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8560 Valve

www.fishvalve.nt-rt.ru

Product Bulletin

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.

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



W8299-2

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



W8361

Fisher 8560 Single-Flange Valve

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

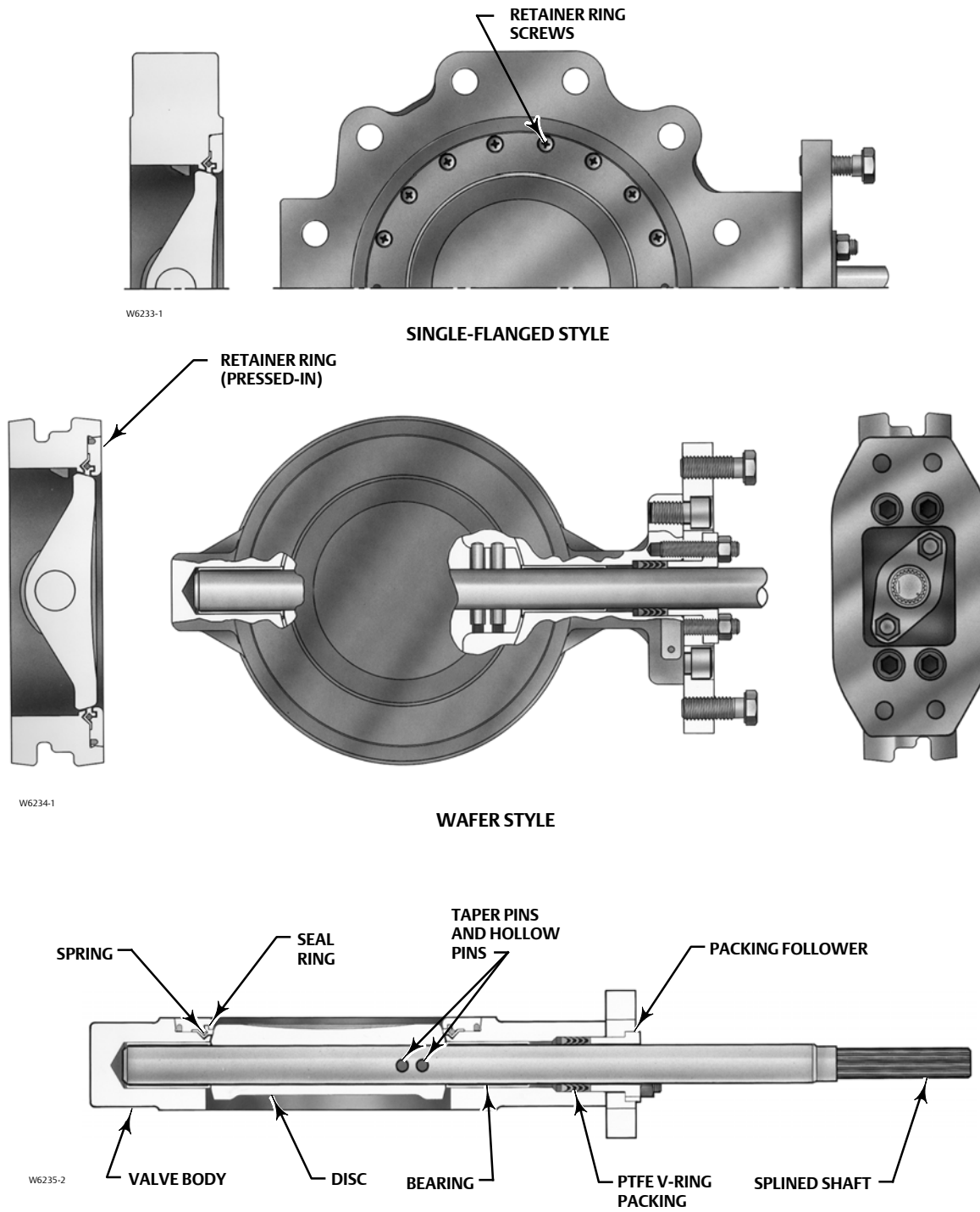


Figure 2. Available Seal Configuration

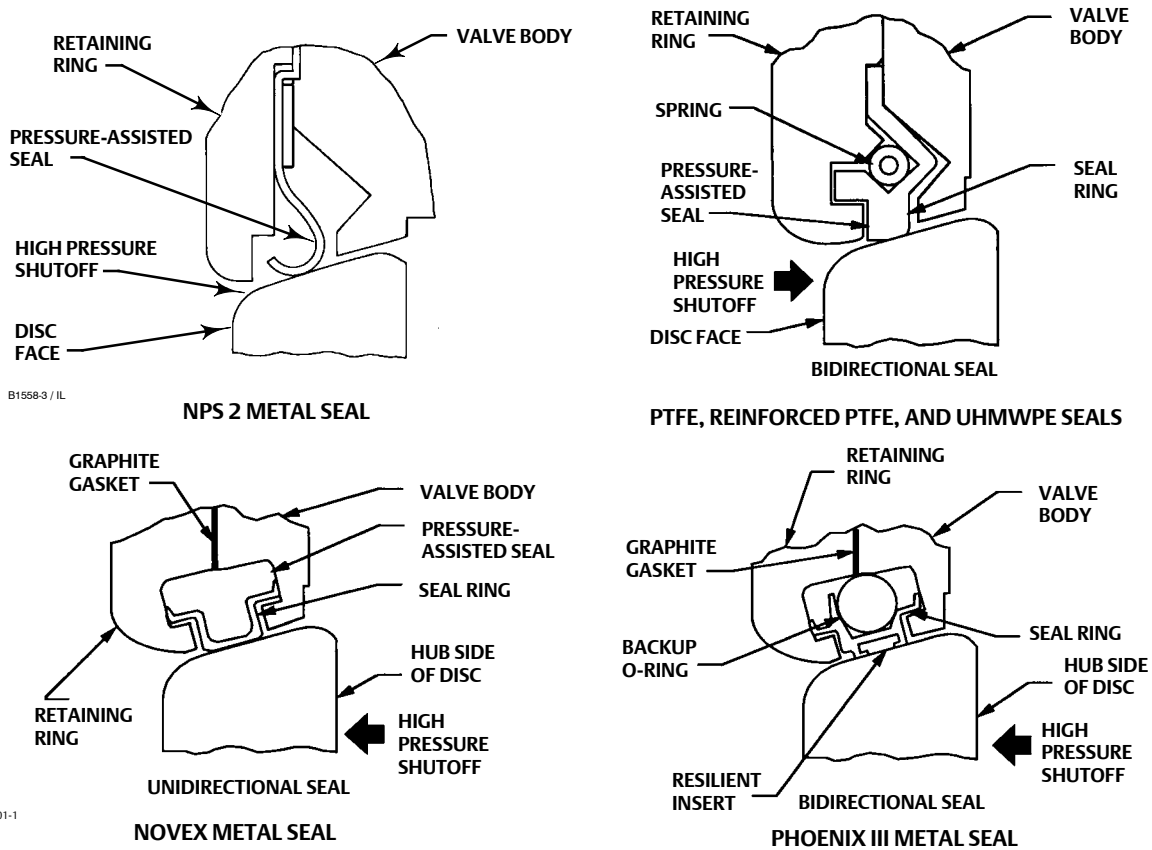
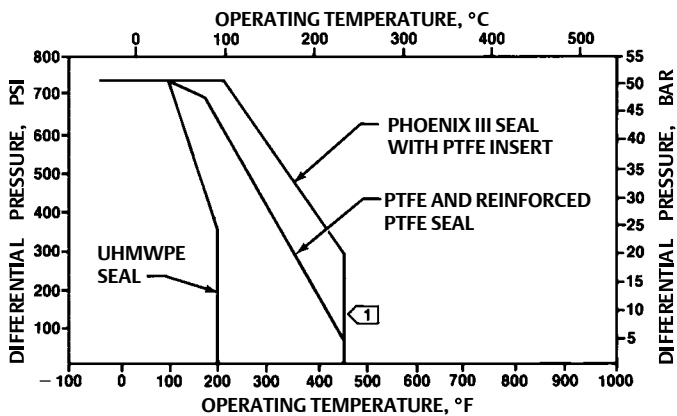


