

Fisher™ NotchFlo™ DST

Control Valve



General Application

Fisher NotchFlo DST control valves offer excellent control of liquid services with high pressure drops and entrained particulate. The dirty service anti-cavitation trims (Figure 1) feature multi-stage protection against damaging effects of cavitation and erosive solids. Fisher NotchFlo DST offers trim selections for CL600 3-stage, CL900/1500 4-stage and CL1500 or CL2500 6-stage.

Features

- **Long Trim Life** — NotchFlo DST control valves feature a protected seat design whereby the shutoff function is separate from the throttling areas of the trim.
- **Class V Shutoff** — Use of hardened metal seats provides tight shutoff to minimize seat erosion.
- **High Pressure Drops** — Rugged cage guiding of the plug, combined with a staged pressure drop, enables the NotchFlo DST control valve to be effective in a wide range of allowable high pressure drop applications. It can be operated by either spring and diaphragm or piston actuators, depending on plug design (balanced or unbalanced) and application requirements.
- **Sour Service Capability** — Materials are available for applications handling sour fluids. All references in this document are for NACE MR0175-2002 and MR0103 unless otherwise noted. Contact your [Emerson sales office](#) for information on NACE MR0175/ISO 15156.
- **Availability** — NotchFlo DST control valves are available in both globe and angle valve body designs.

Principle of Operation

NotchFlo DST control valves utilize a high resistance, multi-stage, axial flow path (or passage) where fluid flow is parallel to the axis of the plug and cage (see Figure 1).

Pressure reduction occurs throughout the length of the plug; thus individual stages are not exposed to the full pressure differential. Therefore, trim life is enhanced.

NotchFlo DST trim utilizes a series of notched flow restrictions and expansions to control the pressure drop of the fluid. The amount of pressure drop per stage is controlled to prevent cavitation problems and minimize erosion issues on a properly sized valve.



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Fisher NotchFlo DST Control Valve

Flow passage configuration provided by the multi-stage plug and cage design make CL600 3-stage, CL900 and CL1500 4-stage and CL1500 and CL2500 6-stage valves well-suited for applications involving fluids with entrained particles. This is a potentially serious problem for other anti-cavitation valve designs which are subject to clogged flow passages.

Design of the trim allows for high rangeability.

Characteristics

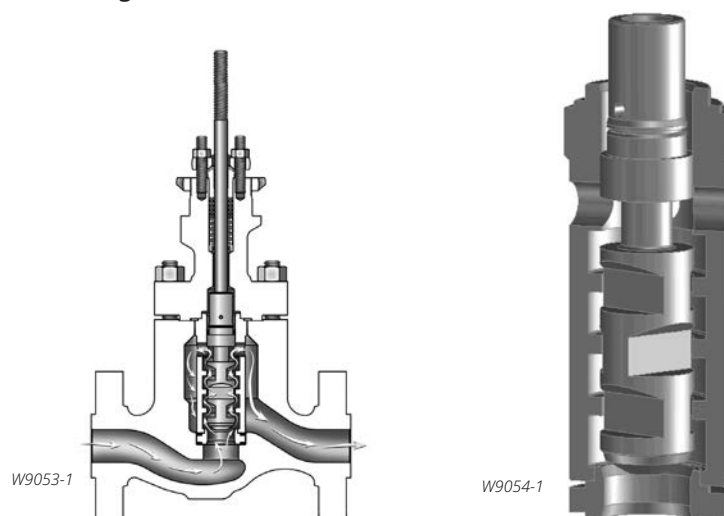
The NotchFlo DST control valve has a linear flow characteristic.

To maximize seat life, the trim is designed not to have significant flow for the first 15% of travel.

The multi-stage clearance flow design helps prevent high pressure drops in the seating area during throttling at low capacity. This design feature extends the shutoff capability significantly, while enhancing throttling control capability at low travels.

Table 1. Specifications

Valve Sizes and End Connection Styles	Flow Direction
CL600 3-Stage: See Table 2 CL900 and CL1500 4-Stage: See Table 3 CL1500 6-Stage: See Table 4 CL2500 6-Stage: See Table 5	Flow up
Shutoff Classification per ANSI/FCI 70-2 and IEC 60534-4	Port Diameter, Travel, Stem, Yoke Boss Diameters, Unbalance Area
Class V: 0.0005 mL/min/psid/in. of water at service pressure drop	See Tables 28, 29, 30 and 31
Maximum Inlet Pressures and Temperatures ⁽¹⁾	Minimum Seating Force
Consistent with applicable CL600, CL900, CL1500 and CL2500 pressure/temperature ratings according to ASME B16.34 unless limited by individual temperature limits shown in Tables 8, 9, 10, 11, 12 or 13	Use Class V seat load requirements (refer to Fisher Catalog 14 or contact your Emerson sales office).
Maximum Pressure Drop ⁽¹⁾	Noise Level
See Table 6	Use Fisher liquid noise prediction methods available in the Fisher sizing program.
Construction Materials	Bonnet Style
Valve Body and Bonnet, Plug, Seat Ring and Cage: See Tables 8, 9, 10 and 11 Other Parts: See Table 12	Plain Bonnet: See Figures 2, 3, 4, 6, 7 and 8
Temperature Capabilities ⁽¹⁾	Packing Arrangements
3-Stage, 4-Stage and 6-Stage: See Tables 8, 9, 10, 11, 12 and 13 Valve Body/Trim Combinations: See Tables 8, 9, 10 and 11 Bolting for Sour Applications: See Table 13 (CL600 – 3-Stage only). For all other valve pressure ratings, contact your Emerson sales office . All Other Parts: See Table 12	Standard Material: Single PTFE V-ring Optional Material: Double PTFE V-ring, single graphite ribbon filament and ENVIRO-SEAL packing systems. See Bulletin 59.1:061, ENVIRO-SEAL and HIGH-SEAL Packing System for Sliding-Stem Valves (Live-Loaded) (D101633X012).
Flow Coefficients	Approximate Weights
See Fisher Catalog 12	See Table 14
Flow Characteristic	Dimensions
Linear	Globe Valve CL300, CL600: See Tables 15 and 16 Globe Valve CL900, CL1500 4-Stage: See Tables 17 and 18 Globe Valve CL1500 6-Stage: See Table 24 Globe Valve CL2500 6-Stage: See Table 25 Angle Valve CL300, CL600: See Table 19 Angle (Forged) Valve CL900 and CL1500: See Tables 20 and 21 Angle (Cast) Valve CL900, CL1500: See Tables 22 and 23 Angle (Forged) Valve CL2500: See Table 26 Angle (Cast) Valve CL2500: See Table 27
1. The pressure/temperature limits in this bulletin and any applicable standard or code limitation for valve should not be exceeded.	

Figure 1. NotchFlo DST 4-Stage Trim

Table 2. CL300 and CL600 3-Stage Available Constructions

VALVE STYLE	VALVE BODY MATERIAL	VALVE SIZE, NPS	END CONNECTION STYLE ⁽¹⁾			
			Screwed	RF or RTJ Flanged	Butt Weld	Socket Weld
Globe	WCC, LCC ⁽²⁾ , WC9, CF8M, CF8C, CD3MN	1 and 2	X	X	X	X
		3, 4, 6 and 8	---	X	X	---
Angle	SA-105, F22, F316, F347, S31803	1 and 2	X	X	X	X
		3, 4, 6 and 8	---	X	X	---

X = Available Construction

1. End connection style abbreviations: RF - Raised Face, RTJ - Ring Type Joint.

2. LCC available with RF and RTJ flanged constructions only. Contact your [Emerson sales office](#) for other end connections.

