1.5 (40)	200 psi	40	5.16
599-10319	1.25 (32)	200 psi	40	1.81	599-10369*	1.5 (40)	200 psi	63	5.16
599-10320	1.25 (32)	200 psi	63	1.81	599-10370	2 (50)	200 psi	40	8.5
599-10321*	1.25 (32)	200 psi	100	1.81	599-10371	2 (50)	200 psi	63	8.5
599-10322	1.5 (40)	200 psi	25	2.5	599-10372*	2 (50)	200 psi	100	8.5
599-10323	1.5 (40)	200 psi	40	2.5					
599-10324*	1.5 (40)	200 psi	63	2.5					
599-10325	1.5 (40)	200 psi	100	2.5					
599-10326	1.5 (40)	200 psi	160	2.5					
599-10327	2 (50)	200 psi	40	4.69					
599-10328	2 (50)	200 psi	63	4.69					
599-10329*	2 (50)	200 psi	100	4.69					
599-10330*	2 (50)	200 psi	160	4.69					

* Denotes a full-port valve without flow characterizer insert.
Add "S" to the end of the valve body number to indicate stainless steel ball and stem



CONTROL VALVES

599 SERIES BALL VALVES

599 BALL VALVE SERIES

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CONTROL VALVES

ACTUATOR SELECTION INFORMATION

Actuator Prefix Code		Actuator	Fail Position	Supply Voltage	Actuator Type	Control Signal	Manual Override	Valve Size
171C	=	GDE161.1P	NO	24VAC	NSR	Proportional, 0-10V	X	1/2" thru 1-1/4"
171D	=	GLB161.1P	NO	24VAC	NSR	Proportional, 0-10V	X	1-1/2" thru 2"
171G	=	GMA161.1P	NO	24VAC	SR	Proportional, 0-10V	X	1/2" thru 2"
173C	=	GDE161.1P	NO	24VAC	NSR	Proportional, 0-10V	X	1/2" thru 1-1/4"
173D	=	GLB161.1P	NO	24VAC	NSR	Proportional, 0-10V	X	1-1/2" thru 2"
171K	=	GQD151.1P	NO	24VAC	SR	Proportional, 2-10V		1/2" thru 3/4"
171E	=	GMA121.1P	NO	24VAC	SR	On-Off, 2 position	X	1/2" thru 2"
171H	=	GQD121.1P	NO	24VAC	SR	On-Off, 2 position		1/2" thru 3/4"
171L	=	GQD221.1U	NO	120VAC	SR	On-Off, 2 position		1/2" thru 3/4"
171M	=	GMA221.1U	NO	120VAC	SR	On-Off, 2 position	X	1" thru 2"
171N	=	GQD126.1P	NO	24VAC	SR	On-Off, 2 position		1/2" thru 3/4"
171P	=	GMA126.1P	NO	24VAC	SR	On-Off, 2 position	X	1" thru 2"
171A	=	GDE131.1P	NO	24VAC	NSR	Tri-state (floating), 3 position	X	1/2" thru 1-1/4"
171B	=	GLB131.1P	NO	24VAC	NSR	Tri-state (floating), 3 position	X	1" thru 2"
171F	=	GMA131.1P	NO	24VAC	SR	Tri-state (floating), 3 position	X	1" thru 2"
171J	=	GQD131.1P	NO	24VAC	SR	Tri-state (floating), 3 position		1/2" thru 3/4"
173A	=	GDE131.1P	NO	24VAC	NSR	Tri-state (floating), 3 position	X	1/2" thru 1-1/4"
173B	=	GLB131.1P	NO	24VAC	NSR	Tri-state (floating), 3 position	X	1" thru 2"
172G	=	GMA161.1P*	NC	24VAC	SR	Proportional, 0-10V	X	1" thru 2"
172K	=	GQD151.1P*	NC	24VAC	SR	Proportional, 2-10V		1/2" thru 3/4"
172E	=	GMA121.1P*	NC	24VAC	SR	On-Off, 2 position	X	1" thru 2"
172H	=	GQD121.1P*	NC	24VAC	SR	On-Off, 2 position		1/2" thru 3/4"
172L	=	GQD221.1U*	NC	120VAC	SR	On-Off, 2 position		1/2" thru 3/4"
172M	=	GMA221.1U*	NC	120VAC	SR	On-Off, 2 position	X	1" thru 2"
172N	=	GQD126.1P*	NC	24VAC	SR	On-Off, 2 position		1/2" thru 3/4"
172P	=	GMA126.1P*	NC	24VAC	SR	On-Off, 2 position	X	1" thru 2"
172F	=	GMA131.1P*	NC	24VAC	SR	Tri-state (floating), 3 position	X	1" thru 2"
172J	=	GQD131.1P*	NC	24VAC	SR	Tri-state (floating), 3 position		1/2" thru 3/4"

* Actuator is mounted upside down to provide NC setting

To Order a Valve Assembly, combine an Actuator Prefix Code with the suffix of the valve body number from Valve Selection Table

Example:	171C	=	GDE161.1P actuator
	10357	=	599-10357 valve body
	Part Number	=	171C-10357

NEW!



BELIMO

DESCRIPTION

The **B2 Series** 2-way and **B3 Series** 3-way ball valves are used for two-position, floating or proportional control of HVAC hot or chilled water. The valves come assembled with direct coupled Belimo electric actuators with spring return or non-spring return operation.

FEATURES

- *Equal percentage characteristic (2-way)*
- *Large Cv range from 0.8 to 57*
- *Assembled, ready for installation*
- *Spring return or non-spring return actuators*
- *Floating, two-position, or proportional control*



3

CONTROL VALVES

SPECIFICATIONS

Size	1/2" to 2" NPT standard, larger sizes also available	Media Compatibility	Hot or chilled water, <60% glycol
Cv Range	0.8 to 57	Media Temperature Range	0° to 212°F (-18° to 100°C)
Body Pattern	Two-way, three-way mixing or diverting	Compatible Actuators	Non-spring return TR, LRB, NRB, ARB; spring return TF, LF, AF
Flow Characteristic	Two-way equal percentage, three-way linear	Pressure Drop	Maximum differential pressure 30 psid (207 kPa), higher could cause noise and/or damage
Leakage Rating	0% for port A to AB; 2% maximum for port B to AB	Pressure Rating	
Maximum Closeoff Pressure	200 psig (1380 kPa)	Two-way	
Materials Of Construction	Forged brass body with nickel plating, chrome plated (or stainless steel) ball, PTFE Teflon® seals, Tefzel® characterized disc, EPDM o-rings	1/2" to 1-1/4"	600 psig (4135 kPa)
		1-1/4" (B231) to 2"	400 psig (2758 kPa)
		Three-way	
		1/2" to 1"	600 psig (4135 kPa)
		1-1/4" to 2"	400 psig (2758 kPa)
		Approvals	UL Listed, CSA, CE
		Warranty	5 years



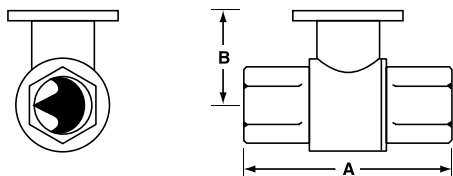
CONTROL VALVES

BALL VALVES B2, B3 SERIES

3

CONTROL VALVES

DIMENSIONS



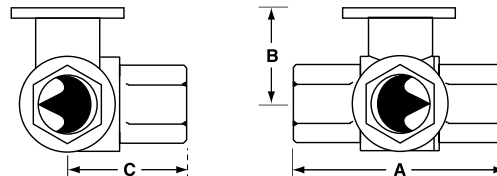
B-2 Series

Stainless Steel

Valve Body	Valve Nominal Size		Dimensions - in (mm)	
	Inches	DN (mm)	A	B
B207-B211	0.5	15	2.41 (61.1)	1.39 (35.2)
B212-B216	0.5	15	2.38 (60.4)	1.78 (45.2)
B217-B221	0.5	20	2.73 (69.3)	1.87 (47.4)
B222-B225	1.0	25	3.09 (78.4)	1.87 (47.4)
B229-B230	1.25	32	3.72 (94.6)	1.87 (47.4)
B231-B232	1.25	32	3.72 (94.6)	2.04 (51.9)
B238-B240	1.5	40	3.88 (98.5)	2.04 (51.9)
B248-B250	2.0	50	4.21 (107.0)	2.27 (57.7)
B251-B254	2.0	50	4.93 (125.2)	2.73 (69.5)
B261-B265	2.5	65	5.55 (140.9)	2.73 (69.5)
B277-B280	3.0	80	5.82 (147.9)	2.73 (69.5)

Brass

Valve Body	Valve Nominal Size		Dimensions - in (mm)	
	Inches	DN (mm)	A	B
B207B-B211B	0.5	15	2.38 (60.8)	1.39 (35.2)
B212B-B216B	0.5	15	2.38 (60.8)	1.78 (45.2)
B217B-B221B	0.75	20	2.73 (69.3)	1.87 (47.4)



B-3 Series

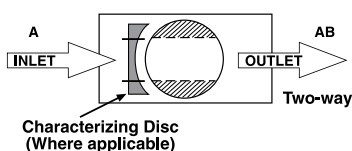
Stainless Steel

Valve Body	Valve Nominal Size		Dimensions - in (mm)		
	Inches	DN (mm)	A	B	C
B307-B311	0.5	15	2.41 (61.1)	1.39 (35.2)	1.20 (30.6)
B312-B316	0.5	15	2.38 (60.4)	1.78 (45.2)	1.29 (32.8)
B317-B321	0.75	20	2.73 (69.3)	1.87 (47.4)	1.47 (37.3)
B322-B325	1.0	25	3.09 (78.4)	1.87 (47.4)	1.59 (40.3)
B329-B331	1.25	32	3.96 (100.6)	2.27 (57.7)	2.14 (54.3)
B338-B341	1.5	40	4.39 (111.6)	2.51 (63.7)	2.40 (61.1)
B347-B352	2.0	50	4.90 (124.5)	2.73 (69.5)	2.74 (69.7)

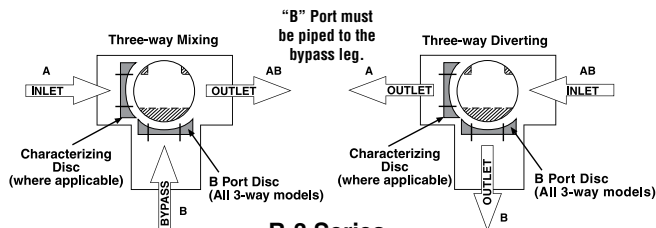
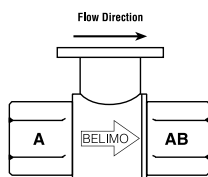
Brass

Valve Body	Valve Nominal Size		Dimensions - in (mm)		
	Inches	DN (mm)	A	B	C
B307B-B311B	0.5	15	2.41 (61.1)	1.39 (35.2)	1.20 (30.6)
B312B-B316B	0.5	15	2.38 (60.4)	1.78 (45.2)	1.29 (32.8)
B317B-B321B	0.75	20	2.73 (69.3)	1.87 (47.4)	1.47 (37.3)

FLOW PATTERN



B-2 Series



B-3 Series

CAUTION: B port leakage rating on three-way valves is 0.5% to 2% of Cv. Do not pipe B port to the coil.



ORDERING INFORMATION

VALVE SPECIFICATION				NON-SPRING RETURN				SPRING RETURN (N.O. / CCW)		
Port	Valve #	Cv	Size	Two-pos/Tri-state		Proportional		Two-pos	Tri-state	Proportional
				Standard	NEMA 4	Standard	NEMA 4			
Two-way	B209B	0.8	1/2"	TR24-3-T	NRB24-3-T-N4	TR24-SR-T	NRB24-SR-T-N4	TFRB24	TFRB24-3	TFRB24-SR
Two-way	B211B	1.9	1/2"	TR24-3-T	NRB24-3-T-N4	TR24-SR-T	NRB24-SR-T-N4	TFRB24	TFRB24-3	TFRB24-SR
Two-way	B212B	3.0	1/2"	TR24-3-T	NRB24-3-T-N4	TR24-SR-T	NRB24-SR-T-N4	TFRB24	TFRB24-3	TFRB24-SR
Two-way	B213B	4.7	1/2"	TR24-3-T	NRB24-3-T-N4	TR24-SR-T	NRB24-SR-T-N4	TFRB24	TFRB24-3	TFRB24-SR
Two-way	B214B	7.4	1/2"	TR24-3-T	NRB24-3-T-N4	TR24-SR-T	NRB24-SR-T-N4	TFRB24	TFRB24-3	TFRB24-SR
Two-way	B218B	7.4	3/4"	TR24-3-T	NRB24-3-T-N4	TR24-SR-T	NRB24-SR-T-N4	TFRB24	TFRB24-3	TFRB24-SR
Two-way	B219B	10.0	3/4"	TR24-3-T	NRB24-3-T-N4	TR24-SR-T	NRB24-SR-T-N4	TFRB24	TFRB24-3	TFRB24-SR
Two-way	B223	10.0	1"	LRB24-3	NRB24-3-T-N4	LRB24-SR	NRB24-SR-T-N4	LF24	LF24-3	LF24-SR
Two-way	B224	19.0	1"	LRB24-3	NRB24-3-T-N4	LRB24-SR	NRB24-SR-T-N4	LF24	LF24-3	LF24-SR
Two-way*	B225	30.0	1"	LRB24-3	NRB24-3-T-N4	LRB24-SR	NRB24-SR-T-N4	LF24	LF24-3	LF24-SR
Two-way*	B230	19.0	1-1/4"	LRB24-3	NRB24-3-T-N4	LRB24-SR	NRB24-SR-T-N4	LF24	LF24-3	LF24-SR
Two-way	B231	25.0	1-1/4"	ARB24-3	NRB24-3-T-N4	ARB24-SR	NRB24-SR-T-N4	AFRB24	AFRB24-MFT	AFRB24-MFT
Two-way*	B240	37.0	1-1/2"	ARB24-3	ARB24-3-T-N4	ARB24-SR	ARB24-SR-T-N4	AFRB24	AFRB24-MFT	AFRB24-MFT
Two-way	B249	46.0	2"	ARB24-3	ARB24-3-T-N4	ARB24-SR	ARB24-SR-T-N4	AFRB24	AFRB24-MFT	AFRB24-MFT
Two-way*	B250	57.0	2"	ARB24-3	ARB24-3-T-N4	ARB24-SR	ARB24-SR-T-N4	AFRB24	AFRB24-MFT	AFRB24-MFT
Three-way	B309B	0.8	1/2"	TR24-3-T	NRB24-3-T-N4	TR24-SR-T	NRB24-SR-T-N4	TFRB24	TFRB24-3	TFRB24-SR
Three-way	B311B	1.9	1/2"	TR24-3-T	NRB24-3-T-N4	TR24-SR-T	NRB24-SR-T-N4	TFRB24	TFRB24-3	TFRB24-SR
Three-way	B312B	3.0	1/2"	TR24-3-T	NRB24-3-T-N4	TR24-SR-T	NRB24-SR-T-N4	TFRB24	TFRB24-3	TFRB24-SR
Three-way	B313B	4.7	1/2"	TR24-3-T	NRB24-3-T-N4	TR24-SR-T	NRB24-SR-T-N4	TFRB24	TFRB24-3	TFRB24-SR
Three-way	B318B	7.4	3/4"	TR24-3-T	NRB24-3-T-N4	TR24-SR-T	NRB24-SR-T-N4	TFRB24	TFRB24-3	TFRB24-SR
Three-way	B323	10.0	1"	LRB24-3	NRB24-3-T-N4	LRB24-SR	NRB24-SR-T-N4	LF24	LF24-3	LF24-SR
Three-way*	B325	30.0	1"	LRB24-3	NRB24-3-T-N4	LRB24-SR	NRB24-SR-T-N4	LF24	LF24-3	LF24-SR
Three-way	B330	19.0	1-1/4"	ARB24-3	ARB24-3-T-N4	ARB24-SR	ARB24-SR-T-N4	AFRB24	AFRB24-MFT	AFRB24-MFT
Three-way	B331	25.0	1-1/4"	ARB24-3	ARB24-3-T-N4	ARB24-SR	ARB24-SR-T-N4	AFRB24	AFRB24-MFT	AFRB24-MFT
Three-way	B340	37.0	1-1/2"	ARB24-3	ARB24-3-T-N4	ARB24-SR	ARB24-SR-T-N4	AFRB24	AFRB24-MFT	AFRB24-MFT
Three-way	B349	46.0	2"	ARB24-3	ARB24-3-T-N4	ARB24-SR	ARB24-SR-T-N4	AFRB24	AFRB24-MFT	AFRB24-MFT
Three-way	B350	57.0	2"	ARB24-3	ARB24-3-T-N4	ARB24-SR	ARB24-SR-T-N4	AFRB24	AFRB24-MFT	AFRB24-MFT

*No characterized disc; requires Cv adjustment for installation in pipe sizes larger than the valve.

MODEL	DESCRIPTION
B_ _ _ /	Ball valve with brackets and mounting (select from above)
_ _ _ _	Compatible actuator (select from above) (other options for the actuator family are also available)

All valves are factory assembled. No field assembly required.

Example: B209B / TR24-SR-T 1/2" ball valve, Cv=0.8, with proportional non-spring return actuator

Note: Standard ball valve construction is chrome-plated brass ball for 1/2" and 3/4" sizes (B suffix); stainless steel ball available as an option. On 1" sizes and larger, stainless ball is standard.

Note: Multi-function Technology® (MFT) model actuators are also available. Add -MFT to the base model number and specify the control signal configuration or the Belimo P-code for a pre-set MFT configuration (not required if to be field configured, or if the default configuration of 2-10 VDC is required).

RELATED PRODUCTS

ZS-CCV-90
SSTAG
ZS-CCV-110
ZS-CCV-100

NEMA 4 weather shield for LF
Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order
NEMA 4 weather shield for AFB/AFR
Nema 4 weather shield for LR/AR



CONTROL VALVES

HIGH TEMPERATURE BALL VALVES HTCCV SERIES

DESCRIPTION

The **HTCCV Series** 2-way high temperature ball valves are used for two-position, floating or proportional control of HVAC hot or chilled water, or low pressure steam. The valves come assembled with direct coupled Belimo electric actuators with spring return or non-spring return operation. This valve displays a true equal percentage characteristic. They come in standard sizes from 1/2" to 1" and Cv's from (0.29 to 28).

FEATURES

- *Equal percentage flow characteristic*
- *Assembled, ready for installation*
- *Spring return or non-spring return actuators*
- *Floating, two-position, or proportional control*

BELIMO®



B215HT029/LRB24-SR



SPECIFICATIONS

Size 1/2", 3/4" and 1" FNPT

Cv Range 0.29 to 28

Body Pattern 2-way only

Flow Characteristic Equal Percentage

Leakage Rating 0%, bubble tight

Maximum Closeoff Pressure

200 psid (1380 kPa)

Materials Of Construction

Brass body (DZR) P-CuZn35Pb2, stainless steel ball and stem, Tefzel® characterized disc and seat, EPDM o-rings

Media Compatibility Hot water, <60% glycol, <15 psig (104kPa) steam

Media Temperature Range

60° to 266°F (16° to 130°C) water, limited to 250°F (121°C) for steam

Compatible Actuators

Non-spring return: TR, LRB;

Spring return: TF, LF

Non-spring return: TR, LRB;

Spring return: TF, LF

Pressure Drop

Maximum differential pressure 60 psid (414 kPa) for water, 15 psid (104 kPa) for steam

Pressure Rating

600 psig (4135 kPa)

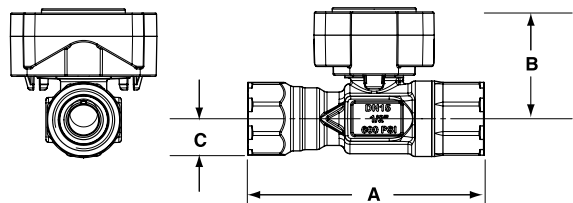
Approvals

UL Listed, CSA, CE

Warranty

5 years

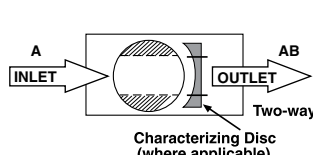
DIMENSIONS



Valve Nominal Size			Dimensions - inches (cm)		
Valve Body	Inches	DN (mm)	A	B	C
B215HT	1/2"	15	3.33 (8.46)	2.09 (5.32)	0.53 (1.35)
B220HT	3/4"	20	3.96 (10.06)	2.37 (6.01)	0.67 (1.70)
B225HT	1"	25	5.14 (13.06)	3.14 (7.98)	0.92 (2.325)

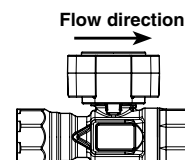
FLOW PATTERN

2-way High Temperature Characterized Control Valves



Upstream A
Downstream AB

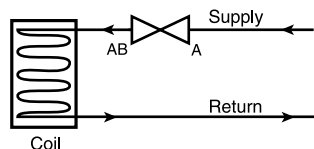
Valve should be installed with the characterization disc downstream (unlike the CCV series valves).



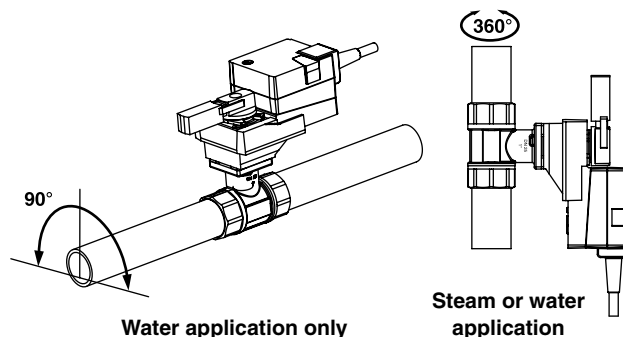


MOUNTING / PIPING DIAGRAMS

2-way Valve Piping Diagram
(1 Input, 1 Output)



Assembly can be mounted horizontally or vertically for water applications. For steam applications the valve can be mounted vertically but if mounted horizontally the valve must be 90° off center of the pipe. Do not install with actuator below pipe.



ORDERING INFORMATION

VALVE SPECIFICATION				NON-SPRING RETURN		SPRING RETURN		
Port	Valve#	Cv	Size	Two-Pos/Tri-state	Proportional	Two-Pos	Tri-state	Proportional
Two-way	B215HT029	0.29	1/2"	TR24-3-T	TR24-SR-T	TF24	TF24-3	TF24-SR
Two-way	B215HT046	0.46	1/2"	TR24-3-T	TR24-SR-T	TF24	TF24-3	TF24-SR
Two-way	B215HT073	0.73	1/2"	TR24-3-T	TR24-SR-T	TF24	TF24-3	TF24-SR
Two-way	B215HT116	1.16	1/2"	TR24-3-T	TR24-SR-T	TF24	TF24-3	TF24-SR
Two-way	B215HT186	1.86	1/2"	TR24-3-T	TR24-SR-T	TF24	TF24-3	TF24-SR
Two-way	B215HT290	2.9	1/2"	TR24-3-T	TR24-SR-T	TF24	TF24-3	TF24-SR
Two-way	B215HT455*	4.55	1/2"	TR24-3-T	TR24-SR-T	TF24	TF24-3	TF24-SR
Two-way	B220HT186	1.86	3/4"	LRB24-3	LRB24-SR	LF24	LF24-3	LF24-SR
Two-way	B220HT290	2.9	3/4"	LRB24-3	LRB24-SR	LF24	LF24-3	LF24-SR
Two-way	B220HT464	4.64	3/4"	LRB24-3	LRB24-SR	LF24	LF24-3	LF24-SR
Two-way	B220HT731	7.31	3/4"	LRB24-3	LRB24-SR	LF24	LF24-3	LF24-SR
Two-way	B220HT928	9.28	3/4"	LRB24-3	LRB24-SR	LF24	LF24-3	LF24-SR
Two-way	B220HT1320	13.2	3/4"	LRB24-3	LRB24-SR	LF24	LF24-3	LF24-SR
Two-way	B225HT464	4.64	1"	LRB24-3	LRB24-SR	LF24	LF24-3	LF24-SR
Two-way	B225HT731	7.31	1"	LRB24-3	LRB24-SR	LF24	LF24-3	LF24-SR
Two-way	B225HT1160	11.6	1"	LRB24-3	LRB24-SR	LF24	LF24-3	LF24-SR
Two-way	B225HT1856	18.56	1"	LRB24-3	LRB24-SR	LF24	LF24-3	LF24-SR
Two-way	B225HT2800	28	1"	LRB24-3	LRB24-SR	LF24	LF24-3	LF24-SR

*Modified equal percentage characteristic

B_ _ _ / Select ball valve # from list above (brackets and mounting are included).

Select actuator # from list above (other options for the actuator family are also available)

Example: B215HT029 / TR24-SR 1/2" ball valve, Cv=0.29 with proportional non-spring return actuator

All valves are factory assembled. No field assembly required.

Note: Multi-Function Technology® (MFT) model actuators are available. Add -MFT to the base model number and specify the control signal configuration or the Belimo P-code for a pre-set MFT configuration (not required if to be field configured, or if the default configuration of 2-10 VDC is required).

RELATED PRODUCTS

SSTAG

Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order



CONTROL VALVES

BALL VALVES VG1000 SERIES

DESCRIPTION

The Johnson Controls **VG1000 Series** ball valves are available with two- and three-way body patterns with a characterized insert for equal percentage flow control and Cv ratings in the range of traditional globe valves. They are available in connection sizes from 1/2" to 2" (Cv's from 1.2 to 73.7). The **VG1000 Series** valves are used in combination with spring return and non-spring return direct-coupled actuators from Johnson Controls. The **VG1000 Series** are designed to control chilled water, hot water, 50% glycol, and 15 psig steam (stainless trim models only).

FEATURES

- **Minimum 200,000 full cycle life expectancy**
- **Compatible with water, glycol, and low-pressure steam**
- **Equal percentage flow characteristics**
- **Assembled or ordered separately**

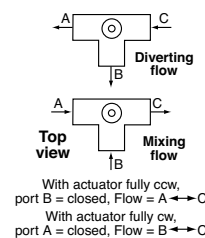
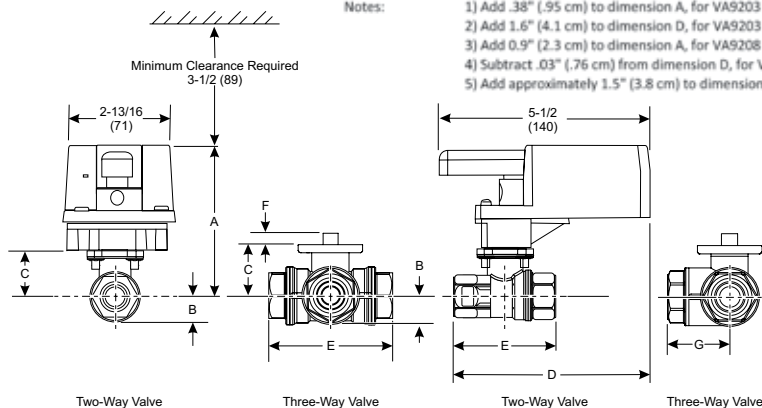


DIMENSIONS

Valve size	DIMENSIONS in (cm) (for non-spring return actuators; see notes below regarding spring-return actuators)						
	A ^{1,3}	B	C	D ^{2,4}	E	F	G
1/2" (DN15)	3.9 (9.8)	.65 (1.7)	1.2 (3.1)	5.1 (12.9)	2.5 (6.4)	.34 (9.0)	1.3 (3.2)
3/4" (DN20)	3.9 (9.8)	.65 (1.7)	1.2 (3.1)	5.2 (13.3)	2.8 (7.1)	.34 (9.0)	1.4 (3.6)
1" (DN25)	3.7 (10.0)	.75 (1.9)	1.3 (3.3)	5.6 (14.1)	3.4 (8.7)	.34 (9.0)	1.7 (4.3)
1-1/4" (DN32)	6.8 (17.3)	1.0 (2.6)	1.7 (4.4)	7.5 (19.0)	3.9 (10.0)	.34 (9.0)	2.0 (5.1)
1-1/2" (DN40)	6.8 (17.3)	1.1 (2.9)	1.9 (4.8)	7.7 (19.5)	4.3 (11.0)	.34 (9.0)	2.1 (5.4)
2" (DN50)	7.2 (18.2)	1.5 (3.7)	2.1 (5.3)	7.9 (20.1)	4.8 (12.3)	.34 (9.0)	2.6 (6.5)

Notes:

- 1) Add .38" (.95 cm) to dimension A, for VA9203 actuators (1/2" to 1" valves)
- 2) Add 1.6" (4.1 cm) to dimension D, for VA9203 actuators (1/2" to 1" valves)
- 3) Add 0.9" (2.3 cm) to dimension A, for VA9208 actuators (1-1/4" to 2" valves)
- 4) Subtract .03" (.76 cm) from dimension D, for VA9208 actuators (1/2" to 1" valves)
- 5) Add approximately 1.5" (3.8 cm) to dimension A when adding thermal barrier to VA9xxx actuators



Three-way Flow Pattern

SPECIFICATIONS

Size	1/2" to 2" FNPT
Cv Range	1.2 to 73.7
Life Expectancy	200,000 leak-free cycles
Body Pattern	Two-way and three-way mixing or diverting
Flow Characteristic	Equal percentage
Leakage Rating	ANSI Class IV (0.01% of Cv)
Maximum Closeoff Pressure	200 psid (1378 kPa)
Pressure Drop	50 psid (345 kPa) maximum; full port valves up to 150 psid (1034 kPa)
Pressure Rating	580 psig (3996 kPa), PN40
Materials Of Construction	Forged brass body, stainless steel (or chrome-plated brass) ball, stainless steel (or nickel-plated brass) stem, EPDM o-ring stem seals and graphite reinforced PTFE seats

Media Compatibility	Hot or chilled water, <50% glycol, <15 psi steam (stainless trim models only)
Media Temperature Range	Stainless trim: 23° to 250°F (-5° to 121°C); Brass trim: 23° to 203°F (-5° to 95°C)
Compatible Actuators	Non-spring return: VA9104 (integral linkage) or M9109 w/M9000-520 linkage; Spring return: VA9203, VA9208 (integral linkage)
Operating Temperature	See M9100 Series and M9200 Series in ACTUATORS & DAMPERS catalog section
Warranty	1 year



ORDERING INFORMATION

VALVE							NON-SPRING RETURN ACTUATOR				SPRING RETURN ACTUATOR		
2-WAY BRASS TRIM	2-WAY SS TRIM	3-WAY BRASS TRIM	3-WAY SS TRIM	SIZE	CV	CLOSE- OFF	TWO- POSITION	FLOATING	PROPORTIONAL	LINKAGE	TWO- POSITION	FLOATING	PROPORTIONAL
VG1241AD	VG1245AD	VG1841AD	VG1845AD	1/2"	1.2	200 PSIG	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	INCLUDED M9000-520	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241AE	VG1245AE	VG1841AE	VG1845AE	1/2"	1.9	200 PSIG	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	INCLUDED M9000-520	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241AF	VG1245AF	VG1841AF	VG1845AF	1/2"	2.9	200 PSIG	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	INCLUDED M9000-520	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241AG	VG1241AG	VG1841AG	VG1841AG	1/2"	4.7	200 PSIG	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	INCLUDED M9000-520	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241AL	VG1245AL	VG1841AL	VG1845AL	1/2"	7.4	200 PSIG	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	INCLUDED M9000-520	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241AN	VG1245AN	VG1841AN	VG1845AN	1/2"	11.7	200 PSIG	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	INCLUDED M9000-520	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241BG	VG1245BG	VG1841BG	VG1845BG	3/4"	4.7	200 PSIG	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	INCLUDED M9000-520	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241BL	VG1245BL	VG1841BL	VG1845BL	3/4"	7.4	200 PSIG	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	INCLUDED M9000-520	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241BN	VG1245BN	VG1841BN	VG1845BN	3/4"	11.7	200 PSIG	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	INCLUDED M9000-520	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241CL	VG1245CL	VG1841CL	VG1845CL	1"	7.4	200 PSIG	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	INCLUDED M9000-520	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241CN	VG1245CN	VG1841CN	VG1845CN	1"	11.7	200 PSIG	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	INCLUDED M9000-520	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241CP	VG1245CP	VG1841CP	VG1845CP	1"	18.7	200 PSIG	VA9104-IGA-3S M9106-IGA-2	VA9104-AGA-3S M9106-AGA-2	VA9104-GGA-3S M9106-GGA-2	INCLUDED M9000-520	VA9203-BGA-2	VA9203-GGA-2Z	VA9203-GGA-2Z
VG1241DN	VG1245DN	VG1841DN	VG1845DN	1-1/4"	11.7	200 PSIG	M9106-IGA-2	M9106-AGA-2	M9106-GGA-2	M9000-520	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241DP	VG1245DP	VG1841DP	VG1845DP	1-1/4"	18.7	200 PSIG	M9106-IGA-2	M9106-AGA-2	M9106-GGA-2	M9000-520	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241DR	VG1245DR	VG1841DR	VG1845DR	1-1/4"	29.2	200 PSIG	M9106-IGA-2	M9106-AGA-2	M9106-GGA-2	M9000-520	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241EP	VG1245EP	VG1841EP	VG1845EP	1-1/2"	18.7	200 PSIG	M9106-IGA-2	M9106-AGA-2	M9106-GGA-2	M9000-520	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241ER	VG1245ER	VG1841ER	VG1845ER	1-1/2"	29.2	200 PSIG	M9106-IGA-2	M9106-AGA-2	M9106-GGA-2	M9000-520	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241ES	VG1245ES	VG1841ES	VG1845ES	1-1/2"	46.8	200 PSIG	M9106-IGA-2	M9106-AGA-2	M9106-GGA-2	M9000-520	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241FR	VG1245FR	VG1841FR	VG1845FR	2"	29.2	200 PSIG	M9109-AGA-2	M9109-AGA-2	M9109-GGA-2	M9000-520	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241FS	VG1245FS	VG1841FS	VG1845FS	2"	46.8	200 PSIG	M9109-AGA-2	M9109-AGA-2	M9109-GGA-2	M9000-520	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2
VG1241FT	VG1245FT	VG1841FT	VG1845FT	2"	73.7	200 PSIG	M9109-AGA-2	M9109-AGA-2	M9109-GGA-2	M9000-520	VA9208-BGA-3	VA9208-AGA-2	VA9208-GGA-2

For models with switches, change to actuator model number to include "C" instead of "A" at the end of the three letter insert. **Example: VA9203-GGC-2Z**
Refer to actuator pages for wiring diagrams

- Notes:**
1. Order optional thermal barrier **M9000-561** for steam applications when using VA actuators. Barrier is included with linkage **M9000-520**.
 2. Order optional weather shield **M9000-341** for assemblies using VA actuators. Not available for assemblies using M actuators + linkage.
 3. Valves are also available with sweat connections; models are **VG1275** instead of **VG1245**, for example.
 4. Valves are also available with press connections; models are **VG1295** instead of **VG1245**, for example.
 5. Spring return assembly model numbers have either **-NC** (normally closed) or **-NO** (normally open) suffix and will be pre-assembled as such.
For 3W valves, "normal" refers to flow to the coil, port A.
 6. Requires controller with timeout, or use **M9106-IGA-2**. No time out on **M109**. The **M9106-IGA** valve size limit is 1.5" maximum.
 7. Valves, linkages, and actuators can be ordered separately or assembled (no extra charge).
 8. Not all options shown in chart. Contact Kele for more information.



CONTROL VALVES

BALL VALVES

VBN2, VBN3 SERIES

DESCRIPTION

The **VBN2** and **VBN3 Series** are Honeywell's characterized flow, low torque, two- and three-way ball valves. They are designed to provide Cv ratings that closely match industry standard globe valves and they have equal percentage flow characteristics. A single-style bracket maximizes simplicity and flexibility in mounting spring or non-spring return actuators. The valve bodies are 1/2" to 2" NPT sizes and use low torque, low cost actuators.

