

Fisher™ 8540 Butterfly Valve

The Fisher 8540 rotary valve offers excellent throttling and automated on/off, quarter-turn performance. An approximately linear flow characteristic provides precise throttling control. The 8540 valve offers high cycle life and rugged reliability.



**Fisher NPS 6 8540 Butterfly Valve
with Bettis RPE Actuator and 3720 Positioner**

Features

- **Exceptional Shutoff**—Bidirectional soft seal ring (see figure 2) with pressure-assisting action results in exceptional shutoff rates as shown in the specifications.
- **Shaft Retention**—Redundant shaft retention provides added protection. The packing follower and shaft step interact to hold the shaft securely in the valve body (see figure 1).
- **Easy Installation**—The valve body self-centers on the line flange bolts as a fast, accurate means of centering the valve in the pipeline.
- **Approximately Linear Flow Characteristic**—An approximately linear flow characteristic provides precise throttling control.
- **Powder Paint as Standard**—The Emerson powder paint finish offers an excellent corrosion-resistant finish to all steel parts.

Specifications

Valve Sizes and End Connection Styles

DN ■ 80, ■ 100, ■ 150, ■ 200, ■ 250, and ■ 300 wafer body
NPS ■ 3, ■ 4, ■ 6, ■ 8, ■ 10, and ■ 12 wafer body valves

Maximum Inlet Pressure and Temperature⁽¹⁾

Carbon Steel and Stainless Steel Valve Bodies:
Consistent with CL150 and 300 pressure-temperature ratings per ASME B16.34 unless limited by material temperature capabilities

Maximum Pressure Drops⁽¹⁾

See table 2

Shutoff Classifications

Bidirectional shutoff to Class VI per ANSI/FCI 70-2. See figure 4.

Construction Materials

Refer to table 4 for standard material selections and component temperature ranges

Seal Material Temperature Capabilities

PTFE Seals: -46 to 232°C (-50 to 450°F)
See table 4 for component temperature ranges

Flow Characteristic

Approximately linear

Flow and Shutoff Direction

Standard (forward flow) is with the seal retainer facing upstream; reverse flow is permissible. See figure 4

Flow Coefficients

See table 3 and Fisher Catalog 12

Disk Rotation

Clockwise to close (when viewing from the drive shaft end) through 90 degrees of disk rotation

Available Mounting

Right-hand or left-hand mounted as viewed from the valve inlet from forward flow

Actuator/Valve Action

With a pneumatic actuator, the valve action is reversible. Refer to the information provided in the Installation section and figure 4

Valve Classification

Face-to-face dimensions meets API 609 or MSS-SP68 standards for face-to-face dimensions of lugged valves (see figure 6)

Mating Flange Capabilities

All sizes compatible with PN 10 - PN 40 flanges and CL150 and 300 flanges (schedule 80 or lighter, see figure 6, Dimension M)

