

# Fisher™ 8540 Butterfly Valve

The Fisher 8540 valve features an eccentrically mounted disk with a soft seal ring. Soft seals provide excellent sealing capabilities in both flow directions. The square shaft combines with a variety of actuators to form a reliable, high-performance valve suitable for many applications requiring tight shutoff.



X1846

**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.

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**Specifications**

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**Valve Sizes and End Connection Styles**

NPS ■ 3, ■ 4, ■ 6, ■ 8, ■ 10, and ■ 12 wafer body valves

**Maximum Inlet Pressure and Temperature<sup>(1)</sup>**

**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<sup>(1)</sup>**

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 CL150 and 300 flanges (schedule 80 or lighter, see figure 6, Dimension M)

**Shaft Diameters**

See figure 6

**Approximate Weights**

See table 1

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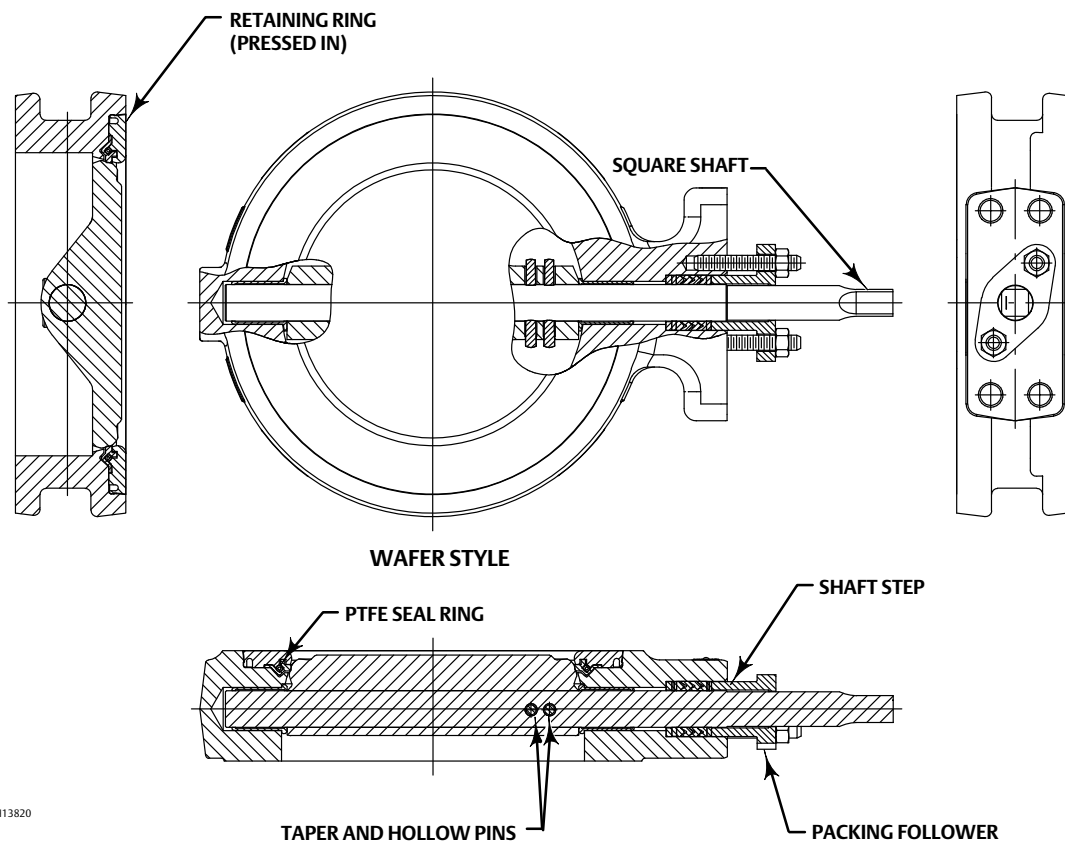
1. The pressure-temperature limits in this bulletin and any applicable standard or code limitation should not be exceeded.