3

CONTROL VALVES

FEATURES

- *Parabolic flow insert constructed into the ball*
- *Cv ratings similar to globe valves*
- *Three-way body pattern similar to globe valves*
- *Low torque means smaller, lower cost actuators*
- *Common mounting bracket*
- *Removable manual override handle*
- *Flexible bracket orientation*
- *Plenum rated*
- *Available with or without actuator*
- *Nema 3R option available*

Honeywell



VBN2, VBN3 Series

SPECIFICATIONS

Size	1/2" to 3" FNPT (three-way to 2-1/2")
Cv Range	0.38 to 162
Body Pattern	Two-way and three-way (mixing or diverting)
Flow Characteristic	Two-way: equal percentage for models with parabolic insert, linear for full port models; Three-way: equal percentage ports A-to-AB and linear ports B-to-AB
Leakage Rating	ANSI Class IV (0.01% of Cv)
Maximum Closeoff Pressure	Two-way 1/2" and 3/4": 130 psid (897 kPa); Two-way 1" to 3": 100 psid (690 kPa); Three-way 1/2" to 1": 50 psid (345 kPa); Three-way 1-1/4" to 2-1/2": 40 psid (276 kPa)

Materials Of Construction

Forged brass body (ASTM B283), nickel-plated brass (or stainless steel) ball and stem, EPDM o-ring stem seals and EPDM with reinforced Teflon® ball seals

Media Compatibility

Hot or chilled water, <50% glycol

Media Temperature Range

-22° to 250°F (-30° to 121°C)

Compatible Actuators

Any Honeywell or Kele 44 in-lb non-spring return or spring return actuator will operate all VBN2, VBN3 assemblies up to 3"

Operating Temperature

See MN Series, MVN Series, and MS Series in ACTUATORS & DAMPERS catalog section

Pressure Rating

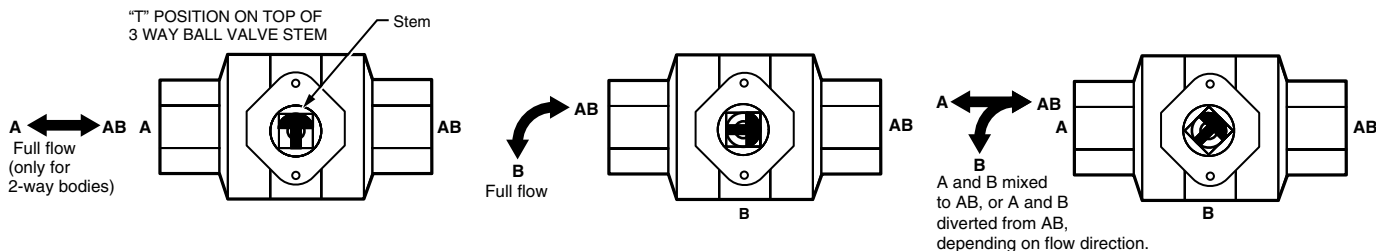
360 psig (2482 kPa) @ 250°F (121°C)

Warranty

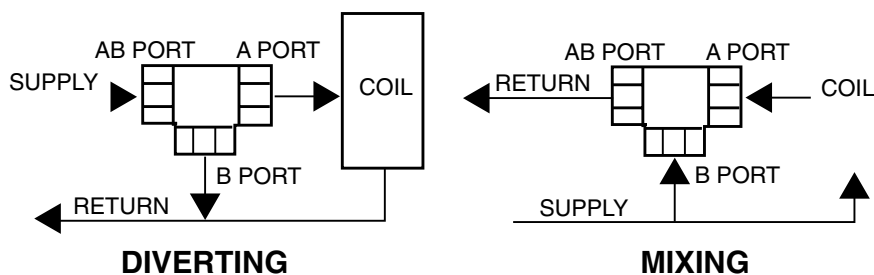
1 year on valves, 5 years on actuators



ORIENTATION OF BALL IN VALVE



FLOW ORIENTATION



Three-way ball valve flow for orientation (not to scale).

RANGEABILITY

Rangeability is a measure of a valve's controllability. It is a measured property and is expressed as the ratio of a valve's maximum flow rate to its minimum controllable flow rate.

2-WAY AVAILABLE CV AND RANGEABILITY

VBN2A	CV	0.38	0.68	1.30	2.00	2.30	4.70	8.00	11.70	
	Rangeability	41	17	52	*	321	159	390	251	
VBN2B	CV	0.31	0.63	1.20	2.50	4.30	7.40	10.10	14.70	29.00
	Rangeability	41	17	52	321	159	*	390	251	1503
VBN2C	CV	4.40	9.00	15.30	26.00	44.00	54.00			
	Rangeability	159	390	1040	484	1263	1207			
VBN2D	CV	4.40	8.30	14.90	25.00	37.00	41.00	102.00		
	Rangeability	159	390	1040	*	484	1207	1263		
VBN2E	CV	23.00	30.00	41.00	74.00	172.00				
	Rangeability	484	*	603	1263	558				
VBN2F	CV	42.00	57.00	71.00	100.00	108.00	210.00	266.00		
	Rangeability	603	*	287	*	558	750	877		
VBN2G	Cv	45.00	55.00	72.00	101.00	162.00	202.00			
	Rangeability	250	*	287	558	750	877			
VBN2H	Cv	49.00	63.00	82.00	124.00	145.00				
	Rangeability	250	287	558	750	877				



CONTROL VALVES

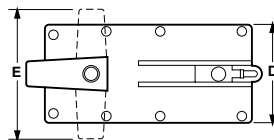
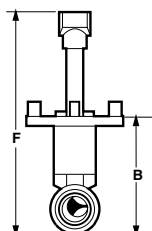
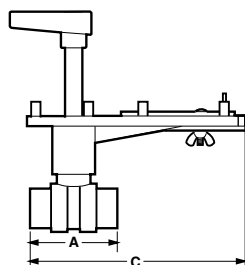
BALL VALVES

VBN2, VBN3 SERIES

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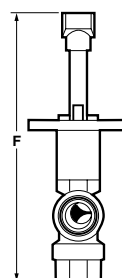
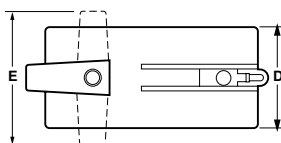
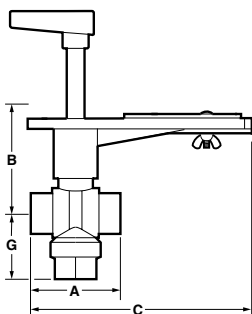
CONTROL VALVES

DIMENSIONS



Pipe Size	Model No.	Cv	Dimensions inches (mm)						Weight lb (kg)
			A	B	C	D	E	F	
1/2"	VBN2A	0.38, 0.68, 1.3, 2.0, 2.6, 4.7, 11.7	2-3/8 (60)	3-7/16 (87)	6-5/8 (168)	3 (76)	4 (102)	8-1/8 (206)	1 (0.5)
		8.0	2-5/8 (67)	3-11/16 (94)	6-1/2 (165)	3 (76)	4 (102)	8-5/16 (211)	1 (0.5)
3/4"	VBN2B	0.31, 0.63, 1.2, 2.5, 4.3, 7.4, 14.7	2-3/8 (60)	3-7/16 (87)	6-7/16 (164)	3 (76)	4 (102)	8-1/8 (206)	1 (0.5)
		10.1, 29	2-5/8 (67)	3-11/16 (94)	6-1/2 (165)	3 (76)	4 (102)	8-5/16 (211)	1 (0.5)
1"	VBN2C	9.0	3-3/4 (95)	3-11/16 (94)	7-1/16 (179)	3 (76)	4 (102)	8-5/16 (211)	1 (0.5)
		4.4, 15.3, 54	3 (76)	3-15/16 (100)	6-3/4 (171)	3 (76)	4 (102)	8-11/16 (221)	1.4 (0.6)
		26, 44	4-3/8 (111)	4-7/16 (113)	7-3/8 (187)	3 (76)	4 (102)	8-7/8 (225)	2.4 (1.1)
1-1/4"	VBN2D	4.4, 8.3, 14.9, 25, 41	3 (76)	3-15/16 (100)	6-11/16 (170)	3 (76)	4 (102)	8-11/16 (221)	1.4 (0.6)
		37, 102	3-5/8 (92)	4-7/16 (113)	7 (178)	3 (76)	4 (102)	9-1/16 (231)	2.4 (1.1)
1-1/2"	VBN2E	23, 30, 74	3-3/8 (86)	3-15/16 (100)	6-15/16 (176)	3 (76)	4 (102)	9-1/16 (231)	2.4 (1.1)
		41, 172	3-3/4 (95)	5-3/16 (132)	7-1/16 (179)	3 (76)	4 (102)	8-7/8 (225)	3.2 (1.5)
2"	VBN2F	42, 108	4 (102)	5-3/16 (132)	7-3/16 (183)	3 (76)	4 (102)	8-7/8 (225)	3.2 (1.5)
		57, 71, 100, 210, 266	4-3/8 (111)	5-3/4 (146)	7-7/16 (189)	3 (76)	4 (102)	10-1/2 (267)	5.5 (2.5)
2-1/2"	VBN2G	45, 55, 72, 101, 162, 202	4-3/4 (121)	5-3/4 (146)	7-9/16 (192)	3 (76)	4 (102)	10-1/2 (267)	5.5 (2.5)
3"	VBN2H	49, 63, 82, 124, 145	5 (127)	5-7/8 (149)	7-11/16 (195)	3 (76)	4 (102)	10-11/16 (271)	5.9 (2.7)

VBN2 dimensions in inches (millimeters)



Pipe Size	Model No.	Cv	Dimensions inches (mm)						Weight lb (kg)
			A	B	C	D	E	F	
1/2"	VBN3A	0.33, 0.59, 1.0, 2.4, 4.3, 8.0	3-1/2 (90)	3-5/16 (84)	7 (178)	3 (76)	4 (102)	9-3/8 (238)	2.4 (1.1)
3/4"	VBN3B	0.40, 0.66, 1.3, 2.4, 3.8, 7.0, 11.0	2-13/16 (71)	3-5/16 (84)	6-1/2 (168)	3 (76)	4 (102)	8-13/16 (224)	2 (0.9)
1"	VBN3C	0.40, 0.65, 1.3, 2.3, 3.5	3-13/16 (97)	3-5/16 (84)	7-5/16 (186)	3 (76)	4 (102)	9-1/2 (241)	2.8 (1.3)
		8.6, 22	3 (76)	3-13/16	6-13/16 (173)	3 (76)	4 (102)	9-13/16 (249)	2.6 (1.2)
		4.5, 14.9, 31	4-1/2 (114)	4 (102)	7-13/16 (198)	3 (76)	4 (102)	10-13/16 (275)	3.3 (1.5)
1-1/4"	VBN3D	4.1, 8.7, 19.0	3 (76)	3-13/16	6-13/16 (173)	3 (76)	4 (102)	9-13/16 (249)	2.5 (1.1)
		12.7, 27, 34	3-5/8 (92)	4 (102)	7-5/16 (186)	3 (76)	4 (102)	10-5/16 (262)	2.8 (1.3)
1-1/2"	VBN3E	4.0, 8.3, 13.4, 32	4-1/2 (114)	4 (102)	7-13/16 (198)	3 (76)	4 (102)	10-13/16 (275)	3.3 (1.5)
		24, 61	4 (102)	4-1/2 (114)	7-5/16 (186)	3 (76)	4 (102)	11 (279)	3.3 (1.5)
2"	VBN3F	24, 38, 57	4 (102)	4-1/2 (114)	7-5/16 (186)	3 (76)	4 (102)	11 (279)	3.3 (1.5)
		83, 109	5 (127)	5-13/16	7-13/16 (198)	3 (76)	4 (102)	12-5/16 (313)	3.8 (1.7)
2-1/2"	VBN3G	38, 74, 100	5 (127)	5-13/16	7-13/16 (198)	3 (76)	4 (102)	12-5/16 (313)	3.8 (1.7)

VBN3 dimensions in inches (millimeters)



ORDERING INFORMATION, VALVE BODY WITH ACTUATOR

MODEL	
VBN	VB Series Ball Valve with Female NPT threaded connections
CONFIGURATION	
2	2-Way
3	3-Way
CONNECTION SIZE	
A	1/2"
B	3/4"
C	1"
D	1-1/4"
E	1-1/2"
F	2"
G	2-1/2"
H	3" (2-Way valves only)
CODE for Cv SELECTION	
x	See Tables 1 and 2 for the Ordering Code to place here
VALVE TRIM	
P	Nickel chrome plate brass
S	316 stainless steel
VALVE PROFILE	
A	MVN standard (1/2", 3/4", 1" and 1-1/4" valves)
L	MVN low profile (1/2", 3/4", 1" and 1-1/4" valves only)**
X	MN, MS or Kele actuator base
ACTUATOR	
0	No actuator (valve body only)
1	MVN613 On/Off or floating (90 second timing)
2	MVN643 On/Off or floating (30 second timing)
3	MVN713 Modulating
4	MN6105A1011-Direct Coupled Actuator (DCA), floating On/Off (SPDT)
5	MN7505A2001-Direct Coupled Actuator (DCA), floating, modulation, On/Off (SPDT), Non-spring return
6	MS7505A2030- Direct Coupled Actuator (DCA), floating, modulation, On/Off (SPDT), Spring return
7	MS8105A1030- Direct Coupled Actuator (DCA), 2-Position (SPST), Spring return
FAIL SAFE POSITION	
0	Fail in place/ No actuator
1	Fail safe open
2	Fail safe closed
3	Fail A to AB Open
4	Fail B to AB Open
OPTIONS	
00	Standard actuator- no options
01	1 meter cable
02	NEMA 3R Enclosure (DCA actuators only)

VBN 2 A B P A 1 1 00 **Example: VBN2ABPA1100**

*Standard base provides clearance between valve and actuator for insulation.

**Low profile base enables installation of valve and actuator in tight spaces.

NOTE: All functions and options are not available with all versions

RELATED PRODUCTS

SSTAG

Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order



CONTROL VALVES

BALL VALVES

VBN2, VBN3 SERIES

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CONTROL VALVES

TABLE 1: VBN2 2-WAY VALVE CV CODE SELECTION CHART

Ordering Code	Valve Size							
	Cv							
	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
B	0.38	0.31						
D	0.68	0.63						
E	1.3	1.2						
F	2.0							
G	2.6	2.5						
H	4.7	4.3	4.4	4.4				
J	8.0	7.4	9.0	8.3				
K	11.7	10.1		14.9				
L		14.7	15.3	25.0	23.0			
M		29.0	26.0	37.0	30.0			
N			44.0	41.0	41.0	42.0	45.0	49.0
P			54.0			57.0	55.0	63.0
R					74.0	71.0	72.0	82.0
S				102.0		100.0	101.0	
T						108.0		124.0
U							162.0	145.0
1					172.0	210.0	202.0	
2						266.0		

TABLE 2: VBN3 3-WAY VALVE CV CODE SELECTION CHART

Ordering Code	Valve Size						
	Cv						
	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"
B	0.33						
C	0.59	0.4	0.4				
D		0.66	0.65				
E	1.0	1.3	1.3				
F	2.4	2.4	2.3				
G		3.8	3.5				
H	4.3		4.5	4.1	4.0		
J	8.0	7.0	8.6	8.7	8.3		
K		11.0	14.9	12.7	13.4		
L			22.0	19.4	24.0	24.0	
M			31.0	27.0	32.0		
N				34.0		38.0	38.0
P					61.0	57.0	
R						83.0	74.0
S							100.0
T						109.0	



VSI
VALVE SOLUTIONS INC.



3

CONTROL VALVES



DESCRIPTION

The VSI **V-Ball Series** is a unique, industrial-grade valve with temperature, pressure, leakage, and close-off ratings that far exceed those of standard commercial grade valves. The **V-Ball Series** assures positive low-leakage control in higher pressure systems such as those with variable speed pumps. With a standard carbon steel body and a Standard ANSI 150/300 pressure-temperature rating, the **V-Ball Series** can handle up to 250 psi differential (closeoff) in hot or chilled water systems and up to 125 psi saturated steam. These valves excel in high-rise building applications and any high-temperature/high-pressure/high-range-ability application.

FEATURES

- Up to 250 psi close off
- Good for chilled or hot water, 50% Glycol, and steam
- ANSI 150/300
- Stainless steel body available
- Thermal overload protection
- Internal heaters on selected actuators
- TFM 1700 seat
- Peek bearing
- ALFAS o-ring

NEW!



VSI V-Ball Series

SPECIFICATIONS

Sizes		Materials (Standard):	
Threaded/Wafered	1" to 2"	Body	Carbon steel
Flanged	3" to 6"	Ball	304 stainless steel
Rangeability	300:1 turndown ratio	Stem	304 stainless steel
Flow Characteristic	Equal percentage	Seat	PTFE
Body Rating		Packing	Teflon®
1" to 2"	ANSI 150/300 multi-rated	Bushing	Stanyl PA46
3" to 6"	ANSI 150 or ANSI 300	Materials (Optional):	
Leakage Rating	ANSI Class VI	Body	304 stainless steel
Media Compatibility	125 psi steam, 50% glycol	Shaft Bearing	PTFE
Maximum Closeoff Pressure	250 psi	Seat	Graphite
Maximum System Pressure	300 psi	Pressure Rating	250 psi
Pressure Drop	100 psi	Temperature Range	-50° to 400°F (-45°C to 204°C)
Dimensions	ASME B16.10 face to ace	Approvals	CSA US File 226201
		Warranty	1 year



CONTROL VALVES

BALL VALVE- V-BALL V-BALL SERIES

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CONTROL VALVES

CV VALUES

Flow Coefficients (Cv) for V-Series Ball Valves 1" - 6"

Flow Coefficient	Valve Size, Inches	Valve Rotation in Degrees										Torque Required @ 250 psi Close Off in-lb
		10	20	30	40	50	60	70	75	80	90	
Cv	V-1 (1")	0.04	0.5	3	5	8	12	17	24	29	31	40
	V-1.5 (1.5")	0.07	3	7	12	21	29	40	55	68	73	80
	V-2 (2")	0.09	4	10	21	34	43	65	77	85	96	130
	V-3 (3")	1	12	29	49	68	117	157	207	215	270	200
	V-4 (4")	4	22	46	86	130	195	279	350	421	529	400
	V-6 (6")	5	33	79	148	230	330	440	507	575	850	650

ELECTRIC ACTUATOR SPECIFICATIONS (SIZED FOR 250 PSI CLOSE-OFF)

VALVE SIZE	CLOSE OFF PSI	ELECTRIC ACTUATOR	ELECTRIC POWER	CONTROL SIGNAL	TORQUE (IN/LB)	FAIL SAFE	RUN TIME (SECONDS)	DIMENSIONS (HxWxL)
1"	250	KA-44	24 VAC (6VA)	2-POS, FLOAT, 2-10 VDC	44	YES	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
1.5"	250	KA-88	24 VAC (6VA)	2-POS, FLOAT, 2-10 VDC	88	YES	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
2"	250	KAS-175	24 VAC (16VA)	2-POS, FLOAT, 2-10 VDC	175	YES	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
3"	250	KA-301	24 VAC (9VA)	2-POS, FLOAT, 2-10 VDC	301	NO	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
3"	250	EFB24	24 VAC (6VA)	2-POS, FLOAT, 2-10 VDC	270	YES	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
4"	250	EFB24 (X2)	24 VAC (6VA)	2-POS, FLOAT, 2-10 VDC	540	YES	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
4"-6"	250	GMB24 (X2)	24 VAC (6VA)	2-POS, FLOAT, 2-10 VDC	360	NO	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
6"	250	GKX24MFT(X2)	24 VAC (42VA)	2-POS, FLOAT, 2-10 VDC	720	YES	95	13" x 7" x 9.25" (33 x 17.8 x 23.5 cm)
1" - 3"	250	1005-X	24 VAC (40VA) or 120 VAC (40VA)	2-POS, FLOAT, 2-10 VDC, 4-20mA	443	NO	20	6.3" x 5.4" x 6.3" (16 x 13.7 x 16 cm)
4"-6"	250	1010-X	24 VAC (46VA) or 120 VAC (97VA)	2-POS, FLOAT, 2-10 VDC, 4-20mA	885	NO	30	7.2" x 5.8" x 7.7" (18.2 x 14.7 x 19.6 cm)

1. Series 1000-X modulating units are equipped with control modules that accept 2-10V or 4-20mA control signal and feedback signal of 4-20mA.
2. The KA and KAS actuators are Kele brand direct coupled actuators and are rated NEMA 2 - indoor use. They can be used on the smaller sized 2-4" valves. The same applies to the G Series Belimo brand.
3. The Series 1000-X actuators are standard equipped with a heater and are NEMA 4 rated for outdoor usage.

NEW!

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NEW!



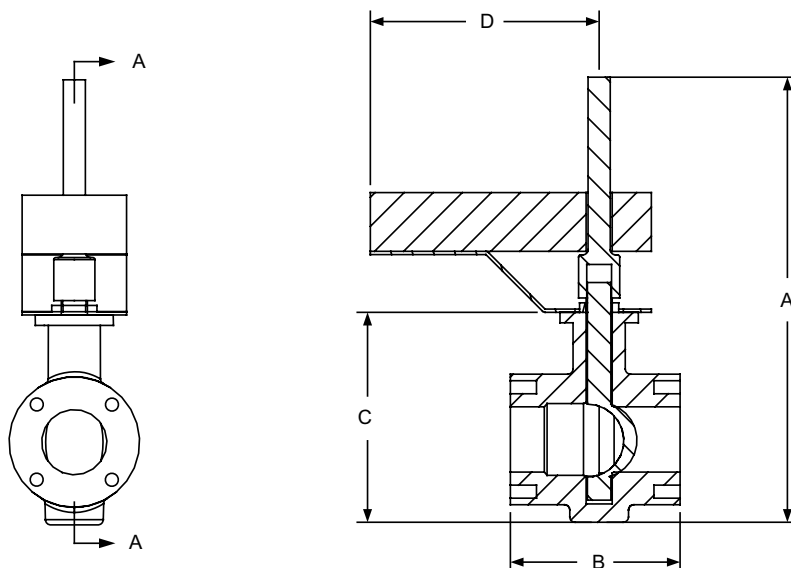
CONTROL VALVES

BALL VALVE- V-BALL V-BALL SERIES

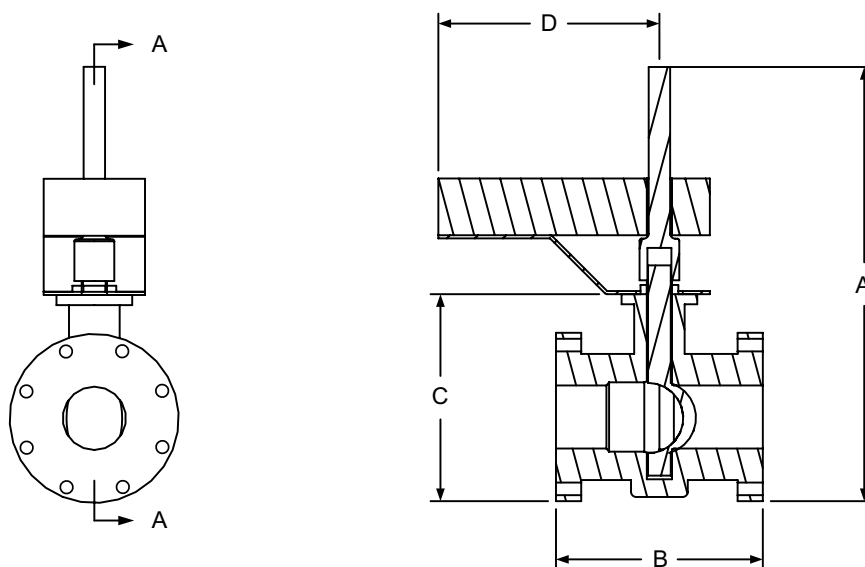
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CONTROL VALVES

DIMENSIONS



VALVE SIZE	SERIES V 2-WAY THREADED/WAFERED			
	A	B	C	D
1"	15	5	7	10
1.5"	17	6.5	8	10
2"	19	7	9	10



VALVE SIZE	SERIES V 2-WAY FLANGED			
	A	B	C	D
3"	22.5	8	10.5	10
4"	24	9	12	10
6"	26.5	10.5	14.5	10

NEW!



ELECTRIC ACTUATOR CODES (NEMA 4 ELECTRIC)				
VALVE SIZE	1E2V	2E2V	1EMV2 / 1EMV4	2EMV2 / 2EMV4
1"	1005-X	1005-X-24V	1005/S-X-2(4)	1005/S-X-24V-2(4)
1.5"	1005-X	1005-X-24V	1005/S-X-2(4)	1005/S-X-24V-2(4)
2"	1005-X	1005-X-24V	1005/S-X-2(4)	1005/S-X-24V-2(4)
3"	1005-X	1005-X-24V	1005/S-X-2(4)	1005/S-X-24V-2(4)
4"	1010-X	1010-X-24V	1010/S-X	1010/S-X-24V-2(4)
6"	1010-X	1010-X-24V	1010/S-X	1010/S-X-24V-2(4)

ELECTRIC ACTUATOR CODES (NEMA 2 ELECTRIC)				
VALVE SIZE	2E2D	2E2DSC / 2E2DS0	2EMD	2EMDSC / 2EMDSO
1"	KA-44-2T	KAS-44-2	KA-44-M	KAS-44-M
1.5"	KA-88-2T	KAS-88-2	KA-88-M	KAS-88-M
2"	KA-175-2T	KAS-175-2	KA-175-P	KAS-175-M
3"	KA-301-2T	EFB24	KA-301-P	EFB24-SR
4"	GMB24-3(X2)	EFB24(X2)	GMB24-SR(X2)	EFB24-SR(X2)
6"	GMB24-3(X2)	GKX24-MFT(X2)	GMB24-SR(X2)	GKX24-MFT(X2)

ACTUATOR CODES (LOW PRESSURE PNEUMATIC- 20PSI AIR)				
VALVE SIZE	LP2SC	LP2SO	LPMSC	LPMSO
1"	D-3153-5130	D-3153-5130	D-3153-5120	D-3153-5120
1.5"	D-3153-5130	D-3153-5130	D-3153-5120	D-3153-5120
2"	D-3153-5130	D-3153-5130	D-3153-5120	D-3153-5120
3"	D-3244-5110	D-3244-5110	D-3244-5100	D-3244-5100
4"	D-3246-5110	D-3246-5110	D-3246-5100	D-3246-5100
6"	D-3246-5110	D-3246-5110	D-3246-5100	D-3246-5100

ACTUATOR CODES (HIGH PRESSURE PNEUMATIC-80 PSI AIR)				
VALVE SIZE	HP21 / HP22 HP2S01 / HP2S02	HP2SC1 / HP2SC2	HPM	HPMSC / HPMSO
1"	C-DA63/WT8	C-SR63/WT8	C-DA63/VP7G	C-SR63/VP7G
1.5"	C-DA63/WT8	C-SR63/WT8	C-DA63/VP7G	C-SR63/VP7G
2"	C-DA63/WT8	C-SR83/WT8	C-DA63/VP7G	C-SR83/VP7G
3"	C-DA63/WT8	C-SR83/WT8	C-DA63/VP7G	C-SR83/VP7G
4"	C-DA83/WT8	C-SR105/WT8	C-DA83/VP7G	C-SR105/VP7G
6"	C-DA092/WT8	C-SR125/WT8	C-DA092/VP7G	C-SR125/VP7G



CONTROL VALVES

BALL VALVE- V-BALL V-BALL SERIES

3

CONTROL VALVES

ORDERING INFORMATION

MODEL	DESCRIPTION			
V	V-Ball			
	SIZE			
-1	1"			
-1.5	1.5"			
-2	2"			
-3	3"			
-4	4"			
-6	6"			
	ACTUATOR			
-2E2V	NEMA 4, 24V electric, 2-position	-LP2SC	Low pressure pneumatic, 2-position, spring return, NC	
-2EMV2	NEMA 4, 24V electric, modulating, 2-10 VDC input	-LP2SO	Low pressure pneumatic, 2-position, spring return, NO	
-2EMV4	NEMA 4, 24V electric, modulating, 4-20 mA input	-LPMSC	Low pressure pneumatic, 3-15 positioner, spring return, NC	
-1E2V	NEMA 4, 120V electric, 2-position	-LPMSC	Low pressure pneumatic, 3-15 positioner, spring return, NO	
-1EMV2	NEMA 4, 120V electric, modulating, 2-10 VDC input	-HP21	High pressure pneumatic, double acting, 120V solenoid	
-1EMV4	NEMA 4, 120V electric, modulating, 4-20 mA input	-HP22	High pressure pneumatic, double acting, 24V solenoid	
-2E2D	NEMA 2, 24V electric, 2-position	-HPM	High pressure pneumatic, double acting, 3-15 positioner	
-2E2DSC	NEMA 2, 24v electric, 2-position, spring return, NC	-HP2SC1	High pressure pneumatic, spring return, NC, 120V solenoid	
-2E2DSO	NEMA 2, 24v electric, 2-position, spring return, NO	-HP2SO1	High pressure pneumatic, spring return, NO, 120V solenoid	
-2EMD	NEMA 2, 24V electric, modulating	-HP2SC2	High pressure pneumatic, spring return, NC, 24V solenoid	
-2EMDSC	NEMA 2, 24v electric, modulating, spring return, NC	-HP2SO2	High pressure pneumatic, spring return, NO, 24V solenoid	
-2EMDSO	NEMA 2, 24v electric, modulating, spring return, NO	-HPMSC	High pressure pneumatic, spring return, NC, 3-15 positioner	

V

-2

-1EMV2

Example: **V-2-1EMV2** Two-inch NEMA4, 120V electric, modulating 2-10 VDC output

RELATED PRODUCTS

MODEL
KOV-3
KOV-4
SSTAG

DESCRIPTION
NEMA 3R fabric weather cover 10" x 10"
NEMA 3R fabric weather cover 14" x 12"
Stainless steel tag on bead chain, 1" x 2" dog tag, custom engraved per order

NEW!

CONTROL VALVES

PRESSURE INDEPENDENT CONTROL VALVES PICCV SERIES



DESCRIPTION

The Belimo **PICCV Series** valves combine a differential pressure regulator with a 2-way characterized control valve to supply a specific flow rate regardless of system pressure fluctuations. The valve performs the function of a balancing valve and a control valve in one unit. PICCV valves can be used to regulate flow through air handling unit heating and cooling coils, fan coil units, unit ventilators and VAV reheat coils.

FEATURES

- *Compensates for pressure variations to maintain system performance at varying loads*
- *Predictable flow throughout valve travel provides favorable energy savings*
- *Helps to maintain desired delta T and reduces additional chiller staging*
- *Constant flow performance reduces actuator movement and hunting to extend actuator life*
- *Valve is sized based on coil flow rate and not Cv simplifies valve selection and saves time*

NEW!

BELIMO



PICCV_ARX24-MFT

APPLICATION

The Pressure Independent Characterized Control Valve is typically used in air handling units on heating and cooling coils, and fan coil unit heating or cooling coils. Some other common applications include unit ventilators and VAV reheat coils. This valve is suitable for use in a hydronic system with constant or variable flow.

This valve is designed with MFT functionality which facilitates the use of various control input.

3

CONTROL VALVES

SPECIFICATIONS

Connections	NPT female ends	Materials of Construction	
Flow Characteristic	Equal percentage	Body	Nickel-plated brass
Flow Range	75°	Ball and Stem	Chrome-plated brass
Leakage Rating	0.01% of rated valve capacity at 50 psi differential	Media Compatibility	Chilled or hot water, 60% Glycol maximum
Leakage Class	ANSI Class IV	Weight, Valve Body Only	
Maximum Closeoff Pressure	200 psi	1/2"	5.8 lb (2.6 kg)
Pressure Drop	5 to 50 psid	3/4"	3.8 lb (1.7 kg)
Maximum Pressure Rating		1"	13.1 lb (5.9 kg)
1/2", 3/4", 1"	600 psi	1-1/4"	10.7 lb (4.9 kg)
1-1/4", 1-1/2", 2"	400 psi	1-1/2"	12.5 lb (5.7 kg)
		2"	10.1 lb (4.6 kg)
		Warranty	5 years

NEW!



CONTROL VALVES

PRESSURE INDEPENDENT CONTROL VALVES

PICCV SERIES

3

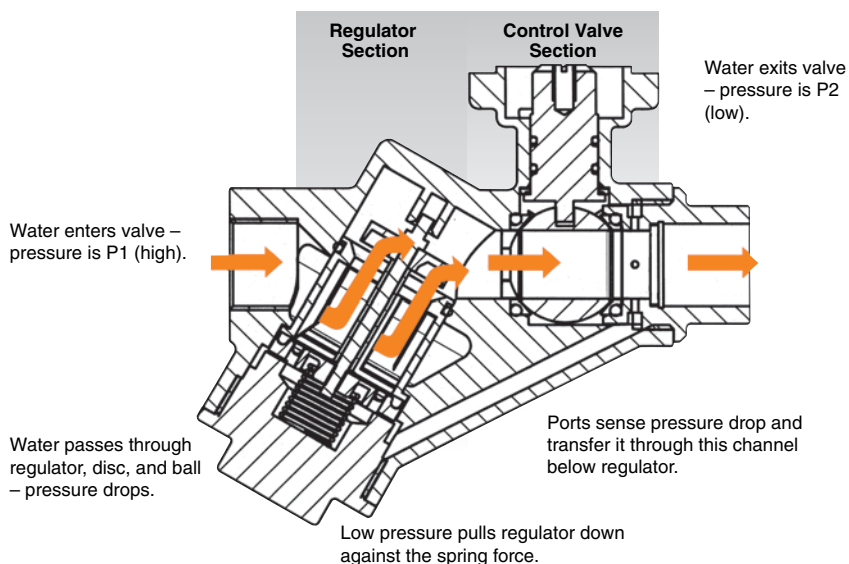
CONTROL VALVES

FLOW PATTERN

PICCV consists of a differential pressure regulator in series with a control valve.

The amount of flow that passes through the valve is controlled by the use of a pressure regulator that moves according to the change in pressure above and below it.

All pressure changes are absorbed by the pressure regulator allowing the differential pressure to be held constant over the control valve section thereby giving the same flow.



TYPICAL APPLICATION

The Pressure Independent Characterized Control Valves can be piped in a parallel orientation to achieve increased flow rates.

Our **PICCV** valves are available in flows to 100 GPM. To achieve flows larger than this, it is recommended to connect two of these valves in parallel leading to a common manifold. To correctly operate these valves, the Belimo Multi Function Technology (MFT) will be employed to utilize one common control signal.

For example, the first valve will be outfitted with an MFT actuator that will correspond to a 2-5 or 2.6 VDC signal. The second valve would be outfitted with an MFT actuator that would correspond to a 6-10 VDC signal. Therefore, through a single 2-10 VDC output, the full flow range will be achieved. The actuators will be wired in a parallel arrangement. The established configured P Codes are P-10137 for 2-5 VDC, P-10118 for 2-6 VDC, and P-10119 for 6-10 VDC.

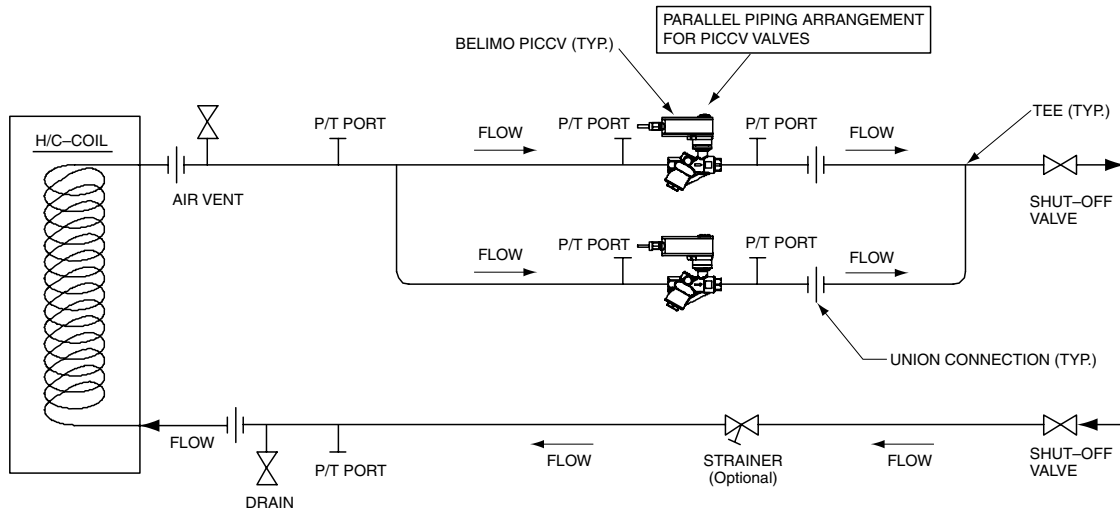
This recommended application provides the control of flows up to 200 GPM by using two valves. The top diagram on the next page details valves piped in a parallel arrangement. The bottom diagram features a typical single piping arrangement.

If more than three valves are piped in parallel, please call Belimo to discuss control options.

