Fisher® 8560 Eccentric Disc Butterfly Control Valve

Fisher 8560 high-performance valves feature a stainless steel disc with a soft or stainless steel seal ring. Soft seals provide excellent sealing capabilities in both directions. The pressure-assisted metal seal ring provides excellent shutoff against pressure applied in the recommended flow direction for both liquid and gas applications.

The NOVEX and Phoenix III metal seals are available for demanding applications requiring excellent shutoff capabilities. The splined-shaft valve combines with a variety of power actuators to form a reliable, high-performance control valve suitable for throttling applications requiring extremely low leakage rates.

Unless otherwise noted, all NACE references are to NACE MR0175-2002.

W8299-2

Fisher 8560 Valve with 1052 Actuator and FIELDVUE ™ DVC6200 Digital Valve Controller

W6361

Fisher 8560 Single-Flange Valve

Features

- **Exceptional Shutoff—**Bidirectional soft seal ring with pressure assisting action (see figure 1) results in exceptional shutoff per Class VI.
- **Excellent Flow Control—**The eccentrically- mounted disc design provides an approximate linear flow characteristic and can be used for throttling or on/off control applications through 90 degrees of disc rotation.
- **Sour Service Capability—**Trim and bolting materials are available for applications involving sour service. These constructions comply with the recommendations of NACE MR0175-2002.
- **Improved Environmental Capabilities—**The optional ENVIRO-SEAL packing system is designed with improved sealing, guiding, and loading force transmission. The ENVIRO-SEAL packing system can control emissions to below the EPA (Environmental Protection Agency) limit of 100 ppm (parts per million) for valves.
- **Integral Shaft-to-Body Bonding—**Standard valve construction includes conductive packing to provide electrical bonding for hazardous area applications.
- **Low Cost Maintenance—**Individual disc/shaft components can be replaced after disassembly due to sleeve and taper pin connections (see figure 1).

Specifications

Valve Sizes and End Connection Styles

NPS ■ 2, ■ 3, ■ 4, ■ 6, ■ 8, ■ 10, and ■ 12 valve size available in ■ wafer or ■ single-flanged style (NPS 2 available in wafer only)

Maximum Inlet Pressure(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. NPS 2 is also consistent with CL600

Maximum Pressure Drops(1)

Consistent with CL150 and 300 pressure-temperature ratings per ASME B16.34 except for PTFE, UHMWPE and Phoenix III seals which are derated at some higher pressure-temperature values. Refer to figure 3

Shutoff Classifications

■ **PTFE, Reinforced PTFE, and UHMWPE(3) Seals:** Bidirectional shutoff to Class VI per ANSI/FCI 70-2 and IEC 60534-4. See figure 2
■ **NPS 2 Metal Seal:** Bidirectional shutoff. 0.001% of maximum valve capacity (1/10) of Class IV per ANSI/FCI 70-2 and IEC 60534-4. Maximum Pressure drop is 51 bar (740 psi) forward and 6.9 bar (100 psi) reverse
■ **NOVEX Seal:** For NPS 3 through 12. Unidirectional shutoff is 0.0001% of maximum valve capacity (1% of Class IV). See figure 2
■ **Phoenix III Seal:** For NPS 3 through 12. Bidirectional shutoff to Class VI per ANSI/FCI 70-2 and IEC 60534-4. See figure 2. For the optional Phoenix III Fire-Tested seal(2), consult your Emerson Process Management sales office

Construction Materials

Refer to table 2 for standard material selections and component temperature ranges

Material Temperature Capabilities(1)

PTFE and Reinforced PTFE Seals: -46 to 232°C (-50 to 450°F)
UHMWPE(3) Seal: -18 to 93°C (0 to 200°F)
NPS 2 Metal Seal: -46 to 538°C (-50 to 1000°F)
NOVEX Seal: -46 to 538°C (-50 to 1000°F)
Phoenix III: -46 to 232°C (-50 to 450°F)

Flow Characteristic

Approximately linear

Flow Direction

Refer to figure 4

Flow Coefficients

See table 1 and Fisher Catalog 12

Flow Coefficient Ratio(4)