Table 3. CL900 and CL1500, 4-Stage Available Constructions

VALVE STYLE	VALVE BODY MATERIAL	VALVE SIZE, NPS	END CONNECTION STYLE ⁽¹⁾		
			RF or RTJ Flanged	Butt Weld	Socket Weld
Globe	WCC, LCC ⁽²⁾ , WC9, CF8M, CF8C, CD3MN	1, 1-1/2 and 2	X	X	X
		3 and 4	X	X	---
Angle	WCC, WC9, CF8M, CF8C, CD3MN	1, 1-1/2 and 2	X	X	X
		3, 4, 6 and 8	X	X	---
	SA-105, F22, F316, F347, S31803	1, 1-1/2 and 2	X	X	X
		3, 4, 6 and 8	X	X	---

X = Available Construction

1. End connection style abbreviations: RF - Raised Face, RTJ - Ring Type Joint.

2. LCC available with RF and RTJ flanged constructions only. Contact your [Emerson sales office](#) for other end connections.

Table 4. CL1500 6-Stage Available Constructions

VALVE STYLE	VALVE BODY MATERIAL	VALVE SIZE, NPS	VALVE BODY MATERIAL AND END CONNECTION STYLE ⁽¹⁾		
			RF or RTJ Flanged	Butt Weld	Socket Weld
Globe	WCC, LCC, WC9, CF8M, CF8C, CD3MN	1	X	---	X
		2, 3, 4 and 6	X	X	---

X = Available Construction
 1. End connection style abbreviations: RF - Raised Face, RTJ - Ring Type Joint.

Table 5. CL2500 6-Stage Available Constructions

VALVE STYLE	VALVE BODY MATERIAL	VALVE SIZE, NPS	VALVE BODY MATERIAL AND END CONNECTION STYLE ⁽¹⁾		
			RF or RTJ Flanged	Butt Weld	Socket Weld
Angle	SA-105, F22, F316, F347, S31803	1	X	---	X
		2, 3, 4 and 6	X	X	---
	WCC, WC9, CF8M, CF8C	1, 2, 3, 4 and 6	X	X	---
	WCC, WC9, CF8M, CF8C, CD3MN	1-1/2	X	---	---
Globe	WCC, WC9, CF8M, CF8C, CF3M	1, 2, 3, 4 and 6	X	---	---

X = Available Construction
 1. End connection style abbreviations: RF - Raised Face, RTJ - Ring Type Joint.

Table 6. Application Guidelines for NotchFlo DST Trim

VALVE PRESSURE RATING	TRIM TYPE	VALVE SIZE, NPS	bar	psid
CL600	3-Stage, Level C	All	<103	<1500
CL900 and CL1500	4-Stage, Level A		<128	<1850
	4-Stage, Level B		<130	<1890
	4-Stage, Level C		<179	<2600
CL1500	6-Stage, Level A		<238	<3450
	6-Stage, Level B		<241	<3490
	6-Stage, Level C		<258	<3750
	6-Stage, Level C+ ⁽¹⁾	NPS 1	<258	<3750
CL2500	6-Stage, Level A	All	<238	<3450
	6-Stage, Level B		<241	<3490
	6-Stage, Level C		<289	<4200
	6-Stage, Level C+ ⁽¹⁾	NPS 1	<289	<4200

1. Level C+ has larger Cv than Level C.

Table 7. Typical Applications

POWER/COGENERATION	Boiler feed pump recirculation
	Desuperheater spray water control
	Feedwater start-up regulators
	Condensate pump recirculation
	Superheater bypass
OIL AND GAS PRODUCTION	Water injection pump recirculation
	Produced/waste water injection well control
	Separator letdown
	Chemical injection pump bypass
NATURAL GAS PROCESSING	Contactor (rich amine) letdown
	Rich and lean amine pump spillback
REFINING	Contactor letdown
	Rich and lean amine pump spillback
	Pump spillback/recirculation
	Various high pressure and low pressure separator letdown

Trim Selection Guidelines

Refer to the following descriptions and Tables 8, 9, 10 and 11 as guidelines for the selection of appropriate trims.

- **Trim 277** — Trim 277 is the standard trim for carbon steel and alloy steel valve bodies and recommended for general and severe service applications up to 316 °C / 600 °F. See Tables 8, 9, 10 and 11 for operating temperature ranges per valve size. Typical applications for Trim 277 include services in boiler feedwater, water, non-sour hydrocarbons and other non-sour liquids.
- **Trim 279** — Trim 279 should be used for sour liquid service in carbon steel, alloy steel and stainless steel valve bodies. Trim 279 complies with the metallurgical requirements of NACE MR0103 and MR0175-2002. Trim 279 has a reduced port option, allowing for controllability at lower travels. Trim 279 can be used up to 316 °C / 600 °F. See Tables 8, 9, 10 and 11 for operating temperature ranges per valve size.
- **Trim 282** — Trim 282 should be used in stainless steel valve bodies only. Trim 282 complies with the metallurgical requirements of NACE MR0103 and MR0175-2002. Trim 282 can be used up to 316 °C / 600 °F. See Tables 8, 9, 10 or 11 for operating temperature ranges per valve size.
- **Trim 283** — Trim 283 should be used in stainless steel valve bodies only. Trim 283 complies with the metallurgical requirements of NACE MR0103 and MR0175-2002. Trim 283 can be used up to 316 °C / 600 °F. See Tables 8, 9, 10 and 11 for operating temperature ranges per valve size.
- **Trim 284** — Trim 284 should be used in duplex stainless steel valve bodies only. Trim 284 can be used up to 316 °C / 600 °F. See Tables 8, 9, 10 and 11 for operating temperature ranges.
- **Trim 285** — Trim 285 is the standard trim for stainless steel valve bodies and is optional for use in carbon steel and alloy steel valve bodies. This trim is recommended for general and severe service applications up to 316 °C / 600 °F. Trim 285 can be used in sour or moderately corrosive services and complies with the metallurgical requirements of NACE MR01752002. See Tables 8, 9, 10 and 11 for operating temperature ranges per valve size.
- **Trim 286** — Trim 286 is available for use in severe service applications, including high pressure separators. Trim 286 can be used in highly corrosive services and complies with the metallurgical requirements of NACE MR0103 and MR0175-2002. See Tables 8, 9, 10 and 11 for operating temperature ranges per valve size.

Table 8. CL600 3-Stage Metal Trim Material Combinations and Valve Body/Trim Temperature Capabilities⁽¹⁾

TRIM DESIGNATION	VALVE PLUG	VALVE PLUG STEM	CAGE	SEAT RING	VALVE BODY MATERIAL	VALVE SIZE	OPERATING TEMPERATURE	
						NPS	°C	°F
277	S42000 HT	S20910	S17400 H900 (NPS 1 TO 4) S17400 H1075 (NPS 6 TO 8)	S42000 HT	SA105, WCC, F22 WC9, LCC	1, 2, 3, 4, 6 and 8	-29 to 316	-20 to 600
					CF8M, S31600	1	-29 to 149	-20 to 300
						2	-29 to 121	-20 to 250
						3 and 4	-29 to 93	-20 to 200
279 ⁽²⁾	R30006 or R30016	S20910	R30006 or R30016	R30006 or R30016	S31600, CF8M, S34700, CF8C	1	-29 to 232	-20 to 450
						2	-29 to 177	-20 to 350
						3 and 4	-29 to 121	-20 to 250
					SA105, WCC, LF2, LCC	1 and 2	-29 to 316	-20 to 600
						3	-29 to 260	-20 to 500
						4	-29 to 204	-20 to 400
					CD3MN (Duplex SST)	1, 2, 3 and 4	-29 to 316	-20 to 600
282 ⁽²⁾	R30016 (NPS 1) S31600/ CoCr-A (NPS 2 TO 8)	S20910	S20910	S31600/ CoCr-A	S31600, CF8M	1, 2, 3, 4 and 6	-29 to 316	-20 to 600
						8	-29 to 232	-20 to 450
283 ⁽²⁾	R30016 (NPS 1) S34700/ CoCr-A (NPS 2 TO 8)	S20910	S20910	S34700/ CoCr-A	S34700, CF8C	1, 2, 3, 4 and 6	-29 to 316	-20 to 600
						8	-29 to 232	-20 to 450
284	R30016 (NPS 1) S31803/ CoCr-A (NPS 2 TO 8)	S20910	S32760	S31803/ CoCr-A	CD3MN (Duplex SST)	1, 2, 3, 4, 6 and 8	-29 to 316	-20 to 600
285	S20910 Annealed	S20910	S17400 H1150 Double HT	S31600/ CoCr-A	SA105, WCC, LF2, LCC	1, 2, 3, 4, 6 and 8	-29 to 316	-20 to 600
					S31600, CF8M	1	-29 to 204	-20 to 400
						2	-29 to 177	-20 to 350
						3 and 4	-29 to 121	-20 to 250
						6	-29 to 177	-20 to 350
						8	-29 to 121	-20 to 250
286	N07718	S20910	S32550	R30006 or R30016	SA105, WCC, LF2, LCC, F22, WC9	1	(3)	(3)
				316 SST/ CoCr-A		2, 3, 4, 6 and 8	(3)	(3)