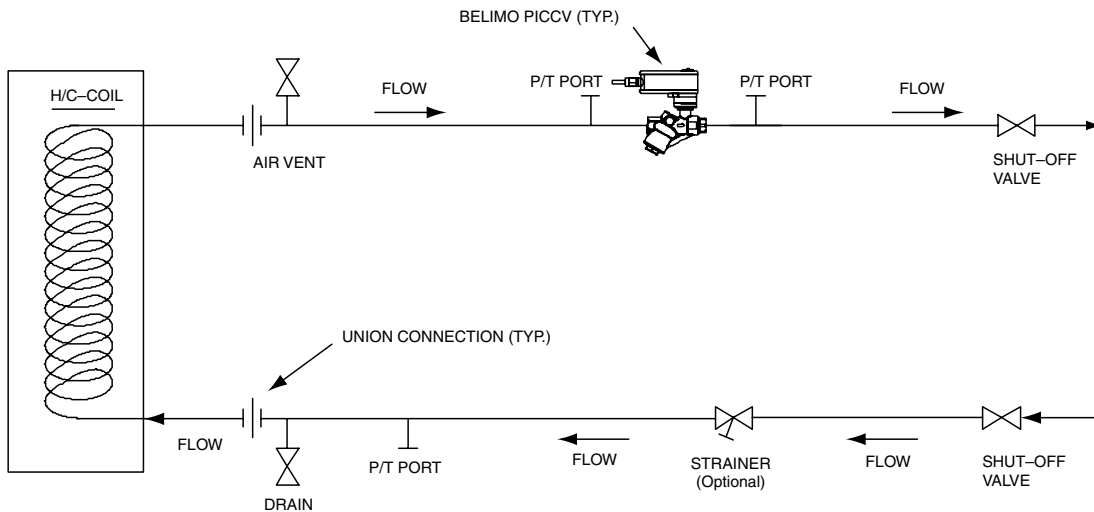
NEW!



TYPICAL PARALLEL PIPING IN RELATION TO THE INPUT AND OUTPUT (SCALE: NONE)



TYPICAL PIPING IN RELATION TO THE INPUT AND OUTPUT (SCALE: NONE)





CONTROL VALVES

PRESSURE INDEPENDENT CONTROL VALVES

PICCV SERIES

ORDERING INFORMATION, NON-SPRING RETURN

ACTUATOR SELECTION, ON/OFF/FLOATING OR PROPORTIONAL

LRB24-3 = 1/2" to 1", 45 in-lb (5 Nm), on/off/floating

LRX24-MFT = 1/2" to 1", 45 in-lb (5 Nm), proportional/MFT technology

ARX24-MFT = 1/4" to 2", 180 in-lb (20 Nm), proportional/MFT technology

VALVE BODY SELECTION

Model	Inches	GPM	Model	Inches	GPM
P2050B005	1/2 IN	0.5	PICCV-32-018	1 1/4 IN	18
P2050B010	1/2 IN	1	PICCV-32-020	1 1/4 IN	20
P2050B015	1/2 IN	1.5	PICCV-32-022	1 1/4 IN	22
P2050B020	1/2 IN	2	PICCV-32-024	1 1/4 IN	24
P2050B025	1/2 IN	2.5	PICCV-32-026	1 1/4 IN	26
P2050B030	1/2 IN	3	PICCV-40-027	1 1/2 IN	27
P2050B035	1/2 IN	3.5	PICCV-40-029	1 1/2 IN	29
P2050B040	1/2 IN	4	PICCV-40-031	1 1/2 IN	31
P2050B045	1/2 IN	4	PICCV-40-033	1 1/2 IN	33
P2050B045	1/2 IN	5	PICCV-50-033	2 IN	33
P2050B050	1/2 IN	5	PICCV-50-035	2 IN	35
P2050B055	1/2 IN	5.5	PICCV-50-036	2 IN	36
P2075B060	3/4 IN	6	PICCV-50-038	2 IN	38
P2075B065	3/4 IN	6.5	PICCV-50-039	2 IN	39
P2075B070	3/4 IN	7	PICCV-50-044	2 IN	44
P2075B075	3/4 IN	7.5	PICCV-50-048	2 IN	48
P2075B080	3/4 IN	8	PICCV-50-056	2 IN	56
P2075B085	3/4 IN	8.5	PICCV-50-060	2 IN	60
P2075B090	3/4 IN	9	PICCV-50-070	2 IN	70
P2075B095	3/4 IN	9.5	PICCV-50-075	2 IN	75
P2075B100	3/4 IN	10	PICCV-50-090	2 IN	90
PICCV-25-011	1 IN	11	PICCV-50-100	2 IN	100
PICCV-25-012	1 IN	12	To order valve and actuator assembly, append the valve number and the actuator number with a "+" sign. Example: <i>P2050B005+LRB24-3</i> 1/2", 0.5 GPM valve with a 45 in-lb actuator with on/off/floating control		
PICCV-25-013	1 IN	13			
PICCV-25-014	1 IN	14			
PICCV-25-015	1 IN	15			
PICCV-25-016	1 IN	16			
PICCV-25-017	1 IN	17			
PICCV-25-018	1 IN	18			

Note: Other actuators available from Belimo. Ask your Kele sales representative.

CONTROL VALVES

PRESSURE INDEPENDENT CONTROL VALVES PICCV SERIES



ORDERING INFORMATION, SPRING RETURN

ACTUATOR SELECTION, PROPORTIONAL/MFT

TFRX24-MFT = 1/2" only, 22 in-lb (3 Nm)
LF24-MFT = 1/2" to 1", 44 in-lb (5 Nm)
AFRX24-MFT = 1-1/4" to 2", 180 in-lb (20 Nm)

VALVE BODY SELECTION

Model	Inches	GPM	Model	Inches	GPM
P2050B005	1/2 IN	0.5	PICCV-40-026	1-1/2 IN	26
P2050B010	1/2 IN	1	PICCV-40-027	1-1/2 IN	27
P2050B015	1/2 IN	1.5	PICCV-40-028	1-1/2 IN	28
P2050B020	1/2 IN	2	PICCV-40-029	1-1/2 IN	29
P2050B025	1/2 IN	2.5	PICCV-40-030	1-1/2 IN	30
P2050B030	1/2 IN	3	PICCV-40-031	1-1/2 IN	31
P2050B035	1/2 IN	3.5	PICCV-40-032	1-1/2 IN	32
P2050B040	1/2 IN	4	PICCV-40-033	1-1/2 IN	33
P2050B045	1/2 IN	4.5	PICCV-50-033	2 IN	33
P2050B050	1/2 IN	5	PICCV-50-034	2 IN	34
P2050B055	1/2 IN	5.5	PICCV-50-035	2 IN	35
P2075B060	3/4 IN	6	PICCV-50-036	2 IN	36
P2075B065	3/4 IN	6.5	PICCV-50-037	2 IN	37
P2075B070	3/4 IN	7	PICCV-50-038	2 IN	38
P2075B075	3/4 IN	7.5	PICCV-50-039	2 IN	39
P2075B080	3/4 IN	8	PICCV-50-040	2 IN	40
P2075B085	3/4 IN	8.5	PICCV-50-044	2 IN	44
P2075B090	3/4 IN	9	PICCV-50-048	2 IN	48
P2075B095	3/4 IN	9.5	PICCV-50-052	2 IN	52
P2075B100	3/4 IN	10	PICCV-50-056	2 IN	56
PICCV-25-011	1 IN	11	PICCV-50-060	2 IN	60
PICCV-25-012	1 IN	12	PICCV-50-065	2 IN	65
PICCV-25-013	1 IN,	13	PICCV-50-070	2 IN	70
PICCV-25-014	1 IN	14	PICCV-50-075	2 IN	75
PICCV-25-015	1 IN	15	PICCV-50-080	2 IN	80
PICCV-25-016	1 IN	16	PICCV-50-090	2 IN	90
PICCV-25-017	1 IN	17	PICCV-50-100	2 IN	100
PICCV-25-018	1 IN	18	To order valve and actuator assembly, append the valve number and the actuator number with a "+" sign. Example: P2050B005+LF24-MFT 1/2", 0.5 GPM valve with a 44 in-lb spring return actuator with proportional control		
PICCV-25-019	1 IN	19			
PICCV-32-018	1-1/4 IN	18			
PICCV-32-019	1-1/4 IN	19			
PICCV-32-020	1-1/4 IN	20			
PICCV-32-021	1-1/4 IN	21			
PICCV-32-022	1-1/4 IN	22			
PICCV-32-023	1-1/4 IN	23			
PICCV-32-024	1-1/4 IN	24			
PICCV-32-025	1-1/4 IN	25			
PICCV-32-026	1-1/4 IN	26			

Note: Other actuators available from Belimo. Ask your Kele sales representative.

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CONTROL VALVES



CONTROL VALVES

THREADED GLOBE VALVES

V5011, V5013 SERIES

DESCRIPTION

The **V5011 Series** is a two-way threaded globe valve used for control of water or steam. The **V5013 Series** is a three-way threaded globe valve used for mixing control of water. The valves can be ordered assembled with actuators for spring return or non-spring return operation, or the valve, linkage, and actuator may be ordered separately for field assembly.

FEATURES

- *Two- and three-way body patterns from 1/2" to 2"*
- *Two-way equal percentage characteristics*
- *Three-way linear characteristics*
- *Floating, two-position, or proportional control actuators*
- *ANSI 150 body class*
- *Compatible with MP953 pneumatic actuators*



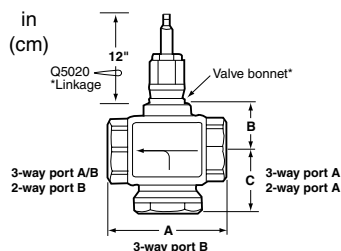
SPECIFICATIONS

Size	1/2" to 2" FNPT
Cv Range	0.73 to 46.8
Stroke	3/4"
Body Pattern	Two-way (stem up to open), three-way mixing (stem up to open B-AB)
Flow Characteristic	Two-way V5011N1xxx: equal percentage; Two-way V5011N2xxx: linear; Three-way: ports A-AB equal percentage, ports B-AB linear
Rangeability	50:1 per VDI/VDE 2173
Leakage Rating	ANSI Class III, 0.05% of Cv
Life Expectancy	250,000 full cycles at maximum rated temperature
Maximum Closeoff Pressure	Actuator dependant, see Selection Chart; maximum differential pressure for quiet service 20 psid
Pressure Drop	Maximum water differential pressure for quiet service 20 psid (138 kPa).
Maximum Pressure Rating	Water: 217 psi (1497 kPa) from 36° to 248°F (2° to 120°C), 185 psi (1277 kPa) from 248° to 337°F (120° to 169°C); Steam: 100 psi (690 kPa) at 337°F (169°C), using stainless trim valve (V5011N2xxx)
Pressure Rating	ANSI 150
Materials Of Construction	Red brass body, stainless steel stem, metal-to-metal brass/stainless plug and seat, spring-loaded carbon-fiber reinforced Teflon® V-ring packing

Media Compatibility	Hot or chilled water, <50% glycol, steam (use V5011N2xxx for steam above 15 psig (103 kPa) to 100 psig (690 kPa))
Media Temperature Range	Brass trim: 36° to 248°F (2° to 120°C), 15 psig (103 kPa) steam; Stainless trim: 36° to 340°F (2° to 177°C), 100 psig (690 kPa) steam
Action	Stem up to open (2-way), stem up to open B-AB, close A-AB (3-way)
Compatible Actuators	Electric rotary Kele KA/KAS Series or Honeywell MN/MS Series with appropriate Q5020 Linkage, or direct-mount ML Series shown on following pages. For pneumatic actuation see MP953 Series in PNEUMATICS & FITTINGS catalog section.
Actuator Mounting	U-bolt or set screws to fit 1-3/8" valve yoke diameter, 3/4" stroke length
Operating Temperature	Actuator dependant, refer to appropriate ACTUATORS & DAMPERS section or ML Series (on following pages) for specifications
Approvals	Actuator dependant, refer to appropriate ACTUATORS & DAMPERS section or ML Series (on following pages) for specifications
Warranty	1 year on valves, 5 years on rotary actuators, 1 year on direct-mount actuators



DIMENSIONS



V501x Two-way and Three-way

VALVE SIZE	ANSI CLASS 150 Dimensions in (cm)		
	A	B	C
1/2"	3.3 (8.38)	1.6 (3.95)	2.6 (6.65)
3/4"	3.3 (8.38)	1.6 (3.95)	2.2 (6.50)
1"	4.1 (10.42)	1.6 (3.95)	2.6 (6.65)
1-1/4"	4.2 (10.67)	1.6 (3.95)	2.9 (7.25)
1-1/2"	4.7 (11.94)	1.8 (4.65)	3.0 (7.70)
2"	5.3 (13.46)	1.8 (4.65)	3.3 (8.35)

* Allow approximately 12" (30.5 cm) clearance above the valve bonnet for installation and service of the actuator and linkage.

GLOBE VALVE					NON-SPRING RETURN *			SPRING RETURN*		
Body Type	Size	Cv	Water and 15# Steam Model	High-Pressure Steam Model	Floating Two-position	Proportional	Close-off (psid)	Two-position	Proportional or Floating	Close-off (psid)
Two-way NPT	1/2"	0.73	V5011N1008	V5011N2006	KA-44-2T	KA-44-M	230	KAS-44-2	KAS-44-M	207
	1/2"	1.16	V5011N1016	V5011N2014	KA-44-2T	KA-44-M	230	KAS-44-2	KAS-44-M	207
	1/2"	1.85	V5011N1024	V5011N2022	KA-44-2T	KA-44-M	230	KAS-44-2	KAS-44-M	207
	1/2"	2.9	V5011N1032	V5011N2030	KA-44-2T	KA-44-M	230	KAS-44-2	KAS-44-M	207
	1/2"	4.7	V5011N1040	V5011N2048	KA-44-2T	KA-44-M	143	KAS-44-2	KAS-44-M	184
	3/4"	7.3	V5011N1057	V5011N2055	KA-44-2T	KA-44-M	69	KAS-44-2	KAS-44-M	79
	1"	11.7	V5011N1065	V5011N2063	KA-44-2T	KA-44-M	47	KAS-44-2	KAS-44-M	66
	1-1/4"	18.7	V5011N1073	V5011N2071	KA-88-2T	KA-88-M	69	KAS-88-2	KAS-88-M	84
	1-1/2"	29.3	V5011N1081	V5011N2089	KA-88-2T	KA-88-M	44	KAS-88-2	KAS-88-M	55
	2"	46.8	V5011N1099	V5011N2097	KA-175-2T	KA-175-P	58	KAS-175-2	KAS-175-M	63
Three-way NPT	1/2"	2.9	V5013N1030		KA-44-2T	KA-44-M	230	KAS-44-2	KAS-44-M	207
	1/2"	4.7	V5013N1048		KA-44-2T	KA-44-M	143	KAS-44-2	KAS-44-M	184
	3/4"	7.3	V5013N1055		KA-44-2T	KA-44-M	69	KAS-44-2	KAS-44-M	79
	1"	11.7	V5013N1063		KA-44-2T	KA-44-M	47	KAS-44-2	KAS-44-M	66
	1-1/4"	18.7	V5013N1071		KA-88-2T	KA-88-M	69	KAS-88-2	KAS-88-M	84
	1-1/2"	29.3	V5013N1089		KA-88-2T	KA-88-M	44	KAS-88-2	KAS-88-M	55
	2"	46.8	V5013N1097		KA-175-2T	KA-175-P	58	KAS-175-2	KAS-175-M	63

* See KA and KAS Series direct-coupled actuator catalog pages for wiring and specs. Q5020A1003 linkage included with assembly.

MODEL	DESCRIPTION
VALVE SELECTION (INCLUDES Q5020A1003 LINKAGE)	
Vxxxxxxxx	Select 1/2" to 2" valve model number (from list above)
ACTUATOR SELECTION*	
KA_ _ _ _	KA actuator (from list above)

Example: V5011N1008 / KA-44-2T 1/2" two-way globe valve, Cv=0.73, with floating non-spring return actuator, factory assembled.

* Specify normally open or normally closed when ordering an assembly with a KAS actuator.

For field assembly, order the **Model Q5020A1003** linkage, the valve, and the actuator as separate line items.

RELATED PRODUCTS

Q5020A1003
SSTAG
SW2

Linkage for 1/2" to 2" valves
Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order
Auxiliary switch kit for KA-175/301 and KAS-88/175

ACCESSORIES

0901786A

Repack kit for V5011, V5013 valves with 1/4" diameter stem (1/2" to 1-1/4")



CONTROL VALVES

FLANGED GLOBE VALVES

VGF SERIES

DESCRIPTION

The **VGF Series** is a family of two- and three-way flanged globe valves designed specifically for commercial HVAC systems. All models of the VGF Series have stainless steel trim suitable for chilled water/glycol, heating water, and steam up to 100 psig.

3

The valves are available with linear or equal percentage flow characteristics. They have ASME/ANSI standard dimensions and pressure/temperature ratings, and there are models with pressure balanced trim for high close-off applications. The **VGF Series** come assembled with Kele Revolution direct-coupled electric actuators or direct-mount Honeywell actuators, or the valves and actuators can be ordered separately.

FEATURES

- **Stainless steel trim - all models**
- **ANSI B16.3 pressure/temperature ratings**
- **ANSI 125 flanges standard, ANSI 250 special order**
- **Equal Percentage or linear flow characteristics**
- **Three-way mixing models or diverting models**
- **Pressure balanced models for high close off**
- **Available assembled with actuator or separate**
- **Spring or non-spring return assemblies**
- **Floating, two-position, or proportional control**



VGF31EM25/KAS-175-M



Q5022B1009/KAS-175-M

TABLE 1. MEDIA PRESSURE/TEMPERATURE RATING

Temperature °F (°C)	System Pressure	
	ANSI Class 125 (VGF21, VGF31)	ANSI Class 250 (VGF22, VGF32)
35 to 130 (2-66)	175 psig (1206 kPa)	400 psig (2758 kPa)
Up to 200 (<93)	165 psig (1138 kPa)	370 psig (2251 kPa)
Up to 250 (<121)	150 psig (1034 kPa)	340 psig (2344 kPa)
Up to 300 (<149)	140 psig (965 kPa)	310 psig (2137 kPa)
Up to 356 (<180)	125 psig (862 kPa)	280 psig (1931 kPa)

NOTE: ANSI Class 250 valves are special order.

SPECIFICATIONS

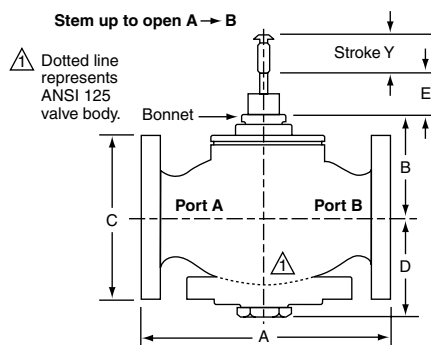
Size	2-1/2" to 6", ANSI Flanges
Cv Range	72 to 370
Connections	Flanges per ANSI/ISA 75.03; bolt holes conform to ANSI B16.1
Stroke	3/4" (2-1/2" and 3" valves); 1-1/2" (4", 5" and 6" valves)
Body Pattern	Two-way: stem up to open Three-way mixing: stem up to open B-AB Three-way diverting: stem up to open AB-A
Flow Characteristic	Two-way: Equal percentage or linear Three-way: Linear
Rangeability	50:1
Leakage Rating	Single seat: ANSI Class III, 0.05% Pressure balanced: ANSI Class IV, 0.01%
Maximum Closeoff Pressure	Actuator dependant, see Selection Chart
Maximum Pressure Rating	See Table 1
Pressure Rating	ANSI Class 125 (Class 250 models available)
Materials Of Construction	Cast iron ASTM A126 Class B (GG25) body, stainless steel stem and trim, spring-loaded PTFE cone ring packing

Media Compatibility	Hot or chilled water, <50% glycol, steam to 100 psig (690 kPa)
Media Temperature Range	See Table 1
Actuator Mounting	U-bolt or set screws attach to valve yoke; 2-1/2" and 3" valves: 1-3/8" yoke diameter and 3/4" stroke length; 4", 5" and 6" valves: 1-7/8" yoke diameter with 1-1/2" stroke length
Approvals	Actuator dependant, refer to appropriate ACTUATORS & DAMPERS section or ML Series (on following pages) for specifications
Compatible Actuators	Rotary Kele KA/KAS Series or Honeywell MN/MS Series with appropriate Q5020/Q5022 Linkage, or direct-mount ML Series
Operating Temperature	Actuator dependant, refer to appropriate ACTUATORS & DAMPERS section or ML Series (on following pages) for specifications
Warranty	1 year on valves, 5 years on rotary actuators, 1 year on direct-mount actuators

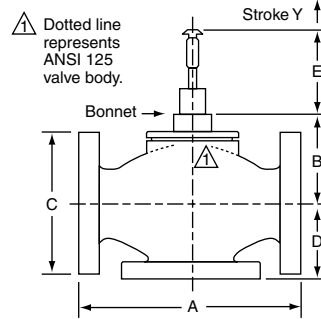
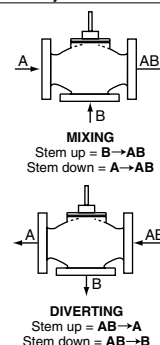

TABLE 2. VGF SERIES FLANGED GLOBE VALVE AND ACTUATOR COMBINATIONS AND CLOSE-OFF RATINGS

Body Type	Size	Cv	Valve Model	NON-SPRING RETURN (NSR) ACTUATORS				SPRING RETURN (SR) ACTUATORS			
				Floating	Proportional	Close Off (psd)	Linkage	Two-position	Proportional/Floating	Close off (psid)	Linkage
Two-way E = Equal % L = Linear	2.5	72	VGF21 (E OR L) S25	KA-301-2T	KA-301-P	95	Q5020B1001	(2 qty) KAS-175-2	(2 qty) KAS-175-M	112	Q5022A1001
	3	120	VGF21 (E OR L) S30	KA-301-2T	KA-301-P	47	Q5020B1001	(2 qty) KAS-175-2	(2 qty) KAS-175-M	55	Q5022A1001
	4	150	VGF21 (E OR L) S40	(2 qty) KA-301-2T	(2 qty) KA-301-P	47	Q5022B1009	(2 qty) KAS-175-2	(2 qty) KAS-175-M	27	Q5022B1009
	5	320	VGF21 (E OR L) S50	(2 qty) KA-301-2T	(2 qty) KA-301-P	18	Q5022B1009	(2 qty) KAS-175-2	(2 qty) KAS-175-M	11	Q5022B1009
	6	370	VGF21 (E OR L) S60	(2 qty) KA-301-2T	(2 qty) KA-301-P	18	Q5022B1009	(2 qty) KAS-175-2	(2 qty) KAS-175-M	11	Q5022B1009
Three-way mixing	2.5	70	VGF31EM25	KA-301-2T	KA-301-P	120	Q5020B1001	(2 qty) KAS-175-2	(2 qty) KAS-175-M	141	Q5022A1001
	3	115	VGF31EM30	KA-301-2T	KA-301-P	80	Q5020B1001	(2 qty) KAS-175-2	(2 qty) KAS-175-M	94	Q5022A1001
	4	150	VGF31EM40	(2 qty) KA-301-2T	(2 qty) KA-301-P	47	Q5022B1009	(2 qty) KAS-175-2	(2 qty) KAS-175-M	27	Q5022B1009
	5	285	VGF31EM50	(2 qty) KA-301-2T	(2 qty) KA-301-P	18	Q5022B1009	(2 qty) KAS-175-2	(2 qty) KAS-175-M	11	Q5022B1009
	6	365	VGF31EM60	(2 qty) KA-301-2T	(2 qty) KA-301-P	18	Q5022B1009	(2 qty) KAS-175-2	(2 qty) KAS-175-M	11	Q5022B1009
Three-way diverting	2.5	72	VGF31LD25	KA-301-2T	KA-301-P	95	Q5020B1001	(2 qty) KAS-175-2	(2 qty) KAS-175-M	112	Q5022A1001
	3	120	VGF31LD30	KA-301-2T	KA-301-P	47	Q5020B1001	(2 qty) KAS-175-2	(2 qty) KAS-175-M	55	Q5022A1001
	4	150	VGF31LD40	(2 qty) KA-301-2T	(2 qty) KA-301-P	47	Q5022B1009	(2 qty) KAS-175-2	(2 qty) KAS-175-M	27	Q5022B1009
	5	320	VGF31LD50	(2 qty) KA-301-2T	(2 qty) KA-301-P	18	Q5022B1009	(2 qty) KAS-175-2	(2 qty) KAS-175-M	11	Q5022B1009
	6	370	VGF31LD60	(2 qty) KA-301-2T	(2 qty) KA-301-P	18	Q5022B1009	(2 qty) KAS-175-2	(2 qty) KAS-175-M	11	Q5022B1009
Two-way pressure balanced	2.5	70	VGF21 (E OR L) P25	ML6421A1017	ML7421A1032	175	N/A	(2 qty) KAS-175-2	(2 qty) KAS-175-M	175	Q5022A1001
	3	115	VGF21 (E OR L) P30	ML6421A1017	ML7421A1032	175	N/A	(2 qty) KAS-175-2	(2 qty) KAS-175-M	175	Q5022A1001
	4	150	VGF21 (E OR L) P40	ML6421B1040	ML7421B1023	175	N/A	(2 qty) KAS-175-2	(2 qty) KAS-175-M	175	Q5022B1009
	5	285	VGF21 (E OR L) P50	ML6421B1040	ML7421B1023	175	N/A	(2 qty) KAS-175-2	(2 qty) KAS-175-M	175	Q5022B1009
	6	370	VGF21 (E OR L) P60	ML6421B1040	ML7421B1023	175	N/A	(2 qty) KAS-175-2	(2 qty) KAS-175-M	175	Q5022B1009

DIMENSIONS



Actuator Clearances Above Bonnet	in (cm)
KA and KAS	12 (30.5)
ML 6421	14.25 (36.0)
ML 7421	14.25 (36.0)
Q5020B1001	9.5 (24.1)
(Requires 12" for service)	
Weight 6 lb (2.7 kg)	


Three-way Valve Flow Patterns

Two-way valves, Equal Percentage or Linear, Standard or Pressure Balanced

VALVE SIZE (in)	ANSI CLASS 125 Two-way Valve Dimensions, in (mm)						Weight lb (kg)
	A	B	C	D	E	Y	
2-1/2	10-7/8 (276)	10-7/8 (276)	7 (178)	—	3-1/2 (89)	3/4 (20)	42 (19.0)
3	11-1/2 (298)	11-1/2 (298)	7-1/2 (191)	—	3-1/2 (89)	3/4 (20)	53 (24.0)
4	13-7/8 (352)	13-7/8 (352)	9 (229)	—	5-1/2 (133)	1-1/2 (38)	73 (33.1)
5	15-1/2 (400)	15-1/2 (400)	10 (254)	—	5-1/2 (133)	1-1/2 (38)	120 (54.4)
6	17-1/2 (451)	17-1/2 (451)	11 (279)	—	5-1/2 (133)	1-1/2 (38)	166 (75.3)

Three-way Valves, Mixing or Diverting

VALVE SIZE (in)	ANSI CLASS 125 Three-way Valve Dimensions, in (mm)						Weight lb (kg)
	A	B	C	D	E	Y	
2-1/2	10-7/8 (276)	3 (276)	7 (178)	3-1/2 (95)	4-3/16 (107)	3/4 (20)	42 (19.0)
3	11-3/4 (298)	4-3/16 (107)	7-1/2 (191)	4-3/8 (111)	4-3/16 (107)	3/4 (20)	53 (24.0)
4	13-7/8 (352)	5-1/2 (140)	9 (229)	5-1/8 (130)	6-11/16 (170)	1-1/2 (38)	73 (33.1)
5	15-1/2 (400)	5-3/8 (137)	10 (254)	5-1/2 (146)	6-11/16 (170)	1-1/2 (38)	120 (54.4)
6	17-1/2 (451)	5-11/16 (145)	11 (279)	6-5/8 (168)	6-11/16 (170)	1-1/2 (38)	166 (75.3)

ORDERING INFORMATION

MODEL	DESCRIPTION
VGF _____ /	Select valve model (from table above)
KA _____ or ML _____	Select actuator model (from list above)

Example: VGF21ES25 / KAS-175-M is a two-way, 2-1/2" ANSI 125 flanged, Cv=63, equal percentage valve assembled with a spring return, proportional/floating actuator.

Note: Valve assemblies with KA and KAS actuators use the Q5020B1001 linkage. If ordering valve and actuator separately for field assembly, order the Q5020B1001 also.

Note: Specify normally open or normally closed when ordering an assembly with KAS spring return actuator.

SSTAG
208638
R43176754-002
R43176755-005

RELATED PRODUCTS

Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order
Packing kit for all VGF Series flanged globe valves
Repair kit for 2-1/2" and 3" VGF Series ANSI 125 flanged valves
Repair kit for all 4" to 6" VGF Series flanged valves



CONTROL VALVES

GLOBE VALVES VG7000 SERIES



DESCRIPTION

The **VG7000 Series** Valves are designed for hot water, chilled water, or steam control in HVAC systems. The globe design exhibits excellent control with two-way equal percentage and three-way linear response. The valves come in two- or three-way NPT thread configurations. All the valves can be fitted with many different control actuators (both electric and pneumatic) and with a variety of control signals, spring ranges, and failsafe operation.

FEATURES

- *Wide actuator selection, electric and pneumatic*
- *Corrosion protection with brass and optional SS trim*
- *Equal percentage and linear characteristics*
- *Longevity with over one million cycles tested*
- *Serviceability with in-place valve repacking*



VG7241CT

VG7842CT

SPECIFICATIONS

Size	1/2" to 2" FNPT	Pressure Rating	ANSI B16.15, Class 250 (EN 12360)
Cv Range	0.73 to 46.2	Materials Of Construction	Cast bronze body, stainless steel stem, brass trim models have brass plug, elastomer disc seat and rubber (EPR packing), stainless trim models have stainless plug/seat and spring-loaded PTFE/elastomer V-ring packing
Stroke	5/16" (8 mm): 1/2" and 3/4" valves 1/2" (13 mm): 1" and 1-1/4" valves 3/4" (19 mm): 1-1/2" and 2" valves	Media Compatibility	Hot or chilled water; <50% glycol; steam 35 psig (Fluid Group 1 according to 67/548/EEC)
Flow Characteristic	Two-way equal percentage; three-way linear	Media Temperature Range	Water: 35° to 248°F (2° to 120°C); Steam: maximum 338°F (170°C) (actuator dependant), 35 psig
Rangeability	25:1 per EN 60534-2-4	Actuator Mounting	Threaded mounting collar
Leakage Rating	Brass trim: ANSI Class IV, 0.01% of maximum flow per ANSI/FCI 70-2; stainless trim: 0.05% of maximum flow	Compatible Actuators	Electric VA-7000 or VA-4233 Series shown on following pages; pneumatic see V-3000, MP800 Series in PNEUMATICS & FITTINGS catalog section.
Maximum Closeoff Pressure	Actuator dependant, see Ordering Information	Operating Temperature	Actuator dependent, refer to following pages for specifications
Pressure Drop	Maximum recommended pressure drop for water is 35 psid (241 kPa) for 1/2" to 1-1/4" valves, 30 psid for 1-1/2" and 2" valves; for steam 15 psid (103 kPa) for brass trim valves and 100 psid (690 kPa) for stainless trim valves	Approvals	Actuator dependent, refer to following pages for specifications
Maximum Pressure Rating	Brass trim with water: 400 psi (2756 kPa) up to 150°F (66°C), decreasing to 365 psi (2515 kPa) at 248°F (120°C); Brass trim with steam: 35 psi (241 kPa) at 284°F (138°C); Stainless trim with water: 400 psi (2756 kPa) up to 150°F (66°C), decreasing to 308 psi (2122 kPa) at 338°F (170°C); Stainless trim with steam: 100 psi (241 kPa) at 338°F (170°C)	Warranty	1 year

CONTROL VALVES

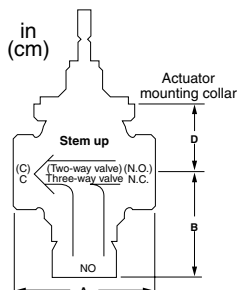
GLOBE VALVES
VG7000 SERIES



3

CONTROL VALVES

DIMENSIONS



		DIMENSIONS			
VALVE SIZE in (DN)*	WEIGHT lb (kg)	A	B		D
		FACE TO FACE ALL VALVES	LOWER VALVE		ACTUATOR COLLAR ALL VALVES
			Two-way	Three-way	
1/2 (DN15)	2.2 (1.0)	3 (7.6)	13/16 (2.1)	1-13/16(4.6)	1-3/4 (4.4)
3/4 (DN20)	3.3 (1.5)	3-7/32 (8.1)	15/16 (2.4)	2-1/8 (5.4)	1-3/4 (4.4)
1 (DN25)	5.3 (2.4)	4-1/8 (10.4)	1-5/32 (2.9)	2-9/19 (6.5)	2-11/16 (6.8)
1-1/4 (DN32)	5.3 (2.4)	4-23/32 (11.9)	1-11/32 (3.4)	2-25/32 (7.0)	2-13/16 (7.1)
1-1/2 (DN40)	10.9 (5.0)	5-1/8 (13.0)	2-5/32 (5.5)	3-3/8 (8.5)	3-7/16 (8.7)
2 (DN50)	16.0 (7.3)	5-29/32 (15.0)	2-1/8 (5.3)	3-3/4 (9.5)	3-3/4 (9.5)

* DN is the European designation for the body size in metric units "cm."

ORDERING INFORMATION

MODEL	DESCRIPTION
VG7	Globe valve NPT thread
CODE	Configuration code for brass trim (Order codes 243, 443, 844 for stainless steel trim respectively)
241	Two-way N.O. (stem down = closed)
441	Two-way N.C. (stem down = open)
842	Three-way mixing

VG7241

CT

3008E

P

Example: VG7241CT/3008EP 1/2" two-way N.O. 9-13 psig pneumatic valve with positioner

RELATED PRODUCTS

SSTAG
VG7000-6001
VG7000-6002

Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order
0.5" to 0.75" packing kit
1" to 2" packing kit



CONTROL VALVES

MVN BALL VALVE ACTUATORS MVN SERIES

DESCRIPTION

The MVN 3Nm (27 lb-in) Control Valve Actuator is used with the VBN2 two-way and the VBN3 three-way control ball valves to control hot and chilled water with glycol solutions up to 50% in heating, ventilating, and air conditioning (HVAC) systems to provide two-position or modulating functions.

NEW!

Honeywell



MVN643L



FEATURES

- *Non-spring Return*
- *Floating and modulating*
- *Space saving, click-on installation – no tool required*
- *Extendable position indicator for easy commissioning*
- *Available with or without cable*
- *Compatible with control ball valves from 1/2 to 1-1/4 inches.*
- *Actuator can be mounted on the valve in any of four positions.*

SPECIFICATIONS

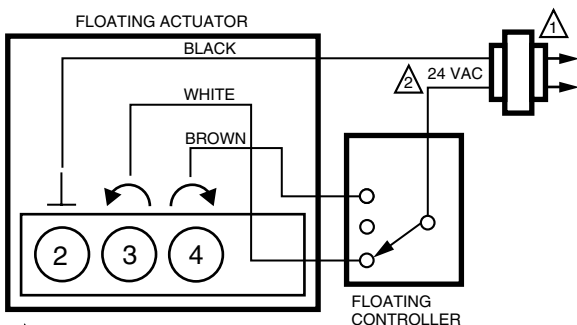
Actuator Type	Valve	Storage Temperature Range	-40° to 176°F (-40° to 80°C)
Rotational Stroke	90° ±3°	Timing	90 sec. for MVN613 and MVN713; 30 sec. for MVN643
Fail Safe Mode	Non-spring return, Fail in place	Electrical Connections	Field wiring 18 to 20 AWG to screw terminals, located under the removable access cover
Torque	27 lb-in. (3 Nm).	Humidity Ratings:	5% to 95% RH noncondensing
External Auxiliary Switches Available	No	Design Life (at Rated Voltage)	60,000 cycles; 1 cycle = 0°...90°...0°
Supply Voltage	24 VAC +20%, -15%, 24 VDC	Cable Specification	18 AWG, Plenum Rated, 300 V, 10 A, 3 ft. length from end of access cover
Power Consumption	5 VA- Modulating; 1.5 VA - Floating; 6 VA - Fast Acting SPDT	Dimensions:	
Environmental Rating	NEMA2	Standard base units	2-13/16"W x 3-7/8"H x 4-9/16"D (7.1 x 9.8 x 11.6 cm)
Frequency	50 Hz; 60 Hz	Low Profile base units	2-13/16"W x 3-1/2"H x 4-9/16"D (7.1 x 8.2 x 11.6 cm)
Mounting	Click-on installation – no tool required	Weight	1.4 lb (0.64 kg)
Noise Rating at 1m (Maximum)	35 dB(A) max at 1 m [50 dB(A) for MVN643]	Environmental Protection Ratings	IP40
Materials	Plenum rated plastic housing	Approvals	UL/cUL; UL60730
Operating Humidity Range (% RH)	5 to 95% RH, noncondensing		
Ambient Temperature Range	-4° to 131°F (-20° to 55°C)		

ORDERING INFORMATION

MODEL	DESCRIPTION
MVN613A0000	Floating control ball valve actuator
MVN613L0000	Floating control ball valve actuator
MVN643A0000	Fast acting SPDT control ball valve actuator
MVN643L0000	Fast acting SPDT control ball valve actuator
MVN713A0000	Modulating control ball valve actuator
MVN713L0000	Modulating control ball valve actuator



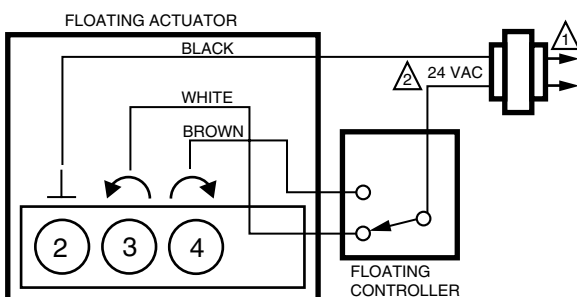
WIRING



⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

⚡ USE CLASS II 24V TRANSFORMER FOR MVN643.