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Table 1. Fisher 8540 Valve Weights

VALVE SIZE, NPS	WAFER STYLE	
	CL150	CL300
	kg	
3	5	6
4	9	10
6	13	15
8	21	24
10	34	44
12	49	64
VALVE SIZE, NPS	lbs	
3	10	13
4	19	23
6	29	33
8	47	53
10	75	96
12	107	141

Figure 1. Typical Valve Construction



GH13820

Figure 2. Available Seal Configurations

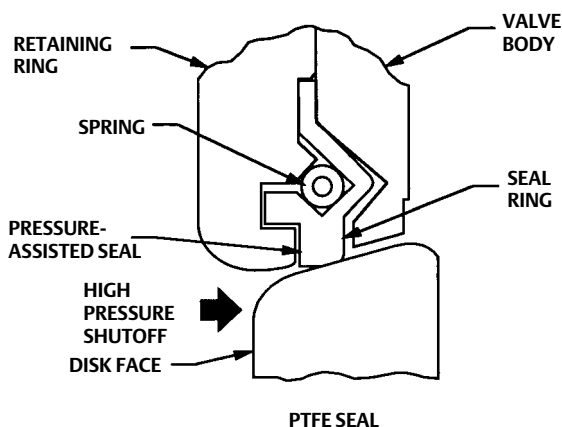


Table 2. Maximum Allowable Pressure Drops at Temperature

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

Table 3. Flow Coefficients<sup>(1)</sup>

VALVE SIZE, NPS	C <sub>v</sub> FORWARD FLOW WITH DISK WIDE OPEN (90 DEGREES ROTATION)	
	CL150	CL300
3	286	237
4	499	488
6	1250	1110
8	2180	2070
10	3600	3480
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
<b>Valve Body Material</b>		
Carbon Steel	-29 to 427	-20 to 800
CF8M	-198 to 538	-325 to 1000
<b>Disk Material</b>		
CF8M	-198 to 538	-325 to 1000
<b>Shaft Material</b>		
S17400	-62 to 427	-80 to 800
<b>Bearing Material</b>		
PEEK / PTFE lined	-46 to 232	-50 to 450
<b>Packing Material</b>		
PTFE V-Rings	-46 to 232	-50 to 450
<b>Seal Ring</b>		
PTFE (standard) Soft Seal Ring	-46 to 232	-50 to 450