1. For metal trim parts only.

2. Contact your [Emerson sales office](#) for information on NACE MR0175/ISO 15156.

3. Contact your Emerson sales office for operating temperature ranges.

Table 9. CL900/CL1500 4-Stage Metal Trim Material Combinations and Temperature Capabilities⁽¹⁾

TRIM DESIGNATION	VALVE PLUG	VALVE PLUG STEM	CAGE	SEAT RING	VALVE BODY MATERIAL	VALVE SIZE	OPERATING TEMPERATURE	
						NPS	°C	°F
277	S42000 HT	S20910	S17400 H900 (NPS 1 TO 4) S17400 H1075 (NPS 6 TO 8)	S42000 HT	SA105, WCC, F22 WC9, LCC	1, 1-1/2, 2, 3, 4, 6 and 8	-29 to 316	-20 to 600
					CF8M, S31600	1	-29 to 177	-20 to 350
						1-1/2	-29 to 149	-20 to 300
						2	-29 to 121	-20 to 250
						3	-29 to 93	-20 to 200
						4	-29 to 149	-20 to 300
279 ⁽²⁾	R30006 or R30016	S20910	R30006 or R30016	R30006 or R30016	S31600, CF8M	1	-29 to 260	-20 to 500
						1-1/2	-29 to 232	-20 to 450
						2	-29 to 177	-20 to 350
						3	-29 to 121	-20 to 250
						4	-29 to 205	-20 to 400
					S34700, CF8C	1, 1-1/2	-29 to 232	-20 to 450
						2	-29 to 177	-20 to 350
						3	-29 to 121	-20 to 250
						4	-29 to 205	-20 to 400
					SA105, WCC, LF2, LCC	1, 1-1/2 and 2	-29 to 316	-20 to 600
						3	-29 to 232	-20 to 450
						4	-29 to 316	-20 to 600
					CD3MN (Duplex SST)	1, 1-1/2, 2, 3 and 4	-29 to 316	-20 to 600
282 ⁽²⁾	R30016 (NPS 1) S31600/CoCr-A (NPS 1-1/2 to 8)	S20910	S20910	S31600/CoCr-A	S31600, CF8M	1, 1-1/2, 2, 3 and 4	-29 to 316	-20 to 600
						6 and 8	-46 to 316	-50 to 600
283 ⁽²⁾	R30016 (NPS 1) S34700/CoCr-A (NPS 1-1/2 to 8)	S20910	S20910	S34700/CoCr-A	S34700, CF8C	1, 1-1/2, 2, 3 and 4	-29 to 316	-20 to 600
						6 and 8	-46 to 316	-50 to 600

-continued -

Table 9. CL900/CL1500 4-Stage Metal Trim Material Combinations and Temperature Capabilities⁽¹⁾ (continued)

TRIM DESIGNATION	VALVE PLUG	VALVE PLUG STEM	CAGE	SEAT RING	VALVE BODY MATERIAL	VALVE SIZE	OPERATING TEMPERATURE	
						NPS	°C	°F
284	R30016 (NPS 1) S31803/CoCr-A (NPS 1-1/2 to 8)	S20910	S32760	S31803/CoCr-A	CD3MN (Duplex SST)	1, 1-1/2, 2, 3, 4, 6 and 8	-29 to 316	-20 to 600
285	S20910 Annealed	S20910	S17400 H1150 Double HT	S31600/CoCr-A	SA105, WCC, LF2, LCC	1, 1-1/2, 2, 3, 4, 6 and 8	-29 to 316	-20 to 600
					S31600, CF8M	1	-29 to 232	-20 to 450
						1-1/2	-29 to 205	-20 to 400
						2	-29 to 177	-20 to 350
						3	-29 to 121	-20 to 250
						4	-29 to 177	-20 to 350
						6	-29 to 149	-20 to 300
8	-29 to 121	-20 to 250						
286	N07718	S20910	S32550	R30006 or R30016	SA105, WCC, LF2, LCC, F22, WC9	1 and 1-1/2	-29 to 316	-20 to 600
				316 SST/CoCr-A		2, 3, 4, 6 and 8	-29 to 316	-20 to 600
1. For metal trim parts only. 2. Contact your Emerson sales office for information on NACE MR0175/ISO 15156.								

Table 10. CL1500 6-Stage Metal Trim Material Combinations and Temperature Capabilities⁽¹⁾

TRIM DESIGNATION	VALVE PLUG	VALVE PLUG STEM	CAGE	SEAT RING	VALVE BODY MATERIAL	VALVE SIZE	OPERATING TEMPERATURE	
						NPS	°C	°F
277	S42000 HT	S20910	S17400 H1075H	S42000 HT	WCC, LCC, WC9	1, 2, 3, 4 and 6	-29 to 316	-20 to 600
					CF8M	4 and 6	-29 to 93	-20 to 200
279 ⁽²⁾	R30006 or R30016	S20910	R30006 or R30016	R30006 or R30016	WCC, LCC, CD3MN	1 and 2	-29 to 316	-20 to 600
					CF8M, CF8C	1	-29 to 177	-20 to 350
					CF8M, CF8C	2	-29 to 232	-20 to 450
					WCC, LCC	3	-29 to 260	-20 to 500
					CF8M, CF8C	3	-29 to 149	-20 to 300
					WCC, LCC, WC9	4	-29 to 232	-20 to 450
					CD3MN	3 and 4	-29 to 316	-20 to 600
282 ⁽²⁾	R30006 or R30016 (NPS 1) S31600/ CoCr-A (NPS 2 TO 6)	S20910	S20910	S31600/ CoCr-A	CF8M	1, 2, 3, 4 and 6	-29 to 316	-20 to 600
283 ⁽²⁾	R30006 or R30016 (NPS 1) S34700/ CoCr-A (NPS 2 TO 6)	S20910	S20910	S34700/ CoCr-A	CF8C	1, 2, 3, 4 and 6	-29 to 316	-20 to 600
284	R30006 or R30016 (NPS 1) S31803/ CoCr-A (NPS 2 TO 6)	S20910	S32760	S31803/ CoCr-A	CD3MN	1, 2, 3, 4 and 6	-29 to 316	-20 to 600
285	S20910 Annealed	S20910	S17400 H1150 Double HT	S31600/ CoCr-A	WCC, LCC, WC9	1, 2, 3, 4, and 6	-29 to 316	-20 to 600
					CF8M, CF8C	1	-29 to 163	-20 to 325
					CF8M, CF8C	2	-29 to 210	-20 to 410
					CF8M, CF8C	3	-29 to 135	-20 to 275
					CF8M, CF8C	4 and 6	-29 to 149	-20 to 300
286	N07718	S20910	S32550	R30006 or R30016 (NPS 1) S31600/ CoCr-A (NPS 2 TO 6)	WCC, LCC, WC9	1, 2, 3, 4 and 6	-29 to 316	-20 to 600

1. For metal trim parts only.

2. Contact your [Emerson sales office](#) for information on NACE MR0175/ISO 15156.

Table 11. CL2500 6-Stage Metal Trim Material Combinations and Temperature Capabilities⁽¹⁾