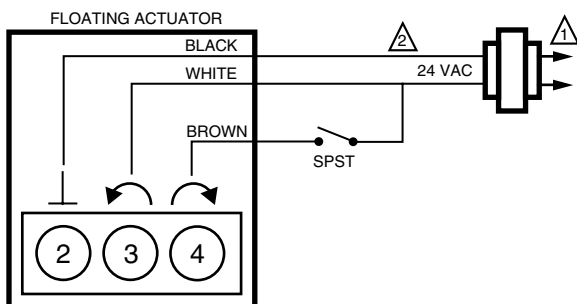
MVN613 or MVN643 with Floating Control



⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

⚡ USE CLASS II 24V TRANSFORMER FOR MVN643.

MVN613 or MVN643 with 2-Position Control

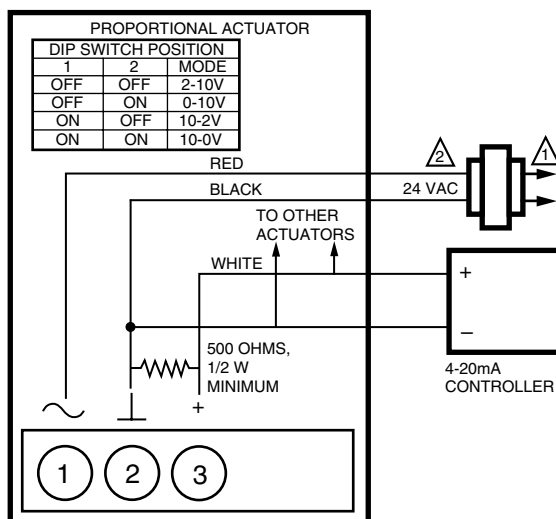


⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

⚡ USE CLASS II 24V TRANSFORMER.

MVN643 with Two Position SPST Control

PROPORTIONAL/MODULATING: 4-20mA CONTROLLER OUTPUT WITH 500Ω SERIES RESISTOR

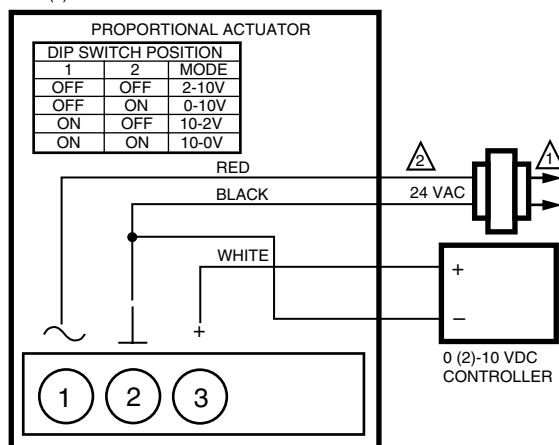


⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

⚡ USE CLASS II 24V TRANSFORMER.

MVN713 with 4-20mA Control

PROPORTIONAL/MODULATING: 0(2)...10 VDC OR 10...0(2) VDC CONTROLLER OUTPUT



⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

⚡ 24 VDC SUPPLY ACCEPTABLE.

MVN713 with 0 (2)-10 VDC Control



CONTROL VALVES

DIRECT-MOUNT GLOBE VALVE ACTUATORS

ML SERIES

DESCRIPTION

The **ML6420**, **ML6421**, **ML6984**, **ML7420**, **ML7421**, and **ML7984** are direct-mount, electric, non-spring return actuators designed for use on Honeywell V5011N/13N and VGF Series globe valves.

The **ML6425** and **ML7425** are direct-mount, electric spring return. The actuators can be ordered pre-assembled with a valve, or they may be easily installed in the field; separate linkages are not required.

Honeywell



**ML7421,
ML6421**



**ML7425,
ML6425**



**ML7984,
ML6984**



**ML7420,
ML6420**



DIRECT-MOUNT ACTUATOR SELECTION CHART / CLOSE-OFF RATINGS

			Non-spring return (NSR) actuator			Spring return (SR) actuator		
Size	Two-way valve	Three-way valve	Floating	Proportional	Closeoff psid	Floating	Proportional	Closeoff psid
1/2"	V5011N1008 - N1040	V5013N1030, N1048	ML6984, ML6420	ML7984, ML7420	273, 230	ML6425	ML7425	230
3/4"	V5011N1057	V5013N1055	ML6984, ML6420	ML7984, ML7420	273, 230	ML6425	ML7425	230
1"	V5011N1065	V5013N1063	ML6984, ML6420	ML7984, ML7420	193, 163	ML6425	ML7425	163
1-1/4"	V5011N1073	V5013N1071	ML6984, ML6420	ML7984, ML7420	123, 104	ML6425	ML7425	104
1-1/2"	V5011N1081	V5013N1089	ML6984, ML6420	ML7984, ML7420	79, 67	ML6425	ML7425	67
2"	V5011N1099	V5013N1097	ML6984, ML6420	ML7984, ML7420	44, 37	ML6425	ML7425	37
2-1/2"		VGF31EM25	ML6421A	ML7421A	87	ML6425	ML7425	29
3"		VGF31EM30	ML6421A	ML7421A	58	ML6425	ML7425	19
2-1/2"	VGF21ES25, LS25	VGF31LD25	ML6421A	ML7421A	69	ML6425	ML7425	23
3"	VGF21ES30, LS30	VGF31LD30	ML6421A	ML7421A	34	ML6425	ML7425	11
4"	VGF21ES40, LS40	VGF31LD40, EM40	ML6421B	ML7421B	34	N/A	N/A	N/A
5"	VGF21ES50, LS50	VGF31LD50, EM50	ML6421B	ML7421B	13	N/A	N/A	N/A
6"	VGF21ES60, LS60	VGF31LD60, EM60	ML6421B	ML7421B	13	N/A	N/A	N/A
2-1/2"	VGF21EP25		ML6421A	ML7421A	175	N/A	N/A	N/A
3"	VGF21EP30		ML6421A	ML7421A	175	N/A	N/A	N/A
4"	VGF21EP40		ML6421B	ML7421B	175	N/A	N/A	N/A
5"	VGF21EP50		ML6421B	ML7421B	175	N/A	N/A	N/A
6"	VGF21EP60		ML6421B	ML7421B	175	N/A	N/A	N/A

COMMON SPECIFICATIONS

Life Expectancy	50,000 full stroke cycles or 1,000,000 repositions (ML6984, ML7984)
Input Impedance	100 kΩ for 2-10 VDC input, 500Ω for 4-20 mA input (ML74xx); 20 kΩ for 2-10 VDC input, 237Ω for 4-20 mA input (ML7984)
Noise	55 dBA @ 3.3' (1m) for ML6984, ML7984 only, others not rated
Spring Return Time	12 seconds, for ML6425, ML7425 only
Manual Override	Yes, on ML6420, ML7420, ML6421, ML7421 only

Operating Temperature	14° to 122°F (-10° to 50°C) for ML64xx, ML74xx; 32° to 132°F (0° to 55°C) for ML6984, ML7984
Operating Humidity	5% to 95% RH non-condensing for ML64xx, ML74xx; 15% to 95% RH non-condensing for ML6984, ML7984
Approvals Warranty	UL Listed, CE 1 year

CONTROL VALVES

DIRECT-MOUNT GLOBE VALVE ACTUATORS

ML SERIES

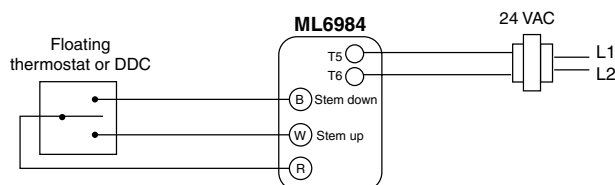


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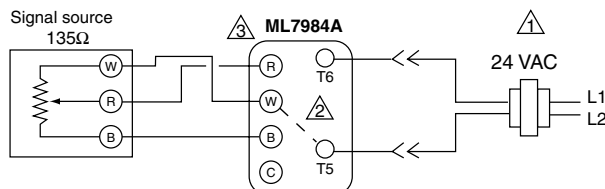
CONTROL VALVES

WIRING

CAUTION: Install actuator on valve before energizing.

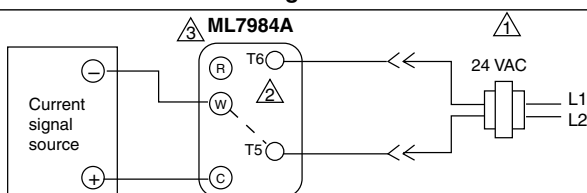


ML6984 Floating Control



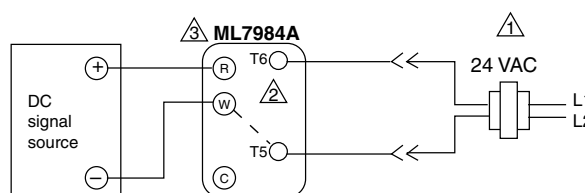
FUNCTION	DIP SWITCH CONFIGURATION
Mechanical 135Ω input	1 On 2 Off 3 Off 4 Off

ML7984A Resistance Control



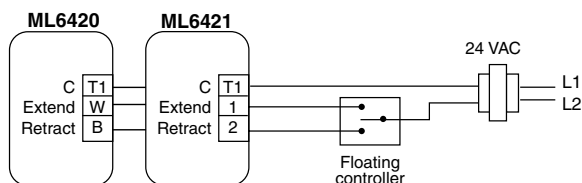
FUNCTION	DIP SWITCH CONFIGURATION
4-20 mA direct acting	1 Master actuator 2 Slave actuator 3 On 4 Off
20-4 mA reverse acting	1 Master actuator 2 Slave actuator 3 On 4 Off

ML7984A mA Proportional Control

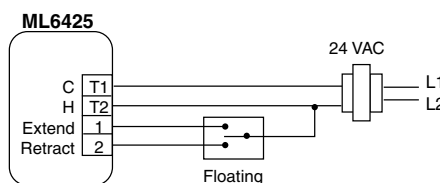


FUNCTION	DIP SWITCH CONFIGURATION
2-10 VDC direct acting	1 On 2 Off 3 On 4 Off
10-2 VDC reverse acting	1 On 2 Off 3 On 4 Off

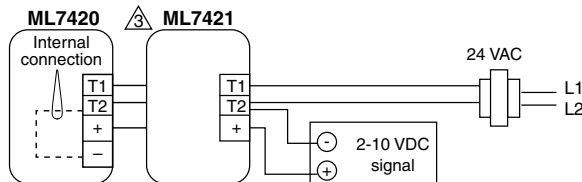
ML7984A VDC Proportional Control



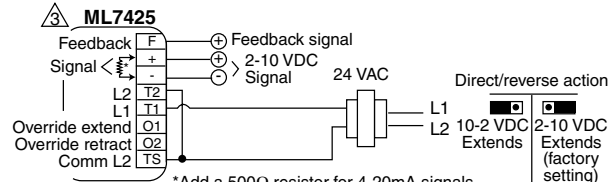
ML6420, ML6421 Floating Control



ML6425 Floating Control



ML7420, ML7421 mA Proportional Control



ML7425 VDC Proportional Control

- 1 Allow 0.5 amps maximum for each device. Actuators and controller can share the same transformer providing proper phasing is observed, except as noted.
- 2 "T5" and "W" terminal are connected internally. Device is compatible with the three-wire control system.
- 3 Use configuration DIP switches to select device functions. See installation instructions.

FUNCTION	DIP SWITCH CONFIGURATION
Direct Acting	1 On 2 Off 3 On 4 Off
Reverse Acting	1 On 2 Off 3 On 4 Off



CONTROL VALVES

DIRECT-MOUNT GLOBE VALVE ACTUATORS

ML SERIES

3

CONTROL VALVES

INDIVIDUAL SPECIFICATIONS							
Model	Force	Supply Voltage	Supply VA	Control Signal	Action	Stroke	Stroke Time
ML6420A3049	135 lbf (600 N)	24 VAC 50/60 Hz	6 VA	Two-position/floating	NSR, DA/RA by wiring	3/4" (1.9 cm)	60 seconds
ML7420A3055	135 lbf (600 N)	24 VAC 50/60 Hz	7 VA	Prop. 2-10 VDC, 4-20 mA	NSR, DA/RA by jumpers	3/4" (1.9 cm)	60 seconds
ML6984A4000	160 lbf (710 N)	24 VAC 50/60 Hz, 24 VDC	12 VA	Two-position/floating	NSR, DA/RA by wiring	3/4" (1.9 cm)	63 seconds
ML7984A4009	160 lbf (710 N)	24 VAC 50/60 Hz, 24 VDC	12 VA	Prop. 2-10 VDC, 4-20 mA, 0-135Ω	NSR, DA/RA by DIP switches	3/4" (1.9 cm)	63 seconds
ML6421A1017	405 lbf (1800 N)	24 VAC 60 Hz	11 VA	Two-position/floating	NSR, DA/RA by wiring	3/4" (1.9 cm)	95 seconds
ML7421A1032	405 lbf (1800 N)	24 VAC 60 Hz	12 VA	Prop. 2-10 VDC, 4-20 mA	NSR, DA/RA by jumpers	3/4" (1.9 cm)	95 seconds
ML6421B1040	405 lbf (1800 N)	24 VAC 60 Hz	11 VA	Two-position/floating	NSR, DA/RA by wiring	1-1/2" (3.8 cm)	175 seconds
ML7421B1023	405 lbf (1800 N)	24 VAC 60 Hz	12 VA	Prop. 2-10 VDC, 4-20 mA	NSR, DA/RA by jumpers	1-1/2" (3.8 cm)	175 seconds
ML6425A3022	135 lbf (600 N)	24 VAC 50/60 Hz	11 VA	Two-position/floating	SR stem down, DA/RA by wiring	3/4" (1.9 cm)	90 seconds
ML6425B3013	135 lbf (600 N)	24 VAC 50/60 Hz	11 VA	Two-position/floating	SR stem up, DA/RA by wiring	3/4" (1.9 cm)	90 seconds
ML7425A3013	135 lbf (600 N)	24 VAC 50/60 Hz	12 VA	Prop. 2-10 VDC, 4-20 mA	SR stem down, DA/RA by jumpers	3/4" (1.9 cm)	90 seconds
ML7425B3012	135 lbf (600 N)	24 VAC 50/60 Hz	12 VA	Prop. 2-10 VDC, 4-20 mA	SR stem up, DA/RA by jumpers	3/4" (1.9 cm)	90 seconds

ORDERING INFORMATION

MODEL

ML6420A3049

ML7420A3055

ML6984A4000

ML7984A4009

ML6421A1017

ML6421B1040

ML7421A1032

ML7421B1023

ML6425A3022

ML6425B3013

ML7425A3013

ML7425B3012

DESCRIPTION

135 lbf, non-spring return, floating control for 1/2" to 2" valves

135 lbf, non-spring return, proportional control (2-10V, 4-20 mA) for 1/2" to 2" valves

160 lbf, non-spring return, floating control for 1/2" to 2" valves

160 lbf, non-spring return, proportional input (2-10V, 4-20 mA, 135Ω) for 1/2" to 2" valves

405 lbf, non-spring return, floating control for 2-1/2" to 3" valves

405 lbf, non-spring return, floating control for 4" to 6" valves

405 lbf, non-spring return, proportional control (2-10V, 4-20 mA) for 2-1/2" to 3" valves

405 lbf, non-spring return, proportional control (2-10V, 4-20 mA) for 4" to 6" valves

135 lbf, spring return stem down, floating control for 1/2" to 3" valves

135 lbf, spring return stem up, floating control for 1/2" to 3" valves

135 lbf, spring return stem down, proportional (2-10 VDC, 4-20 mA) for 1/2" to 3" valves

135 lbf, spring return stem up, proportional (2-10V, 4-20 mA) for 1/2" to 3" valves

RELATED PRODUCTS

SSTAG

KOV Series

Stainless steel tag on bead chain, 1" x 2" dogtag, custom engraved per order

Fabric Weatherproof cover for globe actuators

PAGE

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CONTROL VALVES

THREADED GLOBE VALVES G2, G3 SERIES



DESCRIPTION

The **G2 Series** 2-way and **G3 Series** 3-way globe valves can be used for two-position, floating or proportional control of HVAC hot water, chilled water or steam. The valves come assembled with Belimo electric actuators with spring return or non-spring return operation and are ideal for controlling unit ventilators, air handling units and a wide variety of HVAC heating and cooling systems.

FEATURES

- Full line of spring and non-spring actuators for all applications
- 2-position, floating and modulating control signals for all control sequences
- Self-adjusting stroke
- Visual sliding stroke indicators; position indicators adjusted automatically
- Assembly can be mounted with valve stem horizontal to the pipe
- Self locking valve coupling

BENEFITS

- Utilizes full control signal for maximum resolution
- Speeds installation and system check
- Piping flexibility
- Proper valve-actuator connection is ensured

NEW!

BELIMO



3

CONTROL VALVES



G2-SVK



G3-LV

SPECIFICATIONS

Actuator Control Type	Floating point, On-Off, 2-10 VDC multi-function technology (MFT)	Maximum Inlet Pressure	241 kPa
Actuator Manual Override	All models except LF	Maximum Pressure Rating	250 psi
Actuator Electrical Connection	3' (1mm) cable with 1/2" conduit fitting standard	Media Compatibility	Chilled or Hot Water, 60% Glycol, Steam (G2, G2S)
Connections	NPT female ends	Pipe Size Range	1/2", 3/4", 1", 1-1/4", 1-1/2", 2"
Flow Characteristic		Maximum Differential Pressure	
G2	Equal percentage	Water	35 psi (241 kPa)
G2S, G3, G3D	Linear	Steam	20 psi (138 kPa) to 35 psi (241 kPa)
		Warranty	5 years
		Weight	Varies per valve



CONTROL VALVES

THREADED GLOBE VALVES

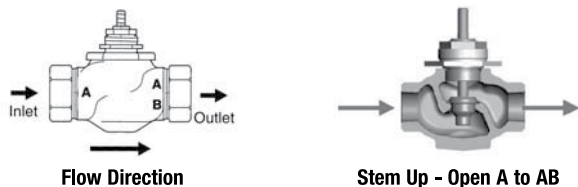
G2, G3 SERIES

3

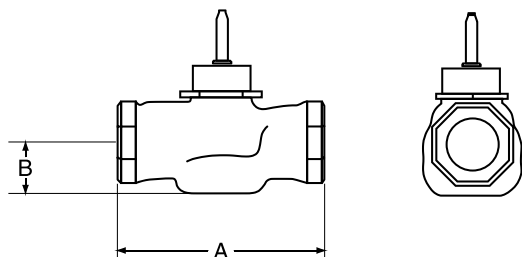
CONTROL VALVES

G2 SERIES FLOW PATTERNS & DIMENSIONS

G2...(S) 2-way Flow Patterns



Dimensions

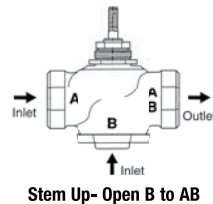


Valve Body	Valve Nominal Size		Dimensions (Inches [mm])	
	Inches	DN [mm]	A	B
G212(S)-G215(S)	½"	15	3.06" [78]	1.06" [27]
G219(S)-G220(S)	¾"	20	3.62" [92]	1.06" [27]
G224(S)-G225(S)	1"	25	4.62" [117]	1.12" [29]
G232(S)	1¼"	32	4.62" [117]	1.37" [35]
G240(S)	1½"	40	5.37" [137]	1.50" [38]
G250(S)	2"	50	6.12" [156]	1.56" [40]

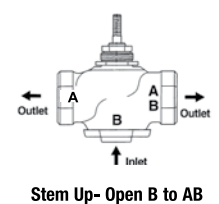
G3 SERIES FLOW PATTERNS & DIMENSIONS

G3...(D) 3-way Flow Patterns

G3 3-way Mixing Valve

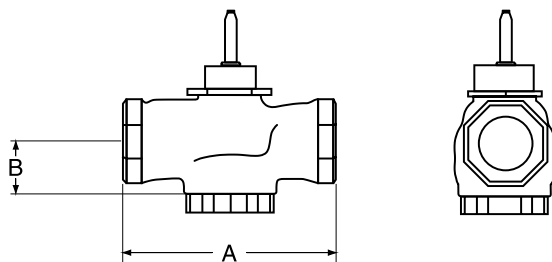


G3...D 3-way Diverting Valve



Note: Flow B to A travels through center of plug (as shown).

Dimensions



Valve Body	Valve Nominal Size		Dimensions (Inches [mm])	
	Inches	DN [mm]	A	B
G314	½"	15	3.06" [78]	1.37" [35]
G315(D)	½"	15	3.06" [78]	1.37" [35]
G320(D)	¾"	20	3.62" [92]	1.68" [43]
G325(D)	1"	25	4.62" [117]	1.56" [40]
G332(D)	1¼"	32	4.62" [117]	1.62" [41]
G340(D)	1½"	40	5.37" [137]	1.62" [41]
G350(D)	2"	50	6.12" [156]	1.87" [48]

NEW!



ORDERING INFORMATION

VALVE SPECIFICATION				NON-SPRING RETURN		SPRING RETURN (N.O. / CCW)			ELECTRONIC FAIL SAFE	
Port	Valve #	Cv	Size	Two-pos/ Tri-state	Proportional	Two-Pos	Tri-state	Proportional	Two-pos/ Tri-state	Proportional
Two-way	G212	0.4	1/2"	LVB24-3	LVB24-SR	LF-24	LF24-3	LF24-SR	LVKB24-3	LVKB24-SR
Two-way	G213	1.3	1/2"	LVB24-3	LVB24-SR	LF-24	LF24-3	LF24-SR	LVKB24-3	LVKB24-SR
Two-way	G214	2.2	1/2"	LVB24-3	LVB24-SR	LF-24	LF24-3	LF24-SR	LVKB24-3	LVKB24-SR
Two-way	G215	4.4	1/2"	LVB24-3	LVB24-SR	LF-24	LF24-3	LF24-SR	LVKB24-3	LVKB24-SR
Two-way	G219	5.5	3/4"	LVB24-3	LVB24-SR	LF-24	LF24-3	LF24-SR	LVKB24-3	LVKB24-SR
Two-way	G220	7.5	3/4"	LVB24-3	LVB24-SR	LF-24	LF24-3	LF24-SR	LVKB24-3	LVKB24-SR
Two-way	G224	10	1"	SVB24-3	SVB24-SR	NFBUP-X1		NFB24-SR-X1	SVKB24-3	SVKB24-SR
Two-way	G225	14	1"	SVB24-3	SVB24-SR	NFBUP-X1		NFB24-SR-X1	SVKB24-3	SVKB24-SR
Two-way	G232	20	1-1/4"	SVB24-3	SVB24-SR	NFBUP-X1		NFB24-SR-X1	SVKB24-3	SVKB24-SR
Two-way	G240	28	1-1/2"	SVB24-3	SVB24-SR	AFBUP-X1		AFB24-SR-X1	SVKB24-3	SVKB24-SR
Two-way	G250	40	2"	SVB24-3	SVB24-SR	AFBUP-X1		AFB24-SR-X1	SVKB24-3	SVKB24-SR
Three-way	G314	2.2	1/2"	LVB24-3	LVB24-SR	LF-24	LF24-3	LF24-SR	LVKB24-3	LVKB24-SR
Three-way	G315	4.4	1/2"	LVB24-3	LVB24-SR	LF-24	LF24-3	LF24-SR	LVKB24-4	LVKB24-SR
Three-way	G320	7.5	3/4"	LVB24-3	LVB24-SR	LF-24	LF24-3	LF24-SR	LVKB24-5	LVKB24-SR
Three-way	G325	14	1"	SVB24-3	SVB24-SR	NFBUP-X1		NFB24-SR-X1	SVKB24-3	SVKB24-SR
Three-way	G332	20	1-1/4"	SVB24-3	SVB24-SR	NFBUP-X1		NFB24-SR-X1	SVKB24-3	SVKB24-SR
Three-way	G340	28	1-1/2"	SVB24-3	SVB24-SR	AFBUP-X1		AFB24-SR-X1	SVKB24-3	SVKB24-SR
Three-way	G350	41	2"	SVB24-3	SVB24-SR	AFBUP-X1		AFB24-SR-X1	SVKB24-3	SVKB24-SR

MODEL	DESCRIPTION
G _ _ _ /	Globe valve with specifications listed above
-----	Compatible actuator (select from above) (other options for the actuator family are also available)

Note: Standard globe valve construction is a bronze body and seat with a stainless steel stem and brass plug. Stainless steel seat and plug is available as an option on the two-way valves only. Add "S" to the end of the valve body number.

Note: Standard three-way valve is mixing valve. For diverting valve add "D" to the end of the valve body number.

Note: Multi-function Technology® (MFT) model actuators are also available. Add - MFT to the base model number of the actuator and specify the control signal configuration or the Belimo P-code for a pre-set MFT configuration (not required if to be field configured, or if the default configuration of 2-10 VDC is required)

ACCESSORIES

MODEL

S1A

S2A

ZS-SPGV-20

ZS-SPGV-60

DESCRIPTION

Auxiliary switch, 1- single pole double throw

Auxiliary switch, 2- single pole double throw

Weather shield for single NF or AF actuators on G2 or G3 series valves

Weather shield for LF actuators on G2 or G3 series valves



CONTROL VALVES

UNIVERSAL RETROFIT LINKAGE/ACTUATOR KITS

UGVL, SGVL, WGPL RETROFIT SERIES

DESCRIPTION

Belimo New Generation Linear Globe Valve Actuators and Retrofit Linkages offer greater power and flexibility. Engineered to suit a broad range of HVAC applications, both the New Generation Actuators and Retrofit Linkages are highly adaptable making selection, installation, and long-term service worry-free. New force ranges is from 112 lbf [500N] to 1011 lbf [4500N] and there is a broader travel range from 0.6" (15 mm) to 2" (50 mm). With a universal format, these retrofit linkages and actuators will fit most globe valves on the market today.

FEATURES

- Increased force ranges for higher close-off pressures
- Field selectable fail-safe actuator positions
- Lower power consumption during operation
- Cast Aluminum linkage
- Locking coupler feature to prevent slipping
- Centering device on linkage to assure proper alignment
- Manual override capability

NEW!



UGVL-SVK



UGVL-LV

BELIMO



SPECIFICATIONS

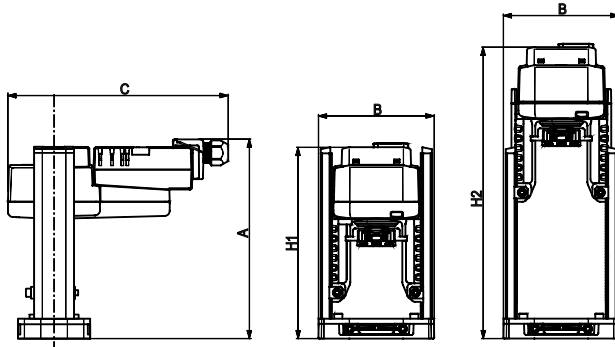
Connections	3' (0.9 m) 18GA plenum rated cable	Feedback	Dependent on model
Life Expectancy	100,000+ cycles	Auxiliary Switch	Add-on, @SPDT, 3A @ 250V,
Materials of Construction	Plastic, aluminum, steel	Force (Actuator Type)	
Color	Orange actuator	LV Series	112 foot lbs (lbf)
Fail Safe	35 seconds (not on all models), 35 sec	SV Series	337 foot lbs (lbf)
Supply Voltage		AVK Series	450 foot lbs (lbf)
UGVL+LVB24-3	24 VAC	EVB Series	562 foot lbs (lbf)
UGVL+LVX120-3	120 VAC	RVB Series	1011 foot lbs (lbf)
Control Signal		Compatible Actuators	Actuator included in part number
UGVL+LVB24-3	Floating, on-off	Actuator Mounting	Included in part number
UGVL+LVB24-SR	Proportional	Drive Time	90 sec (variable on MFT)
UGVL+LVX24-MFT	MFT	Operating Temperature	-22° to 122°F (-30° to 50°C)
Noise (Actuator Type)		Operating Humidity	5-95% non-condensating
SV Series	55 dB	Enclosure Rating	NEMA 2 / IP54, UL enclosure type 2
LV Series	45 dB	Approvals	cULus, UL 60730-1A/-2, -14, CAN/CSA
EV/RV Series	65 dB		E60730-1:02, CE 2004/108/EC, 2006/95/EC
Conduit Connection	1/2" conduit fitting appliance cable	Warranty	5 years

RETROFIT LINKAGE REPLACEMENT PRODUCT RANGE

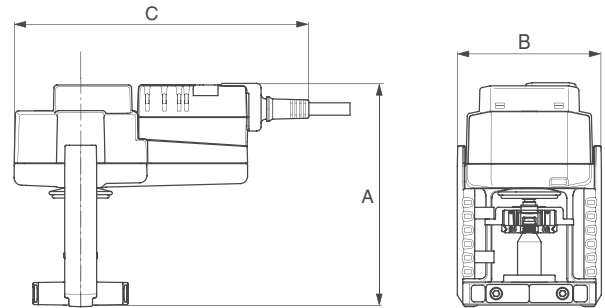
Original Valve Manufacturer	Valve Body Model Numbers	Belimo Linkage Type
Honeywell	V5011 Series	UGVL
	V5011N Series	
	V5013 Series	
	V5013N Series	
Johnson Controls	V(B)-3754 Series, Bronze Trim	
	V(B)-3974 Series, Bronze Trim	
	V(B)-4324 Series, Bronze Trim	
	V(B)-5844 Series	
	V-4332	
	VG7000 Series	
Siemens, Landis, Powers	591 Series	
	599 Series	
	656 Series	
Robertshaw	V6600	
	V6700	
	V6800	
Siebe (Belimo), Invensys, Barber Coleman	Belimo USA G2 series	SGVL
	Belimo USA G2...S series	
	Belimo USA G3 series	
	VB7000 series	
	VB9000 series	
Warren Controls	Type 20	WGPL
	Type 22	
	Type 30	
	Type 32	



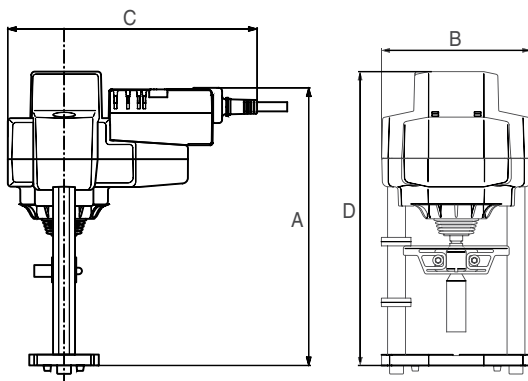
DIMENSIONS / COMPARISON



New UGVL with LV, SV



New SGVL with LV, SV



New WGPL with AV, EV and RV

Dimensions - in (cm)

	A	B	C	D	H1	H2
UGVL	8 (20.3)	4.4 (11.2)	9.6 (24.4)	—	8.4 (21.3)	12.1 (30.7)
SGVL	6.7 (17)	3.9 (9.9)	8.2 (20.8)	—	—	—
WGPL	10.4 (26.4)	5.5 (14)	10.3 (26.2)	10.9 (27.7)	—	—



CONTROL VALVES

UNIVERSAL RETROFIT LINKAGE/ACTUATOR KITS

UGVL, SGVL, WGVL RETROFIT SERIES

3

CONTROL VALVES

ORDERING INFORMATION

MODEL	DESCRIPTION
U	Universal Retrofit
S	Schneider Valve Retrofit
W	Warren Valve Retrofit
GLOBE VALVE LINKAGE	
GVL+	Retrofit Globe Valve Linkage
ACTUATOR	
LVB	Non-spring return for 1/2" thru 3/4" valve
LVX	Non-spring return for 1/2" thru 3/4" valve (used with 120 VAC or MFT options only)
SVX	Non-spring return for 1" thru 2" valve
SVB	Non-spring return for 1" thru 2" valve (used with SR option only)
EVB	Non-spring return for 2-1/2" thru 6" valve (used with Warren valves only)
RVB	Non-spring return for 2-1/2" thru 6" valve (used with Warren valves only)
LVKX	Electronic fail-safe for 1/2" thru 3/4" valve
LVKB	Electronic fail-safe for 1/2" thru 3/4" valve (used with SR option only)
SVKX	Electronic fail-safe for 1" thru 2" valve
SVKB	Electronic fail-safe for 1" thru 2" valve (used with SR option only)
AVKB	Electronic fail-safe for 2-1/2" thru 6" valve (used with Warren valves only)
ACTUATOR	
24	24 VAC/VDC
120	120 VAC-230 VAC
CONTROL TYPE	
-3	Floating/On-off
-MFT	Multifunction technology, proportional, default 2-10 VDC
-SR	Proportional

U

GVL+

LVB

24

-3

Example: UGVL+LVB24-3

Universal retrofit globe valve linkage, floating, on-off signal, 24V, NSR

NOTE: All functions and options are not available with all versions.

RELATED PRODUCTS

S2A-GV

Aux-Switch

NEW!



NEW!



VG2000 Series

DESCRIPTION

The **VG2000 Series** flanged globe valves from Johnson Controls are designed to control the flow of water and steam in HVAC systems. Available in 2-1/2" through 6" pipe sizes, these ANSI Class 125 valves are available in normally open (N.O.), normally closed (N.C.) and 3-way mixing configurations.

FEATURES

- *Complete family of 2-1/2" through 6" flanged cast iron valves with several choices in electric and pneumatic actuation*
- *Every valve factory tested to assure performance and tight close-off*
- *Order valve body alone for field assembly, or pre-assembled with actuator to fit the application*

SPECIFICATIONS

Service*	Hot water, chilled water, 50% glycol solutions, or steam for HVAC systems	Maximum Recommended Operating Pressure Drop 35 psig (241 kPa) for all valve sizes
Valve Stroke		Maximum Actuator Supply Pressure (Pneumatically Actuated Valves Only) 25 psig (172 kPa) maximum
2-1/2" and 3" Valves	3/4" (19 mm)	Maximum Closeoff Pressures Dependent on valve size and actuator used
3" and 4" Valves	1-1/8" (29 mm)	
5" Valves	1-3/8" (35 mm)	
6" Valves	1-1/2" (38 mm)	
Valve Body Rating	Meets requirements of ASME B16.1, Class 125.	
Valve Assembly	Steam 35 psig (241 kPa) at 281°F (138°C)	Materials of construction
Maximum Allowable	Water 175 psig (1,206 kPa) up to 150°F (66°C)	Body Cast iron with black lacquer finish
Pressure/Temperature	Decreasing to 125 psig (861 kPa) at 281°F (138°C)	Stem 316 stainless steel
Leakage	0.1% of maximum flow	Plug Brass
Inherent Flow Characteristics	Modified linear	Packing Ethylene propylene terpolymer (EPT) ring packs
Rangeability**		Valve Fluid Operating Temperature Limits 35° to 281°F (2° to 138°C), 35 psig (241 kPa) saturated steam
2-1/2" Valves	6.5:1	* Proper water treatment is recommended; refer to VDI 2035 Standard.
3" Valves	7.7:1	** Rangeability is defined as the ratio of maximum flow to minimum controllable flow.
4" Valves	9.3:1	
5" Valves	10.7:1	
6" Valves	10.4:1	
Spring Ranges (MP8000 Series Actuators)	3 to 7, 4 to 8, and 9 to 13 psig (21 to 48, 28 to 55, and 62 to 90 kPa)	The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult Johnson Controls, Inc. Neither Kele, Inc., nor Johnson Controls, Inc., shall be liable for damages resulting from misapplication or misuse of its products.