Shaft Diameters

See figure 6

Approximate Weights

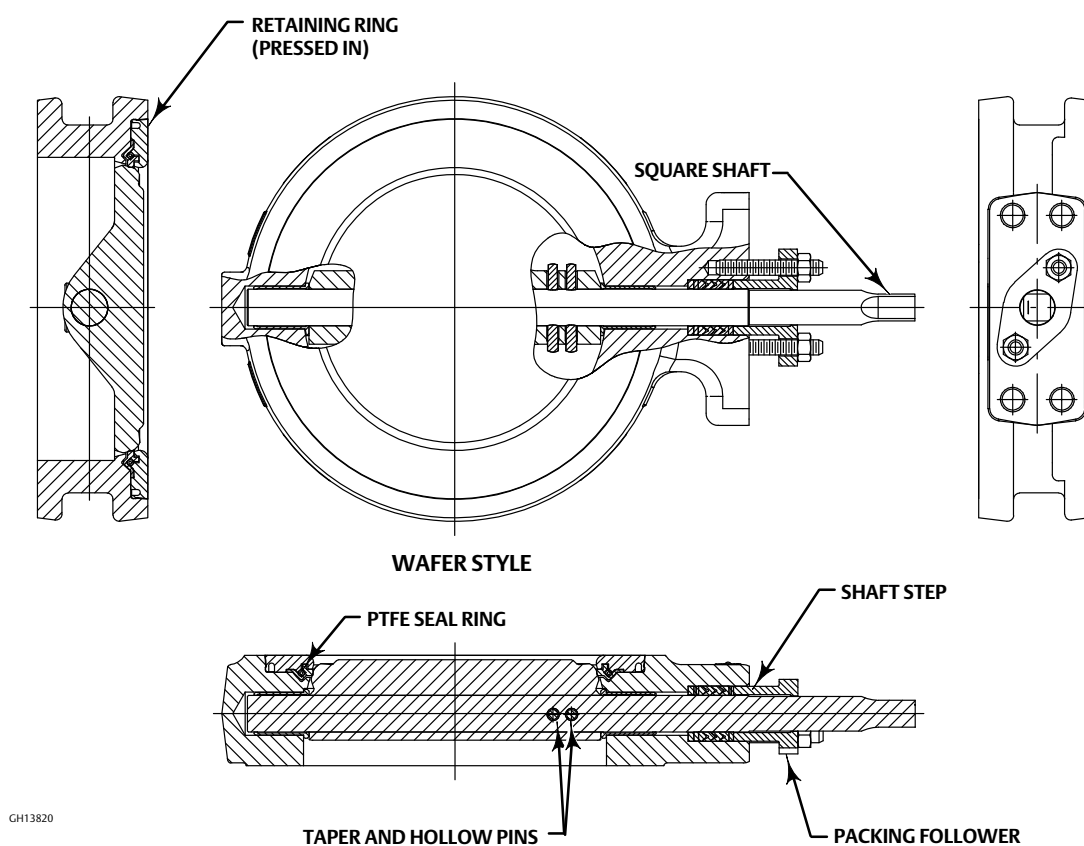
See table 1

¹. The pressure-temperature limits in this bulletin and any applicable standard or code limitation should not be exceeded.

Table 1. Fisher 8540 Valve Weights

VALVE SIZE DN	VALVE SIZE NPS	CLASS		SHAFT DIAMETER		APPROXIMATE WEIGHT	
		EN	ASME	mm	Inches	kg	lbs
80	3	PN10-16	CL150	12.7	1/2	4.5	10
		PN25-40	CL300	15.9	5/8	5.9	13
100	4	PN10-16	CL150	15.9	5/8	8.6	19
		PN25-40	CL300	19.1	3/4	10	23
150	6	PN10-16	CL150	19.1	3/4	13	29
		PN25-40	CL300	25.4	1	15	33
200	8	PN10-16	CL150	25.4	1	21	47
		PN25-40	CL300	31.8	1-1/4	24	53
250	10	PN10-16	CL150	31.8	1-1/4	34	75
		PN25-40	CL300	38.1	1-1/2	44	96
300	12	PN10-16	CL150	38.1	1-1/2	49	107
		PN25-40	CL300	44.5	1-3/4	64	141

Figure 1. Typical Valve Construction



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Figure 2. Available Seal Configurations

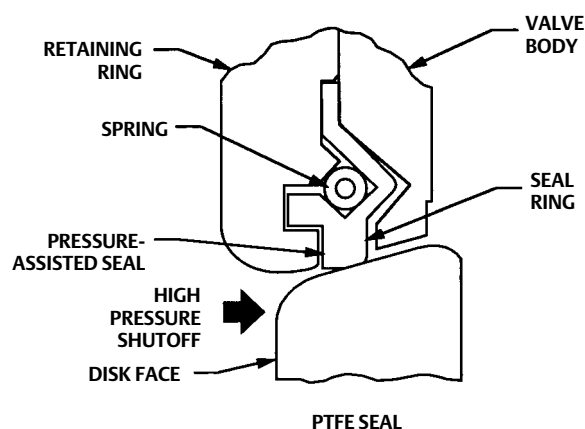


Table 2. Maximum Allowable Pressure Drops at Temperature

TEMPERATURE		PRESSURE DROP	
°C	°F	Bar	Psi
-46	-50	52	750
-32	-25		
-18	0		
38	100		
66	150		
93	200	43	620
121	250	35	510
149	300	27	390
204	400	11	160
232	450	3	50