Figure 3. Flow Direction Arrow

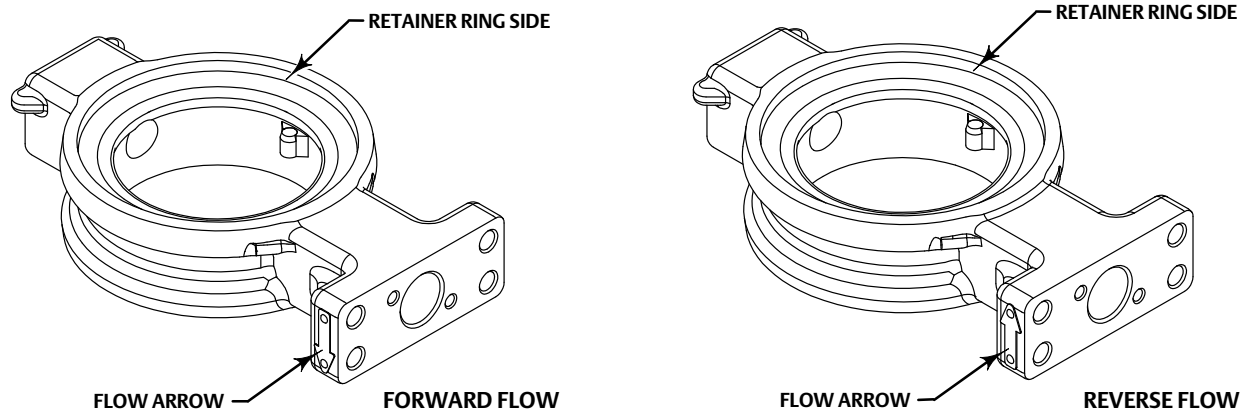
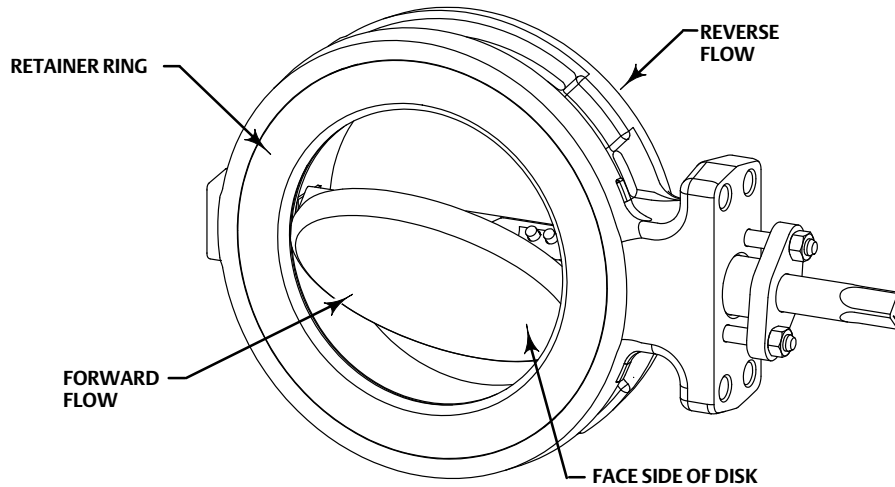


Figure 4. Flow Direction



## Installation

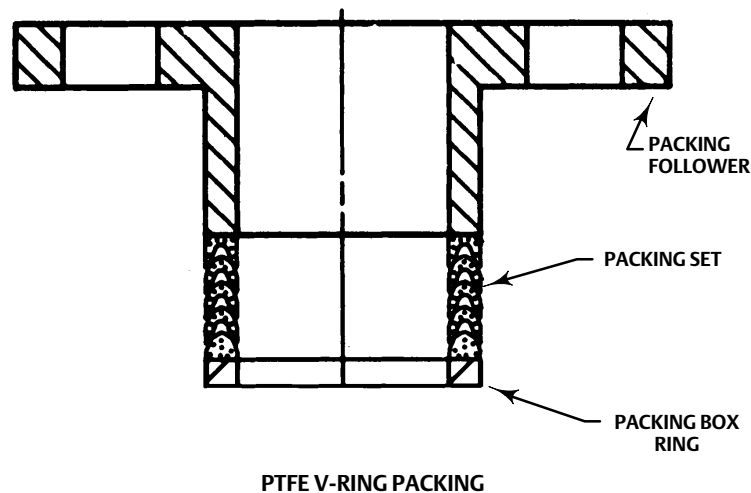
It is recommended that the valve drive shaft be mounted in a horizontal position as shown in figure 1. Operating conditions may require specific valve/actuator fail action, styles, positions and flow direction. Large valve/actuator assemblies may require additional support because of their combined weight.