TRIM DESIGNATION	VALVE PLUG	VALVE PLUG STEM	CAGE	SEAT RING	VALVE BODY MATERIAL ⁽³⁾	VALVE SIZE	OPERATING TEMPERATURE	
						NPS	°C	°F
277	S42000 HT	S20910	S17400 H1075 HT	S42000 HT	SA105, LF2 and F22, WCC, WC9	1, 1-1/2, 2, 3, 4 and 6	-29 to 316	-20 to 600
					S31600, CF8M, CF3M	4	-29 to 93	-20 to 200
						6	-29 to 93	-20 to 200
279 ⁽²⁾	R30006 or R30016	S20910	R30006 or R30016	R30006 or R30016	S31600, S34700, CF8M, CF8C, CF3M	1	-29 to 177	-20 to 350
						1-1/2 and 2	-29 to 232	-20 to 450
						3	-29 to 149	-20 to 300
						4	-29 to 121	-20 to 250
					SA105, LF2, WCC	1, 1-1/2, 2, 3 and 4	-29 to 316	-20 to 600
					S31803 and CD3MN (Duplex SST)	1, 1-1/2, 2, 3 and 4	-29 to 316	-20 to 600
282 ⁽²⁾	S300006 (NPS 1) S31600/ CoCr-A (NPS 1-1/2 TO 6)	S20910	S20910	S31600/ CoCr-A	S31600, CF8M, CF3M	1, 1-1/2, 2, 3, 4 and 6	-29 to 316	-20 to 600
283 ⁽²⁾	S300006 (NPS 1) S31600/ CoCr-A (NPS 1-1/2 TO 6)	S20910	S20910	S34700/ CoCr-A	S34700, CF8C	1, 1-1/2, 2, 3, 4 and 6	-29 to 316	-20 to 600
284	S300006 (NPS 1) S31600/ CoCr-A (NPS 1-1/2 TO 6)	S20910	S32760	S31803/ CoCr-A	S31803 and CD3MN (Duplex SST)	1, 1-1/2, 2, 3, 4 and 6	-29 to 316	-20 to 600
285	S20910 Annealed	S20910	S17400 H1150 Double HT	S31600/ CoCr-A	SA105, LF2 and F22, WCC, WC9	1, 1-1/2, 2, 3, 4 and 6	-29 to 316	-20 to 600
					S31600, S34700, CF8M, CF8C, CF3M	1	-29 to 163	-20 to 325
						1-1/2 and 2	-29 to 210	-20 to 410
						3	-29 to 135	-20 to 275
						4 and 6	-29 to 149	-20 to 300
286	N07718	S20910	S32550	R30006 or R30016	SA105, LF2 and F22, WCC, WC9	1, 1-1/2, 2, 3, 4 and 6	-29 to 316	-20 to 600
				316 SST/ CoCr-A				

1. For metal trim parts only.

2. Contact your [Emerson sales office](#) for information on NACE MR0175/ISO 15156.

3. Forging materials for forged angle bodies, casting materials for cast globe and/or angle bodies.

Table 12. Construction Materials and Temperature Capabilities for Parts Other than Valve Body and Trim

PART		MATERIAL	TEMPERATURE CAPABILITIES	
			°C	°F
Valve plug stem		S20910 S31600	-- (4)	-- (4)
Spring-loaded valve plug seal ⁽⁶⁾	Backup ring	S41600 S34700 S31600 S31803 S41000 N07718	-29 to (4)	-20 to (4)
	Retaining ring	18-8 N07750	-- (4)	-- (4)
	Seal ring	Modified PTFE with R30003 Spring (standard) UHMWPE ⁽⁵⁾ with N10276 Spring	-73 to 316 ⁽³⁾ -73 to 93	-100 to 600 ⁽³⁾ -100 to 200
	Anti-extrusion rings	PEEK (PolyEtherEtherKetone)	-- (4)	-- (4)
Bonnet gasket (CL600)		Graphite/S31600	-- (4)	-- (4)
Bonnet gasket (CL900, CL1500 and CL2500)		N06600/Graphite	-- (4)	-- (4)
Seat ring gasket		N06600/Graphite	-- (4)	-- (4)
Cage gasket		N06600/Graphite	-- (4)	-- (4)
Valve Body-to-bonnet bolting ⁽¹⁾ See Table 13 for NACE bolting materials and temperature limits.	Studs Nuts	Steel SA193-B7 (all valve body materials) Steel SA194-2H (all valve body materials)	-29 to (4) (WCC, WC9, SA105, F22) -48 to (4) (LCC, CF8M, S31600 and S34700) -29 to 316 (CD3MN, S31803 [Duplex SST])	-20 to (4) (WCC, WC9, SA105, F22) -55 to (4) (LCC, CF8M, S31600 and S34700) -20 to 600 (CD3MN, S31803 [Duplex SST])
	Studs Nuts	Steel SA193-B7M for sour service Steel SA194-2HM for sour service	-29 to (4) (WCC and SA105) -46 to (4) (LCC)	-20 to (4) (WCC and SA105) -50 to (4) (LCC)
	Studs Nuts	S31600 SA193-B8M (strain hardened) (CF8M and S31600 valve body materials) S31600 SA194-8M (CF8M and S31600 valve body materials)	(CF8M and S31600)- - (4)	(CF8M and S31600)- - (4)
	Studs Nuts	S20910 (SA479-XM-19) ⁽²⁾ (CF8M and S31600 valve body materials) Steel SA194-7	(CF8M and S31600)- - (4)	(CF8M and S31600)- - (4)
Packing		PTFE V-ring	-40 to 232	-40 to 450
		Graphite ribbon filament (oxidizing service to 700 °F)	-- (4)	-- (4)
		Graphite ULF (non-environmental service)	-- (4)	-- (4)
Packing follower, spring or lantern ring		S31600 S34700 S31803	-- (4)	-- (4)
Packing box ring		S31600	-- (4)	-- (4)
Packing flange, studs or nuts		S31600	-- (4)	-- (4)

1. Valve body materials with which these bolting materials may be used are shown in parentheses.

2. This stud material is not listed in ASME B16.34.

3. With PEEK anti-extrusion rings in non-oxidizing service. Maximum operating temperature limited to 260 °C / 500 °F in oxidizing service.

4. These materials are not limiting factors.

5. Ultra high molecular weight polyethylene

6. Not required for NPS 1 or 1-1/2 CL900 and CL1500 4-stage valves.

Table 13. CL600 3-Stage Bolting Materials and Temperature Limits for Bolting Compliance with NACE MR0175-2002, NACE MR0175/ISO 15156 and NACE MR0103

VALVE BODY MATERIAL		BOLTING MATERIAL	TEMPERATURE CAPABILITIES	
			°C	°F
Non-exposed bolting (Standard)				
WCC, CF8M, CD3MN, SA105, S31600 and S31803	Studs	Steel SA-193-B7	-48 ⁽²⁾ to 427 (WCC, CF8M, SA105 and S31600)	-55 ⁽²⁾ to 800 (WCC, CF8M, SA105 and S31600)
	Nuts	Steel SA-194-2H	-29 to 316 (CD3MN and S31803)	-20 to 600 (CD3MN and S31803)
Exposed bolting (Optional) May require derating of valve ⁽¹⁾ when these body-to-bonnet bolting materials are used				
WCC, CF8M, CD3MN, SA105, S31600 and S31803	Studs	Steel SA-193-B7M	-48 ⁽²⁾ to 427 (WCC, CF8M, SA105 and S31600)	-55 ⁽²⁾ to 800 (WCC, CF8M, SA105 and S31600)
	Nuts	Steel SA-194-2HM	-29 to 316 (CD3MN and S31803)	-20 to 600 (CD3MN and S31803)
1. Derating may be required for valves rated at CL600. Contact your Emerson sales office for assistance in determining the derating of valves when these body-to-bonnet bolting materials are used. Derating is not required for CL900 and CL1500 valves. 2. -29 °C / -20 °F with WCC valve body material.				