100 to 1

Noise Levels

See Catalog 12 for sound pressure level prediction

Disc Rotation

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

Actuator/ Valve Action

With a diaphragm or piston rotary actuator, the valve action is field-reversible. Refer to information provided in the Installation section and figure 4

Valve Classification

Face-to-face dimensions of NPS 3 through 12 valves in CL150 or 300, meets API 609 or MSS-SP68 standards for face-to-face dimensions of wafer-style and single-flange valves (see figure 6)

(continued)

Specifications (continued)

Approximate Weights

VALVE SIZE, NPS	WAFER STYLE		SINGLE FLANGE	
	CL150	CL300	CL150	CL300
	kg			
2[5]	4	4	---	---
3	5	6	6	11
4	9	10	11	18
6	13	15	16	27
8	21	24	27	42
10	34	44	40	78
12	49	64	62	131
	Pounds			
2[5]	9.5	9.5	---	---
3	10	13	14	25
4	19	23	24	39
6	29	33	35	59
8	47	53	59	93
10	75	96	88	172
12	107	141	137	288

Mating Flange Capabilities

All sizes compatible with CL150 and 300, NPS 2 also compatible with CL600, flanges (schedule 80 or lighter, see figure 6, Dimension M)

Shaft Diameters

See figure 6

ENVIRO-SEAL™ Packing

This optional ■ PTFE or ■ graphite packing system provides improved sealing, guiding, and transmission of loading force to control liquid and gas emissions (see figure 5). See Bulletin 59.3:041 ENVIRO-SEAL Packing Systems for Rotary Valves for more information.

1. The pressure-temperature limits in this bulletin and any applicable standard or code limitation should not be exceeded.
2. For component selection and applicable fire-tested standards and codes, consult your Emerson Process Management sales office (see table 2).
3. UHMWPE stands for ultra high molecular weight polyethylene.
4. Ratio of maximum flow coefficient to minimum usable flow coefficient.
5. Weight of the CL600 NPS 2 valve is the same as the CL150 and CL300 values.

Installation

It is recommended that the valve drive shaft be mounted in a horizontal position as shown in the figures on page 1. Operating conditions may require specific valve/actuator fail action, styles, positions and flow direction. Valves with NOVEX seal rings require mounting in the reverse flow direction. Refer to figure 4. 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 Process Management sales office. Dimensions for wafer-style and single-flanged valves are shown in figure 6.

Table 1. Flow Coefficients[1]

VALVE SIZE, NPS	C_v FORWARD FLOW WITH DISC WIDE OPEN (90 DEGREES ROTATION)	
	CL150	CL300
2	80.2	80.2
3	237	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 2. 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
CG8M	-198 to 538	-325 to 1000
Disc Material		
CF8M	-198 to 538	-325 to 1000
CG8M	-198 to 538	-325 to 1000
Shaft Material		
S20910	-198 to 538	-325 to 1000
S17400	-62 to 427	-80 to 800
Bearing Material		
PEEK / PTFE lined	-73 to 260	-100 to 500
Metal (NOVEX or Phoenix III only)	-198 to 538	-325 to 1000
Packing Material		
PTFE V-Rings	-46 to 232	-50 to 450
Graphite rings (NOVEX or Phoenix III only)	-198 to 538	-325 to 1000
Seal Ring		
PTFE (Standard) Soft Seal Ring	-46 to 232	-50 to 450
Reinforced PTFE Soft Seal Ring	-46 to 232	-50 to 450
UHMWPE Soft Seal Ring	-18 to 93	0 to 200
NOVEX Metal Seal Ring	-46 to 538	-50 to 1000
NPS 2 Metal Seal ring	-46 to 538	-50 to 1000
Phoenix III Metal Seal Ring Fluorocarbon backup ring	-40 to 232	-40 to 450
Phoenix III Fire-Tested[1] Metal Seal Ring Fluorocarbon backup ring (Specify metal bearings and graphite packing)	-40 to 232	-40 to 450

1. For component selection and applicable fire-tested standards and codes, consult your Emerson Process Management sales office.