**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](#).

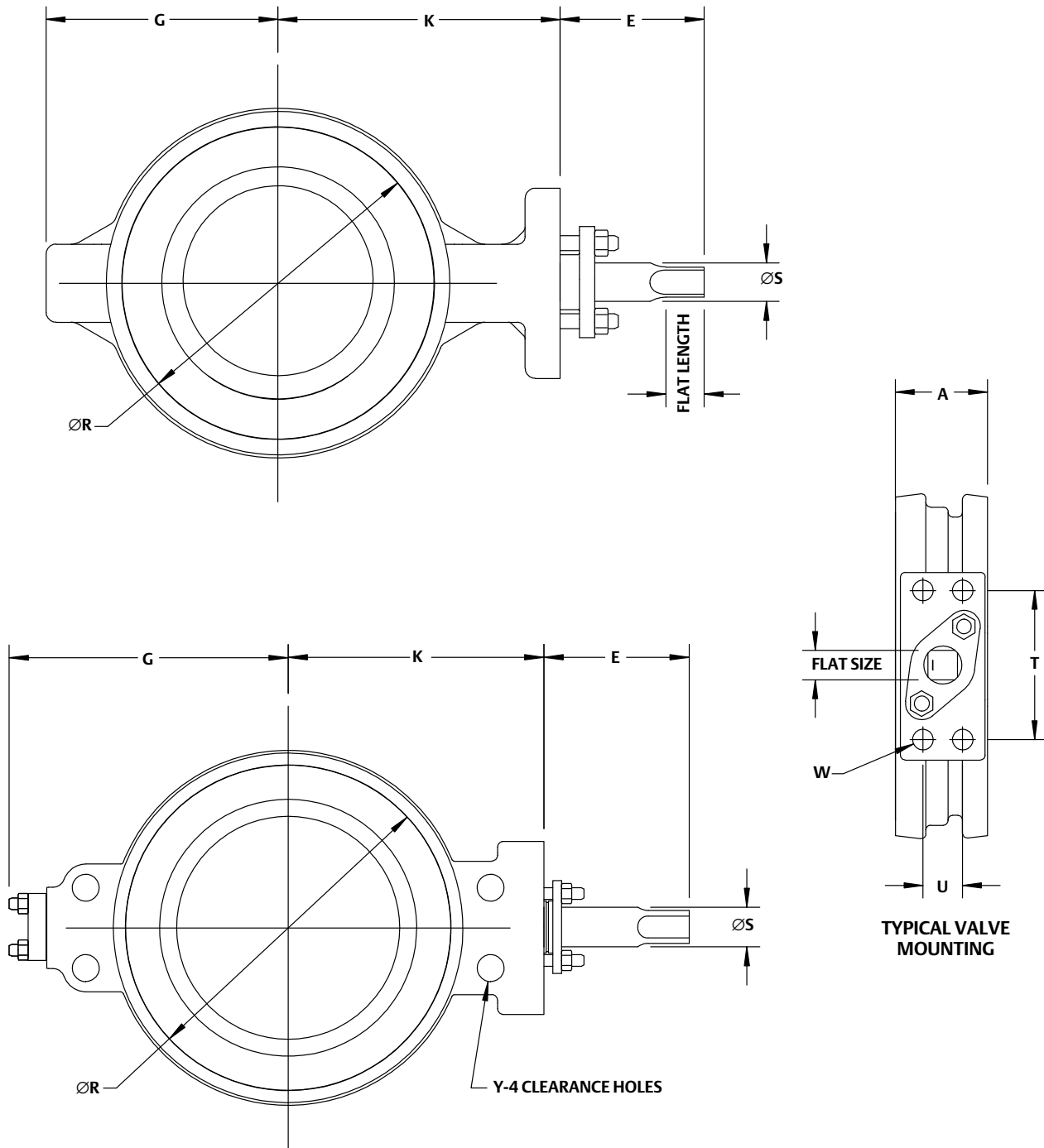
Dimensions for wafer valves are shown in figure 6.

Figure 5. Typical Packing Arrangement



C0785\*A

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



NPS 12 CL300 WAFER STYLE

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**8540 Valve**  
D104708X012

**Table 5. CL150 Valve Dimensions**

Valve Size, NPS	A	E	G Wafer Style	K	M <sup>(2)</sup>	R Wafer Style	S <sup>(1)</sup>	Square Width	Square Length	T	U	W
<b>mm</b>												
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	
<b>Inches</b>												
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 6. CL300 Valve Dimensions**

Valve Size, NPS	A	E	G Wafer Style	K	M <sup>(2)</sup>	R Wafer Style	S <sup>(1)</sup>	Square Width	Square Length	T	U	W	Y
<b>mm</b>													
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		
<b>Inches</b>													
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	
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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