Table 14. Approximate Weights (Valve and Bonnet Assemblies)

VALVE DESIGN	VALVE SIZE, NPS	PRESSURE RATING	KG		LBS	
			Flanged	Socket Weld ⁽¹⁾ , Butt Weld, Screwed ⁽²⁾	Flanged	Socket Weld ⁽¹⁾ , Butt Weld, Screwed ⁽²⁾
3-Stage Angle Valves	1	CL600	20	---	44	---
	2		42	---	93	---
	3		86	---	190	---
	4		140	---	315	---
	6		300	---	660	---
	8		605	---	1340	---
3-Stage Globe Valves	1	CL600	20	15	45	35
	2		40	30	90	70
	3		70	50	155	110
	4		120	80	265	175
	6		275	230	610	510
	8		510	445	1130	980
4-Stage Angle Valves	1	CL900 and CL1500	50	40	110	90
	1-1/2		55	45	120	95
	2		95	95	210	210
	3		185	---	405	---
	4		285	---	625	---
	6		560	---	1230	---
	8		1260	---	2770	---

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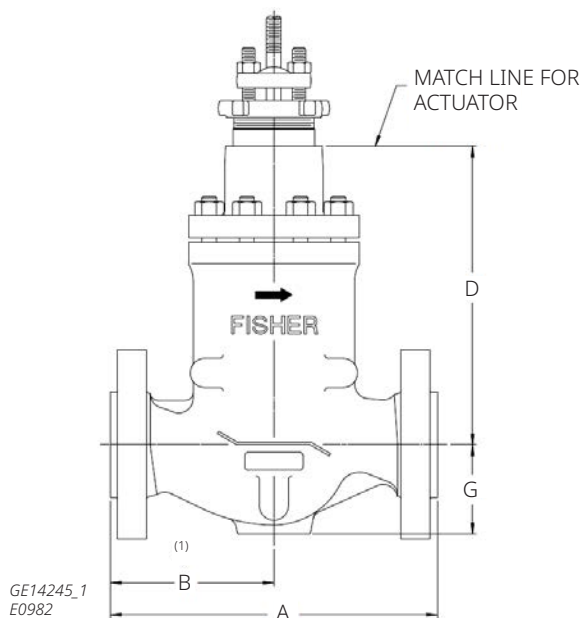
Table 14. Approximate Weights (Valve and Bonnet Assemblies) (continued)

VALVE DESIGN	VALVE SIZE, NPS	PRESSURE RATING	KG		LBS	
			Flanged	Socket Weld ⁽¹⁾ , Butt Weld, Screwed ⁽²⁾	Flanged	Socket Weld ⁽¹⁾ , Butt Weld, Screwed ⁽²⁾
4-Stage Cast Angle Valves	1	CL900 and CL1500	40	32	88	71
	1-1/2		43	35	95	77
	2		75	57	165	126
	3		148	118	326	260
	4		243	200	536	441
	6		523	443	1153	977
	8		1062	920	2342	2029
4-Stage Globe Valves	1	CL900 and CL1500	58	42	128	93
	1-1/2		75	48	165	106
	2		95	85	210	185
	3		185	140	405	310
	4		340	280	750	620
6-Stage Angle Valves	1	CL2500	64	67	140	148
	2		180	170	405	375
	3		500	473	1110	1043
	4		465	433	1025	955
	6		1060	1030	2330	2271
6-Stage Cast Angle Valves	1	CL2500	50	42	110	93
	1-1/2		110	---	243	---
	2		135	108	298	238
	3		352	293	776	646
	4		385	300	849	662
	6		921	692	2031	1526
6-Stage Globe Valves	1	CL1500	47	43	103	94
	2		98	84	217	186
	3		354	307	781	677
	4		406	386	896	852
	6		975	866	2149	1909
	1	CL2500	53	---	117	---
	2		130	---	287	---
	3		321	---	708	---
	4		427	---	942	---
	6		1026	---	2262	---

1. SWE available on NPS 1, 1-1/2 and 2 only. Please check Tables 2 to 6 for available end connection selections.

2. Screwed end available on NPS 1 and 2 CL600 only.

Figure 2. Typical CL300 and CL600 3-Stage NotchFlo DST Valve Dimensions (Also See Tables 15 and 16)



NOTE:
1. $B = \frac{A}{2}$

Table 15. CL300 and CL600 3-Stage Globe Valve Dimensions with Plain Bonnet

VALVE SIZE, NPS	A ⁽¹⁾							
	CL300				CL600			
	Scrd or SWE	BWE	RF	RTJ	Scrd or SWE	BWE	RF	RTJ
	mm							
1	---	---	197	---	209.6	209.6	209.6	209.6
2	---	---	267	---	285.8	285.8	285.8	289.1
3	---	---	318	---	---	336.6	336.6	339.9
4	---	---	368	---	---	393.7	393.7	396.7
6	---	---	473	489	---	508	508	511
8	---	---	568	584	---	609.6	609.6	612.6
	in.							
1	---	---	7.75	---	8.25	8.25	8.25	8.25
2	---	---	10.50	---	11.25	11.25	11.25	11.38
3	---	---	12.50	---	---	13.25	13.25	13.38
4	---	---	14.50	---	---	15.50	15.50	15.62
6	---	---	18.62	19.25	---	20	20	20.12
8	---	---	22.38	23.00	---	24	24	24.12

1. RF: raised-face flanges, RTJ: ring-type-joint flanges, BWE: buttwelding ends, SWE: socketweld ends; Scrd: screwed

Table 16. CL300 and CL600 3-Stage Globe Valve Dimensions with Plain Bonnet

VALVE SIZE, NPS	YOKE BOSS DIAMETER	D	G
		mm	
1	71	220.7	60.5
2	71	260.4	77.7
	90	257.3	77.7
3	90	318.5	96.8
4	90	329.4	128.5
	127	375.4	128.5
6	90	515.6	138.1
	127	549.3	138.1
8	90	653	189.6
	127	697.6	189.6
in.			
1	2-13/16	8.69	2.38
2	2-13/16	10.25	3.06
	3-9/16	10.13	3.06
3	3-9/16	12.54	3.81
4	3-9/16	12.97	5.06
	5	14.78	5.06
6	3-9/16	20.3	5.44
	5	21.63	5.44
8	3-9/16	25.71	7.46
	5	27.46	7.46

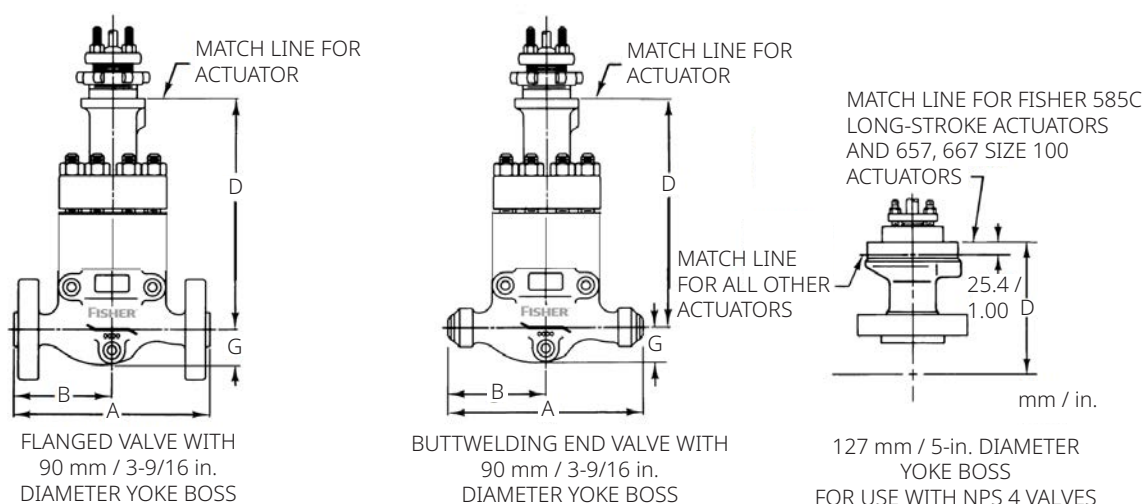
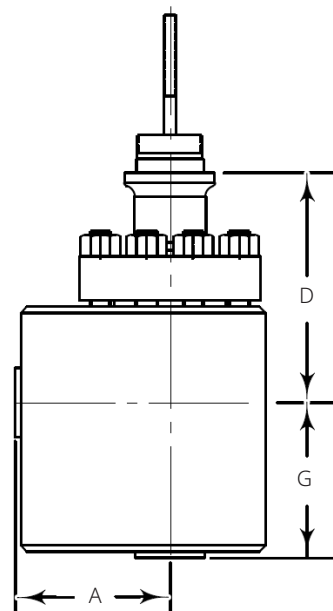
Figure 3. Typical CL900 and CL1500 ≤ NPS 4, 4-Stage NotchFlo DST Globe Valve Dimensions (Also See Tables 17 and 18)