Figure 1. Typical Valve Construction

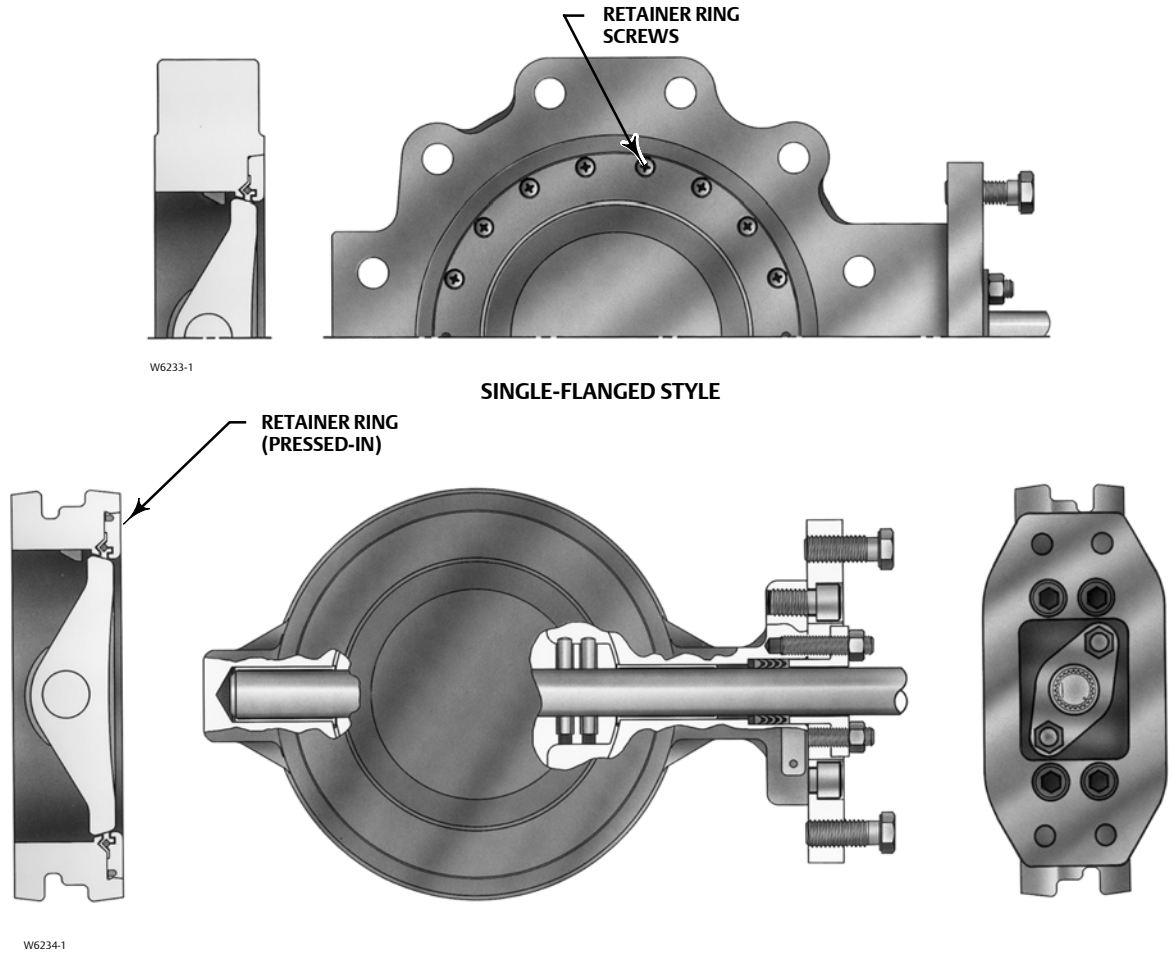


Figure 2. Available Seal Configuration

