

Cast Iron Globe Valves
SDF/STF Series

SDF/STF Series Cast Iron Globe Valves provide excellent controllability on hot water, chilled water, and steam control applications. Configured with a wide variety of factory-mounted electric and pneumatic actuator options, SDF/STF series valves are available in two-way and three-way body styles from 2-1/2" to 6" (DIN 63 to 150).

These valves are especially suited to steam applications, and any control application operating at high pressure differentials.



Figure 1: SDF Series Valve shown with VAL-SRS Actuator

Technical Specifications

Product		SDF/STF Series Cast Iron Globe Valves
Service		Hot Water, Chilled Water, Glycol Solutions, for HVAC Systems
Valve Stroke		3/4 in. (19 mm) for 2-1/2 and 3 in. Valves (DN65 and DN80) 1-1/2 in. (38 mm) for 4 to 6 in. Valves (DN100 to DN150)
Valve Body Rating		ANSI Class 125
Valve Assembly	Steam	SDF: 38 psig (262 kPa) Saturated Steam at 284°F (140°C) STF: 50 psig (345 kPa) Saturated Steam at 284°F (140°C)
Maximum Allowable Pressure/Temperature	Water	200 psig (1379 kPa) Up to 150°F (66°C), Decreasing to 125 psig (862 kPa) at 450°F (232°C)
Leakage		0.01% of Maximum Flow per ANSI/FCI 70-2, Class 4
Inherent Flow Characteristics	SDF	Equal Percentage: N.O./PDTC and N.C./PDTO Valves Linear: Three-Way Mixing Valves
	STF	Linear
Rangeability		>100:1 for All Sizes
Maximum Recommended Operating Pressure Drop		SDF: 25 psig (172 kPa) STF: 50 psig (345 kPa)
Materials	Body	Cast Iron (ASTM 126A Class B)
	Bonnet	Cast Iron
	Stem	Stainless Steel (ASTM A582 Type 303)
	Plug & Seat	SDF: Bronze STF: Stainless Steel
	Packing	SDF: EPDM O-ring STF: Teflon V-ring/EPDM O-ring

All statements, technical information and recommendations in this bulletin are nominal and conform to generally acceptable industry standards. Consult Bray Controls—Commercial Division for recommendations specific to your application.

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SPECIFICATIONS AND PART NUMBERS

Action	Flow Rate		Nominal Line Size		Stroke		2-Way Equal %	3-Way Linear
	Cv	kvs	in.	mm	in.	mm	Normal Duty Packing	
Normally Closed	63	54	2-1/2	65	3/4	20	S_F2-S063C	S_F3-S063C
	100	85	3	80	3/4	20	S_F2-S100C	S_F3-S100C
	160	137	4	100	1-1/2	40	S_F2-S160C	S_F3-S160C
	250	214	5	125	1-1/2	40	S_F2-S250C	S_F3-S250C
	400	340	6	150	1-1/2	40	S_F2-S400C	S_F3-S400C
Normally Open	63	54	2-1/2	65	3/4	20	S_F2-S063N	S_F3-S063N
	100	85	3	80	3/4	20	S_F2-S100N	S_F3-S100N
	160	137	4	100	1-1/2	40	S_F2-S160N	S_F3-S160N
	250	214	5	125	1-1/2	40	S_F2-S250N	S_F3-S250N
	400	340	6	150	1-1/2	40	S_F2-S400N	S_F3-S400N

D = Standard Trim / T = Stainless Steel Trim

OPERATION

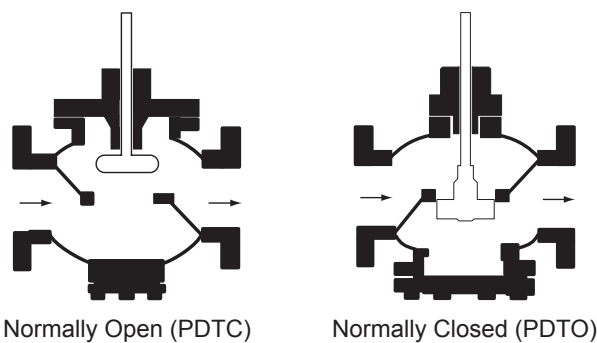


Figure 2: Cutaway View, 2-Way

Figure 2 shows the normally open valve in the open or full flow position and the normally closed valve in the closed or zero flow position. The actuator spring provides the necessary force to hold the stem in the raised or normal position.