Table 3. Flow Coefficients⁽¹⁾

VALVE SIZE		C _v FORWARD FLOW WITH DISK WIDE OPEN (90 DEGREES ROTATION)	
DN	NPS	EN PN 10-16 / CL150	EN PN 25-40 / CL300
80	3	286	237
100	4	499	488
150	6	1250	1110
200	8	2180	2070
250	10	3600	3480
300	12	5400	5130

1. See Fisher Catalog 12 for a complete listing of flow coefficients.

Table 4. Construction Material Temperature Limits

COMPONENTS AND MATERIALS OF CONSTRUCTION	TEMPERATURE LIMITS	
	°C	°F
Valve Body Material		
Carbon Steel	-29 to 427	-20 to 800
CF8M	-198 to 538	-325 to 1000
WCC/1.0619	-10 to 480	+14 to 896
CF8M/1.4404	-196 to 580	-321 to 1076
Disk Material		
CF8M	-198 to 538	-325 to 1000
Shaft Material		
S17400	-62 to 427	-80 to 800
Bearing Material		
PEEK / PTFE lined	-46 to 232	-50 to 450
Packing Material		
PTFE V-Rings	-46 to 232	-50 to 450
Seal Ring		
PTFE (standard) Soft Seal Ring	-46 to 232	-50 to 450

Figure 3. Flow Direction Arrow

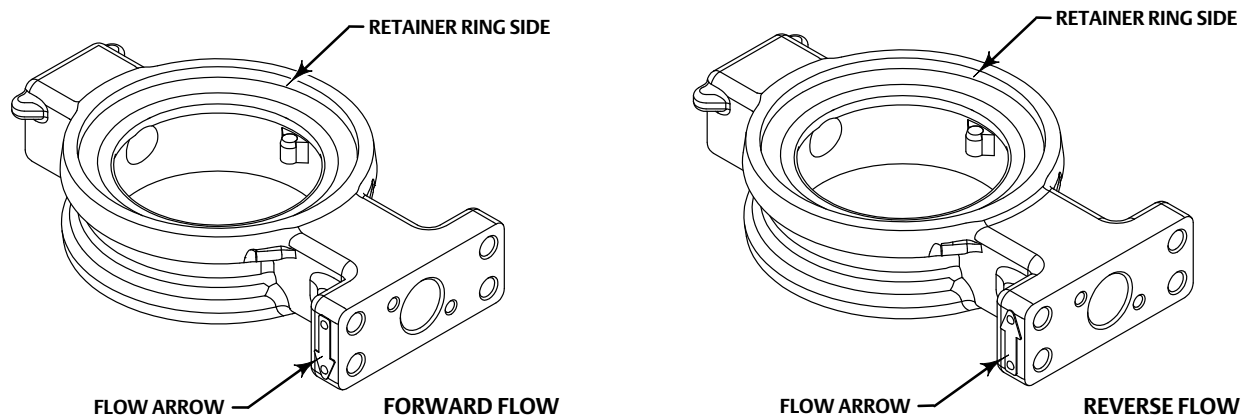
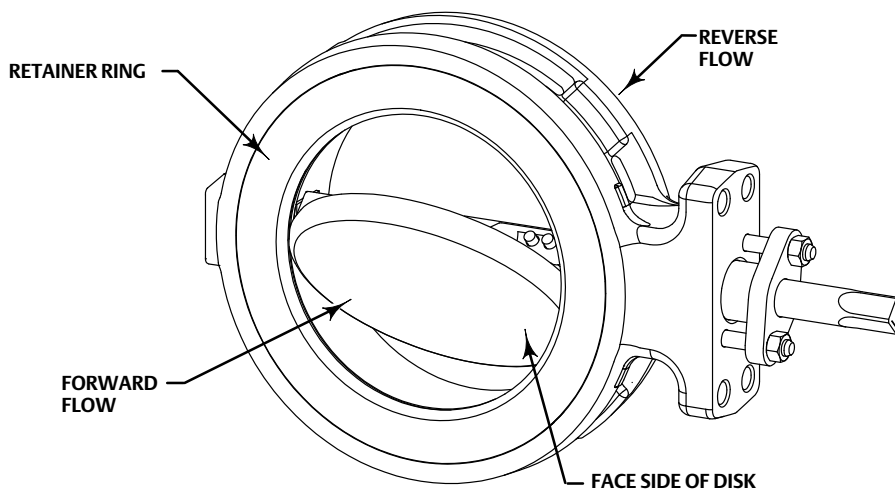