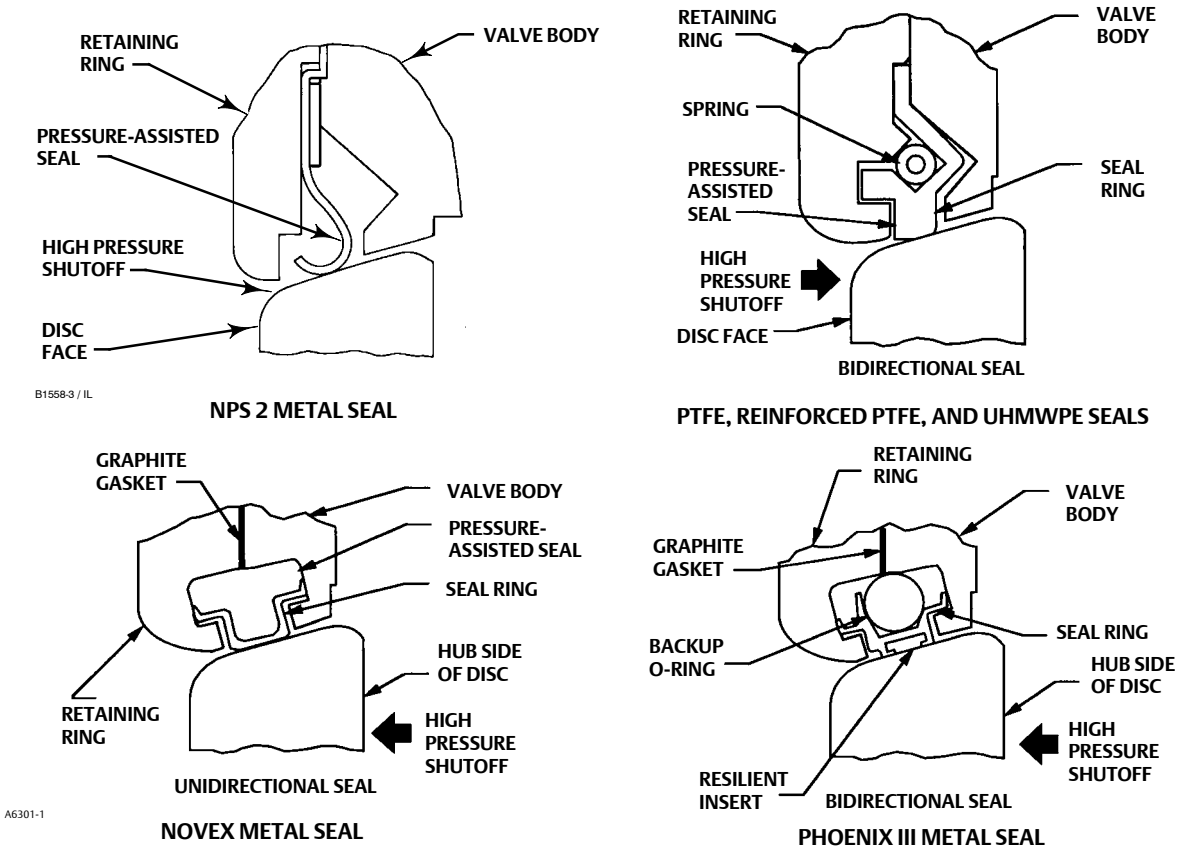
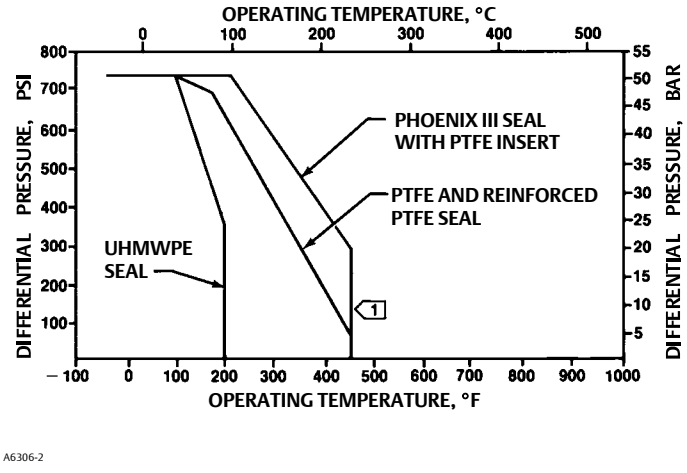
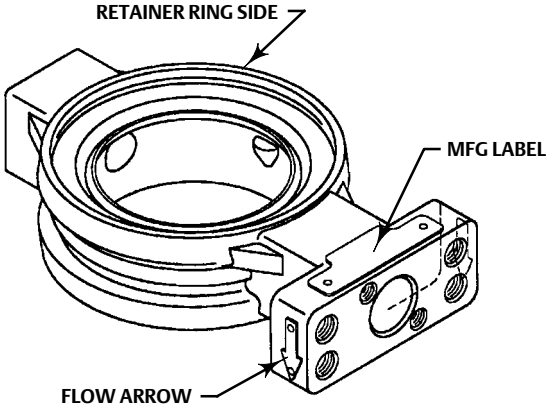