Figure 4. Typical CL300 3-Stage, CL600 3-Stage, CL900 4-Stage and CL1500 4-Stage NotchFlo DST Angle Valve Dimensions (Also See Tables 19, 20 and 21)



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Figure 5. Typical CL1500 4-Stage NotchFlo DST Cast Angle Valve Dimensions (Also See Tables 22 and 23)

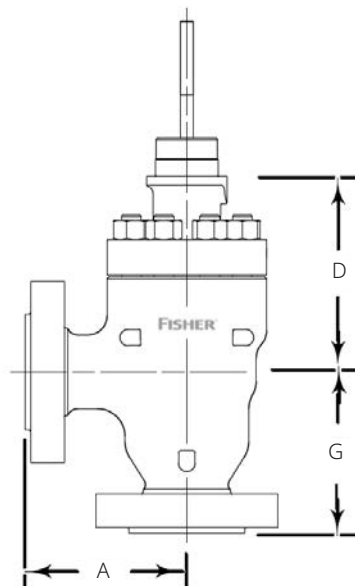


Table 17. CL900 and CL1500 ≤ NPS 4, 4-Stage Globe Valve Dimensions with Plain Bonnet

VALVE SIZE, NPS	A ⁽¹⁾					
	CL900		CL1500			
	RF	RTJ	BWE	SWE	RF	RTJ
	mm					
1	292	292	---	292	292	292
1-1/2	298	298	---	292	298	298
2	375	378	375	375	375	378
3	442	445	460	---	460	464
4	511	514	530	---	530	533
	in.					
1	11.5	11.5	---	11.5	11.5	11.5
1-1/2	11.75	11.75	---	11.5	11.75	11.75
2	14.75	14.88	14.75	14.75	14.75	14.88
3	17.38	17.50	18.12	---	18.12	18.25
4	20.12	20.25	20.88	---	20.88	21.00

- continued -

Table 17. CL900 and CL1500 ≤ NPS 4, 4-Stage Globe Valve Dimensions with Plain Bonnet (continued)

VALVE SIZE, NPS	B					
	CL900		CL1500			
	RF	RTJ	BWE	SWE	RF	RTJ
	mm					
1	148	148	---	148	148	148
1-1/2	151	151	---	148	151	151
2	187	189	187	187	187	189
3	221	222	230	---	230	232
4	229	230	238	---	238	240
	in.					
1	5.81	5.81	---	5.81	5.81	5.81
1-1/2	5.93	5.93	---	5.81	5.93	5.93
2	7.38	7.44	7.38	7.38	7.38	7.44
3	8.69	8.75	9.06	---	9.06	9.12
4	9.00	9.06	9.38	---	9.38	9.44
1. RF: raised-face flanges, RTJ: ring-type-joint flanges, BWE: buttwelding ends, SWE: socketweld ends						

Table 18. CL900 and CL1500 ≤ NPS 4, 4-Stage Globe Valve Dimensions

VALVE SIZE, NPS		D		G
	Plain Bonnet			
	71 mm / 2-13/16 in. Yoke Boss	90 mm / 3-9/16 in. Yoke Boss	127 mm / 5-in. Yoke Boss	
	mm			
1	305	---	---	59
1-1/2	294	---	---	75
2	---	333	---	77
3	---	412	---	121
4	---	427	495	175
	in.			
1	12.01	---	---	2.32
1-1/2	11.57	---	---	2.94
2	---	13.12	---	3.06
3	---	16.24	---	4.75
4	---	16.79	19.48	6.88

Table 19. CL300 and CL600 3-Stage Angle Valve Dimensions with Plain Bonnet

VALVE SIZE, NPS	A ⁽¹⁾		YOKE BOSS DIAMETER	D	G ⁽¹⁾	
	RF	RTJ			RF	RTJ
	mm					
1	76	76	71	165.3	88	88
2	96	96	71	185.3	123	123
			90	182.1	123	123
3	118	118	90	224.1	149	149
4	151	151	90	232.1	174	174
			127	278.2	174	174
6 ⁽²⁾	177	177	90	335.6	235.5	235.5
			127	369.3	235.5	235.5
8 ⁽²⁾	221	221	90	306	418	418
			127	350.5	418	418
	in.					
1	2.99	2.99	2-13/16	6.51	3.46	3.46
2	3.78	3.78	2-13/16	7.3	4.84	4.84
			3-9/16	7.17	4.84	4.84
3	4.64	4.64	3-9/16	8.82	5.87	5.87
4	5.94	5.94	3-9/16	9.14	6.85	6.85
			5	10.95	6.85	6.85
6 ⁽²⁾	6.97	6.97	3-9/16	13.21	9.27	9.27
			5	15.54	9.27	9.27
8 ⁽²⁾	8.7	8.7	3-9/16	12.05	16.46	16.46
			5	13.8	16.46	16.46
1. RF: Raised-face flanges, RTJ: Ring-type-joint flanges. 2. NPS 6 and 8 are only available in CL1500.						

Table 20. CL900 and CL1500, 4-Stage Angle Valve Dimensions with Plain Bonnet

VALVE SIZE, NPS	A ⁽¹⁾		
	CL900 TO CL1500		
	RF	RTJ	SWE
	mm		
1	115	115	74
1-1/2	140	140	74
2	99	100	102
3	120	122	---
4	140	142	---
6	184	187	---
8	260	263	---
	in.		
1	4.50	4.50	2.88
1-1/2	5.50	5.50	2.88
2	3.88	3.94	4.00
3	4.75	4.81	---
4	5.50	5.56	---
6	7.25	7.35	---
8	10.24	10.33	---

1. RF: raised-face flanges, RTJ: ring-type-joint flanges, SWE: socketweld ends

Table 21. CL900 and CL1500, 4-Stage Angle Valve Dimensions

VALVE SIZE, NPS	YOKE BOSS DIAMETER	D	G
		Plain Bonnet	
	mm		
1	71	260	70 (FLG) or 64 (SWE)
1-1/2	71	274	83 (FLG) or 70 (SWE)
2	90	251	153
3	90	294	197
4	90	319	223
	127	387	223
6	127	497	290
8	127	613	403

- continued -

Table 21. CL900 and CL1500, 4-Stage Angle Valve Dimensions (continued)

VALVE SIZE, NPS	YOKE BOSS DIAMETER	D	G
		Plain Bonnet	
		in.	
1	2-13/16	10.25	2.75 (FLG) or 2.50 (SWE)
1-1/2	2-13/16	10.75	3.25 (FLG) or 2.75 (SWE)
2	3-9/16	9.87	6.00
3	3-9/16	11.56	7.75
4	3-9/16	12.54	8.75
	5	15.23	8.75
6	5	19.57	11.4
8	5	24.14	15.85

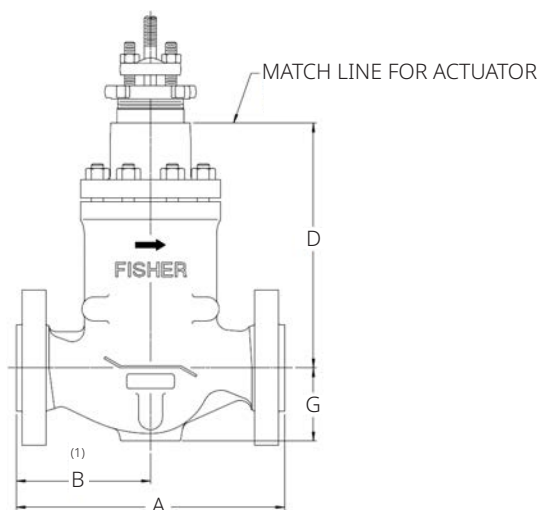
Table 22. CL1500, 4-Stage Cast Angle Valve Dimensions with Plain Bonnet