Figure 4. Flow Direction



Installation

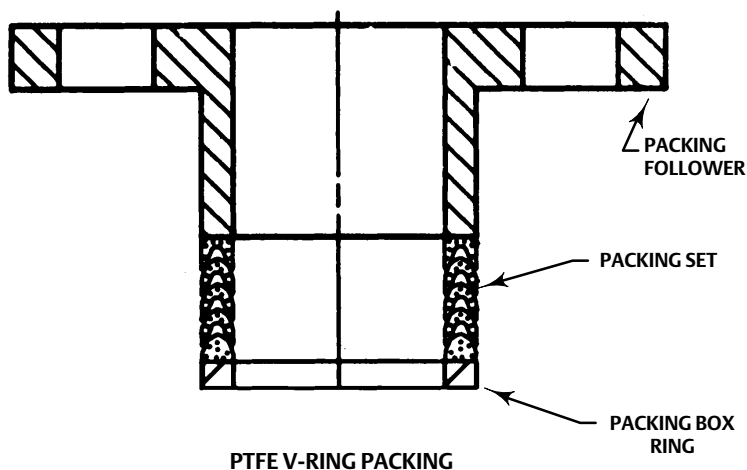
It is recommended that the valve drive shaft be mounted in a horizontal position as shown in figure 1. Operating conditions may require specific valve/actuator fail action, styles, positions and flow direction. Large valve/actuator assemblies may require additional support because of their combined weight.

Fail Action: For actuators with spring returns, spring fail action is available for push-down-to-open or push-down-to-close valve action. The valve action is field reversible.

For assistance in selecting the valve/actuator mounting suited to your application, consult your [Emerson sales office](#).

Dimensions for wafer valves are shown in figure 6.

Figure 5. Typical Packing Arrangement



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Figure 6. Typical Valve Dimensions (also see tables 5, 6, 7, and 8)