Figure 3. Maximum Pressure-Temperature Ratings



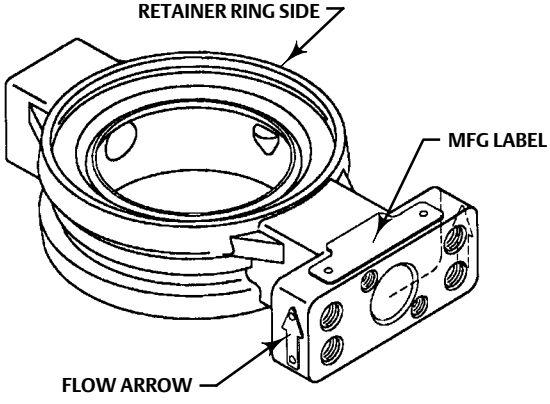
Note:
1 Temperature limitations do not account for the additional limitations imposed by the backup ring used with this seal. To determine the effective temperature limitation of the appropriate seal/backup ring combination, refer to table 2.

Figure 4. Actuator Mounting



ARROW SHOWS PREFERRED FLOW DIRECTION FOR SOFT SEALS AND NPS 2 METAL SEALS

FORWARD FLOW



ARROW SHOWS FLOW DIRECTION FOR NOVEX METAL SEAL, AND PREFERRED FLOW DIRECTION FOR PHOENIX METAL SEAL

REVERSE FLOW

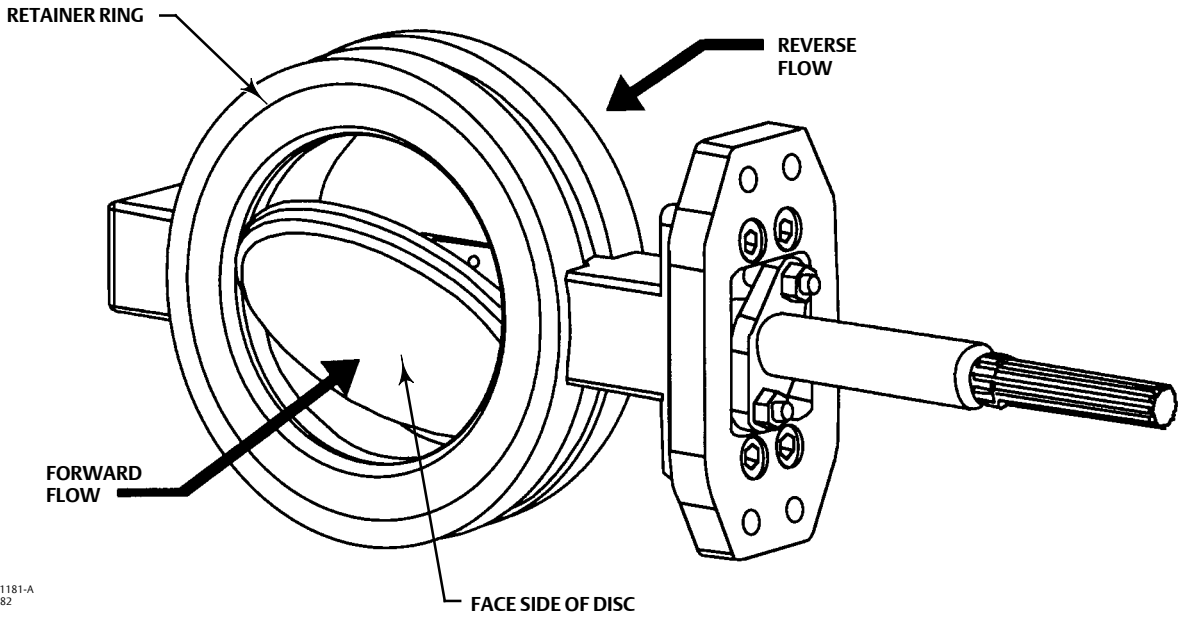
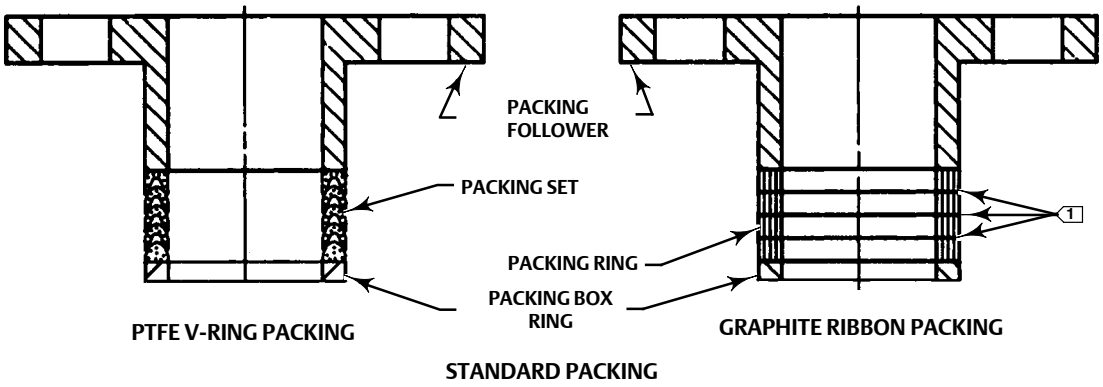
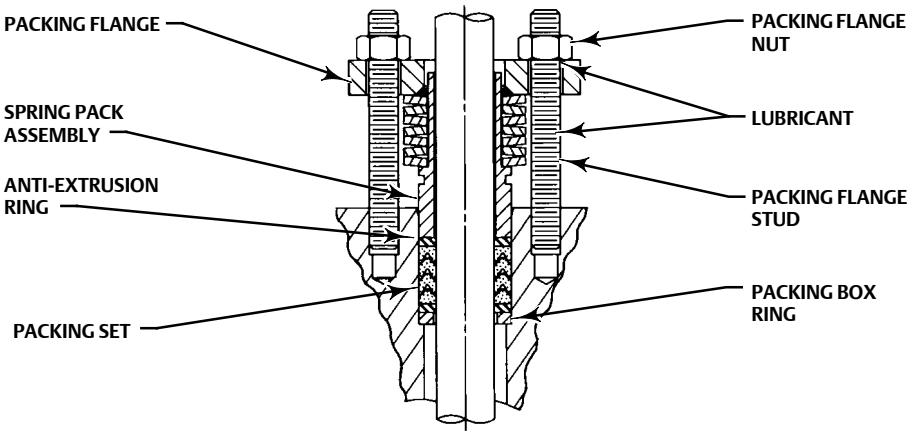
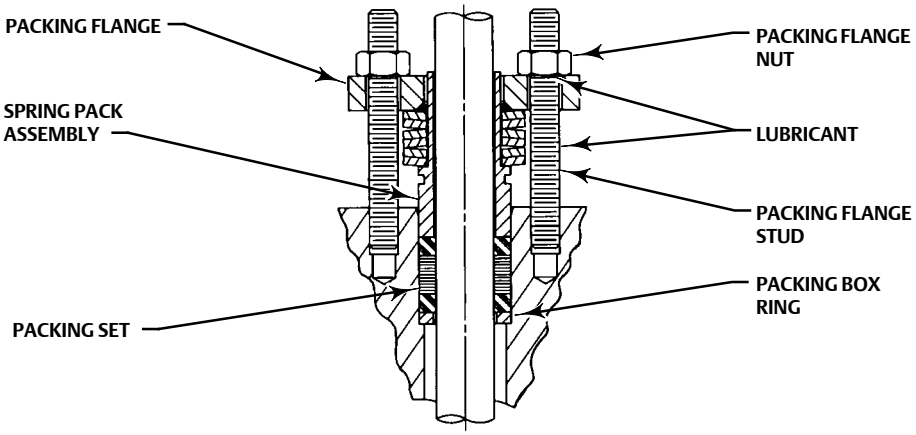