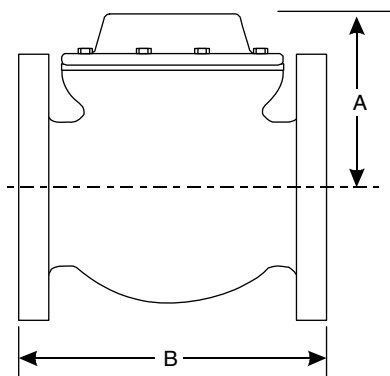
CONTROL VALVES

FLANGED GLOBE VALVES VG2000 SERIES

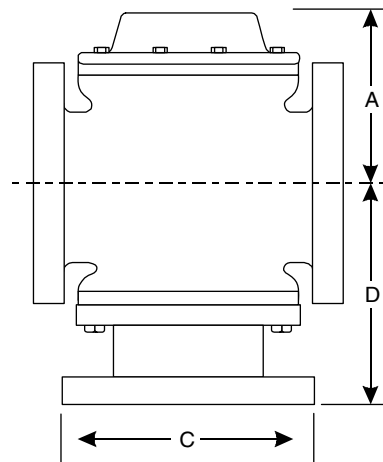
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CONTROL VALVES

DIMENSIONS



Two-Way



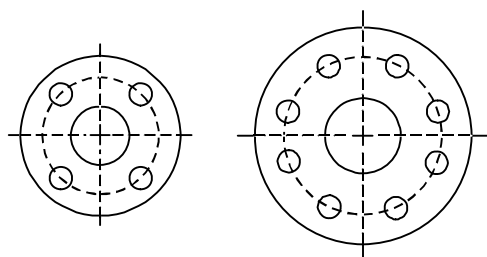
Three-Way Mixing

DIMENSIONS

Valve Body Size	A	B	C	D
2-1/2"	4-21/32" (118 mm)	7-1/4" (184 mm)	7" (178 mm)	6-25/32" (172 mm)
3"	5-5/16" (135 mm)	8-5/8" (219 mm)	7-1/2" (191 mm)	6-13/16" (175 mm)
4"	6-7/16" (164 mm)	10-1/2" (267 mm)	9" (229 mm)	8-1/16" (205 mm)
5"	6-7/8" (175 mm)	12-1/2" (318 mm)	10" (254 mm)	9-5/32" (233 mm)
6"	8-3/16" (208 mm)	14-1/2" (368 mm)	11" (279 mm)	9-15/16" (252 mm)

WEIGHTS

Valve Body Size	2-WAY	3-WAY
2-1/2"	40 lb (18.14 kg)	60 lb (27.22 kg)
3"	60 lb (27.22 kg)	85 lb (38.56 kg)
4"	90 lb (40.82 kg)	115 lb (52.16 kg)
5"	135 lb (61.24 kg)	180 lb (81.65 kg)
6"	140 lb (65.50 kg)	220 lb (99.79 kg)



Flange and Bolt Circle

DIMENSIONS

Valve Size	Flange Diameter	Flange Thickness	Bolt Circle Diameter	Bolt Hole Diameter	Bolt Holes
2-1/2"	7" (178 mm)	11/16" (17 mm)	5-1/2" (140 mm)	3/4" (19 mm)	4
3"	7-1/2" (191 mm)	3/4" (19 mm)	6" (152 mm)	3/4" (19 mm)	4
4"	9" (229 mm)	1" (25 mm)	7-1/2" (191 mm)	3/4" (19 mm)	8
5"	10" (254 mm)	1" (25 mm)	8-1/2" (216 mm)	7/8" (22 mm)	8
6"	11" (279 mm)	1" (25 mm)	9-1/2" (241 mm)	7/8" (22 mm)	8

NEW!



VG2231 TWO-WAY NORMALLY OPEN VALVES WITH PNEUMATIC ACTUATORS							
Spring Range		3 to 7 psig		4 to 8 psig		9 to 13 psig	
Size	Cv	Closeoff psig	Model Number	Closeoff psig	Model Number	Closeoff psig	Model Number
MP82 Series Actuators – 25 sq. in. Effective Diaphragm Area							
2-1/2"	51	53	VG2231TL-823C00	49	VG2231TL-823D00	28	VG2231TL-823E00
3"	83	37	VG2231UL-823C00	34	VG2231UL-823D00	19	VG2231UL-823E00
MP84 Series Actuators – 50 sq. in. Effective Diaphragm Area							
2-1/2"	51	109	VG2231TM-843C00	100	VG2231TM-843D00	58	VG2231TM-843E00
3"	83	75	VG2231UM-845C00	70	VG2231UM-845D00	40	VG2231UM-845E00
4"	150	42	VG2231VM-845C00	39	VG2231VM-845D00	23	VG2231VM-845E00
MP86 Series Actuators – 100 sq. in. Effective Diaphragm Area							
3"	83	152	VG2231UN-865C00	140	VG2231UN-865D00	81	VG2231UN-865E00
4"	150	86	VG2231VN-865C00	79	VG2231VN-865D00	46	VG2231VN-865E00
5"	240	55	VG2231WN-867C00	51	VG2231WN-867D00	29	VG2231WN-867E00
6"	350	38	VG2231YN-867C00	35	VG2231YN-867D00	20	VG2231YN-867E00

VG2431 TWO-WAY NORMALLY CLOSED VALVES WITH PNEUMATIC ACTUATORS							
Spring Range		3 to 7 psig		4 to 8 psig		9 to 13 psig	
Size	Cv	Closeoff psig	Model Number	Closeoff psig	Model Number	Closeoff psig	Model Number
MP84 Series Actuators – 50 sq. in. Effective Diaphragm Area							
2-1/2"	54	24	VG2431TM-843C00	32	VG2431TM-843D00	75	VG2431TM-843E00
3"	83	17	VG2431UM-845C00	22	VG2431UM-845D00	52	VG2431UM-845E00
4"	150	9	VG2431VM-845C00	13	VG2431VM-845D00	29	VG2431VM-845E00
MP86 Series Actuators – 100 sq. in. Effective Diaphragm Area							
3"	83	34	VG2431UN-865C00	46	VG2431UN-865D00	105	VG2431UN-865E00
4"	150	19	VG2431VN-865C00	26	VG2431VN-865D00	59	VG2431VN-865E00
5"	237	12	VG2431WN-867C00	17	VG2431WN-867D00	38	VG2431WN-867E00
6"	344	9	VG2431YN-867C00	11	VG2431YN-867D00	26	VG2431YN-867E00

VG2831 THREE-WAY MIXING VALVES WITH PNEUMATIC ACTUATORS							
Spring Range		3 to 7 psig		4 to 8 psig		9 to 13 psig	
Size	Cv	Closeoff psig	Model Number	Closeoff psig	Model Number	Closeoff psig	Model Number
MP84 Series Actuators – 50 sq. in. Effective Diaphragm Area							
2-1/2"	54	65/14	VG2831TM-843C00	60/19	VG2831TM-843D00	35/45	VG2831TM-843E00
3"	83	45/10	VG2831UM-845C00	42/13	VG2831UM-845D00	24/31	VG2831UM-845E00
4"	150	25/6	VG2831VM-845C00	23/8	VG2831VM-845D00	14/18	VG2831VM-845E00
MP86 Series Actuators – 100 sq. in. Effective Diaphragm Area							
3	83	91/21	VG2831UN-865C00	84/28	VG2831UN-865D00	49/63	VG2831UN-865E00
4	150	51/12	VG2831VN-865C00	47/16	VG2831VN-865D00	27/35	VG2831VN-865E00
5	237	33/7	VG2831WN-867C00	30/10	VG2831WN-867D00	18/23	VG2831WN-867E00
6	344	23/5	VG2831YN-867C00	21/7	VG2831YN-867D00	12/16	VG2831YN-867E00

To add an optional positioner to the valve assembly, change the 00 at the end of the code number to 01 for a V-9502-95 pneumatic positioner or to 02 for an EPP-1000-8 Electro-pneumatic positioner.



CONTROL VALVES

FLANGED GLOBE VALVES

VG2000 SERIES

3

CONTROL VALVES

ORDERING INFORMATION — ELECTRIC SPRNG RETURN

VG2X31 VALVES WITH M9220-XGX-3 ACTUATORS

				Spring Return		
				Floating	On/Off	Proportional
Valve	Size	Cv	Closeoff psig	M9220-AGA-3 (w/switches) M9220-AGC-3 (w/o switches)	M9220-BGA-3 (w/switches) M9220-BGC-3 (w/o switches)	M9220-GGA-3 (w/switches) M9220-GGC-3 (w/o switches)
Two-Way – Spring Return Normally Open – Valve Stem Up						
VG2231TM	2-1/2"	51	76	VG2231TM-92NAGx	VG2231TM-92NBGx	VG2231TM-92NGGx
VG2231UM	3"	83	33	VG2231UM-92NAGx	VG2231UM-92NBGx	VG2231UM-92NGGx
VG2231UM	3"	83	66	VG2231TM292NAGx	VG2231UM292NBGx	VG2231UM292NGGx
VG2231VM	4"	150	37	VG2231UM292NAGx	VG2231VM292NBGx	VG2231VM292NGGx
VG2231WN	5"	240	20	VG2231WN292NAGx	VG2231WN292NBGx	VG2231WN292NGGx
Two-Way – Spring Return Normally Closed – Valve Stem Down						
VG2231TM	2-1/2"	51	76	VG2231TM-94NAGx	VG2231TM-94NBGx	VG2231TM-94NGGx
VG2231UM	3"	83	33	VG2231UM-94NAGx	VG2231UM-94NBGx	VG2231UM-94NGGx
VG2231UM	3"	83	66	VG2231TM294NAGx	VG2231UM294NBGx	VG2231UM294NGGx
VG2231VM	4"	150	37	VG2231UM294NAGx	VG2231VM294NBGx	VG2231VM294NGGx
VG2231WN	5"	240	20	VG2231WN294NAGx	VG2231WN294NBGx	VG2231WN294NGGx
Three-Way Mixing – Spring Return – Valve Stem Up – Side Inlet Port Closed						
VG2831TM	2-1/2"	54	45	VG2831TM-92NAGx	VG2831TM-92NBGx	VG2831TM-92NGGx
VG2831UM	3"	80	20	VG2831UM-92NAGx	VG2831UM-92NBGx	VG2831UM-92NGGx
VG2831UM	3"	80	40	VG2831UM292NAGx	VG2831UM292NBGx	VG2831UM292NGGx
VG2831VM	4"	157	11	VG2831VM-92NAGx	VG2831VM-92NBGx	VG2831VM-92NGGx
VG2831VM	4"	157	22	VG2831VM292NAGx	VG2831VM292NBGx	VG2831VM292NGGx
VG2831WN	5"	238	12	VG2831WM292NAGx	VG2831WN292NBGx	VG2831WN292NGGx
VG2831YN	6"	347	7	VG2831YN292NAGx	VG2831YN292NBGx	VG2831YN292NGGx
Three-Way Mixing – Spring Return – Valve Stem Down – Side Inlet Port Open						
VG2831TM	2-1/2"	54	45	VG2831TM-94NAGx	VG2831TM-94NBGx	VG2831TM-94NGGx
VG2831UM	3"	80	20	VG2831UM-94NAGx	VG2831UM-94NBGx	VG2831UM-94NGGx
VG2831UM	3"	80	40	VG2831UM294NAGx	VG2831UM294NBGx	VG2831UM294NGGx
VG2831VM	4"	157	11	VG2831VM-92NAGx	VG2831VM-94NBGx	VG2831VM-94NGGx
VG2831VM	4"	157	22	VG2831VM294NAGx	VG2831VM294NBGx	VG2831VM294NGGx
VG2831WN	5"	238	12	VG2831WM294NAGx	VG2831WN294NBGx	VG2831WN294NGGx
VG2831YN	6"	347	7	VG2831YN294NAGx	VG2831YN294NBGx	VG2831YN294NGGx

NEW!

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March 2014



ORDERING INFORMATION — ELECTRIC NON-SPRNG RETURN						
VG2X31 VALVES WITH M91XX-XGX-2 ACTUATORS – NON-SPRING RETURN						
			Non-Spring Return			
			On/Off Floating without Switches	Proportional without Switches	On/Off Floating with Two Switches	Proportional with Two Switches
Size	Cv	Closeoff psig	M9116-AGA-2 M9124-AGA-2	M9116-GGA-2 M9124-GGA-2	M9116-AGC-2 M9124-AGC-2	M9116-GGC-2 M9124-GGC-2
Two-Way, Push-Down-To-Close						
2-1/2"	51	62	VG2231TM+916AGA	VG2231TM+916GGA	VG2231TM+916AGC	VG2231TM+916GGC
2-1/2"	51	101	VG2231TM+924AGA	VG2231TM+924GGA	VG2231TM+924AGC	VG2231TM+924GGC
3"	83	27	VG2231UM+916AGA	VG2231UM+916GGA	VG2231UM+916AGC	VG2231UM+916GGC
3"	83	43	VG2231UM+924AGA	VG2231UM+924GGA	VG2231UM+924AGC	VG2231UM+924GGC
3"	83	88	VG2231UM2924AGA*	VG2231UM2924GGA*	VG2231UM2924AGC*	VG2231UM2924GGC*
4"	150	24	VG2231VM+924AGA	VG2231VM+924GGA	VG2231VM+924AGC	VG2231VM+924GGC
4"	150	49	VG2231VM2924AGA*	VG2231VM2924GGA*	VG2231VM2924AGC*	VG2231VM2924GGC*
5"	240	26	VG2231WN2924AGA*	VG2231WN2924GGA*	VG2231WN2924AGC*	VG2231WN2924GGC*
6"	350	16	VG2231YN2924AGA*	VG2231YN2924GGA*	VG2231YN2924AGC*	VG2231YN2924GGC*
Three-Way, Mixing						
2-1/2"	54	37	VG2831TM+916AGA	VG2831TM+916GGA	VG2831TM+916AGC	VG2831TM+916GGC
2-1/2"	54	60	VG2831TM+924AGA	VG2831TM+924GGA	VG2831TM+924AGC	VG2831TM+924GGC
3"	80	16	VG2831UM+916AGA	VG2831UM+916GGA	VG2831UM+916AGC	VG2831UM+916GGC
3"	80	26	VG2831UM+924AGA	VG2831UM+924GGA	VG2831UM+924AGC	VG2831UM+924GGC
3"	80	53	VG2831UM2924AGA*	VG2831UM2924GGA*	VG2831UM2924AGC*	VG2831UM2924GGC*
4"	157	9	VG2831VM+916AGA	VG2831VM+916GGA	VG2831VM+916AGC	VG2831VM+916GGC
4"	157	14	VG2831VM+924AGA	VG2831VM+924GGA	VG2831VM+924AGC	VG2831VM+924GGC
4"	157	30	VG2831VM2924AGA*	VG2831VM2924GGA*	VG2831VM2924AGC*	VG2831VM2924GGC*
5"	238	7	VG2831WN+924AGA	VG2831WN+924GGA	VG2831WN+924AGC	VG2831WN+924GGC
5"	238	15	VG2831WN2924AGA*	VG2831WN2924GGA*	VG2831WN2924AGC*	VG2831WN2924GGC*
6"	347	4	VG2831YN+924AGA	VG2831YN+924GGA	VG2831YN+924AGC	VG2831YN+924GGC
6"	347	9	VG2831YN2924AGA*	VG2831YN2924GGA*	VG2831YN2924AGC*	VG2831YN2924GGC*
*Valve assemblies require two actuators mounted in tandem. On tandem assemblies with switches, only one actuator is required to have switches. M9116-AGx-2 actuators are not designed for tandem operation.						

ORDERING INFORMATION — ELECTRIC NON-SPRNG RETURN						
VG2x31 Valves with VA-3100-xGx Series Non-Spring Return Actuators						
				Non-Spring Return		
				On/Off Floating without Switches	On/Off Floating with Two Switches	Proportional with Two Switches
Valve	Size	Cv	Closeoff psig	VA-3100-AGA	VA-3100-AGC	VA-3100-HGC
Two-Way Push-Down-To-Close						
VG2231TM	2-1/2	51	115	VG2231TM+300AGA	VG2231TM+300AGC	VG2231TM+300HGC
VG2231UM	3	83	79	VG2231UM+301AGA	VG2231UM+301AGC	VG2231UM+301HGC
VG2231VM	4	150	45	VG2231VM+301AGA	VG2231VM+301AGC	VG2231VM+301HGC
VG2231WN	5	240	29	VG2231WN+302AGA	VG2231WN+302AGC	VG2231WN+302HGC
VG2231YN	6	350	20	VG2231YN+302AGA	VG2231YN+302AGC	VG2231YN+302HGC
Three-Way Mixing						
VG2831TM	2-1/2	54	69	VG2831TM+300AGA	VG2831TM+300AGC	VG2831TM+300HGC
VG2831UM	3	80	48	VG2831UM+301AGA	VG2831UM+301AGC	VG2831UM+301HGC
VG2831VM	4	157	27	VG2831VM+301AGA	VG2831VM+301AGC	VG2831VM+301HGC
VG2831WN	5	238	17	VG2831WN+302AGA	VG2831WN+302AGC	VG2831WN+302HGC
VG2831YN	6	347	12	VG2831YN+302AGA	VG2831YN+302AGC	VG2831YN+302HGC



CONTROL VALVES

DIRECT-MOUNT GLOBE VALVE ACTUATORS

VA-4233, VA-7000 SERIES

DESCRIPTION

The **VA-7000 Series** is a family of direct-mount non-spring return actuators for use with 1/2" to 2" JCI VG7000 valves in a wide range of HVAC applications. They are available for three-wire floating control or proportional control. The **VA-4233 Series** is a family of direct-mount spring return actuators, available for two-position, floating, or proportional control.

FEATURES

- **Compact size**
- **Simple installation and adjustment**
- **No separate linkages**
- **Economical, yet powerful**



VA-4233-AGA-2



VA-7150

COMMON SPECIFICATIONS

Supply Voltage	24 VAC 50/60 Hz
Noise	35 dBa @ 3.3 ft (1m)
Feedback	0/2-10 VDC (VA-78xx-HGA only)
Auxiliary Contacts	Two SPDT; 50 VA pilot duty @ 24 VAC; 5.8A resistive, 1/4 HP, 275 VA pilot duty @ 120 VAC (VA-4233-GGC only)
Valve Mounting	
VA-71xx, -72xx	Set screw to bonnet, 1/4-28 UNF-2B threads for valve stem;
VA-4233, -78xx	Set screw to bonnet, stem nut connector
Spring Return Time	15 seconds (VA-4233 only)
Life Expectancy	100,000 full stroke cycles

Operating Temperature	
VA-71xx	0° to 140°F (-18° to 60°C)
VA-72xx, -78xx	23° to 131°F (-5° to 55°C)
VA-4233	32° to 122°F (0° to 50°C)
Operating Humidity	10% to 90% RH non-condensing
Approvals	
VA-71xx, -72xx, -4233	UL 873 Listed, File E27734, Class 2, plenum rated; CSA C22.2 No. 139 Certified, File LR85083; CE Directive 89/336/EEC
VA-78	UL 60730 Listed, File E194024; ULc 60730-1 Listed; CE Directive 89/336/EEC
Warranty	1 year

CONTROL VALVES

DIRECT-MOUNT GLOBE VALVE ACTUATORS

VA-4233, VA-7000 SERIES



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CONTROL VALVES

INDIVIDUAL SPECIFICATIONS							
Model	Force	Supply VA	Control Signal	Input Impedance	Action	Stroke	Stroke Time
VA-7150-1001	90 lbf (400 N)	2.7 VA	Floating		NSR, DA/RA by wiring	.78" (2.0 cm) maximum	165 seconds
VA-7152-1001		4.7 VA	Prop. 0-5 VDC, 0-10 VDC	100 k Ω	NSR, DA/RA by jumpers		
VA-7200-1001	180 lbf (800 N)	6.7 VA	Floating		NSR, DA/RA by wiring		62 seconds
VA-7202-1001		8.7 VA	Prop. 0-10 VDC, 0-20 mA	100 k Ω (0-10 VDC); 500 Ω (0-20 mA)	NSR, DA/RA by jumpers		
VA-4233-AGA-2	61 lbf (271 N)	12 VA	Floating		SR stem up, DA/RA by wiring	.91" (2.3 cm) maximum	76 seconds
VA-4233-BGA-2			Two-position		SR stem up, power stem down		
VA-4233-GGA-2			Prop. 0/2-10 VDC, 6-9 VDC, 4-20 mA	200 k Ω (2-10 VDC); 500 Ω (4-20 mA)	SR stem up, DA/RA by switch		
VA-4233-GGC-2			Prop. 0/2-10 VDC, 6-9 VDC, 4-20 mA	200 k Ω (2-10 VDC); 500 Ω (4-20 mA)	SR stem up, DA/RA by switch		
VA7820-HGA-2	180 lbf (800 N)	11 VA	Prop. 0/2-10 VDC, 0/4-20 mA	100 k Ω (0-10 VDC); 500 Ω (0-20 mA)	SR stem up, DA/RA by DIP switch	1.0" (2.5 cm) maximum	114 or 57 seconds
VA7830-HGA-2			Prop. 0/2-10 VDC, 0/4-20 mA	100 k Ω (0-10 VDC); 500 Ω (0-20 mA)	SR stem down, DA/RA by DIP switch		



CONTROL VALVES

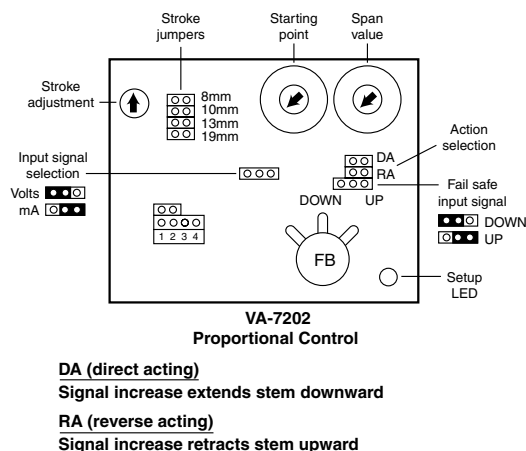
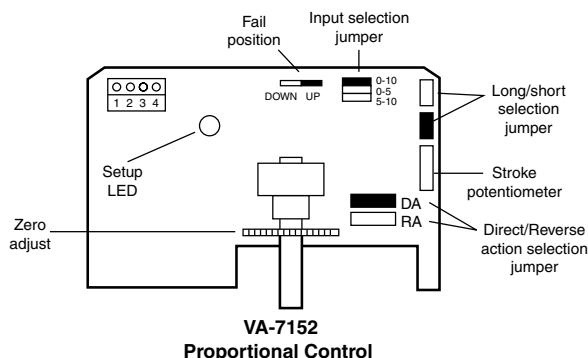
DIRECT-MOUNT GLOBE VALVE ACTUATORS

VA-4233, VA-7000 SERIES

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CONTROL VALVES

PROPORTIONAL CONTROL SETUP COMPONENTS



DIMENSIONS

Model	Dimensions	Enclosure Rating	Wiring	Conduit Connection	Weight
VA-7150-1001	6.1"H x 3.8" Diameter (15.4 x 9.8 cm)	NEMA 1 (IP40)	Screw terminals, 24 to 14 AWG	Cable gland, 1/2" (6.4 mm) maximum diameter	1.7 lb (0.8 kg)
VA-7152-1001	6.1"H x 3.8" Diameter (15.4 x 9.8 cm)	NEMA 1 (IP40)	Screw terminals, 24 to 14 AWG	Cable gland, 1/2" (6.4 mm) maximum diameter	1.7 lb (0.8 kg)
VA-7200-1001	7.8"H x 4.2" Diameter (19.7 x 10.6 cm)	NEMA 2 (IP42)	Screw terminals, 24 to 14 AWG	Two 7/8" (2.2 cm) knockouts for 1/2" fittings	2.2 lb (1.0 kg)
VA-7202-1001	7.8"H x 4.2" Diameter (19.7 x 10.6 cm)	NEMA 2 (IP42)	Screw terminals, 24 to 14 AWG	Two 7/8" (2.2 cm) knockouts for 1/2" fittings	2.2 lb (1.0 kg)
VA-4233-AGA-2	6.8"H x 4.1"W x 3.3"D (17.3 x 10.4 x 9.1 cm)	NEMA 2 (IP42)	48" (12.2 cm) cable with 20 AWG	Fitting for 1/2" conduit	3.1 lb (1.4 kg)
VA-4233-BGA-2	6.8"H x 4.1"W x 3.3"D (17.3 x 10.4 x 9.1 cm)	NEMA 2 (IP42)	48" (12.2 cm) cable with 20 AWG	Fitting for 1/2" conduit	3.1 lb (1.4 kg)
VA-4233-GGA-2	6.8"H x 4.1"W x 3.3"D (17.3 x 10.4 x 9.1 cm)	NEMA 2 (IP42)	48" (12.2 cm) cable with 20 AWG	Fitting for 1/2" conduit	3.1 lb (1.4 kg)
VA-4233-GGC-2	6.8"H x 4.1"W x 3.3"D (17.3 x 10.4 x 9.1 cm)	NEMA 2 (IP42)	48" (12.2 cm) cable with 18 AWG	Fitting for 1/2" conduit	3.1 lb (1.4 kg)
VA7820-HGA-2	9.1"H x 4.5"W x 8.4"D (23.1 x 11.5 x 21.2 cm)	NEMA 2 (IP54)	48" (12.2 cm) UL 758 AWM cable, 18 AWG	Integral connector for 3/8" (1.0 cm) flex conduit	7.3 lb (3.3 kg)
VA7830-HGA-2	9.1"H x 4.5"W x 8.4"D (23.1 x 11.5 x 21.2 cm)	NEMA 2 (IP54)	48" (12.2 cm) UL 758 AWM cable, 18 AWG	Integral connector for 3/8" (1.0 cm) flex conduit	7.3 lb (3.3 kg)



ORDERING INFORMATION

MODEL	DESCRIPTION
VA-7150-1001	90 lbf, non-spring return, floating control, for 1/2" to 1-1/4" valves
VA-7152-1001	90 lbf, non-spring return, proportional (0-5, 0-10 VDC) control, for 1/2" to 1-1/4" valves
VA-7200-1001	180 lbf, non-spring return, floating control, for 1-1/2" and 2" valves
VA-7202-1001	180 lbf, non-spring return, proportional (0-10 VDC, 0-20 mA) control, for 1-1/2" and 2" valves
VA-4233-AGA-2	61 lbf, spring return stem up, floating control, for 1/2" to 1-1/4" valves
VA-4233-BGA-2	61 lbf, spring return stem up, two-position control, for 1/2" to 1-1/4" valves
VA-4233-GGA-2	61 lbf, spring return stem up, proportional control, for 1/2" to 1-1/4" valves
VA-4233-GGC-2	61 lbf, spring return stem up, proportional control, with auxiliary switches, for 1/2" to 1-1/4" valves
VA7820-HGA-2	180 lbf, spring return stem up, proportional control, for 1/2" to 2" valves
VA7830-HGA-2	181 lbf, spring return stem down, proportional control, for 1/2" to 2" valves

	RELATED PRODUCTS	PAGE
M9000-200	Commissioning tool	
KOV-2	NEMA 3R fabric weather shield, 8" dia. x 10"H, fits Honeywell ML6420/7420/6425/7425 and Belimo NV/NVF	206

	ACCESSORIES
V-9999-BC1	Kit for 1/2" to 1-1/4" Barber Colman VB9000 Series valves
VG7000-1016	Bonnet adapter for replacing M100, V-400, V-500, MP8000 Series on VG7000 valves



CONTROL VALVES

THREADED AND FLANGED GLOBE VALVES

VB SERIES

Schneider
Electric

DESCRIPTION

The **VB Series** Globe Valves are available in 1/2" to 2" threaded bronze body **VB-7XXX** models, or in 2 1/2" to 6" flanged cast iron body **VB-8XXX** models. The flanged valves have a patented balanced plug design. The balanced plug design allows water or steam to flow through the valve plug, equalizing the pressure on the top and bottom of the plug which greatly reduces the force required to operate and close these larger size valves. The **VB Series** Valves are designed for control of chilled water, hot water, or steam in the HVAC industry and have a long history of high quality and reliability. They are available pre-assembled with electric or pneumatic actuators, or available without actuator for field assembly.

FEATURES

- *Low-profile body*
- *High quality, proven history of performance*
- *Self-adjusting packing design*
- *Wide temperature range 20° to 281°F (-7° to 138°C)*
- *Pneumatic or electric actuation choices*
- *Available pre-assembled or separately*
- *Two- and three-way body patterns*
- *Mixing and diverting 3-way body patterns*
- *Balanced plug design on flanged models*



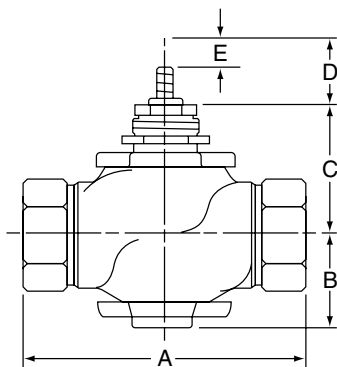
VF-8213-596-5-12

SPECIFICATIONS

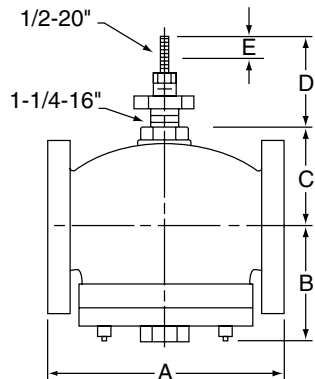
Size	1/2" to 2" FNPT, 2-1/2" to 6" flanged	Materials Of Construction	1/2" to 2": Bronze body/plug/seat, stainless steel stem and spring-loaded TFE packing;
Cv Range	0.4 to 40 (NPT bodies); 56 to 500 (flanged bodies)		2-1/2" to 6": Cast iron body, bronze plug/seat, stainless steel stem and spring-loaded TFE/EPDM packing
Body Pattern	Two-way, three-way mixing or diverting	Media Compatibility	Hot or chilled water, steam (up to 35 psig (241 kPa)), glycol (up to 50%)
Rangeability	1/2" to 2": from 5:1 (Cv=0.4), up to 75:1 (Cv=40) 2-1/2" to 6": 100:1	Media Temperature Range	20° to 281°F (-7° to 138°C)
Leakage Rating	ANSI Class IV, 0.01% of Cv	Action	Two-way stem up to close and stem up to open models; three-way mixing or diverting
Maximum Closeoff Pressure	Actuator dependant, see Ordering Information	Actuator Mounting	Threaded mounting yoke
Pressure Drop	35 psid (241 kPa) for water; 20 psid (138 kPa) for steam	Compatible Actuators	Electric Forta Series or DuraDrive Series shown on following pages; pneumatic see MK Series in PNEUMATICS & FITTINGS catalog section.
Pressure Rating	1/2" to 2": ANSI B16.15-1985, Class 250 (400 psi (2756 kPa) @ 20° to 150°F (-7° to 66°C), decreasing to 321 psi (2215 kPa) at 281°F (138°C)); 2-1/2" to 6": ANSI B16.1-1993, Class 125 (200 psi (1380 kPa) @ 20° to 150°F (-7° to 66°C), decreasing to 169 psi (1166 kPa) at 281°F (138°C))	Operating Temperature	Actuator dependant, refer to following pages for specifications
Flow Characteristic		Approvals	Actuator dependant, refer to following pages for specifications
Two Way	Equal %	Warranty	2 years
Three Way	Linear		



MODEL NUMBERS AND DIMENSIONS FOR VB-7000 AND VB-8000 SERIES VALVES WITHOUT ACTUATORS



Typical VB-7000
Threaded Valve



Typical VB-8000
Flanged Valve

Note: Actuator dimensions are listed on the DuraDrive Series pages

Part Number	Valve Size	Pattern	Stem Position	Dimensions in inches (mm)					Weight (lbs)
				A	B	C	D (Stem Down)	E ^a (Stem Down)	
VB-7213-0-4-01 VB-7213-0-4-02 VB-7213-0-4-03 VB-7213-0-4-04	1/2"	2-way	SUTO	3-1/16 (78)	1-1/16 (27)	1-11/16 (43)	3/4 (19)	7/16 (11)	2.0
VB-7213-0-4-05 VB-7213-0-4-06	3/4"	2-way	SUTO	3-5/8 (92)					
VB-7213-0-4-07 VB-7213-0-4-08	1"	2-way	SUTO	4-5/8 (118)	1-1/8 (29)	2-3/8 (60)			5.5
VB-7213-0-4-09	1-1/4"	2-way	SUTO						1-3/8 (35)
VB-7213-0-4-10	1-1/2"	2-way	SUTO	5-3/8 (137)	1-1/2 (38)	2-7/16 (57)			13
VB-7213-0-4-11	2"	2-wav	SUTO	6-1/8 (156)	1-9/16 (40)	2-3/4 (70)	13		

VB-7223-0-4-01 VB-7223-0-4-02 VB-7223-0-4-03 VB-7223-0-4-04	1/2"	2-way	SUTC	3-1/16 (78)	1-1/4 (32)	1-11/16 (43)	1-1/8 (29)	7/16 (11)	2.0
VB-7223-0-4-05 VB-7223-0-4-06	3/4"	2-way	SUTC	3-5/8 (92)					3.0
VB-7223-0-4-07 VB-7223-0-4-08	1"	2-way	SUTC	4-5/8 (118)	1-3/4 (45)	5.5			
VB-7223-0-4-09	1-1/4"	2-way	SUTC			2 (51)			6.0
VB-7223-0-4-10	1-1/2"	2-way	SUTC	5-3/8 (137)	1-13/16 (46)	2-1/8 (54)			13
VB-7223-0-4-11	2"	2-wav	SUTC	6-1/8 (156)	2-1/16 (53)	2-3/16 (56)			13

VB-7313-0-4-02 VB-7313-0-4-04	1/2"	3-way	MIXING*	3-1/16 (78)	1-3/8 (35)	1-11/16 (43)	3/4 (19)	7/16 (11)	2.0
VB-7313-0-4-06 VB-7313-0-4-08	3/4"	3-way	MIXING*	3-5/8 (92)	1-11/16 (43)	1-3/4 (45)			3.0
VB-7313-0-4-09 VB-7313-0-4-10	1"	3-way	MIXING*	4-5/8 (118)	1-9/16 (40)	2 (51)			5.0
VB-7313-0-4-11	1-1/4"	3-way	MIXING*	5-3/8 (137)	1-5/8 (41)	2 (51)			5.5
VB-7313-0-4-11	1-1/2"	3-way	MIXING*		1-9/16 (40)	1-1/8 (29)			14
VB-7313-0-4-11	2"	3-way	MIXING*	6-1/8 (156)	1-7/8 (53)	1-3/16 (30)			14

VB-7323-0-4-04 VB-7323-0-4-06	1/2"	3-way	DIVERTING*	3-1/16 (78)	1-3/8 (53)	1-11/16 (43)	3/4 (19)	7/16 (11)	2.0
VB-7323-0-4-08 VB-7323-0-4-10	3/4"	3-way	DIVERTING*	3-5/8 (92)	1-11/16 (43)	1-3/4 (45)			2.5
VB-7323-0-4-11	1"	3-way	DIVERTING*	4-5/8 (118)	1-9/16 (40)	1-3/4 (45)			5.0
VB-7323-0-4-11	1-1/4"	3-way	DIVERTING*	5-3/8 (137)	1-5/8 (41)	2 (51)			5.5
VB-7323-0-4-11	1-1/2"	3-way	DIVERTING*		1-9/16 (40)	1-1/8 (29)			14
VB-7323-0-4-11	2"	3-way	DIVERTING*	6-1/8 (156)	1-7/8 (53)	1-3/16 (30)			14

VB-8213-0-5-12 VB-8213-0-5-13	2-1/2"	2-way	SUTO	8-9/16 (217)	4 (102)	4-1/8 (105)	3-1/4 (83)	1 (25)	46
VB-8213-0-5-14 VB-8213-0-5-15	3"	2-way	SUTO	9-1/2 (241)	4-5/8 (117)	4-3/8 (111)			58
VB-8213-0-5-16	4"	2-way	SUTO	11-1/2 (292)	5-1/2 (140)	5-1/16 (129)			95
VB-8213-0-5-16	5"	2-way	SUTO	13 (330)	6-15/16 (176)	5-9/16 (141)			141
VB-8213-0-5-16	6"	2-way	SUTO	14 (356)	7-1/2 (190)	6-3/8 (162)			146

VB-8223-0-5-12 VB-8223-0-5-13	2-1/2"	2-way	SUTC	8-9/16 (217)	4 (102)	4-1/4 (108)	3-1/4 (83)	1 (25)	46
VB-8223-0-5-14 VB-8223-0-5-15	3"	2-way	SUTC	9-1/2 (241)	4-1/4 (108)	4-7/8 (124)			58
VB-8223-0-5-16	4"	2-way	SUTC	11-1/2 (292)	4-15/16 (125)	5-3/4 (146)			95
VB-8223-0-5-16	5"	2-way	SUTC	13 (330)	5-7/16 (138)	6-3/4 (172)			141
VB-8223-0-5-16	6"	2-way	SUTC	14 (356)	6-1/4 (159)	7-1/2 (191)			146

VB-8303-0-5-12 VB-8303-0-5-13	2-1/2"	3-way	MIX. & DIV.*	8-9/16 (217)	5-7/16 (138)	4-3/16 (106)	3-1/4 (83)	1 (25)	55
VB-8303-0-5-14 VB-8303-0-5-15	3"	3-way	MIX. & DIV.*	9-1/2 (241)	6-3/8 (162)	4-3/8 (111)			68
VB-8303-0-5-16	4"	3-way	MIX. & DIV.*	11-1/2 (292)	8-7/16 (214)	5-1/16 (129)			113
VB-8303-0-5-16	5"	3-way	MIX. & DIV.*	13 (330)	8-13/16 (224)	5-5/8 (143)			166
VB-8303-0-5-16	6"	3-way	MIX. & DIV.*	14 (356)	9-3/4 (248)	6-3/4 (171)			212

^a Stroke for rated flow. Add up to 1/16 inch (1.6mm) for disc seating and compression.