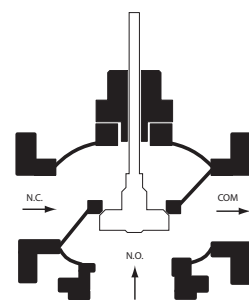
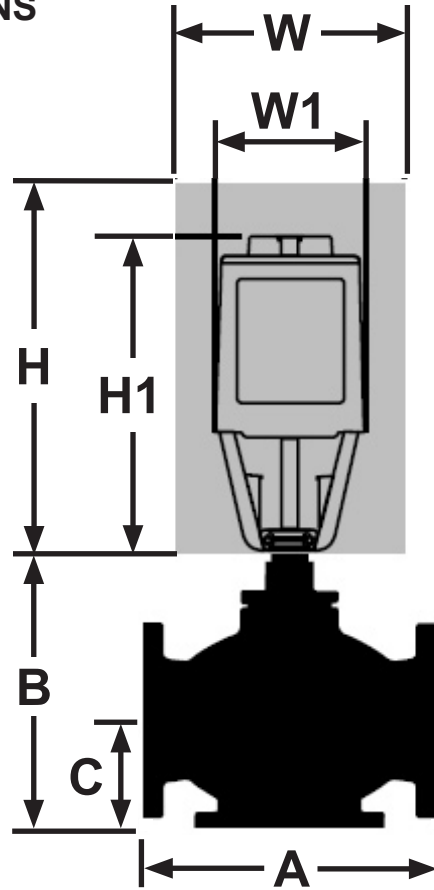


Figure 3: Cutaway View, 3-Way

In the event of power failure, a spring return actuator returns the valve to its normal position. Non-spring return actuators will hold the last commanded position. See the Technical Instructions of the various actuators for additional information

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ASSEMBLY DIMENSIONS



Actuator	Actual Height of Actuator H1	Service Height H	Actual Width or Diameter of Actuator W1	Service Width W
VP800	14-1/8 (359)	26 (660)	8-3/4 (222) diameter	21 (533)
VP1200	17-7/8 (359)	30 (762)	15-1/8 (384) diameter	27 (686)
VAL-SRS	14-3/4 375)	22-3/4 (578)	7 (178) Width x 8-15/16 (226) Depth	25 (635)
NR2224	16 (406)	19-3/4 (500)	5 (127) Width x 5 (127) Depth	14-1/2 (360)
BIB	16 (406)	19-3/4 (502)	5 (127) Width x 5 (127) Depth	14-1/2 (360)

Dimensions in inches (millimeters).

VALVE DIMENSIONS

Valve Action	Nominal Valve Size in. (mm)	2-Way Dimensions in. (mm)			Weight lb. (kg)	3-Way Dimensions in. (mm)			Weight lb. (kg)
		A	B	C		A	B	C	
Normally Closed	2-1/2 (65)	10-7/8 (276)	10-5/8 (269)	4-7/8 (125)	58 (26)	10-7/8 (276)	9-3/8 (239)	3-3/4 (95)	104 (47)
	3 (80)	11-3/4 (299)	11-15/16 (303)	5-5/8 (142)	75 (34)	11-3/4 (299)	10-3/4 (272)	4-3/8 (111)	114 (52)
	4 (100)	13-7/8 (352)	13-15/16 (354)	6-5/8 (168)	123 (56)	13-7/8 (352)	12-1/2 (318)	5-1/8 (132)	146 (66)
	5 (125)	15-3/4 (400)	15-1/4 (388)	7-1/2 (185)	153 (69)	15-3/4 (400)	13-3/4 (349)	5-3/4 (146)	170 (77)
	6 (150)	17-3/4 (451)	17-1/16 (433)	8-3/16 (207)	209 (95)	17-3/4 (451)	15-1/2 (393)	6-5/8 (167)	199 (90)
Normally Open	2-1/2 (65)	10-7/8 (276)	11 (281)	4-7/8 (123)	60 (27)				
	3 (80)	11-3/4 (299)	12-1/4 (312)	5-5/16 (135)	76 (34)				
	4 (100)	13-7/8 (352)	13-9/16 (345)	6-5/16 (160)	124 (56)				
	5 (125)	15-3/4 (400)	15-3/16 (385)	7 (177)	155 (70)				
	6 (150)	17-3/4 (451)	16-3/4 (426)	7-7/8 (200)	212 (96)				