Figure 5. Typical Packing Arrangement







Note:
1 Includes zinc washers for graphite ribbon packing only.

Table 3. CL150 Valve Dimensions

Valve Size, NPS	A	E	G		K	M(2)	R		S(1)	T	U	W	Y
			Wafer Style	Single Flange			Wafer Style	Single Flange					Single Flange Only
mm													
2	45	188	102	---	102	---	103	---	12.7	117	---	See thread information below	---
3	48	188	70	79	121	73	133	189	12.7	117	---		See thread information below
4	54	188	86	102	143	97	171	219	15.9	117	---		
6	57	214	121	129	172	146	219	273	19.1	152	32		
8	64	214	155	157	200	191	272	333	25.4	152	32		
10	71	208	186	198	254	238	330	406	31.8	235	46		
12	81	208	222	230	279	284	387	476	38.1	235	46		
Inches													
2	1.78	7.38	4.0	---	4.00	1.88	4.06	---	1/2	4.62	---	1/2-13	---
3	1.88	7.38	2.75	3.12	4.00	2.88	5.25	7.44	1/2	4.62	---	1/2-13	5/8-11 4-holes
4	2.12	7.38	3.38	4.00	5.62	3.81	6.75	8.62	5/8	4.62	---	1/2-13	5/8-11 8-holes
6	2.25	8.44	4.75	5.06	6.75	5.75	8.62	10.75	3/4	6.00	1.25	1/2-13	3/4-10 8-holes
8	2.50	8.44	6.12	6.19	7.88	7.50	10.69	13.12	1	6.00	1.25	1/2-13	3/4-10 8-holes
10	2.81	8.19	7.31	7.81	10.00	9.38	13.00	16.00	1-1/4	9.25	1.81	5/8-11	7/8-9 12-holes
12	3.19	8.19	8.75	9.06	11.00	11.19	15.25	18.75	1-1/2	9.25	1.81	5/8-11	7/8-9 12-holes