VALVE SIZE, NPS	A ⁽¹⁾			
	CL900 TO CL1500			
	RF	RTJ	BWE	SWE
	mm			
1	142	142	142	142
1-1/2	152	152	152	152
2	184	184	184	184
3	235	235	235	---
4	273	273	273	---
6	353	353	353	---
8	416	416	416	---
	in.			
	1	5.59	5.59	5.59
	1-1/2	5.98	5.98	5.98
	2	7.24	7.24	7.24
	3	9.25	9.25	---
	4	10.75	10.75	---
	6	13.9	13.9	---
	8	16.38	16.38	---

1. RF: raised-face flanges, RTJ: ring-type-joint flanges, SWE: socketweld ends

Table 23. CL1500, 4-Stage Cast Angle Valve Dimensions

VALVE SIZE, NPS	YOKE BOSS DIAMETER	D	G			
		Plain Bonnet	RF	RTJ	BWE	SWE
		mm				
1	71	247	142	142	142	142
1-1/2	71	260	152	152	152	152
2	90	237	184	184	184	184
3	90	285	235	235	235	---
4	90	339	273	273	273	---
	127	407				
6	127	464	353	353	353	---
8	127	665	416	416	416	---
in.						
1	2-13/16	9.72	5.59	5.59	5.59	5.59
1-1/2	2-13/16	10.24	5.98	5.98	5.98	5.98
2	3-9/16	9.33	7.24	7.24	7.24	7.24
3	3-9/16	11.22	9.25	9.25	9.25	---
4	3-9/16	13.35	10.75	10.75	10.75	---
	5	16.02				
6	5	18.27	13.9	13.9	13.9	---
8	5	26.18	16.38	16.38	16.38	---

Figure 6. Typical CL1500 and CL2500 6-Stage NotchFlo DST Globe Valve Dimensions (Also See Tables 24 and 25)


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NOTE:
1. $B = \frac{A}{2}$

Table 24. CL1500 6-Stage Globe Valve Dimensions with Plain Bonnet

VALVE SIZE, NPS	A ⁽¹⁾				YOKE BOSS DIAMETER	D	G ⁽¹⁾
	RF	RTJ	BWE	SWE		Plain Bonnet	
	mm						
1	292	292	---	292	90	372	69.1
2	375	378	375	---	90	442	76.9
3	460	464	460	---	90	721	141
					127	751.5	
4	530	533	530	---	90	653.8	172
					127	677.6	
6	768	775	768	---	127	862	240
	in.						
1	11.5	11.5	---	11.5	3-9/16	14.66	2.44
2	14.76	14.88	14.76	---	3-9/16	17.41	3.03
3	18.11	18.25	18.11	---	3-9/16	28.39	5.56
					5	29.58	
4	20.88	21	20.88	---	3-9/16	25.74	6.77
					5	26.68	
6	30.25	30.5	30.25	---	5	33.93	9.47
1. RF: Raised-face flanges, RTJ: Ring-type-joint flanges							

1. RF: Raised-face flanges, RTJ: Ring-type-joint flanges

Table 25. CL1500 6-Stage Globe Valve Dimensions with Plain Bonnet

VALVE SIZE, NPS	A ⁽¹⁾				YOKE BOSS DIAMETER	D	G ⁽¹⁾
	RF	RTJ	BWE	SWE		Plain Bonnet	
	mm						
1	308	308	---	---	71	361	69.0
					90		
2	412.75	415.75	---	---	90	478	78.7
3	498	504	---	---	127	751.5	106.7
4	575	585	---	---	127	677.6	123.8
6	819	832	---	---	127	852.5	185.4
	in.						
1	12.12	12.12	---	---	2-13/16	14.23	2.70
					3-9/16		
2	16.25	16.37	---	---	3-9/16	18.80	3.10
3	19.62	19.87	---	---	5	29.58	4.20
4	22.62	23	---	---	5	26.68	4.87
6	32.25	32.75	---	---	5	33.56	7.30

1. RF: Raised-face flanges, RTJ: Ring-type-joint flanges

Figure 7. Typical CL2500 6-Stage NotchFlo DST Forged Angle Valve Dimensions (Also See Table 26)

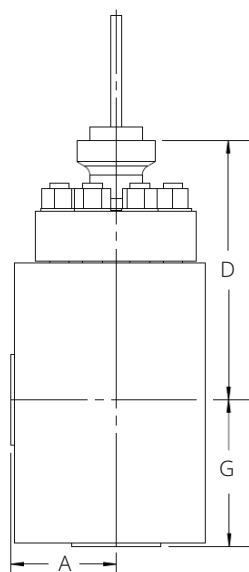


Figure 8. Typical CL2500 6-Stage NotchFlo DST Cast Angle Valve Dimensions (Also See Table 27)

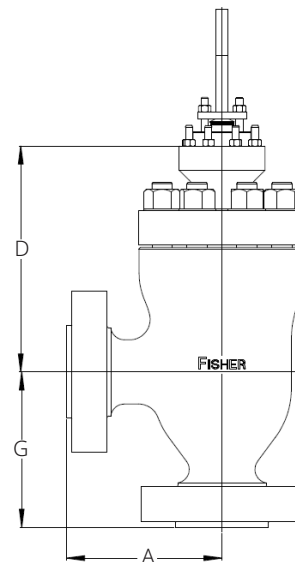


Table 26. CL2500 6-Stage Forged Angle Valve Dimensions with Plain Bonnet

VALVE SIZE, NPS	A ⁽¹⁾				YOKE BOSS DIAMETER	D	G ⁽¹⁾			
	RF	RTJ	BWE	SWE		Plain Bonnet	RF	RTJ	BWE	SWE
	mm									
1	114	114	---	114	71	280.6	104	104	---	104
					90					
2	169	169	169	---	90	347.6	173	173	173	---
3	222	222	222	---	127	563.2 (FLG) 578.2 (BWE)	237	237	237	---
4	190	193	194	---	127	470.3	250	253	254	---
6	254	257	259	---	127	554.1 (FLG) 594.1 (BWE)	350	353	355	---
	in.									
1	4.49	4.49	---	4.49	2-13/16	11.05	4.09	4.09	---	4.09
					3-9/16					
2	6.65	6.65	6.65	---	3-9/16	13.69	6.81	6.81	6.81	---
3	8.74	8.74	8.74	---	5	22.17 (FLG) 22.76 (BWE)	9.33	9.33	9.33	---
4	7.48	7.58	7.64	---	5	20.83	9.84	9.94	10	---
6	10.00	10.10	10.2	---	5	21.82 (FLG) 23.39 (BWE)	13.78	13.88	13.98	---

1. RF: Raised-face flanges, RTJ: Ring-type-joint flanges

1. RF: Raised-face flanges, RTJ: Ring-type-joint flanges

Table 27. CL2500 6-Stage Cast Angle Valve Dimensions with Plain Bonnet

VALVE SIZE, NPS	A ⁽¹⁾				YOKE BOSS DIAMETER	D	G ⁽¹⁾			
	RF	RTJ	BWE	SWE		Plain Bonnet	RF	RTJ	BWE	SWE
	mm									
1	154	154	154	---	71	333.8	154	154	154	---
					90					
1-1/2	192	193.5	---	---	90	444.9	192	193.5	---	---
2	226	227.5	226	---	90	436.6	226	227.5	226	---
3	289	292	289	---	127	699.7	289	292	289	---
4	337	342	342	---	127	497.6	337	342	342	---
6	457	463.5	457	---	127	646.9	457	463.5	457	---
	in.									
1	6.06	6.06	6.06	---	2-13/16	13.14	6.06	6.06	6.06	---
					3-9/16					
1-1/2	7.56	7.62	---	---	3-9/16	17.52	7.56	7.62	---	---
2	8.90	8.96	8.90	---	3-9/16	17.19	8.90	8.96	8.90	---
3	11.38	11.50	11.38	---	5	27.55	11.38	11.50	11.38	---
4	13.27	13.46	13.46	---	5	19.59	13.27	13.46	13.46	---
6	17.99	18.25	17.99	---	5	25.47	17.99	18.25	17.99	---
1. RF: Raised-face flanges, RTJ: Ring-type-joint flanges										