SUTO = Stem up to open, SUTC = Stem up to close

*See 3-way flow patterns on the next page



CONTROL VALVES

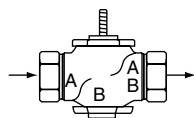
THREADED AND FLANGED GLOBE VALVES

VB SERIES

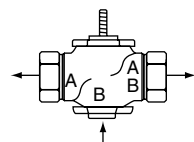
3

CONTROL VALVES

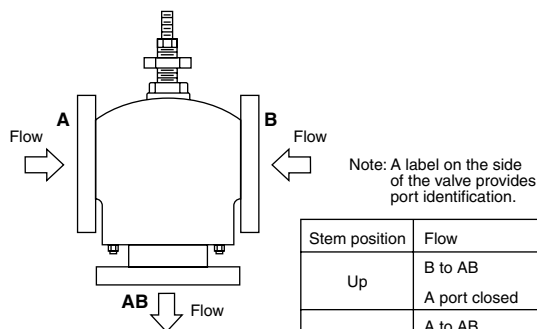
VALVE FLOW PATTERNS



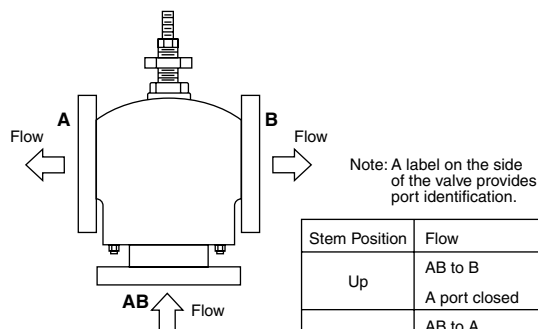
VB-7313
Mixing valve
(Stem up = B-AB)



VB-7323
Diverting valve
(Stem up = B-AB)



VB-8303 Piped as mixing valve

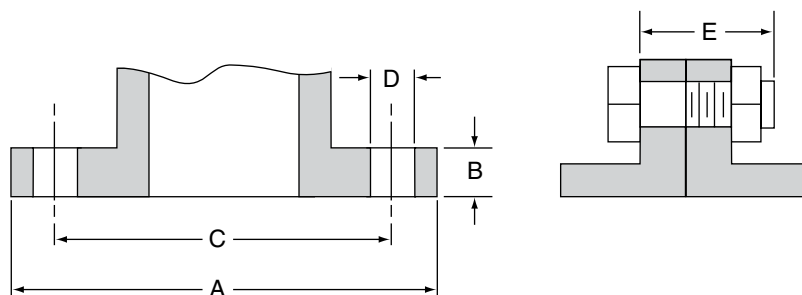


VB-8303 Piped as diverting valve

Three-way Flanged Valve Flow Patterns

Note: Two-way **VB-7213** and **VB-8213** valves are stem up to open (SUTO).
VB-7223 and **VB-8223** are stem up to close (SUTC).

FLANGE DIMENSIONS



Flange Dimensions

Flange Detail for American Standard 125 psi Cast Iron Pipe Flanges

Nominal Pipe Size	Flanges		Drilling		Bolting		Length of Machine Bolts E
	Flange Diameter A	Flange Thickness B	Diameter of Bolt Circle C	Diameter of Bolt Holes D	Number of Bolts	Diameter of Bolts	
2-1/2"	7"	11/16"	5-1/2"	3/4"	4	5/8"	2-1/2"
3"	7-1/2"	3/4"	6"				
4"	9"	15/16"	7-1/2"				
5"	10"		8-1/2"	7/8"	8	3/4"	3"
6"	11"	1"	9-1/2"				

CONTROL VALVES

THREADED AND FLANGED GLOBE VALVES

VB SERIES



ORDERING INFORMATION

TWO-WAY ELECTRIC VALVE ASSEMBLIES - ORDERING INFORMATION									SUTO = Stem Up To Open, SUTC = Stem Up To Close	
Model Number	Size	Cv	Pattern	Fail	Control	Actuator	Linkage	Closeoff		
VF-7213-255-4-01	1/2" NPT	0.4	Two-way SUTO	Non-spring return	Floating (24 VAC)	MF-22303	None	130		
VF-7213-255-4-02	1/2" NPT	1.3								
VF-7213-255-4-03	1/2" NPT	2.2								
VF-7213-255-4-04	1/2" NPT	4.4								
VF-7213-255-4-05	3/4" NPT	5.5								
VF-7213-255-4-06	3/4" NPT	7.5						80		
VA-7213-804-4-01	1/2" NPT	0.4	Two-way SUTO	Spring return N.O.	Two-position (24 VAC)	MA51-7103-100	None	250		
VA-7213-804-4-02	1/2" NPT	1.3						250		
VA-7213-804-4-03	1/2" NPT	2.2						250		
VA-7213-804-4-04	1/2" NPT	4.4						250		
VA-7213-804-4-05	3/4" NPT	5.5						200		
VA-7213-804-4-06	3/4" NPT	7.5						200		
VA-7213-804-4-07	1" NPT	10						150		
VA-7213-804-4-08	1" NPT	14						150		
VA-7213-593-4-09	1-1/4" NPT	20				MA51-7203		150		
VA-7213-593-4-10	1-1/2" NPT	28						100		
VA-7213-593-4-11	2" NPT	40						65		
VA-8213-596-5-12	2-1/2" Flanged	56				MA61-7203		125		
VA-8213-596-5-13	3" Flanged	85								
VA-8213-596-5-14	4" Flanged	145								
VA-8213-596-5-15	5" Flanged	240								
VA-8213-556-5-16	6" Flanged	370				MA41-7153		AV-609		
VA-7223-804-4-01	1/2" NPT	0.4	Two-way SUTC	Spring return N.C.	Two-position (24 VAC)	MA51-7103-100	None	250		
VA-7223-804-4-02	1/2" NPT	1.3						250		
VA-7223-804-4-03	1/2" NPT	2.2						250		
VA-7223-804-4-04	1/2" NPT	4.4						250		
VA-7223-804-4-05	3/4" NPT	5.5						200		
VA-7223-804-4-06	3/4" NPT	7.5						200		
VA-7223-804-4-07	1" NPT	10						90		
VA-7223-804-4-08	1" NPT	14						90		
VA-7223-593-4-09	1-1/4" NPT	20				MA51-7203		150		
VA-7223-593-4-10	1-1/2" NPT	28						100		
VA-7223-593-4-11	2" NPT	40						65		
VA-8223-596-5-12	2-1/2" Flanged	56				MA61-7203		125		
VA-8223-596-5-13	3" Flanged	85								
VA-8223-596-5-14	4" Flanged	145								
VA-8223-596-5-15	5" Flanged	240								
VA-8223-556-5-16	6" Flanged	370				MA41-7153		AV-609		
VF-7213-804-4-01	1/2" NPT	0.4	Two-way SUTO	Spring return N.O.	Floating (24 VAC)	MF51-7103-100	None	250		
VF-7213-804-4-02	1/2" NPT	1.3						250		
VF-7213-804-4-03	1/2" NPT	2.2						250		
VF-7213-804-4-04	1/2" NPT	4.4						250		
VF-7213-804-4-05	3/4" NPT	5.5						200		
VF-7213-804-4-06	3/4" NPT	7.5						200		
VF-7213-804-4-07	1" NPT	10						150		
VF-7213-804-4-08	1" NPT	14						150		
VF-7213-593-4-09	1-1/4" NPT	20				MF51-7203		150		
VF-7213-593-4-10	1-1/2" NPT	28						100		
VF-7213-593-4-11	2" NPT	40						65		
VF-8213-596-5-12	2-1/2 " Flanged	56				MF61-7203		125		
VF-8213-596-5-13	3" Flanged	85								
VF-8213-596-5-14	4" Flanged	145								
VF-8213-596-5-15	5" Flanged	240								
VF-8213-556-5-16	6" Flanged	370				MF41-7153		AV-609		
VU-7213-674-4-02	1/2" NPT	2.2	Two-way SUTO	Non-Spring Return	Programmable Floating/Proportional	M400A	AV-821	250		
VU-7213-674-4-04	1/2" NPT	4.4						250		
VU-7213-674-4-06	3/4" NPT	7.5						250		
VU-7213-680-4-08	1" NPT	14				M800A	AV-821	207		
VU-7213-680-4-09	1-1/4" NPT	20						130		
VU-7213-680-4-10	1-1/2" NPT	28	88							
VU-7213-680-4-11	2" NPT	40	Two-way SUTO			125				
VU-8213-686-5-12	2-1/2" Flanged	56								
VU-8213-686-5-13	3" Flanged	85								
VU-8213-686-5-14	4" Flanged	145								
VU-8213-686-5-15	5" Flanged	240								
VU-8213-686-5-16	6" Flanged	370								

3

CONTROL VALVES



CONTROL VALVES

THREADED AND FLANGED GLOBE VALVES

VB SERIES

3

CONTROL VALVES

ORDERING INFORMATION

TWO-WAY ELECTRIC VALVE ASSEMBLIES - ORDERING INFORMATION (continued)			SUTO = Stem Up To Open, SUTC = Stem Up To Close							
Model Number	Size	Cv	Pattern	Fail	Control	Actuator	Linkage	Closeoff		
VF-7223-804-4-01	1/2" NPT	0.4	Two-way SUTC	Spring return N.C.	Floating (24 VAC)	MF51-7103-100	None	250		
VF-7223-804-4-02	1/2" NPT	1.3						250		
VF-7223-804-4-03	1/2" NPT	2.2						250		
VF-7223-804-4-04	1/2" NPT	4.4						250		
VF-7223-804-4-05	3/4" NPT	5.5						200		
VF-7223-804-4-06	3/4" NPT	7.5						200		
VF-7223-804-4-07	1" NPT	10						90		
VF-7223-804-4-08	1" NPT	14						90		
VF-7223-593-4-09	1-1/4" NPT	20				MF51-7203		150		
VF-7223-593-4-10	1-1/2" NPT	28						100		
VF-7223-593-4-11	2" NPT	40						65		
VF-8223-596-5-12	2-1/2" Flanged	56				MF61-7203		125		
VF-8223-596-5-13	3" Flanged	85								
VF-8223-596-5-14	4" Flanged	145								
VF-8223-596-5-15	5" Flanged	240								
VF-8223-556-5-16	6" Flanged	370				MF41-7153		AV-609		
VS-7213-814-4-01	1/2" NPT	0.4	Two-way SUTO	Spring return N.O.	Proportional (24 VAC, 4-20 mA)	MS51-7103-160	None	250		
VS-7213-814-4-02	1/2" NPT	1.3						250		
VS-7213-814-4-03	1/2" NPT	2.2						250		
VS-7213-814-4-04	1/2" NPT	4.4						250		
VS-7213-814-4-05	3/4" NPT	5.5						200		
VS-7213-814-4-06	3/4" NPT	7.5						200		
VS-7213-814-4-07	1" NPT	10						150		
VS-7213-814-4-08	1" NPT	14						150		
VS-7213-593-4-09	1-1/4" NPT	20				MS51-7203		150		
VS-7213-593-4-10	1-1/2" NPT	28						100		
VS-7213-593-4-11	2" NPT	40						65		
VS-8213-596-5-12	2-1/2" Flanged	56				MS61-7203		125		
VS-8213-596-5-13	3" Flanged	85								
VS-8213-596-5-14	4" Flanged	145								
VS-8213-596-5-15	5" Flanged	240								
VS-8213-556-5-16	6" Flanged	370				MS41-7153		AV-609		
VS-7223-814-4-01	1/2" NPT	0.4	Two-way SUTC	Spring return N.C.	Proportional (24 VAC, 4-20 mA)	MS51-7103-160	None	250		
VS-7223-814-4-02	1/2" NPT	1.3						250		
VS-7223-814-4-03	1/2" NPT	2.2						250		
VS-7223-814-4-04	1/2" NPT	4.4						250		
VS-7223-814-4-05	3/4" NPT	5.5						200		
VS-7223-814-4-06	3/4" NPT	7.5						200		
VS-7223-814-4-07	1" NPT	10						90		
VS-7223-814-4-08	1" NPT	14						90		
VS-7223-593-4-09	1-1/4" NPT	20				MS51-7203		150		
VS-7223-593-4-10	1-1/2" NPT	28						100		
VS-7223-593-4-11	2" NPT	40						65		
VS-8223-596-5-12	2-1/2" Flanged	56				MS61-7203		125		
VS-8223-596-5-13	3" Flanged	85								
VS-8223-596-5-14	4" Flanged	145								
VS-8223-596-5-15	5" Flanged	240								
VS-8223-556-5-16	6" Flanged	370				MS41-7153		AV-609		
THREE-WAY ELECTRIC VALVE ASSEMBLIES - ORDERING INFORMATION										
Model Number	Size	Cv	Pattern	Fail	Control	Actuator	Linkage	Closeoff		
VF-7313-255-4-02	1/2" NPT	1.3	Three-way Mixing	Non-spring return	Floating (24 VAC)	MF-22303 Incl. two-position	None	130		
VF-7313-255-4-04	1/2" NPT	4.4						80		
VF-7313-255-4-06	3/4" NPT	7.5								
VA-7313-804-4-02	1/2" NPT	1.3	Three-way Mixing	Spring return B-AB	Two-position (24 VAC)	MA51-7103-100	None	250		
VA-7313-804-4-04	1/2" NPT	4.4						250		
VA-7313-804-4-06	3/4" NPT	7.5						200		
VA-7313-804-4-08	1" NPT	14				MA51-7203		90		
VA-7313-593-4-09	1-1/4" NPT	20						150		
VA-7313-593-4-10	1-1/2" NPT	28						100		
VA-7313-593-4-11	2" NPT	40						65		
VU-7313-674-4-02	1/2" NPT	2.2	Mixing	Non-Spring Return	Programmable Floating/Proportional	M400A	AV-821	250		
VU-7313-674-4-04	1/2" NPT	4.4						250		
VU-7313-674-4-06	3/4" NPT	7.5						198		
VU-7313-674-4-08	1" NPT	14				M800A	AV-821	207		
VU-7313-680-4-09	1-1/4" NPT	20						130		
VU-7313-680-4-10	1-1/2" NPT	28						88		
VU-7313-680-4-11	2" NPT	40	Three-way Mixing/Diverting			M1500A	AV-822	125		
VU-8303-686-5-12	2-1/2" Flanged	80								
VU-8303-686-5-13	3" Flanged	110								
VU-8303-686-5-14	4" Flanged	190								
VU-8303-686-5-15	5" Flanged	290								
VU-8303-686-5-16	6" Flanged	500								



ORDERING INFORMATION

THREE-WAY ELECTRIC VALVE ASSEMBLIES - ORDERING INFORMATION (continued)									
Model Number	Size	Cv	Pattern	Fail	Control	Actuator	Linkage	Closeoff	
VA-8303-596-5-12	2-1/2" Flanged	80	Three-way Mixing/Diverting	Spring return B-AB	Two-position (24 VAC)	MA61-7203	None	35	
VA-8303-596-5-13	3" Flanged	110							
VA-8303-596-5-14	4" Flanged	190							
VA-8303-596-5-15	5" Flanged	290							
VA-8303-556-5-16	6" Flanged	500							
VF-7313-804-4-02	1/2" NPT	1.3	Three-way Mixing	Spring return B-AB	Floating (24 VAC)	MF51-7103-100	None	250	
VF-7313-804-4-04	1/2" NPT	4.4				250			
VF-7313-804-4-06	3/4" NPT	7.5				200			
VF-7313-804-4-08	1" NPT	14				90			
VF-7313-593-4-09	1-1/4" NPT	20				150			
VF-7313-593-4-10	1-1/2" NPT	28	Three-way Mixing/Diverting	Spring return B-AB	Floating (24 VAC)	MF51-7203	None	100	
VF-7313-593-4-11	2" NPT	40				65			
VF-8303-596-5-12	2-1/2" Flanged	80				35			
VF-8303-596-5-13	3" Flanged	110							
VF-8303-596-5-14	4" Flanged	190							
VF-8303-596-5-15	5" Flanged	290							
VF-8303-556-5-16	6" Flanged	500	MF41-7153	AV-609					
VS-7313-814-4-02	1/2" NPT	1.3	Three-way Mixing	Spring return B-AB	Proportional (24 VAC, 4-20 mA) 2-10 VDC	MS51-7103-160	None	250	
VS-7313-814-4-04	1/2" NPT	4.4				250			
VS-7313-814-4-06	3/4" NPT	7.5				200			
VS-7313-814-4-08	1" NPT	14				90			
VS-7313-593-4-09	1-1/4" NPT	20				150			
VS-7313-593-4-10	1-1/2" NPT	28	Three-way Mixing/Diverting	Spring return B-AB	Proportional (24 VAC, 4-20 mA) 2-10 VDC	MS51-7203	None	100	
VS-7313-593-4-11	2" NPT	40				65			
VS-8303-596-5-12	2-1/2" Flanged	80				35			
VS-8303-596-5-13	3" Flanged	110							
VS-8303-596-5-14	4" Flanged	190							
VS-8303-596-5-15	5" Flanged	290							
VS-8303-556-5-16	6" Flanged	500	MS41-7153	AV-609					
TWO-WAY PNEUMATIC VALVE ASSEMBLIES - ORDERING INFORMATION									
Model Number	Size	Cv	Pattern	Fail	Control	Actuator	Linkage	Closeoff	
VK4-7213-201-4-01	1/2" NPT	0.4	Two-way	Spring return N.O.	3-7 psi spring with positioner	MK-2690+AK-42309-500	AV-7400	220	
VK4-7213-201-4-02	1/2" NPT	1.3						130	
VK4-7213-201-4-03	1/2" NPT	2.2							
VK4-7213-201-4-04	1/2" NPT	4.4							
VK4-7213-201-4-05	3/4" NPT	5.5							
VK4-7213-201-4-06	3/4" NPT	7.5			3-6 psi spring with positioner	MK-4601+AK-42309-500	AV-401	150	
VK4-7213-301-4-07	1" NPT	10						90	
VK4-7213-301-4-08	1" NPT	14							
VK4-7213-301-4-09	1-1/4" NPT	20							
VK4-7213-611-4-10	1-1/2" NPT	28							3-8 psi spring with positioner
VK4-7213-611-4-11	2" NPT	40			160				
VK4-8213-602-5-12	2-1/2" Flanged	56			125				
VK4-8213-602-5-13	3" Flanged	85							
VK4-8213-602-5-14	4" Flanged	145							
VK4-8213-602-5-15	5" Flanged	240							
VK4-8213-652-5-16	6" Flanged	370					MK-6911+AK-42309-500		
VK4-7223-203-4-01	1/2" NPT	0.4	Two-way	Spring return N.C.	8-13 psi spring with positioner	MK-2690+AK-42309-500	AV-7400	130	
VK4-7223-203-4-02	1/2" NPT	1.3						60	
VK4-7223-203-4-03	1/2" NPT	2.2							
VK4-7223-203-4-04	1/2" NPT	4.4							
VK4-7223-203-4-05	3/4" NPT	5.5							10-13 psi spring with positioner
VK4-7223-203-4-06	3/4" NPT	7.5			40				
VK4-7223-303-4-07	1" NPT	10							
VK4-7223-303-4-08	1" NPT	14							
VK4-7223-303-4-09	1-1/4" NPT	20				8-13 psi spring with positioner	MK-6621+AK-42309-500	AV-430	
VK4-7223-613-4-10	1-1/2" NPT	28			90				
VK4-7223-613-4-11	2" NPT	40			125				
VK4-8223-602-5-12	2-1/2" Flanged	56							
VK4-8223-602-5-13	3" Flanged	85							
VK4-8223-602-5-14	4" Flanged	145							
VK4-8223-602-5-15	5" Flanged	240							
VK4-8223-652-5-16	6" Flanged	370						MK-6911+AK-42309-500	
THREE-WAY PNEUMATIC VALVE ASSEMBLIES - ORDERING INFORMATION									
Model Number	Size	Cv	Pattern	Fail	Control	Actuator	Linkage	Closeoff	
VK4-7313-303-4-02	1/2" NPT	1.3	Three-way Mixing	Spring return B-AB	10-13 psi spring with positioner	MK-4621+AK-42309-500	AV-401	200	
VK4-7313-303-4-04	1/2" NPT	4.4						120	
VK4-7313-303-4-06	3/4" NPT	7.5							
VK4-7313-303-4-08	1" NPT	14							
VK4-7313-303-4-09	1-1/4" NPT	20						60	
VK4-7313-612-4-10	1-1/2" NPT	28	Three-way Mixing/Diverting	Spring return B-AB	5-10 psi spring with positioner	MK-6611+AK-42309-500	AV-430	80	
VK4-7313-612-4-11	2" NPT	40						50	
VK4-8303-602-5-12	2-1/2" Flanged	80						35	
VK4-8303-602-5-13	3" Flanged	110							
VK4-8303-602-5-14	4" Flanged	190							
VK4-8303-602-5-15	5" Flanged	290	Three-way Mixing/Diverting	Spring return B-AB		MK-6811+AK-42309-500	AV-497		
VK4-8303-652-5-16	6" Flanged	500							



CONTROL VALVES

GLOBE VALVE ACTUATORS *DURADRIVE SERIES*



DESCRIPTION

The Schneider Electric **DuraDrive Series** linear globe valve actuators are designed to mount directly onto two- and three-way VB-7000 and VB-8000 Series globe valves. They have integral linkage to provide linear travel and are available in a wide selection of spring and non-spring return models.



MA51-7103-000

FEATURES

- *Direct-mount, integral linkage (SR models)*
- *Wide selection of control signal inputs*
- *Rugged design, reliable performance*
- *Spring or non-spring return models*

COMMON SPECIFICATIONS

Input Impedance

MS41-7153/AV-609-1 80 k Ω @ 0/2-10 VDC;
500 Ω @ 4-20 mA

Conduit Connection

1/2" FNPT

Wiring

MF-22303 48" (122 cm) 18 AWG plenum cable
rated for UL

Mx51-7103 36" (91 cm) plenum cable

Mxxx-7203 36" (91 cm) appliance cable

Mx41-7153 36" (91 cm) cable, 18 AWG

Enclosure Rating

MF-22303 NEMA 1 (IP31)

All others NEMA 2 (IP54)

Feedback

MF51, MS51, MS41 2-10 VDC

Manual Override

Crank

Operating Humidity

5% to 95% RH non-condensing

Operating Temperature

MF-22303 40° to 281°F (4° to 138°C)

Mx51-7103, Mx41 -22° to 140°F (-30° to 60°C)

Mx51-7203, Mx61-7203 0° to 140°F (-18° to 60°C)

Weight

MF-22303 1.5 lb (.68 kg)

Mxxx-7102, -7203 4.3 lb (1.9 kg)

Mx41-7153/AV-609 7.5 lb (3.4 kg)

Approvals

MF-22303 UL 873, File E9429; cUL, C22.2 No. 24-93; CE EMC Directive 89/336/EEC;

Mx51, Mx61 UL 873, File E9429; cUL, C22.2 No. 24-93; CE EMC Directive 89/336/EEC; C-tick;

Mx41-7153 UL, CE, cUL, C-tick

Warranty

MF-22303 2 years

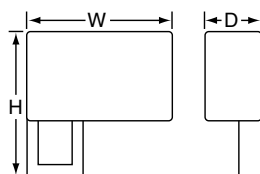
All others 5 years



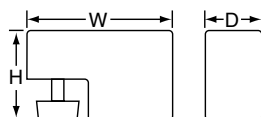
INDIVIDUAL SPECIFICATIONS									
Model	Supply Voltage	Supply VA	Force/Torque	Actuator Code	Action	Control Signal	Stroke	Drive Time	Spring Return Time
MF-22303	24 VAC	1.5 VA	45 lbf (200 N)	255	NSR, DA/RA by wiring terminations	Floating, contacts or Triacs	9/16" (1.4 cm)	126 seconds nominal	16 seconds
MA51-7103-100	24 VAC/VDC	5.3 VA	105 lbf (467 N)	804	SR valve stem up	Two-position	1/2" (1.3 cm)	44 seconds	19 seconds
MF51-7103-100	24 VAC/VDC	6.9 VA	105 lbf (467 N)	804	SR valve stem up, DA/RA by wiring	Floating	1/2" (1.3 cm)	60 seconds	16 seconds
MS51-7103-100	24 VAC/VDC	6.6 VA	105 lbf (467 N)	814	SR, DA/RA by jumpers	Prop. 2-10 VDC	1/2" (1.3 cm)	60 seconds	16 seconds
MS51-7103-160	24 VAC/VDC	6.6 VA	105 lbf (467 N)	814	SR, DA/RA by jumpers	Prop. 4-20 mA	1/2" (1.3 cm)	60 seconds	16 seconds
MA51-7203	24 VAC/VDC	9.7 VA	220 lbf (979 N)	593	SR valve stem up	Two-position	1/2" (1.3 cm)	190 seconds maximum	35 seconds
MA61-7203	24 VAC/VDC	9.7 VA	220 lbf (979 N)	596	SR valve stem up	Two-position	1" (2.5 cm)	190 seconds maximum	40 seconds
MF51-7203	24 VAC/VDC	9.7 VA	220 lbf (979 N)	593	SR valve stem up, DA/RA by wiring	Floating	1/2" (1.3 cm)	190 seconds maximum	35 seconds
MF61-7203	24 VAC/VDC	9.7 VA	220 lbf (979 N)	596	SR valve stem up, DA/RA by wiring	Floating	1" (2.5 cm)	190 seconds maximum	40 seconds
MS51-7203	24 VAC/VDC	9.7 VA	220 lbf (979 N)	593	SR, DA/RA by jumpers	Prop. 2-10 VDC or 4-20 mA	1/2" (1.3 cm)	190 seconds maximum	35 seconds
MS61-7203	24 VAC/VDC	9.7 VA	220 lbf (979 N)	596	SR, DA/RA by jumpers	Prop. 2-10 VDC or 4-20 mA	1" (2.5 cm)	190 seconds maximum	40 seconds
MA41-7153/AV-609-1	24 VAC/VDC	9.7 VA	133 in-lb (15 Nm)	556	SR, Mounting orientation DA/RA	Two-position	1" w/AV-609 linkage	190 seconds	30 seconds
MF41-7153/AV-609-1	24 VAC/VDC	9.7 VA	133 in-lb (15 Nm)	556	SR, Mounting orientation DA/RA	Floating	1" w/AV-609 linkage	190 seconds	30 seconds
MS41-7153/AV-609-1	24 VAC/VDC	9.7 VA	133 in-lb (15 Nm)	556	SR, Mounting orientation DA/RA	Prop. 2-10 VDC or 4-20 mA	1" w/AV-609 linkage	190 seconds	30 seconds

ACTUATOR DIMENSIONS

in (cm)



*Mx41/Mx51/Mx61



Mx-223x3

Model Number	H	W	D
Mx51-7103	6-5/16 (16.0)	6-3/4 (17.2)	3-1/2 (8.9)
Mx51-7203	7 (17.8)	10-5/8 (27.0)	2-9/16 (6.5)
Mx61-7203	9-9/16 (24.2)	10-5/8 (27.0)	2-9/16 (6.5)
Mx223x3	3-5/16 (8.4)	5-9/16 (14.1)	3 (7.6)
Mx41-7153/AV-609	11-5/8 (29.5)	4 (10.2)	6-1/8 (15.6)

* Mx41 assemblies include separate AV-60x linkages.
Dimension diagrams are generic and for illustration purposes only.



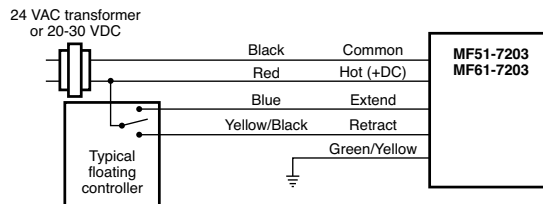
CONTROL VALVES

GLOBE VALVE ACTUATORS DURADRIVE SERIES

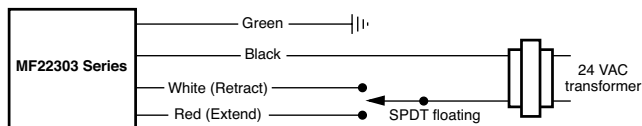
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CONTROL VALVES

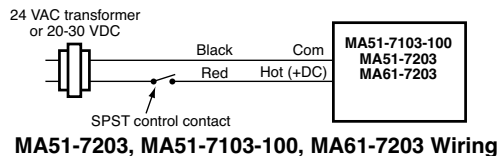
WIRING



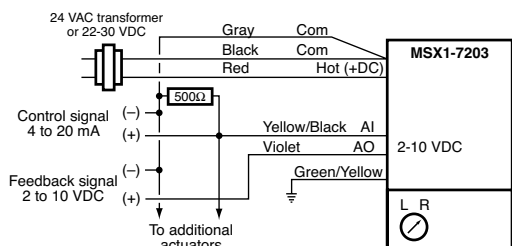
MF41-7153, MF51/MF61-7203 Wiring



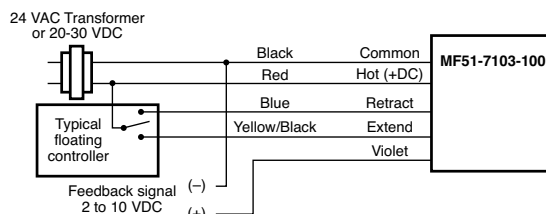
MF22303 Wiring



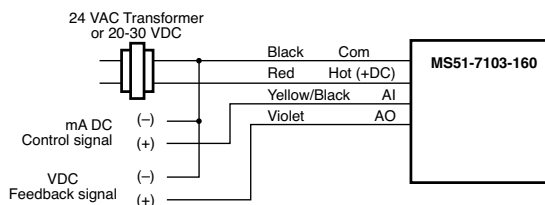
MA51-7203, MA51-7103-100, MA61-7203 Wiring



MS51/MS61-7203 Wiring



MF51-7103-100 Wiring



MS51-7103-160 Wiring

ORDERING INFORMATION

MODEL

MF-22303

MA51-7103-100

MF51-7103-100

MS51-7103-100

MS51-7103-160

MA51-7203

MA61-7203

MF51-7203

MF61-7203

MS51-7203

MS61-7203

MA41-7153

MF41-7153

MS41-7153

DESCRIPTION

Non-spring return, 45 lbf, floating control, for 1/2" to 1-1/4" VB-7xxx valves
Spring return stem up, 105 lbf, two-position, plenum cable, for 1/2" to 2" VB-7xxx
Spring return stem up, 105 lbf, floating, plenum cable, for 1/2" to 2" VB-7xxx
Spring return stem up, 105 lbf, proportional 2-10 VDC, plenum cable, for 1/2" to 2" VB-7xxx
Spring return stem up, 105 lbf, proportional 4-20 mA, plenum cable, for 1/2" to 2" VB-7xxx
Spring return stem up, 220 lbf, two-position, plenum cable, for 1-1/4" to 2" VB-7xxx
Spring return stem up, 220 lbf, two-position, plenum cable, for 2-1/2" to 4" VB-7xxx
Spring return stem up, 220 lbf, floating, plenum cable, for 1-1/4" to 2" VB-7xxx
Spring return stem up, 220 lbf, floating, plenum cable, for 2-1/2" to 4" VB-7xxx
Spring return stem up, 220 lbf, proportional, plenum cable, for 1-1/4" to 2" VB-7xxx
Spring return stem up, 220 lbf, proportional, plenum cable, for 2-1/2" to 4" VB-7xxx
Spring return 133 in-lb (15 Nm), two-position, 24 VAC, two-wire control
Spring return 133 in-lb (15 Nm), tri-state control, 24 VAC
Spring return 133 in-lb (15 Nm), proportional control, 24 VAC



DESCRIPTION

The **Forta Series** globe valve actuator is a programmable linear actuator family for use with VB7000, VB8000 and VB9000 series two- and three-way valves. The actuators are easily configured for floating or proportional control, direct or reverse action, stroke timing and flow characteristics. An automatic input control signal setup allows for easy field installation onto existing Schneider Electric globe valves. The Forta actuator can also be purchased as part of a complete valve assembly for new applications/installations (order the VU Series).

FEATURES

- *Floating or proportional control in the same actuator*
- *Proportional configuration 0-10, 2-10 VDC or 4-20 mA, 500Ω resistor included*
- *Direct/Reverse action (switch selectable)*
- *Configurable run time*
- *Manual override*
- *Electronic valve sequencing and flow characteristic (equal percentage or linear) selection*
- *Torque overload protection (full stroke)*
- *Easy auto zero and span*



M800A-VB
(screw-mount, linkage not required)

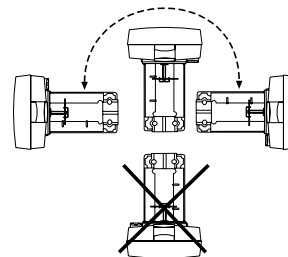
Schneider
Electric



M400A with AV-821
on a VB-7213-0-4-07



MOUNTING



3

CONTROL VALVES

SPECIFICATIONS

Supply Voltage	24 VAC ±10%, 50/60 Hz	Valve Mounting	
Supply VA		Non "...VB"	Requires AV-811 linkage for VB-7xxx, AV-812 for VB-8xxx, VB-9xxx valves
M400	6 VA	"-VB" models	Direct screw-mount to valve bonnet
M800	15 VA	Manual Override	Yes
M1500	24 VA	Operating Temperature	14° to 122°F (-10° to 50°C) for chilled water applications; maximum temperature reduces to 90°F (32°C) when media temperature is 366°F (186°C)
Control Signal	Floating or Proportional 0/2-10 VDC or 4-20 mA	Operating Humidity	15% to 95% RH non-condensing
Motor	Brushless DC	Dimensions	
Noise	32 dBA maximum	M400, M800	9.5"H x 6.3"W x 4.6"D (24.2 x 16.0 x 11.7 cm)
Conduit Connection	Two knockouts, 7/8" (2.2 cm)	M1500	6.8"H x 6.3"W x 4.6"D (17.3 x 16.0 x 11.7 cm)
Wiring	Screw terminals	Weight	3.9 lb (1.8 kg)
Feedback	2-10 VDC	Enclosure Rating	NEMA 2 (IP54) if both conduit connectors used, otherwise NEMA 1 (IP40)
Auxiliary Switch	Two SPDT, 4A resistive @ 24 VAC (model specific)	Approvals	UL 873, cULus, C-tick, CE
Action	Non-spring return, direct or reverse DIP switch selectable	Warranty	1 year
Force			
M400	90 lbf (400 N)		
M800	180 lbf (800 N)		
M1500	337 lbf (1500 N)		
Stroke	3/8" to 2" (.9 to 5.2 cm)		
Stroke Time	Floating, 60 or 300 seconds; Proportional, 15 seconds (for 1/2" stroke)		



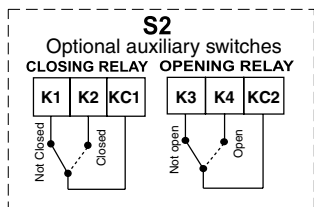
CONTROL VALVES

GLOBE VALVE ACTUATORS FORTA SERIES

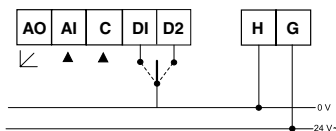
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CONTROL VALVES

WIRING



*add- S2 to model number
for auxiliary switch



Terminal	Function	Description
G	24 vac	power
H	24 vac	power
AI	+	input signal
C	-	signal common
D1	Floating	Extend/ Retract*
D2	Floating	Extend/ Retract*
A0	+	feedback signal

*Exact operation will vary based on the settings
of DIP switch #1 and #7

DIP SWITCH SETTINGS

	MOD	Function in the "OFF" position	"ON" position	Description
	---	Modulating	Increase/decrease	Control
	---	SEQ	Sequence	Control
	2-10	0-10	0-10 V	Voltage range
	6-10, 5-10	2-6, 0-5	6-10 V, 5-10 V	Part of voltage range
	60 s	300 s	60 s	Running time
	NORM	INV	Inverted	Direction of movement
	NORM	LIN/LG	Linear/Logarithmic	Valve characteristic
	OP	ADJ	End position adjustment	Operation/End position adjustment

COMPATIBILITY

VB-7000 Bronze Valve

(AV-821 linkage required for M400A, M800A, M1500A)

Valve size	M400A/ M400A-VB (90 lbf)	M800A/ M800A-VB (180 lbf)	M1500A/ M1500A-VB (337 lbf)
1/2"	✓		
3/4"	✓	✓	
1"	✓	✓	
1-1/4"	✓	✓	
1-1/2"	✓	✓	✓
2"	✓	✓	✓

VB-8000/9000 Flanged Iron Valve

(AV-822 linkage required)

Valve size	M400A (90 lbf)	M800A (180 lbf)	M1500A (337 lbf)
2-1/2"		✓	✓
3"		✓	✓
4"		✓	✓
5"			✓
6"			✓

* VB-9313 only

ORDERING INFORMATION

MODEL

M400A

M400A-S2

M400A-S2-VB

M400A-VB

M800A

M800A-S2

M800A-S2-VB

M800A-VB

M1500A

M1500A-S2

M1500A-S2-VB

M1500A-VB

AV-821

AV-822

DESCRIPTION

90 lbf, non-spring return, proportional/floating control, requires AV-81x linkage

90 lbf, non-spring return, proportional/floating control, requires AV-81x linkage, auxiliary switch

90 lbf, non-spring return, proportional/floating control, screw-mount, auxiliary switch

90 lbf, non-spring return, proportional/floating control, screw-mount

180 lbf, non-spring return, proportional/floating control, requires AV-81x linkage

180 lbf, non-spring return, proportional/floating control, requires AV-81x linkage, auxiliary switch

180 lbf, non-spring return, proportional/floating control, screw-mount, auxiliary switch

180 lbf, non-spring return, proportional/floating control, screw-mount

337 lbf, non-spring return, proportional/floating control, requires AV-81x linkage

337 lbf, non-spring return, proportional/floating control, requires AV-81x linkage, auxiliary switch

337 lbf, non-spring return, proportional/floating control, screw-mount, auxiliary switch

337 lbf, non-spring return, proportional/floating control, screw-mount

Linkage for VB-7xxx valves (required for M400A, M800A, M1500A)

Linkage for VB-8xxx & VB-9xxx valves (required for M400A, M800A, M1500A)

ACCESSORIES

AV-821

AV-822

Linkage for VB-7xxx valves (required for M400A, M800A, M1500A)

Linkage for VB-8xxx & VB-9xxx valves (required for M400A, M800A, M1500A)



DESCRIPTION

The **KB Series** butterfly valves from Valve Solutions are available in sizes from 2" to 24" and come with a variety of options to meet your needs. The Fusion Bonded Epoxy coated body along with the EPDM seat and o-ring make for a very durable and long lasting butterfly valve. These valves are available in 100 PSI, 150 PSI, and 200 PSI close off ratings for 2 position control. These are available with low or high pressure pneumatic actuators or with Valve Solutions' new 1000X series actuators.