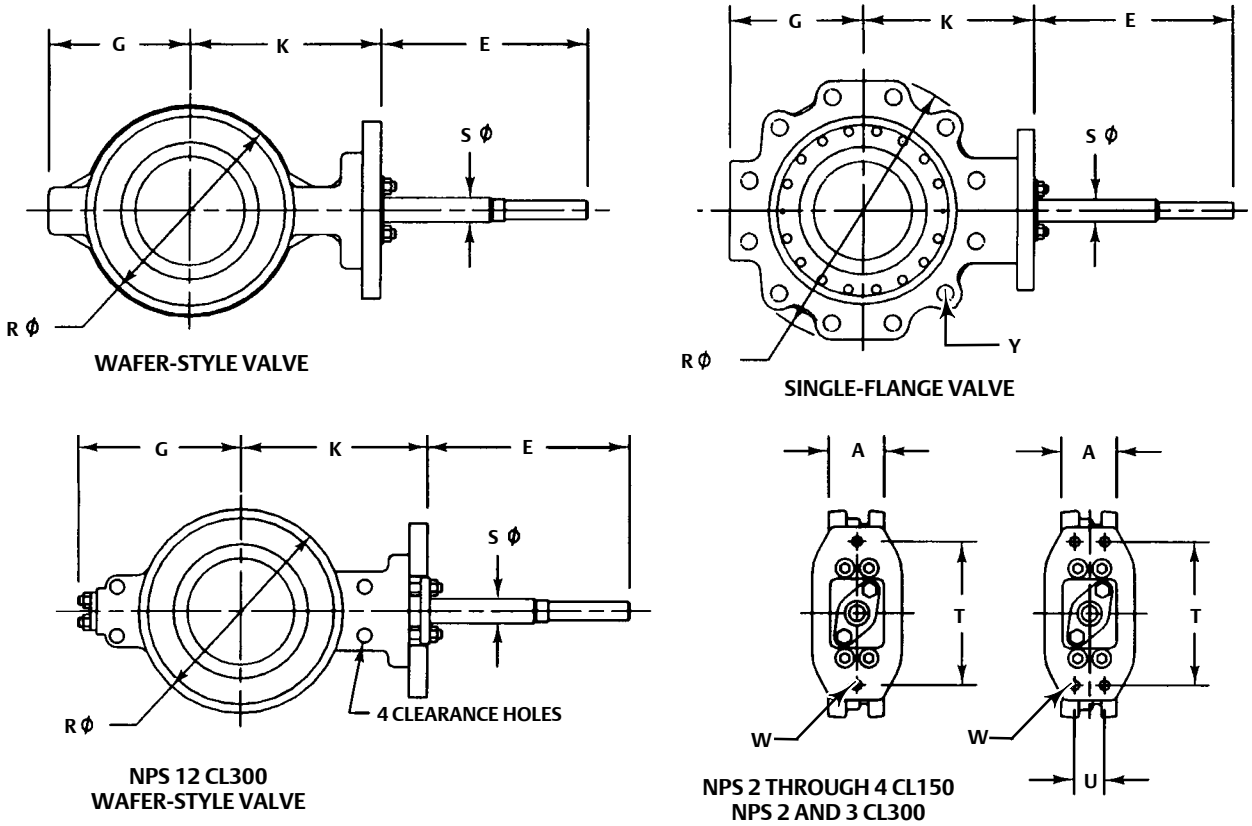
1. This nominal valve shaft diameter is the shaft diameter through the packing box. Use this diameter when selecting Fisher actuators.
2. Disc chordal swing diameter at valve face. Please verify with piping.

Table 4. CL300 Valve Dimensions

Valve Size, NPS	A	E	G		K	M(2)	R		S(1)	T	U	W	Y
			Wafer Style	Single Flange			Wafer Style	Single Flange					Single Flange Only
mm													
2	45	188	102	---	102	---	103	---	12.7	117	---	See thread information below	---
3	48	188	89	95	137	73	132	206	15.9	117	---		See thread information below
4	54	214	114	121	165	97	162	238	19.1	152	32		
6	59	214	146	152	197	146	221	308	25.4	152	32		
8	73	208	175	183	235	188	276	375	31.8	235	46		
10	83	208	232	229	268	233	330	438	38.1	235	46		
12	92	365	308	308	308	278	389	508	44.5	273	51	21	
Inches													
2	1.78	7.38	4.00	---	4.00	1.88	4.06	---	1/2	4.62	---	1/2-13	---
3	1.88	7.38	3.50	3.75	5.38	2.88	5.19	8.12	5/8	4.62	---	1/2-13	3/4-10 8-holes
4	2.12	8.44	3.50	4.75	6.50	3.81	6.38	9.38	3/4	6.00	1.25	1/2-13	3/4-10 8-holes
6	2.31	8.44	5.75	6.00	7.75	5.69	8.69	12.12	1	6.00	1.25	1/2-13	3/4-10 12-holes
8	2.88	8.19	6.88	7.19	9.25	7.38	10.88	14.75	1-1/4	9.25	1.81	5/8-11	7/8-9 12-holes
10	3.25	8.19	9.12	9.00	10.56	9.19	13.00	17.25	1-1/2	9.25	1.81	5/8-11	1-8 16-holes
12	3.61	14.00	12.12	12.12	12.12	10.94	15.31	20.00	1-3/4	10.75	2.00	0.82	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. Disc chordal swing diameter at valve face. Please verify with piping.

Figure 6. Typical Valve Dimensions (also see tables 3 and 4)



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14B0835-D
B2433

Note:
Disc chordal swing diameter at valve face is M. Please verify clearance with piping.

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