Table 28. CL600 3-Stage Port Diameter, Travel, Stem, Yoke Boss Diameter and Unbalance Area

VALVE SIZE, NPS	PORT DIAMETER	TRAVEL	STEM DIAMETER	YOKE BOSS DIAMETER	UNBALANCE AREA
	mm				cm ²
1	25.4	9.5	12.7	71	0.1 ⁽²⁾
2	38.1	9.5	12.7	71	0.3 ⁽²⁾
			19.1 ⁽¹⁾	90 ⁽¹⁾	
3	55.6	15.9	19.1	90	0.5 ⁽²⁾
4	73.2	19.1	19.1	90	0.4 ⁽²⁾
			25.4 ⁽¹⁾	127 ⁽¹⁾	
6	111.1	19.1	19.1	90	0.5 ⁽²⁾
			25.4 ⁽¹⁾	127 ⁽¹⁾	
8	136.5	25.4	19.1	90	0.6 ⁽²⁾
			25.4 ⁽¹⁾	127 ⁽¹⁾	

- continued -

Table 28. CL600 3-Stage Port Diameter, Travel, Stem, Yoke Boss Diameter and Unbalance Area (continued)

VALVE SIZE, NPS	PORT DIAMETER	TRAVEL	STEM DIAMETER	YOKE BOSS DIAMETER	UNBALANCE AREA
					in. ²
1	1.0	0.375	1/2	2-13/16	0.02 ⁽²⁾
2	1.5	0.375	1/2	2-13/16	0.05 ⁽²⁾
			3/4 ⁽¹⁾	3-9/16 ⁽¹⁾	
3	2.19	0.625	3/4	3-9/16	0.07 ⁽²⁾
4	2.88	0.75	3/4	3-9/16	0.06 ⁽²⁾
			1 ⁽¹⁾	5 ⁽¹⁾	
6	4.38	0.75	3/4	3-9/16	0.08 ⁽²⁾
			1 ⁽¹⁾	5 ⁽¹⁾	
8	5.38	1	3/4	3-9/16	0.09 ⁽²⁾
			1 ⁽¹⁾	5 ⁽¹⁾	

1. Optional.
2. Balanced trim, PTTC (pressure tends to close).

Table 29. CL900 and CL1500, 4-Stage Port Diameter, Travel, Stem, Yoke Boss Diameter and Unbalance Area

VALVE SIZE, NPS	PORT DIAMETER	TRAVEL	STEM DIAMETER	YOKE BOSS DIAMETER	UNBALANCE AREA
					cm ²
1	12.7	6.4	12.7	71	1.3 ⁽¹⁾
	17.8				2.5 ⁽¹⁾
1-1/2	25.4	6.4	12.7	71	5.1 ⁽¹⁾
2	38.1	9.5	19.1	90	0.3 ⁽²⁾
3	55.6	15.9	19.1	90	0.5 ⁽²⁾
4	73.2	19.1	19.1	90	0.4 ⁽²⁾
			25.4 (optional)	127 (optional)	
6	111.1	25.4	25.4	127	0.6 ⁽²⁾
8	136.5	31.8	31.8	127	0.6 ⁽²⁾
in.					in. ²
1	0.5	0.25	1/2	2-13/16	0.20 ⁽¹⁾
	0.7				0.39 ⁽¹⁾
1-1/2	1.0	0.25	1/2	2-13/16	0.79 ⁽¹⁾
2	1.5	0.375	3/4	3-9/16	0.05 ⁽²⁾
3	2.19	0.625	3/4	3-9/16	0.07 ⁽²⁾
4	2.88	0.75	3/4	3-9/16	0.06 ⁽²⁾
			1 (optional)	5 (optional)	
6	4.38	1	1	5	0.09 ⁽²⁾
8	5.38	1.25	1-1/4	5	0.1 ⁽²⁾

1. Unbalanced trim, PTTO (pressure tends to open).
2. Balanced trim, PTTC (pressure tends to close).

Table 30. CL1500 6-Stage Port Diameter, Travel, Stem, Yoke Boss Diameter and Unbalance Area

VALVE SIZE, NPS	PORT DIAMETER	TRAVEL	STEM DIAMETER	YOKE BOSS DIAMETER	UNBALANCE AREA
	mm				cm ²
1	12.7	6.4	12.7	90	1.3
	17.8		19.1		2.5
2	38.1	9.5	19.1	90	0.3
3	55.6	15.9	19.1	90	0.5
			25.4	127	
4	73.2	19.1	19.1	90	0.4
			25.4	127	
6	111.1	25.4	25.4	127	0.6
in.					in. ²
1	0.5	0.25	1/2	3-9/16	0.20
	0.7		3/4		0.39
2	1.5	0.375	3/4	3-9/16	0.05
3	2.19	0.625	3/4	3-9/16	0.07
			1	5	
4	2.88	0.75	3/4	3-9/16	0.06
			1	5	
6	4.38	1	1	5	0.09

Table 31. CL2500 6-Stage Port Diameter, Travel, Stem, Yoke Boss Diameter and Unbalance Area

VALVE SIZE, NPS	PORT DIAMETER	TRAVEL	STEM DIAMETER	YOKE BOSS DIAMETER	UNBALANCE AREA
	mm				cm ²
1	12.7	6.4	12.7	71	1.3
	17.8		19.1	90	2.5 ⁽¹⁾
1-1/2, 2	38.1	9.5	19.1	90	0.3 ⁽²⁾
3	55.6	15.9	25.4	127	0.5 ⁽²⁾
4	73.2	19.1	25.4	127	0.4 ⁽²⁾
6	111.1	25.4	25.4	127	0.6 ⁽²⁾
in.					in. ²
1	0.5	0.25	1/2	2-13/16	0.20
	0.7		3/4	3-9/16	0.39 ⁽¹⁾
1-1/2, 2	1.5	0.375	3/4	3-9/16	0.05 ⁽²⁾
3	2.19	0.625	1	5	0.07 ⁽²⁾
4	2.88	0.75	1	5	0.06 ⁽²⁾
6	4.38	1	1	5	0.09 ⁽²⁾

1. Unbalanced trim, PTTO (pressure tends to open).

2. Balanced trim, PTTC (pressure tends to close).

Valve Sizing Guidelines

Standard ISA equations, sizing procedures from Catalog 12 or Fisher Specification Manager can be used to size NotchFlo DST control valves.

Noise calculations are best performed by using Fisher Specification Manager. The serial stage configuration of the NotchFlo DST design reduces valve trim noise significantly.

Selection of the correct trim can be made by determining the KC value from Table 6.

Ensure that the correct KC value for the appropriate valve size, trim type and pressure drop are selected.

Ordering Information

When ordering, specify:

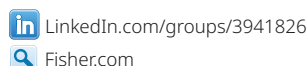
Application Information

1. Process liquid—State particle size and type of entrained impurities, if any.

2. Specific gravity of liquid
3. Temperature and vapor pressure of liquid
4. Critical pressure
5. Range of flowing inlet pressures
6. Pressure drops
 - a. Range of flowing pressure drops
 - b. Maximum at shutoff
7. Flow rates
 - a. Minimum controlled flow
 - b. Normal flow
 - c. Maximum flow
8. Required C_v
9. Line size and schedule

Valve Body Information

To determine what information is needed for ordering the valve body and trim, refer to the Specifications section. Review the description at the right of each specification or in the referenced tables, figures and bulletins and indicate the desired choice wherever a selection is to be made.



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