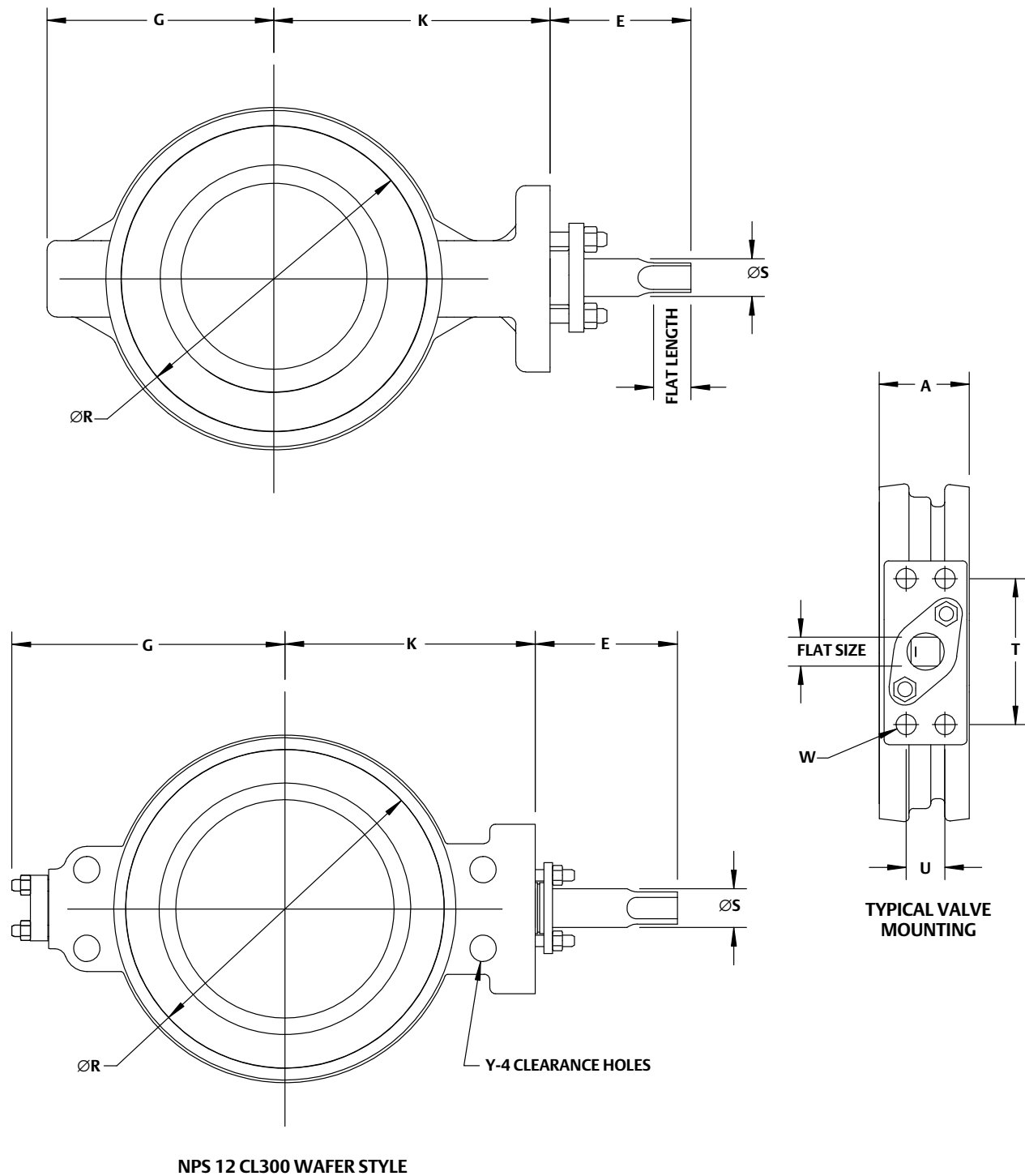


Table 5. PN10 - PN16 Valve Dimensions

Valve Size, DN	A	E	G Wafer Style	K	M(2)	R Wafer Style	S(1)	Square Width	Square Length	T	U	W
mm												
80	48	80	70	121	73	--	12.7	9	16	83	19	See thread information below
100	54	82	86	124	97	--	15.9	11	15	83	19	
150	57	86	121	152	146	--	19.1	14	19	95	25	
200	64	91	155	181	191	--	25.4	19	24	95	25	
250	71	94	186	229	238	--	31.8	22	30	133	38	
300	81	99	222	254	284	--	38.1	27	35	133	38	
Inches												
80	1.88	3.14	2.75	4.00	2.88	--	1/2	0.35	0.63	3.25	0.75	3/8-16
100	2.12	3.22	3.38	4.88	3.81	--	5/8	0.43	0.59	3.25	0.75	3/8-16
150	2.25	3.38	4.75	6.00	5.75	--	3/4	0.55	0.75	3.75	1.00	1/2-13
200	2.50	3.57	6.12	7.12	7.50	--	1	0.74	0.95	3.75	1.00	1/2-13
250	2.81	3.69	7.31	9.00	9.38	--	1-1/4	0.86	1.18	5.25	1.50	5/8-11
300	3.19	3.89	8.75	10.00	11.19	--	1-1/2	1.06	1.38	5.25	1.50	5/8-11
1. This nominal valve shaft diameter is the shaft diameter through the packing box. Use this diameter when selecting Fisher actuators. 2. Disk chordal swing diameter at valve face. Please verify with piping.												