FEATURES

- *Good for chilled water, hot water and 50% Glycol applications*
- *Ductile iron body construction*
- *PTFE bushing*
- *Stainless steel disc and stem*
- *Manual gear wheel available*
- *Actuators come with two 1/2" conduit entries*

NEW!



VSI Series 2100
with Series C and Solenoid

VSI
VALVE SOLUTIONS INC.



VSI, 14-inch with 1060



VSI Butterfly Valve -
6-inch 3-way
with 1000-X



3

CONTROL VALVES

SPECIFICATIONS			
Size	2" thru 24"	Supply Voltage	24 VAC, 120 VAC
Cv	135 thru 43116	Supply Frequency	60 Hz
Body Pattern	Lugged 150 # butterfly	Supply VA	Ranges from 38.4 VA to 474 VA depending on actuator
Flow Characteristic	Modified EQ%	Supply Current	0.34A to 7.2 A depending on actuator
Rangeability	10:1 for 30° to 70° range	Conduit Connection	(1) 1/2" NPT conduit connection
Leakage Rating	Bubble tight	Air Connections	80 PSI 1/4" NPT
Mounting Flange	ANSI 150	Feedback	4-20 mA
Body Rating	ASME/ANSI Class 125	Auxiliary Switch	(2) SPDT, optional
Maximum Closeoff Pressure	100 PSI, 200 PSI	Action	Floating, modulating, 2-position
Maximum Pressure Rating	ASME/ANSI Class 125	Rotation	90 degrees
Media Compatibility	H2O - 50% Glycol	Actuator Compatibility	Dependent on model
Media Temperature Range	-30° to 225°F (-34° to 107°C)	Actuator Mounting	ISO 5211, direct-coupled
		Weight	32 to 1754 lbs. depending on model
		Enclosure Rating	NEMA 4 on select models
		Approvals	CSA US File 226201
		Meets ARRA or BAA	Yes



CONTROL VALVES

BUTTERFLY VALVES KB SERIES

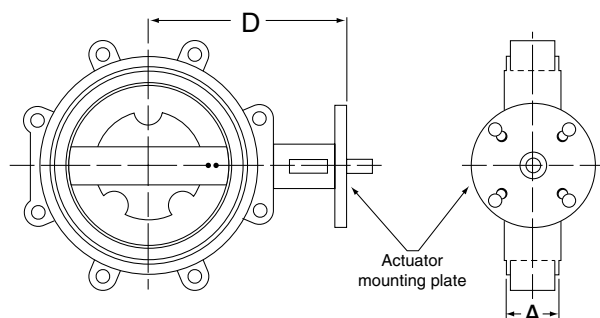
3

CONTROL VALVES

VALVE DIMENSIONS in (mm)

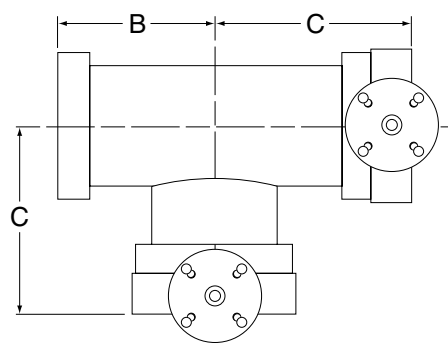
PORT	DIM	2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
2-WAY	A	1.693 (43)	1.811 (46)	1.811 (46)	2.047 (52)	2.205 (56)	2.205 (56)	2.632 (60)	2.677 (68)	3.071 (78)	3.071 (78)	4.016 (102)	4.488 (114)	5.000 (127)	6.053 (154)
3-WAY	B	4.5 (114)	5 (127)	5.5 (140)	6.5 (165)	7.5 (190)	8 (203)	9 (228)	11 (280)	12 (305)	14 (356)	15 (381)	16.5 (419)	18 (457)	22 (559)
	C	10.7 (272)	11.8 (300)	12.8 (325)	15 (381)	17.2 (437)	18.2 (462)	20.6 (523)	24.7 (627)	27 (686)	31 (788)	34 (864)	37.5 (953)	41 (1041)	50 (1270)
Height without actuator	D	6.34 (161)	6.89 (175)	7.13 (181)	7.9 (200)	8.4 (213)	8.9 (226)	10.24 (259)	11.5 (292)	13.27 (337)	14.49 (368)	15.75 (400)	16.61 (422)	18.9 (480)	22.13 (562)
Weight 2-WAY	LB (KG)	9 (4.07)	10 (4.57)	12.75 (5.77)	19.25 (8.75)	24.25 (11.04)	28 (12.64)	44 (20.02)	70 (31.67)	103 (46.87)	152.5 (69.2)	253 (114.6)	333 (151.2)	408 (185)	626.5 (248.2)
Weight 3-WAY	LB (KG)														
Mounting	LUGS	(4ea) 5/8 -11	(4ea) 5/8 -11	(4ea) 5/8 -11	(8ea) 5/8 -11	(8ea) 3/4 -10	(8ea) 3/4 -10	(8ea) 3/4 -10	(12ea) 7/8 -9	(12ea) 7/8 -9	(12ea) 1 -8	(16ea) 1 -8	(16ea) 1 1/8 -7	(20ea) 1 1/8 -7	(20ea) 1 1/4 -7

Two-way Valve Bodies



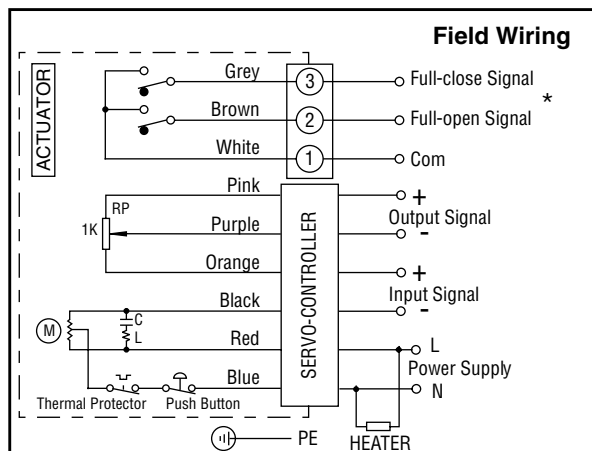
*For total valve height add dimension "D" to the actuator coupling height listed above.

Three-way Tee-mounted Valve Bodies

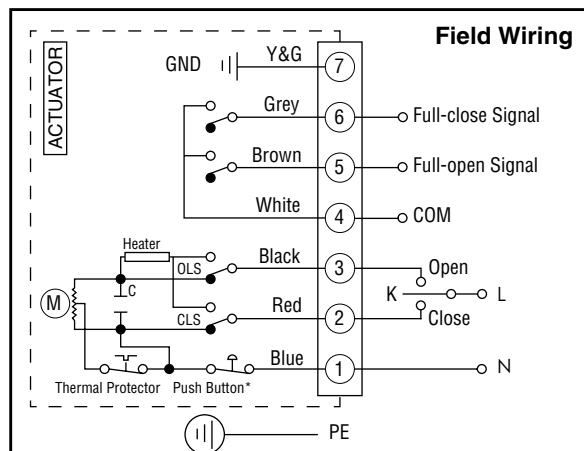


1000 SERIES WIRING

PROPORTIONAL/MODULATING



TWO-POSITION



NEW!

CONTROL VALVES

BUTTERFLY VALVES KB SERIES



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CONTROL VALVES

KA / KAS ACTUATOR WIRING		
KA-175-2T - KA-301-2T Two-position Control	KA-301-P Proportional Control 24 VAC Power 0/2-10 VDC or 0/4-20 mA Signal	KA-175-P - KA-301-P Proportional Control 24 VDC Power 0/2-10 VDC or 0/4-20 mA Signal
KA-175-2T - KA-301-2T Floating Control	KAS-175-M Floating Control	KAS-175-M Proportional Control * 500Ω, 1/2"W or greater resistor required when control signal is 4-20 mA
KAS-175-2 Two-position Control		

DOUBLE ACTING PNEUMATIC ACTUATOR SPECS (100PSI CLOSE OFF)													
	2-WAY VALVE SIZE	3-WAY VALVE SIZE	CLOSE OFF (PSI)	Pneu-matic Actuator	Air Source PSIG	Control Signal		Torque @ 80PSI	Failsafe	Timing Seconds	Dimensions HxWxL (in)	Coupling Height (in)	Actuator Weight (lbs)
						2-POS	Modulating	In/LB					
HIGH PRESSURE DOUBLE ACTING (DA)	2"-3"	2"-3"	100	C-DA063	40-130	24/120VAC	3-15PSI, 4-20mA	354	NO	0.5	4.25x3.25x6.6	DIRECT	4.41
	4"	4"	100	C-DA083	40-130	24/120VAC	3-15PSI, 4-20mA	761	NO	0.5	5.07x4.05x8.03	DIRECT	6.83
	5-6"	5-6"	100	C-DA092	40-130	24/120VAC	3-15PSI, 4-20mA	1097	NO	0.5	5.37x4.27x10.31	DIRECT	10.14
	8"	8"	100	C-DA105	40-130	24/120VAC	3-15PSI, 4-20mA	1611	NO	0.5	6.02x4.78x10.55	DIRECT	14.99
	10"	10"	100	C-DA125	40-130	24/120VAC	3-15PSI, 4-20mA	2443	NO	0.5	6.89x5.59x11.85	DIRECT	19.68
	12"	12"	100	C-DA140	40-130	24/120VAC	3-15PSI, 4-20mA	4160	NO	1	7.56x5.98x15.35	DIRECT	28.66
	14"	14"	100	C-DA160	40-130	24/120VAC	3-15PSI, 4-20mA	6470	NO	1	8.54x6.95x18.03	DIRECT	44.09
	16"-18"	16"	100	C-DA190	40-130	24/120VAC	3-15PSI, 4-20mA	10355	NO	2	10.24x8.12x20.67	DIRECT	68.37
	20"	18"	100	C-DA210	40-130	24/120VAC	3-15PSI, 4-20mA	12949	NO	2	11.22x8.90x20.94	DIRECT	103.62
		20"	100	C-DA240	40-130	24/120VAC	3-15PSI, 4-20mA	12949	NO	2	12.56x10.24x23.70	DIRECT	147.74
	24"	24"	100	C-DA270	40-130	24/120VAC	3-15PSI, 4-20mA	28464	NO	2	14.02x11.58x28.43	DIRECT	213.85

DOUBLE ACTING PNEUMATIC ACTUATOR SPECS (100PSI CLOSE OFF)													
	2-WAY VALVE SIZE	3-WAY VALVE SIZE	CLOSE OFF (PSI)	Pneu-matic Actuator	Air Source PSIG	Control Signal		Torque @ 80PSI	Failsafe	Timing Seconds	Dimensions HxWxL (in)	Coupling Height (in)	Actuator Weight (lbs)
						2-POS	Modulating	In/LB					
HIGH PRESSURE DOUBLE ACTING (DA)	2"-3"	2"-2.5"	200	C-DA063	40-130	24/120VAC	3-15PSI, 4-20mA	354	NO	0.5	4.25x3.25x6.6	DIRECT	4.41
	4"	3"-4"	200	C-DA083	40-130	24/120VAC	3-15PSI, 4-20mA	761	NO	0.5	5.07x4.05x8.03	DIRECT	6.83
	5"	5"	200	C-DA092	40-130	24/120VAC	3-15PSI, 4-20mA	1097	NO	0.5	5.37x4.27x10.31	DIRECT	10.14
	6"	6"	200	C-DA105	40-130	24/120VAC	3-15PSI, 4-20mA	1611	NO	0.5	6.02x4.78x10.55	DIRECT	14.99
	8"	8"	200	C-DA125	40-130	24/120VAC	3-15PSI, 4-20mA	2443	NO	0.5	6.89x5.59x11.85	DIRECT	19.68
	10"	10"	200	C-DA140	40-130	24/120VAC	3-15PSI, 4-20mA	4160	NO	1	7.56x5.98x15.35	DIRECT	28.66
	12"-14"	12"	150	C-DA160	40-130	24/120VAC	3-15PSI, 4-20mA	6470	NO	1	8.54x6.95x18.03	DIRECT	44.09
	16"	14"	150	C-DA190	40-130	24/120VAC	3-15PSI, 4-20mA	10355	NO	2	10.24x8.12x20.67	DIRECT	68.37
		16"	150	C-DA210	40-130	24/120VAC	3-15PSI, 4-20mA	12949	NO	2	11.22x8.90x20.94	DIRECT	103.62
	18"-20"	18"	150	C-DA240	40-130	24/120VAC	3-15PSI, 4-20mA	12949	NO	2	12.56x10.24x23.70	DIRECT	147.74
	20"	150	C-DA270	40-130	24/120VAC	3-15PSI, 4-20mA	28464	NO	2	14.02x11.58x28.43	DIRECT	213.85	
	24"	24"	150	C-DA300	40-130	24/120VAC	3-15PSI, 4-20mA	37147	NO	3	14.88x12.76x29.21	DIRECT	242.51



CONTROL VALVES

BUTTERFLY VALVES KB SERIES

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CONTROL VALVES

SPRING RETURN PNEUMATIC ACTUATOR SPECS (100PSI CLOSE OFF)

	2-WAY VALVE SIZE	3-WAY VALVE SIZE	CLOSE OFF (PSI)	Pneumatic Actuator	Air Source PSIG	Control Signal		Torque @ 80PSI In/LB	Failsafe	Timing Seconds	Dimensions HxWxL (in)	Coupling Height (in)	Actuator Weight (lbs)
						2-POS	Modulating						
HIGH PRESSURE SPRING RETURN (SR)	2"	2"	100	C-SR063	40-130	24/120VAC	3-15PSI, 4-20mA	121	YES	0.5	4.25x3.25x6.6	DIRECT	4.63
	2.5"-3"	2.5"-3"	100	C-SR083	40-130	24/120VAC	3-15PSI, 4-20mA	280	YES	0.5	5.07x4.05x8.03	DIRECT	7.94
	4"-5"	4"	100	C-SR092	40-130	24/120VAC	3-15PSI, 4-20mA	413	YES	0.5	5.37x4.27x10.31	DIRECT	11.46
		5"	100	C-SR105	40-130	24/120VAC	3-15PSI, 4-20mA	560	YES	0.5	6.02x4.78x10.55	DIRECT	15.24
	6"-8"	6"	100	C-SR125	40-130	24/120VAC	3-15PSI, 4-20mA	929	YES	0.5	6.89x5.59x11.85	DIRECT	22.27
	10"	8"-10"	100	C-SR140	40-130	24/120VAC	3-15PSI, 4-20mA	1522	YES	1	7.56x5.98x15.35	DIRECT	33.07
	12"	12"	100	C-SR160	40-130	24/120VAC	3-15PSI, 4-20mA	2469	YES	1	8.54x6.95x18.03	DIRECT	52.91
	14"	14"	100	C-SR190	40-130	24/120VAC	3-15PSI, 4-20mA	3540	YES	2	10.24x8.12x20.67	DIRECT	77.16
	16"		100	C-SR210	40-130	24/120VAC	3-15PSI, 4-20mA	4868	YES	2	11.22x8.90x20.94	DIRECT	121.25
	18"	16"	100	C-SR240	40-130	24/120VAC	3-15PSI, 4-20mA	7266	YES	2	12.56x10.24x23.70	DIRECT	176.37
	20"	18"	100	C-SR270	40-130	24/120VAC	3-15PSI, 4-20mA	9904	YES	2	14.02x11.58x28.43	DIRECT	260.15
		20"	100	C-SR300	40-130	24/120VAC	3-15PSI, 4-20mA	12922	YES	3	14.88x12.76x29.21	DIRECT	286.6

SPRING RETURN PNEUMATIC ACTUATOR SPECS (200PSI CLOSE OFF)

	2-WAY VALVE SIZE	3-WAY VALVE SIZE	CLOSE OFF (PSI)	Pneumatic Actuator	Air Source PSIG	Control Signal		Torque @ 80PSI In/LB	Failsafe	Timing Seconds	Dimensions HxWxL (in)	Coupling Height (in)	Actuator Weight (lbs)
						2-POS	Modulating						
HIGH PRESSURE SPRING RETURN (SR)	2"		200	C-SR063	40-130	24/120VAC	3-15PSI, 4-20mA	121	YES	0.5	4.25x3.25x6.6	DIRECT	4.63
	2.5"-3"	2"-2.5"	200	C-SR083	40-130	24/120VAC	3-15PSI, 4-20mA	280	YES	0.5	5.07x4.05x8.03	DIRECT	7.94
	4"	3"	200	C-SR092	40-130	24/120VAC	3-15PSI, 4-20mA	413	YES	0.5	5.37x4.27x10.31	DIRECT	11.46
		4"	200	C-SR105	40-130	24/120VAC	3-15PSI, 4-20mA	560	YES	0.5	6.02x4.78x10.55	DIRECT	15.24
	5"-6"	5"	200	C-SR125	40-130	24/120VAC	3-15PSI, 4-20mA	929	YES	0.5	6.89x5.59x11.85	DIRECT	22.27
	8"	6"-8"	200	C-SR140	40-130	24/120VAC	3-15PSI, 4-20mA	1522	YES	1	7.56x5.98x15.35	DIRECT	33.07
	10"		200	C-SR160	40-130	24/120VAC	3-15PSI, 4-20mA	2469	YES	1	8.54x6.95x18.03	DIRECT	52.91
	12"	10"	200	C-SR190	40-130	24/120VAC	3-15PSI, 4-20mA	3540	YES	2	10.24x8.12x20.67	DIRECT	77.16
	14"	12"	150	C-SR210	40-130	24/120VAC	3-15PSI, 4-20mA	4868	YES	2	11.22x8.90x20.94	DIRECT	121.25
	16"	14"	150	C-SR240	40-130	24/120VAC	3-15PSI, 4-20mA	7266	YES	2	12.56x10.24x23.70	DIRECT	176.37
		16"	150	C-SR270	40-130	24/120VAC	3-15PSI, 4-20mA	9904	YES	2	14.02x11.58x28.43	DIRECT	260.15
	18"	18"	150	C-SR300	40-130	24/120VAC	3-15PSI, 4-20mA	12922	YES	3	14.88x12.76x29.21	DIRECT	286.6

LOW PRESSURE SPRING RETURN PNEUMATIC ACTUATOR SPECS (100PSI CLOSE OFF)

	2-WAY VALVE SIZE	3-WAY VALVE SIZE	CLOSE OFF (PSI)	Pneumatic Actuator	Air Source PSIG	Control Signal		Torque @ 80PSI In/LB	Failsafe	Timing Seconds	Dimensions HxWxL (in)	Coupling Height (in)	Actuator Weight (lbs)
						2-POS	Modulating						
LOW PRESSURE SPRING RETURN (SR)	2"-3"	2"-2.5"	100	D31535130	20	20 PSI	NA	201	YES	15	10x8x16	3"	14
	4"-5"	3"-4"	100	D32445110	20	20 PSI	NA	425	YES	15	12x10x20	4"	24
	6"-8"	5"-6"	100	D32465110	20	20 PSI	NA	602	YES	15	14x12x24	5"	35
	10"-12"	8"-10"	100	D32465110(X2)	20	20 PSI	NA	1204	YES	15	14x12x24	5"	70
	2"-3"	2"-2.5"	100	D31535120	20	NA	3-15 PSI	201	YES	15	10x8x16	3"	14
	4"-5"	3"-4"	100	D32445100	20	NA	3-15 PSI	425	YES	15	12x10x20	4"	24
	6"-8"	5"-6"	100	D32465100	20	NA	3-15 PSI	602	YES	15	14x12x24	5"	35
	10"-12"	8"-10"	100	D32465100(X2)	20	NA	3-15 PSI	1204	YES	15	14x12x24	5"	70

LOW PRESSURE SPRING RETURN PNEUMATIC ACTUATOR SPECS (100PSI CLOSE OFF)

	2-WAY VALVE SIZE	3-WAY VALVE SIZE	CLOSE OFF (PSI)	Pneumatic Actuator	Air Source PSIG	Control Signal		Torque @ 80PSI In/LB	Failsafe	Timing Seconds	Dimensions HxWxL (in)	Coupling Height (in)	Actuator Weight (lbs)
						2-POS	Modulating						
LOW PRESSURE SPRING RETURN (SR)	2"-2.5"	2"	200	D31535130	20	20 PSI	NA	201	YES	15	10x8x16	3"	14
	3"-4"	2.5"-3"	200	D32445110	20	20 PSI	NA	425	YES	15	12x10x20	4"	24
	5"-6"	4"-5"	200	D32465110	20	20 PSI	NA	602	YES	15	14x12x24	5"	35
	8"	6"-8"	200	D32465110(X2)	20	20 PSI	NA	1204	YES	15	14x12x24	5"	70
	2"-2.5"	2"	200	D31535120	20	NA	3-15 PSI	201	YES	15	10x8x16	3"	14
	3"-4"	2.5"-3"	200	D32445100	20	NA	3-15 PSI	425	YES	15	12x10x20	4"	24
	5"-6"	4"-5"	200	D32465100	20	NA	3-15 PSI	602	YES	15	14x12x24	5"	35
	8"	6"-8"	200	D32465100(X2)	20	NA	3-15 PSI	1204	YES	15	14x12x24	5"	70

NEW!

CONTROL VALVES

BUTTERFLY VALVES KB SERIES



ELECTRIC ACTUATOR SPECIFICATIONS (SIZED FOR 100 PSI CLOSE-OFF)											
2-Way Valve Size	3Way Valve Size	Close Off Psi	Electric Actuator	Electric Power	Control Signal	Torque (in/lb)	Fail Safe	Run Time (Sec-onds)	Dimensions (HxWxL) In.	Coupling Height	Coupling Height 3Way
2"-3"	2"-2.5"	100	KA-175	24VAC(6VA)	2-POS, FLOAT, 2-10VDC	175	NO	95	8"x7"x9.25"	8"	8"
2"-3"	2"-2.5"	100	KAS-175	24VAC(16VA)	2-POS, FLOAT, 2-10VDC	175	YES	95	8"x7"x9.25"	8"	8"
4"	3"	100	KA-301	24VAC(9VA)	2-POS, FLOAT, 2-10VDC	301	NO	95	8"x7"x9.25"	8"	8"
4"-5"	3"-4"	100	GKB24	24VAC(21VA)	2-POS, FLOAT, 2-10VDC	360	YES	95	8"x7"x9.25"	8"	8"
5"	4"	100	GMB24	24VAC(6VA)	2-POS, FLOAT, 2-10VDC	360	NO	95	8"x7"x9.25"	8"	8"
6"	5"-6"	100	GKX24MFT(X2)	24VAC(42VA)	2-POS, FLOAT, 2-10VDC	720	YES	95	13"x7"x9.25"	13"	13"
2"-5"	2"-5"	100	1005-X	24VAC(40VA) or 120VAC(40VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	443	NO	20	6.3"x5.4"x6.3"	DIRECT	2"
6"	6"	100	1010-X	24VAC(46VA) or 120VAC(97VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	885	NO	30	7.2"x5.8"x7.7"	DIRECT	2"
8" - 10"	8" - 10"	100	1020-X	24VAC(116VA) or 120VAC(201VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	1770	NO	30	8.6"x7.2"x10"	DIRECT	3"
12"-14"	12"	100	1040-X	24VAC(173VA) or 120VAC(410VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	3540	NO	30	8.6"x7.2"x10"	DIRECT	3"
	14"	100	1060-X	120VAC(432VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	5310	NO	45	8.6"x7.2"x10"	DIRECT	3"
16"-18"	16"-18"	100	1100-X	120VAC(456VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	8851	NO	30	9.6"x9.5"x12.2"	DIRECT	3"
20"	20"	100	1160-X	120VAC(472VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	14616	NO	48	9.6"x9.5"x12.2"	DIRECT	3"
24"	24"	100	1250-X	120VAC(475VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	22127	NO	75	9.6"x9.5"x12.2"	DIRECT	3"
1. Series 1000-X modulating units are equipped with control modules that accept 2-10V or 4-20mA control signal and feedback signal of 4-20mA. 2. The KA and KAS actuators are Kele brand direct coupled actuators and are rated NEMA 2 - indoor use. They can be used on the smaller sized 2-4" valves. The same applies to the G Series Belimo brand. 3. The Series 1000-X actuators are standard equipped with a heater and are NEMA 4 rated for outdoor usage.											

3

CONTROL VALVES



CONTROL VALVES

BUTTERFLY VALVES

KB SERIES

3

CONTROL VALVES

ELECTRIC ACTUATOR SPECIFICATIONS (SIZED FOR 150/200 PSI CLOSE-OFF)

2-Way Valve Size	3Way Valve Size		Electric Actuator	Electric Power	Control Signal	Torque (In/Lb)	Fail Safe	Run Time (Sec-onds)	Dimensions (HxWxL) In.	Coupling Height 2Way	Coupling Height 3Way
2"	2"	200	KA-175	24VAC(6VA)	2-POS, FLOAT, 2-10VDC	175	NO	95	8"x7"x9.25"	8"	8"
2"	2"	200	KAS-175	24VAC(16VA)	2-POS, FLOAT, 2-10VDC	175	YES	95	8"x7"x9.25"	8"	8"
2.5"-3"	2.5"	200	KA-301	24VAC(16VA)	2-POS, FLOAT, 2-10VDC	175	NO	95	8"x7"x9.25"	8"	8"
2.5"-3"	2.5"	200	EFB24	24VAC(14VA)	2-POS, FLOAT, 2-10VDC	270	YES	95	8"x7"x9.25"	13"	13"
4"-5"	3"	200	GMB24(X2)	24VAC(21VA)	2-POS, FLOAT, 2-10VDC	720	NO	95	13"x7"x9.25"	13"	13"
4"	4"	200	EFB24(X2)	24VAC(28VA)	2-POS, FLOAT, 2-10VDC	270	YES	95	13"x7"x9.25"	13"	13"
5"	5"	200	GKX24MFT	24VAC(42VA)	2-POS, FLOAT, 2-10VDC	720	YES	95	13"x7"x9.25"	13"	13"
2"-4"	2"-4"	200	1005-X	24VAC(40VA) or 120VAC(40VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	443	NO	20	5.5"x4.4"x6.3"	DIRECT	2"
5"-6"	5"-6"	200	1010-X	24VAC(46VA) or 120VAC(97VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	885	NO	30	7.2"x5.8"x7.7"	DIRECT	2"
8"	8"	200	1020-X	24VAC(116VA) or 120VAC(201VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	1770	NO	30	8.6"x7.2"x10"	DIRECT	3"
10"-12"	10"	200	1040-X	24VAC(173VA) or 120VAC(410VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	3540	NO	30	8.6"x7.2"x10"	DIRECT	3"
14"	12"	200	1060-X	120VAC(432VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	5310	NO	45	8.6"x7.2"x10"	DIRECT	3"
14"	14"	150	1060-X	120VAC(432VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	5310	NO	45	8.6"x7.2"x10"	DIRECT	3"
16"-18"	16"	150	1100-X	120VAC(456VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	8851	NO	30	9.6"x9.5"x12.2"	DIRECT	3"
20"	18"	150	1160-X	120VAC(472VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	14616	NO	48	9.6"x9.5"x12.2"	DIRECT	3"
24"	20"	150	1250-X	120VAC(475VA)	2-POS, FLOAT, 2-10VDC, 4-20mA	22127	NO	75	9.6"x9.5"x12.2"	DIRECT	3"

1. Series 1000-X modulating units are equipped with control modules that accept 2-10V or 4-20mA control signal and feedback signal of 4-20mA.

2. The KA and KAS actuators are Kele brand direct coupled actuators and are rated NEMA 2 - indoor use. They can be used on the smaller sized 2-4" valves. The same applies to the G Series Belimo brand.

3. The Series 1000-X actuators are standard equipped with a heater and are NEMA 4 rated for outdoor usage.

NEW!



ELECTRIC ACTUATOR CODES (NEMA 4 ELECTRIC)

VALVE TYPE/SIZE	1E2V	2E2V	1EMV2 / 1EMV4	2EMV2 / 2EMV4
2-WAY/2"	1005-X	1005-X-24V	1005/S-X-2(4)	1005/S-X-24V-2(4)
2-WAY/2.5"	1005-X	1005-X-24V	1005/S-X-2(4)	1005/S-X-24V-2(4)
2-WAY/3"	1005-X	1005-X-24V	1005/S-X-2(4)	1005/S-X-24V-2(4)
2-WAY/4"	1005-X	1005-X-24V	1005/S-X-2(4)	1005/S-X-24V-2(4)
2-WAY/5"	1005-X or 1010-X	1005-X-24V or 1010-X-24	1005/S-X-2(4) OR 1010/S-X	1005/S-X-24V-2(4) or 1010/S-X-24V-2(4)
2-WAY/6"	1010-X	1005-X-24V or 1010-X-24	1010/S-X	1010/S-X-24V-2(4)
2-WAY/8"	1020-X	1005-X-24V or 1020-X-24V	1020/S-X	1020/S-X-24V-2(4)
2-WAY/10"	1020-X or 1040-X	1005-X-24V or 1040-X-24V	1020/S-X or 1040/S-X	1020/S-X-24V-2(4) or 1040/S-X-24V-2(4)
2-WAY/12"	1040-X	1005-X-24V or 1040-X-24V	1040/S-X	1040/S-X-24V-2(4)
2-WAY/14"	1040-X or 1060-X	1005-X-24V	1040/S-X or 1060/S-X	1040/S-X-24V-2(4)
2-WAY/16"	1100-X	—	1100/S-X	—
2-WAY/18"	1100-X or 1160-X	—	1100/S-X or 1160/S-X	—
2-WAY/20"	1160-X	—	1160/S-X	—
2-WAY/24"	1250-X	—	1250/S-X	—
3-WAY/2"	1005-X	1005-X-24V	1005/S-X-2(4) or 1005/S-X-2(4)	1005/S-X-24V-2(4)
3-WAY/2.5"	1005-X	1005-X-24V	1005/S-X-2(4) or 1005/S-X-2(4)	1005/S-X-24V-2(4)
3-WAY/3"	1005-X	1005-X-24V	1005/S-X-2(4) or 1005/S-X-2(4)	1005/S-X-24V-2(4)
3-WAY/4"	1005-X or 1010-X	1005-X-24V or 1010-X-24	1005/S-X-2(4) or 1010/S-X	1005/S-X-24V-2(4) or 1010/S-X-24V-2(4)
3-WAY/5"	1005-X or 1010-X	1005-X-24V or 1010-X-24	1005/S-X-2(4) or 1010/S-X	1005/S-X-24V-2(4) or 1010/S-X-24V-2(4)
3-WAY/6"	1010-X or 1020-X	1010-X-24V or 1020-X-24	1010/S-X or 1020/S-X	1010/S-X-24V-2(4) or 1020/S-X-24V-2(4)
3-WAY/8"	1020-X	1020-X-24V	1020/S-X	1020/S-X-24V-2(4)
3-WAY/10"	1020-X or 1040-X	1020-X-24V or 1040-X-24V	1020/S-X or 1040/S-X	1020/S-X-24V-2(4) or 1040/S-X-24V-2(4)
3-WAY/12"	1040-X or 1060-X	1040-X-24V	1040/S-X or 1060/S-X	1040/S-X-24V-2(4)
3-WAY/14"	1060-X	—	1060/S-X	—
3-WAY/16"	1100-X	—	1100/S-X	—
3-WAY/18"	1100-X or 1160-X	—	1100/S-X or 1160/S-X	—
3-WAY/20"	1160-X or 1250-X	—	1160/S-X or 1250/S-X	—
3-WAY/24"	1250-X	—	1250/S-X	—

ELECTRIC ACTUATOR CODES (NEMA 2 ELECTRIC)

VALVE TYPE/SIZE	2E2D	2E2DSC / 2E2DS0	2EMD	2EMDSC / 2EMDSO
2-WAY/2"	KA-175-2T	KAS-175-2	KA-175-P	KAS-175-M
2-WAY/2.5"	KA-175-2T or KA-301-2T	KAS-175-2 or EFB24	KA-175-P or KA-301-P	KAS-175-M or EFB24-SR
2-WAY/3"	KA-175-2T or KA-301-2T	KAS-175-2 or EFB24	KA-175-P or KA-301-P	KAS-175-M or EFB24-SR
2-WAY/4"	KA-301-2T or GMB24-3(x2)	GKB24-3 or EFB24(x2)	KA-301-P or GMB24-SR(x2)	GKB24-SR or EFB24-SR(x2)
2-WAY/5"	GMB24-3 or GMB24-3(x2)	GKB24-3 or GKX24-MFT(x2)	GMB24-SR or GMB24-SR(x2)	GKB24-SR or GKX24-MFT(x2)
2-WAY/6"	GMB24-3(x2)	GKX24-MFT(x2)	GMB24-SR(x2)	GKX24-MFT(x2)
3-WAY/2"	KA-175-2T	KAS-175-2	KA-175-P	KAS-175-M
3-WAY/2.5"	KA-175-2T or KA-301-2T	KAS-175-2 or EFB24	KA-175-P or KA-301-P	KAS-175-M or EFB24-SR
3-WAY/3"	KA-301-2T	EFB24 or GKB24-3	KA-301-P	EFB24-SR or GKB24-SR
3-WAY/4"	GMB24-3 or GMB24-3(x2)	GKB24-3 or EFB24(x2)	GMB24-SR or GMB24-SR(x2)	GKB24-SR or EFB24-SR(x2)
3-WAY/5"	GMB24-3(x2)	GKX24-MFT(x2)	GMB24-SR(x2)	GKX24-MFT(x2)
3-WAY/6"	GMB24-3(x2)	GKX24-MFT(x2)	GMB24-SR(x2)	GKX24-MFT(x2)



CONTROL VALVES

BUTTERFLY VALVES

KB SERIES

3

CONTROL VALVES

ACTUATOR CODES (LOW PRESSURE PNEUMATIC- 20PSI AIR)