INSTALLATION

- Install the valve so that the flow follows the direction of the arrow indicated on the valve body identification tag.

For best performance, install the valve assembly with the actuator above the valve body. The valve and actuator can be installed in any position between vertical and horizontal. Installing the valve assembly below horizontal or upside down is NOT recommended.

- Allow sufficient space for servicing the valve and actuator. Refer to the table above for valve body dimensions. Refer to the table on page 3 for dimensions of the service envelope recommended around the actuator.

NOTE: Instructions for field mounting an actuator, spring adjustments, wiring diagrams, and start-up are covered in the Technical Instructions and Installation Instructions for each actuator.

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Features & Benefits

CLOSE-OFF PRESSURES FOR PNEUMATIC ACTUATORS

Action	Valve Size in. (mm)	8 to 13 PSI (55 to 90 kPa) Spring Range			
		VP800 (8") 0 PSI (0 kPa)		VP1200 (12") 0 PSI (0 kPa)	
Normally Closed (Upper Port)	2-1/2 (65)	36 (248)		114 (786)	
	3 (80)	23 (159)		74 (510)	
	4 (100)	—		46 (317)	
	5 (125)	—		29 (200)	
	6 (150)	—		20 (138)	
Action	Valve Size in. (mm)	3 to 8 PSI (21 to 55 kPa) Spring Range			
		VP800 (8") 20 PSI (138 kPa) 30 PSI (207 kPa)		VP1200 (12") 20 PSI (138 kPa) 30 PSI (207 kPa)	
Normally Open (Lower Port)	2-1/2 (65)	54 (372)	100 (689)	165 (1138)	304 (2096)
	3 (80)	25 (172)	66 (455)	108 (745)	200 (1379)
	4 (100)	—	—	70 (483)	129 (889)
	5 (125)	—	—	48 (331)	82 (565)
	6 (150)	—	—	23 (159)	57 (393)

CLOSE-OFF PRESSURES FOR ELECTRIC ACTUATORS

Action	Valve Size in. (mm)	VAL-SRS		NR2224		BIB	
		PSI	(kPa)	PSI	(kPa)	PSI	(kPa)
Normally Closed (Upper Port)	2-1/2 (65)	97	(669)	50	(345)	65	(448)
	3 (80)	63	(434)	33	(228)	50	(345)
	4 (100)	39	(269)	—	—	—	—
	5 (125)	25	(172)	—	—	—	—
	6 (150)	17	(117)	—	—	—	—
Normally Open (Lower Port)	2-1/2 (65)	153	(1055)	50	(345)	65	(448)
	3 (80)	101	(696)	33	(228)	50	(345)
	4 (100)	65	(448)	—	—	—	—
	5 (125)	42	(290)	—	—	—	—
	6 (150)	29	(200)	—	—	—	—

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SERVICE KITS

Valve packing kit

Normal duty packing 599-08020

Steam packing 599-08021

Stem retainer clip:

2-1/2 inch and 3 inch valves 599-00305

4-inch, 5-inch, and 6-inch valves 599-00306

CAST IRON VALVE BODY RATINGS

Temperature		Pressure psig (kPa)	
F°	C°	ANSI Class 125	
-20 to 150	-30 to 66	200	(1387)
200	93	190	(1310)
250	121	175	(1206)
300	149	165	(1137)
400	204	140	(965)
450	232	125	(861)

All statements, technical information, and recommendations in this bulletin are for general use only. Consult Bray representatives or factory for the specific requirements and material selection for your intended application. The right to change or modify product design or product without prior notice is reserved.



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