Table 6. PN25 - PN40 Valve Dimensions

Valve Size, DN	A	E	G Wafer Style	K	M(2)	R Wafer Style	S(1)	Square Width	Square Length	T	U	W	Y
mm													
80	48	82	89	119	73	--	15.7	11	15	83	19	See thread information below	N/A
100	54	86	114	146	97	--	19.0	14	19	95	25		
150	59	91	146	178	145	--	25.4	19	24	95	25		
200	73	94	175	210	188	--	31.8	22	30	133	38		
250	83	99	232	243	233	--	38.1	27	35	133	38		
300	92	159	308	279	278	--	44.4	36	45	146	38		
Inches													
80	1.88	3.22	3.50	4.69	2.88	--	5/8	0.43	0.59	3.25	0.75	3/8-16	N/A
100	2.12	3.38	4.50	5.75	3.81	--	3/4	0.55	0.75	3.75	1.00	1/2-13	
150	2.31	3.57	5.75	7.00	5.69	--	1	0.74	0.95	3.75	1.00	1/2-13	
200	2.88	3.69	6.88	8.25	7.38	--	1-1/4	0.86	1.18	5.25	1.50	5/8-11	
250	3.25	3.89	9.12	9.56	9.19	--	1-1/2	1.06	1.38	5.25	1.50	5/8-11	
300	3.62	6.25	12.12	11.00	10.94	--	1-3/4	1.41	1.77	5.75	1.50	3/4-10	M27X3 FOR PN25 M30X3.5 FOR PN40
1. This nominal valve shaft diameter is the shaft diameter through the packing box. Use this diameter when selecting Fisher actuators. 2. Disk chordal swing diameter at valve face. Please verify with piping.													

Table 7. CL150 Valve Dimensions

Valve Size, NPS	A	E	G Wafer Style	K	M ⁽²⁾	R Wafer Style	S ⁽¹⁾	Square Width	Square Length	T	U	W
mm												
3	48	80	70	121	73	133	12.7	9	16	83	19	See thread information below
4	54	82	86	124	97	171	15.9	11	15	83	19	
6	57	86	121	152	146	219	19.1	14	19	95	25	
8	64	91	155	181	191	272	25.4	19	24	95	25	
10	71	94	186	229	238	330	31.8	22	30	133	38	
12	81	99	222	254	284	387	38.1	27	35	133	38	
Inches												
3	1.88	3.14	2.75	4.00	2.88	5.25	1/2	0.35	0.63	3.25	0.75	3/8–16
4	2.12	3.22	3.38	4.88	3.81	6.75	5/8	0.43	0.59	3.25	0.75	3/8–16
6	2.25	3.38	4.75	6.00	5.75	8.62	3/4	0.55	0.75	3.75	1.00	1/2–13
8	2.50	3.57	6.12	7.12	7.50	10.69	1	0.74	0.95	3.75	1.00	1/2–13
10	2.81	3.69	7.31	9.00	9.38	13.00	1–1/4	0.86	1.18	5.25	1.50	5/8–11
12	3.19	3.89	8.75	10.00	11.19	15.25	1–1/2	1.06	1.38	5.25	1.50	5/8–11

1. This nominal valve shaft diameter is the shaft diameter through the packing box. Use this diameter when selecting Fisher actuators.
2. Disk chordal swing diameter at valve face. Please verify with piping.

Table 8. CL300 Valve Dimensions

Valve Size, NPS	A	E	G Wafer Style	K	M ⁽²⁾	R Wafer Style	S ⁽¹⁾	Square Width	Square Length	T	U	W	Y
mm													
3	48	82	89	119	73	132	15.7	11	15	83	19	See thread information below	N/A
4	54	86	114	146	97	162	19.0	14	19	95	25		
6	59	91	146	178	145	221	25.4	19	24	95	25		
8	73	94	175	210	188	276	31.8	22	30	133	38		
10	83	99	232	243	233	330	38.1	27	35	133	38		
12	92	159	308	279	278	389	44.4	36	45	146	38		
Inches													
3	1.88	3.22	3.50	4.69	2.88	5.19	5/8	0.43	0.59	3.25	0.75	3/8–16	N/A
4	2.12	3.38	4.50	5.75	3.81	6.38	3/4	0.55	0.75	3.75	1.00	1/2–13	
6	2.31	3.57	5.75	7.00	5.69	8.69	1	0.74	0.95	3.75	1.00	1/2–13	
8	2.88	3.69	6.88	8.25	7.38	10.88	1–1/4	0.86	1.18	5.25	1.50	5/8–11	
10	3.25	3.89	9.12	9.56	9.19	13.00	1–1/2	1.06	1.38	5.25	1.50	5/8–11	1–8 16–holes
12	3.62	6.25	12.12	11.00	10.94	15.31	1–3/4	1.41	1.77	5.75	1.50	3/4–10	1 1/8–8 16–holes

1. This nominal valve shaft diameter is the shaft diameter through the packing box. Use this diameter when selecting Fisher actuators.
2. Disk chordal swing diameter at valve face. Please verify with piping.

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