VALVE TYPE/SIZE	LP2SC	LP2SO	LPMSC	LPMSO
2-WAY/2"	D-3153-5130	D-3153-5130	D-3153-5120	D-3153-5120
2-WAY/2.5"	D-3153-5130	D-3153-5130	D-3153-5120	D-3153-5120
2-WAY/3"	D-3153-5130 or D-3244-5110	D-3153-5130 or D-3244-5110	D-3153-5120 or D-3244-5100	D-3153-5120 or D-3244-5100
2-WAY/4"	D-3244-5110	D-3244-5110	D-3244-5100	D-3244-5100
2-WAY/5"	D-3244-5110 or D-3246-5110	D-3244-5110 or D-3246-5110	D-3244-5100 or D-3246-5100	D-3244-5100 or D-3246-5100
2-WAY/6"	D-3246-5110	D-3246-5110	D-3246-5100	D-3246-5100
2-WAY/8"	D-3246-5110 or D-3246-5110(x2)	D-3246-5110 or D-3246-5110(x2)	D-3246-5100 or D-3246-5100(x2)	D-3246-5100 or D-3246-5100(x2)
2-WAY/10"	D-3246-5110(x2)	D-3246-5110(x2)	D-3246-5100(x2)	D-3246-5100(x2)
2-WAY/12"	D-3246-5110(x2)	D-3246-5110(x2)	D-3246-5100(x2)	D-3246-5100(x2)
3-WAY/2"	D-3153-5130	D-3153-5130	D-3153-5120	D-3153-5120
3-WAY/2.5"	D-3153-5130 or D-3244-5110	D-3153-5130 or D-3244-5110	D-3153-5120 or D-3244-5100	D-3153-5120 or D-3244-5100
3-WAY/3"	D-3244-5110	D-3244-5110	D-3244-5100	D-3244-5100
3-WAY/4"	D-3244-5110 or D-3246-5110	D-3244-5110 or D-3246-5110	D-3244-5100 or D-3246-5100	D-3244-5100 or D-3246-5100
3-WAY/5"	D-3246-5110	D-3246-5110	D-3246-5100	D-3246-5100
3-WAY/6"	D-3246-5110 or D-3246-5110(x2)	D-3246-5110 or D-3246-5110(x2)	D-3246-5100 or D-3246-5100(x2)	D-3246-5100 or D-3246-5100(x2)
3-WAY/8"	D-3246-5110(x2)	D-3246-5110(x2)	D-3246-5100(x2)	D-3246-5100(x2)
3-WAY/10"	D-3246-5110(x2)	D-3246-5110(x2)	D-3246-5100(x2)	D-3246-5100(x2)

ACTUATOR CODES (HIGH PRESSURE PNEUMATIC-80 PSI AIR)

VALVE TYPE/SIZE	HP21 / HP22	HP2SC1 / HP2SC2 HP2S01 / HP2S02	HPM	HPMSC / HPMSO
2-WAY/2"	C-DA63/WT8	C-SR63/WT8	C-DA63/VP7G	C-SR63/VP7G
2-WAY/2.5"	C-DA63/WT8	C-SR83/WT8	C-DA63/VP7G	C-SR83/VP7G
2-WAY/3"	C-DA63/WT8	C-SR83/WT8	C-DA63/VP7G	C-SR83/VP7G
2-WAY/4"	C-DA83/WT8	C-SR92/WT8	C-DA83/VP7G	C-SR92/VP7G
2-WAY/5"	C-DA83/WT8 or C-DA092/WT8	C-SR92/WT8 or C-SR125/WT8	C-DA83/VP7G or C-DA092/VP7G	C-SR92/VP7G or C-SR125/VP7G
2-WAY/6"	C-DA092/WT8 or C-DA105/WT8	C-SR125/WT8	C-DA092/VP7G or C-DA105/VP7G	C-SR125/VP7G
2-WAY/8"	C-DA105/WT8 or C-DA125/WT8	C-SR125/WT8 or C-SR140/WT8	C-DA105/VP7G or C-DA125/VP7G	C-SR125/VP7G or C-SR140/VP7G
2-WAY/10"	C-DA125/WT8 or C-DA140/WT8	C-SR140/WT8 or C-SR160/WT8	C-DA125/VP7G or C-DA140/VP7G	C-SR140/VP7G or C-SR160/VP7G
2-WAY/12"	C-DA140/WT8 or C-DA160/WT8	C-SR160/WT8 or C-SR190/WT8	C-DA140/VP7G or C-DA160/VP7G	C-SR160/VP7G or C-SR190/VP7G
2-WAY/14"	C-DA160/WT8	C-SR190/WT8 or C-SR210/WT8	C-DA160/VP7G	C-SR190/VP7G or C-SR210/VP7G
2-WAY/16"	C-DA190/WT8	C-SR210/WT8 or C-SR240/WT8	C-DA190/VP7G	C-SR210/VP7G or C-SR240/VP7G
2-WAY/18"	C-DA190/WT8 or C-DA240/WT8	C-SR240/WT8 or C-SR300/WT8	C-DA190/VP7G or C-DA240/VP7G	C-SR240/VP7G or C-SR300/VP7G
2-WAY/20"	C-DA210/WT8 or C-DA240/WT8	C-SR270/WT8	C-DA210/VP7G or C-DA240/VP7G	C-SR270/VP7G
2-WAY/24"	C-DA270/WT8 or C-DA300/WT8	—	C-DA270/VP7G or C-DA300/VP7G	—
3-WAY/2"	C-DA63/WT8	C-SR63/WT8 or C-SR83/WT8	C-DA63/VP7G	C-SR63/VP7G or C-SR83/VP7G
3-WAY/2.5"	C-DA63/WT8	C-SR83/WT8	C-DA63/VP7G	C-SR83/VP7G
3-WAY/3"	C-DA63/WT8 or C-DA83/WT8	C-SR83/WT8 or C-SR92/WT8	C-DA63/VP7G or C-DA83/VP7G	C-SR83/VP7G or C-SR92/VP7G
3-WAY/4"	C-DA83/WT8	C-SR92/WT8 or C-SR105/WT8	C-DA83/VP7G	C-SR92/VP7G or C-SR105/VP7G
3-WAY/5"	C-DA83/WT8 or C-DA092/WT8	C-SR105/WT8 or C-SR125/WT8	C-DA83/VP7G or C-DA092/VP7G	C-SR105/VP7G or C-SR125/VP7G
3-WAY/6"	C-DA092/WT8 or C-DA105/WT8	C-SR125/WT8 or C-SR140/WT8	C-DA092/VP7G or C-DA105/VP7G	C-SR125/VP7G or C-SR140/VP7G
3-WAY/8"	C-DA105/WT8 or C-DA125/WT8	C-SR140/WT8	C-DA105/VP7G or C-DA125/VP7G	C-SR140/VP7G
3-WAY/10"	C-DA125/WT8 or C-DA140/WT8	C-SR140/WT8 or C-SR190/WT8	C-DA125/VP7G or C-DA140/VP7G	C-SR140/VP7G or C-SR190/VP7G
3-WAY/12"	C-DA140/WT8 or C-DA160/WT8	C-SR160/WT8 or C-SR210/WT8	C-DA140/VP7G or C-DA160/VP7G	C-SR160/VP7G or C-SR210/VP7G
3-WAY/14"	C-DA160/WT8 or C-DA190/WT8	C-SR190/WT8 or C-SR240/WT8	C-DA160/VP7G or C-DA190/VP7G	C-SR190/VP7G or C-SR240/VP7G
3-WAY/16"	C-DA190/WT8 or C-DA210/WT8	C-SR240/WT8 or C-SR270/WT8	C-DA190/VP7G or C-DA210/VP7G	C-SR240/VP7G or C-SR270/VP7G
3-WAY/18"	C-DA210/WT8 or C-DA240/WT8	C-SR270/WT8 or C-SR300/WT8	C-DA210/VP7G or C-DA240/VP7G	C-SR270/VP7G or C-SR300/VP7G
3-WAY/20"	C-DA240/WT8 or C-DA270/WT8	C-SR300/WT8	C-DA240/VP7G or C-DA270/VP7G	C-SR300/VP7G
3-WAY/24"	C-DA270/WT8	—	C-DA270/VP7G	—

Note: Actuators listed in order depending on valve body pressure rating.

Example: C-DA125/VP7G or C-DA140/VP7G

100 psi pressure body or 150/200 psi pressure body

NEW!

200

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WHEN YOU NEED IT RIGHT, RIGHT NOW, CALL KELE.

March 2014



ORDERING INFORMATION

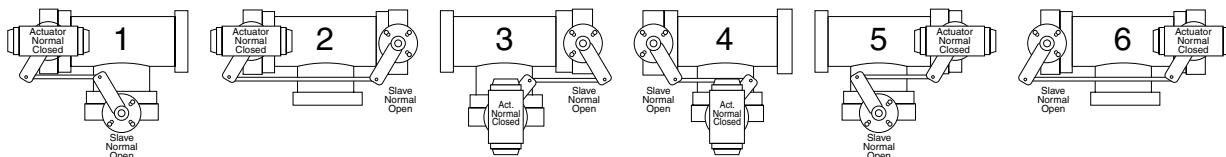
MODEL			
KB	Butterfly Valve		
PRESSURE			
1	100 psi (low pressure)		
2	150/200 psi (high pressure)		
TYPE			
-2	2-Way		
-3	3-Way		
SIZE			
-02	2"	-10	10"
-25	2.5"	-12	12"
-03	3"	-14	14"
-04	4"	-16	16"
-05	5"	-18	18"
-06	6"	-20	20"
-08	8"	-24	24"
ACTUATOR			
-2E2V	NEMA 4, 24V electric, 2-position		-LP2SC Low pressure pneumatic, 2-position, spring return, NC
-2EMV2	NEMA 4, 24V electric, modulating, 2-10 VDC input		-LP2SO Low pressure pneumatic, 2-position, spring return, NO
-2EMV4	NEMA 4, 24V electric, modulating, 4-20 mA input		-LPMSC Low pressure pneumatic, 3-15 positioner, spring return, NC
-1E2V	NEMA 4, 120V electric, 2-position		-LPMSO Low pressure pneumatic, 3-15 positioner, spring return, NO
-1EMV2	NEMA 4, 120V electric, modulating, 2-10 VDC input		-HP21 High pressure pneumatic, double acting, 120V solenoid
-1EMV4	NEMA 4, 120V electric, modulating, 4-20 mA input		-HP22 High pressure pneumatic, double acting, 24V solenoid
-2E2D	NEMA 2, 24V electric, 2-position		-HPM High pressure pneumatic, double acting, 3-15 positioner
-2E2DSC	NEMA 2, 24V electric, 2-position, spring return, NC		-HP2SC1 High pressure pneumatic, spring return, NC, 120V solenoid
-2E2DSO	NEMA 2, 24V electric, 2-position, spring return, NO		-HP2SO1 High pressure pneumatic, spring return, NO, 120V solenoid
-2EMD	NEMA 2, 24V electric, modulating		-HP2SC2 High pressure pneumatic, spring return, NC, 24V solenoid
-2EMDSC	NEMA 2, 24V electric, modulating, spring return, NC		-HP2SO2 High pressure pneumatic, spring return, NO, 24V solenoid
-2EMDSO	NEMA 2, 24V electric, modulating, spring return, NO		-HPMSC High pressure pneumatic, spring return, NC, 3-15 positioner
			-HPMSO High pressure pneumatic, spring return, NO, 3-15 positioner
3-Way ARRANGEMENT CODE (See arrangement chart for diagram)*			
-01	Arrangement 1		
-02	Arrangement 2		
-03	Arrangement 3		
-04	Arrangement 4		
-05	Arrangement 5		
-06	Arrangement 6		

KB	1	-3	-02	-1EMV2
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-01	Example: KB1-3-02-1EMV2-01
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* Note: Arrangement Code only needed when ordering 3-way valves

THREE-WAY CONFIGURATION





CONTROL VALVES

BUTTERFLY VALVES

F6, F7 SERIES

DESCRIPTION

The **F6, F7 Series** butterfly valves fulfill the requirements of commercial and industrial HVAC applications requiring positive shutoff for water. Applications include chiller isolation, cooling tower isolation, change-over systems, large air handler coil control and bypass, and various water distribution and storage systems. The F6 assemblies are two-way and the F7 are three-way flow patterns. Undercut disc assemblies, designated by "HDU" in the part number have a maximum close-off of 50 psid, and full-cut models, designated by "HD" part number, have full 200 psid close-off rating. Small size valves are available with economical Belimo rotary actuators and all sizes are available with industrial grade, NEMA 4 actuators, to meet most application requirements. Other sizes, assembly combinations, connection types, and materials of construction are available.



BELIMO

FEATURES

- **Advanced seat and disc design provide bubble-tight shutoff while maintaining a low seating torque**
- **Standard rotary actuators, or industrial grade NEMA 4 actuators for a variety of application requirements**
- **Internal valve body five bushing design isolates the valve body from the shaft resulting in better control**
- **Standard stainless steel disc and shaft for strength, durability and long-lasting operation**

APPLICATIONS

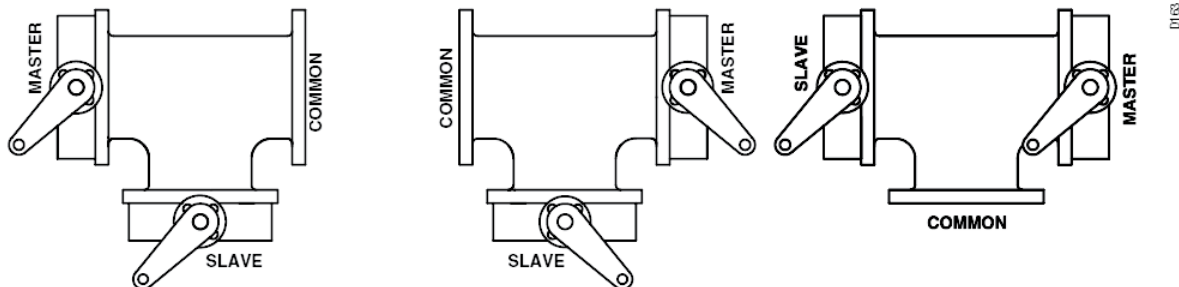
Butterfly valves allow high flows with relatively low pressure loss, compared to globe valves, and are typically used for isolation or flow control. Good modulation is achieved between 30 and 70 degrees of full open. At valve openings greater than 70 degrees, the pressure loss is too low to produce any significant effect on flow or the energy loss of a flow system. Butterfly valves can be controlled with a maintenance-free electronic actuator or manually, with an ergonomic, wear-free plastic handle or gear operator.

SPECIFICATIONS

Mounting Flange	ANSI Class 125/150 lug style flanges	Media Compatibility	Hot or chilled water, up to 60% glycol
Maximum Closeoff Pressure	50 psid (345 kPa) (undercut models); 200 psid (1380 kPa) (full rated models)	Media Temperature Range	-22° to 250°F (-30° to 120°C)
Pressure Rating	200 psig (1379 kPa) @ -30°F to 275°F per ASME/ANSI Class 125/150	Supply Voltage	24 VAC/VDC (Belimo direct-coupled); 24 VAC or 120 VAC (SY Series)
Materials Of Construction	Ductile iron ASTM A536 (with epoxy powder finish) valve body; EPDM seat; 416 stainless steel shaft; 304 stainless steel disc; EPDM o-ring; RPTFE bushings	Control Signal	Two-position, floating, proportional 0-10 VDC, 4-20 mA
		Manual Override	All models have manual override
		Operating Temperature	-22° to 122°F (-30° to 50°C)
		Enclosure Rating	NEMA 2 and NEMA 4 enclosed (Belimo direct-coupled actuators); NEMA 4/4X (SY Series industrial actuators)
		Warranty	2 years



THREE-WAY CONFIGURATION CODES



CONFIG CODE	ON/OFF OR MOD@2VDC MASTER VALVE IS	MASTER VALVE @ FAIL
X10	OPEN	NON-FAIL
X11	OPEN	OPEN
X12	OPEN	CLOSED
X13	CLOSED	NON-FAIL
X14	CLOSED	OPEN
X15	CLOSED	CLOSED

CONFIG CODE	ON/OFF OR MOD@2VDC MASTER VALVE IS	MASTER VALVE @ FAIL
X20	OPEN	NON-FAIL
X21	OPEN	OPEN
X22	OPEN	CLOSED
X23	CLOSED	NON-FAIL
X24	CLOSED	OPEN
X25	CLOSED	CLOSED

CONFIG CODE	ON/OFF OR MOD@2VDC MASTER VALVE IS	MASTER VALVE @ FAIL
X30	OPEN	NON-FAIL
X31	OPEN	OPEN
X32	OPEN	CLOSED
X33	CLOSED	NON-FAIL
X34	CLOSED	OPEN
X35	CLOSED	CLOSED

X Specifies Bi-Directional Flow Capability

Notes:

1. Slave Valve operates inversely of the Master Valve.
2. The Master Valve is always located on the run.
3. The Slave Valve may also have an actuator if required (Direct Coupled).
4. On/Off actuator normal position is a function of field logic.
5. Proportional actuator normal position is a function of the CCW/CW
6. All 3-way assemblies are designed for 90 degree actuator rotation.

CONFIGURATION CODES

2-way Configuration

Non-Spring Return	Modulating	2 Pos.	Set Up Required Field Logic Determines Normal Position
		NC	(Normally Closed) 1 VDC/2 VDC/4mA = Closed
		NO	(Normally Open) 1 VDC/2 VDC/4mA = Open
Spring Return	Modulating	2 Pos.	NO/FO (Normally Open/Fail Open) Field Logic Determines Normal Position Spring Fails Valve OPEN
			NC/FC (Normally Closed/Fail Closed) Field Logic Determines Normal Position Spring Fails Valve CLOSED
			NO/FO (Normally Open/Fail Open) 1 VDC/2 VDC/4mA = Open Spring Fails Valve OPEN
			NO/FC (Normally Open/Fail Closed) 1 VDC/2 VDC/4mA = Open Spring Fails Valve CLOSED
			NC/FO (Normally Closed/Fail Open) 1 VDC/2 VDC/4mA = Closed Spring Fails Valve OPEN
			NC/FC (Normally Closed/Fail Closed) 1 VDC/2 VDC/4mA = Closed Spring Fails Valve CLOSED

3-way Configuration

Non-Spring Return	Modulating	2 Pos.	No Set Up Required Field Logic Determines Normal Position
		Specify Flow Pattern [10-35]	Master (Actuated) Valve NC (Normally Closed) 1 VDC/2 VDC/4mA = Closed
			Master (Actuated) Valve NO (Normally Open) 1 VDC/2 VDC/4mA = Open
Spring Return	Modulating	2 Pos.	NO/FO (Normally Open/Fail Open) Field Logic Determines Normal Position Spring Fails Master Valve OPEN
			NC/FC (Normally Closed/Fail Closed) Field Logic Determines Normal Position Spring Fails Master Valve CLOSED
			NO/FO (Normally Open/Fail Open) 1 VDC/2 VDC/4mA = Master Valve Open Spring Fails Master Valve OPEN
			NO/FC (Normally Open/Fail Closed) 1 VDC/2 VDC/4mA = Master Valve Open Spring Fails Master Valve CLOSED
			NC/FO (Normally Closed/Fail Open) 1 VDC/2 VDC/4mA = Master Valve Closed Spring Fails Master Valve OPEN
			NC/FC (Normally Closed/Fail Closed) 1 VDC/2 VDC/4mA = Master Valve Closed Spring Fails Master Valve CLOSED



CONTROL VALVES

BUTTERFLY VALVES

F6, F7 SERIES

3

CONTROL VALVES

ASSEMBLY COMBINATIONS/ORDERING INFORMATION - INDOOR LOCATIONS

Model	Size	Cv @ 90°	Close-off	NSR On/off/floating	NSR Proportional/ MFT	SR or fail-safe On/off/floating	SR or fail-safe Proportional/MFT
2-way undercut							
F650HDU	2" (DN50)	115	50	ARB24-3-5	ARB24-MFT-5	AFBUP-X1	AFX24-MFT-X1
F665HDU	2-1/2" (DN65)	196				AFBUP-X1	2xAFX24-MFT-X1
F680HDU	3" (DN80)	302		GRB24-3-7	GRX24-MFT-7	2XAFBUP-X1	2XAFX24-MFT-X1
F6100HDU	4" (DN100)	600					
F6125HDU	5" (DN125)	1022					
F6150HDU	6" (DN150)	1579					
3-way undercut							
F750HDU	2" (DN50)	115	50	AMB24-3-X1	AMX24-MFT-X1	AFBUP-X1	AFX24-MFT-X1
F765HDU	2-1/2" (DN65)	196				AFBUP-X1	2xAFX24-MFT-X1
F780HDU	3" (DN80)	302		GMB24-3-X1	GMX24-MFT-X1	2XAFBUP-X1	2XAFX24-MFT-X1
F7100HDU	4" (DN100)	600				--	--
F7125HDU	5" (DN125)	1022		2xGMB24-3-X1	2xGMX24-MFT-X1	--	--
F7150HDU	6" (DN150)	1579				--	--
2-way full rated							
F650HD	2" (DN50)	115	200	ARB24-3-5	ARB24-MFT-5	AFBUP-X1	AFX24-MFT-X1
F665HD	2-1/2" (DN65)	196					AFX24-MFT-X1
F680HD	3" (DN80)	302		GMB24-3-X1	GMX24-MFT-5	GKRB24-3-5	GKRX24-MFT-5
F6100HD	4" (DN100)	600		2xGMB24-3-X1	2xGMX24-MFT-X1	--	--
F6125HD	5" (DN125)	600		--	--	--	--
F6150HD	6" (DN150)	1579		--	--	--	--
F6200HD	8" (DN200)	3136		--	--	--	--
F6250HD	10" (DN250)	5340		--	--	--	--
F6300HD	12" (DN300)	8250		--	--	--	--
F6350HD	14" (DN350)	11917		--	--	--	--
F6400HD	16" (DN400)	16388		--	--	--	--
F6450HD	18" (DN450)	21705		--	--	--	--
F6500HD	20" (DN500)	27908		--	--	--	--
3-way full rated							
F750HD	2" (DN50)	115	200	AMB24-3-X1	AMX24-MFT-X1	AFBUP-X1	AFX24-MFT-X1
F765HD	2-1/2" (DN65)	196		GMB24-3-X1	GMX24-MFT-X1	2XAFBUP-X1	2XAFX24-MFT-X1
F780HD	3" (DN80)	302		2xGMB24-3-X1	2xGMX24-MFT-X1	--	--
F7100HD	4" (DN100)	600		--	--	--	--
F7125HD	5" (DN125)	600		--	--	--	--
F7150HD	6" (DN150)	1579		--	--	--	--
F7200HD	8" (DN200)	3136		--	--	--	--
F7250HD	10" (DN250)	5340		--	--	--	--
F7300HD	12" (DN300)	8250		--	--	--	--
F7350HD	14" (DN350)	11917		--	--	--	--
F7400HD	16" (DN400)	16388		--	--	--	--
F7450HD	18" (DN450)	21705		--	--	--	--
F7500HD	20" (DN500)	27908		--	--	--	--

Ordering example: F6100HDU/GKRX24-MFT-7 two-way 4", undercut, 50 psid close-off, fail-safe, proportional/MFT control, 24V actuator



ASSEMBLY COMBINATIONS/ORDERING INFORMATION - NEMA 4 RATED							
Model	Size	Cv @ 90°	Close-off	NSR On/off/floating NEMA 4 housing	NSR Proportional/MFT NEMA 4 housing	NSR On/off/floating SY NEMA 4	NSR Proportional/ MFT SY NEMA 4
2-way undercut							
F650H DU	2" (DN50)	115	50	GRCX24-3-T-N4	GRX24-MFT-T-N4	--	--
F665H DU	2-1/2" (DN65)	196				--	--
F680H DU	3" (DN80)	302				--	--
F6100H DU	4" (DN100)	600		2xGRCX24-3-T-N4	2xGRX24-MFT-T-N4	--	--
F6125H DU	5" (DN125)	1022				--	--
F6150H DU	6" (DN150)	1579				DKRX24-3-T-N4	DKRX24-MFT-T-N4
3-way undercut							
F750H DU	2" (DN50)	115	50	GMCX24-3-T-X1-N4	GMX24-MFT-T-X1-N4	--	--
F765H DU	2-1/2" (DN65)	196				--	--
F780H DU	3" (DN80)	302				GMCX24-3-T-X1-N4	GMX24-MFT-T-X1-N4
F7100H DU	4" (DN100)	600		2xGMCX24-3-T-X1-N4	2xGMX24-MFT-T-X1-N4	--	--
F7125H DU	5" (DN125)	1022				--	--
F7150H DU	6" (DN150)	1579				--	--
2-way full rated							
F650HD	2" (DN50)	115	200	GRCX-24-3-T-N4	GRX24-MFT-T-N4	SY2-24 or SY2-110	SY2-24MFT or SY2-120MFT
F665HD	2-1/2" (DN65)	196					
F680HD	3" (DN80)	302					
F6100HD	4" (DN100)	600		--	--		
F6125HD	5" (DN125)	600		--	--		
F6150HD	6" (DN150)	1579		--	--	SY3-24 or SY3-110	SY3-24MFT or SY3-120MFT
F6200HD	8" (DN200)	3136		--	--	SY4-24 or SY4-110	SY4-24MFT or SY4-120MFT
F6250HD	10" (DN250)	5340		--	--		
F6300HD	12" (DN300)	8250		--	--		
F6350HD	14" (DN350)	11917		--	--	SY5-24 or SY5-110	SY5-24MFT or SY5-120MFT
F6400HD	16" (DN400)	16388		--	--	SY6-110	SY6-120MFT
F6450HD	18" (DN450)	21705		--	--	SY8-110	SY8-120MFT
F6500HD	20" (DN500)	27908		--	--		
3-way full rated							
F750HD	2" (DN50)	115	200	GMCX24-3-T-X1-N4	GMX24-MFT-T-X1-N4	SY2-24 or SY2-110	SY2-24MFT or SY2-120MFT
F765HD	2-1/2" (DN65)	196					
F780HD	3" (DN80)	302					
F7100HD	4" (DN100)	600		--	--		
F7125HD	5" (DN125)	600		--	--	SY3-24 or SY3-110	SY3-24MFT or SY3-120MFT
F7150HD	6" (DN150)	1579		--	--		
F7200HD	8" (DN200)	3136		--	--		
F7250HD	10" (DN250)	5340		--	--	SY4-24 or SY4-110	SY4-24MFT or SY4-120MFT
F7300HD	12" (DN300)	8250		--	--	SY5-24 or SY5-110	SY5-24MFT or SY5-120MFT
F7350HD	14" (DN350)	11917		--	--	SY6-110	SY6-120MFT
F7400HD	16" (DN400)	16388		--	--	SY7-110	SY7-120MFT
F7450HD	18" (DN450)	21705		--	--	SY8-110	SY8-120MFT
F7500HD	20" (DN500)	27908		--	--	SY9-110	SY9-120MFT

Ordering example: F6100H DU/2XGRX24-MFT-T-N4 two-way 4", undercut, 50 psid close-off, non-spring return, proportional control, 24V, NEMA4



CONTROL VALVES

FABRIC WEATHERPROOF COVER FOR GLOBE VALVE ACTUATORS

KOV SERIES

DESCRIPTION

The **KOV Series** fabric cover offers an innovative and effective weather protection solution for low-voltage direct-mount globe valve actuators. Made of heavy-duty, water repellent, acrylic woven fabric, the **KOV** provides a significant degree of protection against falling rain, sleet, snow and ice. The light color minimizes solar heat gain to keep the actuator cooler than traditional plastic or metal enclosures and the fabric breathes to prevent condensation. It can be installed and removed in seconds and it is available in four sizes to fit many popular globe valve direct-mount actuators.

FEATURES

- **Heavy-duty, water repellent fabric**
- **Keeps actuator cool in hot sun**
- **Breatheable design prevents condensation**
- **Cinch strap allows quick and easy installation**
- **Keeps actuator clean and protected**

APPLICATION

The **KOV Series** has been tested to the NEMA 3R standard and will effectively protect a NEMA 2 (IP42 or equivalent) actuator from the weather when mounted vertically. The cover fabric is guaranteed for a period of five years against loss of color or strength from normal exposure conditions including sunlight, mildew, rot and atmospheric chemicals. It is not rated for high-voltage equipment.



**KOV-3 on
ML7421B actuator
and 5" globe valve**

SPECIFICATIONS

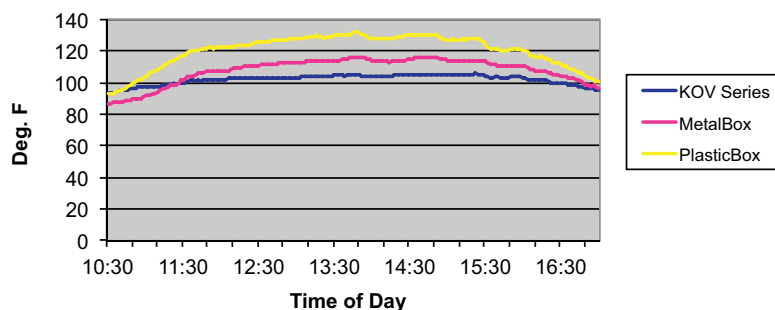
Materials Of Construction

600D Oxford fabric, thickened and densified for heavy duty protection; nylon webbing and straps; nylon buckle

Dimensions

KOV-1	Approximately 6" diameter x 7"H (15 x 18 cm)
KOV-2	Approximately 8" diameter x 10"H (20 x 25 cm)
KOV-3	Approximately 10" diameter x 10"H (25 x 25 cm)
KOV-4	Approximately 14" diameter x 12"H (36 x 30 cm)
Color	Light tan to minimize solar gain

Weather Shield Temperature Comparisons
Enclosure air temperature test data



ORDERING INFORMATION

MODEL	DESCRIPTION
KOV-1	NEMA 3R fabric weather shield, 6" dia. x 7"H, fits Honeywell ML6984/7984, JCI VA-4233
KOV-2	NEMA 3R fabric weather shield, 8" dia. x 10"H, fits Honeywell ML6420/7420/6425/7425 and Belimo NV/NVF
KOV-3	NEMA 3R fabric weather shield, 10" dia. x 10"H, fits Honeywell ML6421/7421
KOV-4	NEMA 3R fabric weather shield, 14" dia. x 12"H, fits Honeywell Q5022 linkage with dual actuators



RECOMMENDED PRESSURE DROPS FOR STEAM

Refer to specific valve data for maximum allowable pressure drops and close-off ratings.

Two-position Zone Valves and Direct Radiator Valves

Use a minimum of 10% of inlet pressure (psig).

Proportional Control Valves

Low pressure (15 psig or less): ΔP of 80% of gauge inlet pressure.

When C_v required is between two valve sizes and closer to the smaller valve size, resize for C_v using 42% of the absolute inlet pressure as pressure drop. Use the valve that is larger than the calculated C_v .

For steam pressures greater than 15 psig: 42% of the absolute inlet pressure.

When C_v required is between two valve sizes, select the larger size.

Note: Do not size steam valves on higher system pressures using a pressure drop greater than 42% of the absolute inlet pressure.

C_v (FLOW COEFFICIENT) DETERMINATION

The Steam Valve Capacity Table on the following page is based on the following formula:

$$C_v = \frac{QK}{3\sqrt{\Delta P \times P_2}}$$

Where: C_v = Coefficient of flow

Q = lb per hour of steam

ΔP = Differential pressure in psig (pressure drop)

P_2 = Outlet pressure in psia (absolute)
psig + 14.7 = psia (absolute)

K = $1 + (0.0007 \times ^\circ\text{F super-heat})$

Note: K normally is 1 ($K = 1$ for saturated steam).

Other forms of the formula are:

$$Q = \frac{3C_v\sqrt{\Delta P \times P_2}}{K}$$

Note: K normally is 1.

$$\Delta P = \left(\frac{QK}{3C_v} \right)^2 \times \frac{1}{P_2}$$

Note: K normally is 1.

$$P_2 = \left(\frac{QK}{3C_v} \right)^2 \times \frac{1}{\Delta P}$$

Note: K normally is 1 ($K = 1$ for saturated steam).

These formulas can be used to calculate one of the quantities if the others are known.

See next page for Steam Valve Capacity Table

USEFUL STEAM INFORMATION

1 Boiler hp = 34.5 lb/hr

EDR

(equivalent direct radiation) = 240 BTU/hr per FT^2

1 Therm = 100,000 BTU

To convert BTU/hr to lb/hr of steam, divide BTU/hr by the latent heat of vaporization (h_{fg}) at the corresponding steam pressure.

Example:

100,000 BTU/hr = 105 lb/hr of 5 psig steam

$$\left(\frac{100,000 \text{ BTU/hr}}{954} \right) = 105 \text{ lb/hr}$$

STEAM DATA

psig (kPa)	Temperature $^\circ\text{F}$ ($^\circ\text{C}$)	Latent Heat (h_{fg})
0 (0)	212 (100)	970
5 (34)	237 (114)	954
15 (103)	250 (121)	945
50 (345)	298 (148)	912
100 (689)	338 (170)	880



CONTROL VALVES

STEAM VALVE CAPACITY TABLE

STEAM CAPACITY IN POUNDS PER HOUR (based on saturated steam)

Inlet Pressure psig	2#		5#		10#		15#		20#		25#		40#		50#		100#	
	0.2*	1.6	0.5*	4	1*	8	1.5*	12	2*	14	2.5*	16	4*	23	5*	27	10*	48
Cv																		
0.4	2.2	5.9	3.7	9.5	5.9	13.9	7.8	17.5	9.7	20.4	11.6	23.4	17.1	32.4	20.7	38.3	38.8	68
0.99	5.4	14.6	9.2	23.5	14.5	34.3	19.3	43.3	24	50.6	28.6	57.8	42.3	80.2	51.3	94.8	96.1	168
1.3	7.1	19.2	12.1	31	19	45.1	25.4	56.8	31.5	66.4	37.6	75.9	55.5	104.3	67.4	124.4	126.2	221
1.8	9.8	27	18.7	43	26.3	62.4	35.1	78.7	43.7	91.9	52.1	105.2	76.9	145.8	93.3	172.3	174.7	306
2.5	13.6	37	23	59	37	87	49	109	61	128	72	146	107	203	130	239	242	424
3.3	18	49	31	79	48	114	64	144	80	169	95	193	141	267	171	316	320	560
3.6	19.6	53	34	86	53	125	70	157	87	184	104	210	154	292	187	345	349	611
4.0	22	59	37	95	58	139	78	175	97	204	116	234	171	324	207	383	388	679
5	27	74	47	119	73	173	98	219	121	255	145	292	214	405	259	479	485	848
6	33	89	56	143	88	208	117	262	146	306	174	351	256	486	311	574	582	1018
7.5	41	111	70	178	110	260	146	328	182	383	217	438	320	608	389	718	728	1273
9.0	49	133	84	214	131	312	176	393	218	460	260	526	385	729	466	861	874	1528
10.5	57	155	98	250	153	364	205	459	255	536	304	613	449	851	544	1005	1019	1782
11	60	162	102	262	161	381	215	481	267	562	318	643	470	891	570	1053	1068	1867
15	82	221	139	357	219	520	293	656	304	766	434	876	641	1215	777	1436	1456	2546
17.4	95	257	162	414	254	603	340	761	422	889	503	1016	743	1409	902	1665	1689	2954
25	136	369	232	594	365	867	488	1093	607	1277	723	1460	1068	2025	1296	2393	2427	4244
35.8	195	528	333	851	523	1241	699	1565	867	1828	1036	2091	1529	2900	1856	3427	3475	6077
40	218	590	372	951	584	1387	780	1749	970	2043	1157	2337	1709	3240	2073	3829	3883	6790
45	245	664	418	1070	657	1560	878	1967	1092	2298	1302	2629	1923	3645	2332	4307	4368	7639
56	305	826	521	1331	818	1942	1093	2448	1359	2860	1620	3271	2392	4536	2903	5360	5436	9506
65	354	958	604	1545	949	2254	1268	2842	1577	3320	1881	3797	2777	5265	3369	6221	6310	11034
75	409	1106	697	1783	1095	2601	1463	3279	1820	3830	2170	4381	3204	6075	3887	7179	7280	12731
85	463	1253	790	2021	1241	2947	1658	3716	2062	4341	2459	4966	3631	6885	4406	8136	8251	14429
100	545	1475	930	2377	1460	3468	1951	4372	2426	5107	2893	5842	4272	8101	5183	9571	9707	16975
115	627	1696	1069	2734	1680	3988	2244	5028	2790	5873	3327	6718	4913	9316	5961	11007	11163	19521
145	790	2138	1348	3447	2118	5028	2829	6340	3518	7405	4195	8471	6195	11746	7516	13878	14075	24613
170	926	2507	1580	4042	2483	5895	3317	7433	4124	8682	4918	9931	7263	13771	8811	16271	16502	28857
200	1090	2949	1859	4755	2921	6935	3902	8744	4852	10214	5786	11684	8544	16201	10366	19143	19414	33950
235	1281	3465	2184	5587	3432	8149	4585	10275	5701	12002	6799	13729	10040	19036	12180	22493	22812	39891
275	1499	4055	2556	6538	4016	9536	5366	12024	6672	14044	7956	16065	11749	22277	14254	26321	26695	46681
350	1907	5161	3253	8321	5112	12136	6829	15303	8491	17875	10126	20447	14953	28352	18141	33500	33975	59412
425	2316	6267	3950	10104	6207	14737	8292	18582	10311	21705	12296	24828	18157	34427	22028	40678	41256	72143
440	2398	6488	4090	10461	6426	15257	8585	19238	10675	22471	12730	25704	18798	35642	22806	42114	42712	74689

1 MBH equals 1000 BTU/hr 1000 BTU/hr is approximately 1#/hr * For two-position control