Figure 3. Maximum Pressure-Temperature Ratings

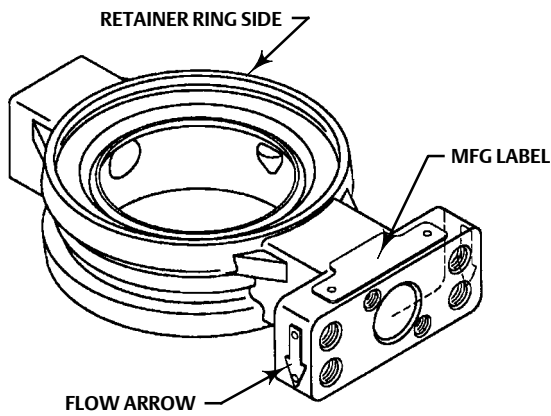


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Note:

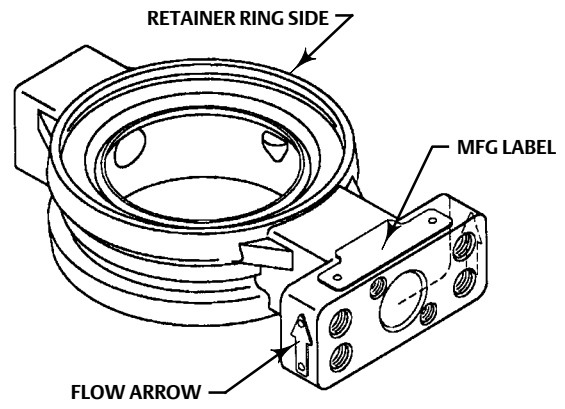
1 > Temperature limitations do not account for the additional limitations imposed by the backup ring used with this seal. To determine the effective temperature limitation of the appropriate seal/backup ring combination, refer to table 2.

Figure 4. Actuator Mounting



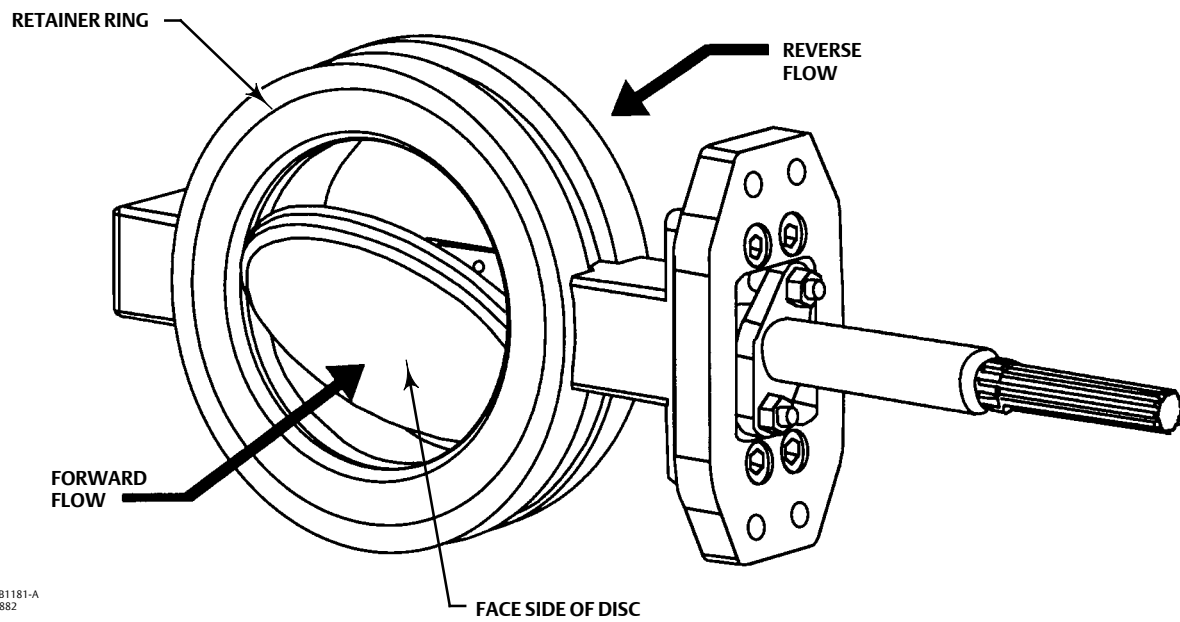
ARROW SHOWS PREFERRED FLOW DIRECTION FOR SOFT SEALS AND NPS 2 METAL SEALS

FORWARD FLOW



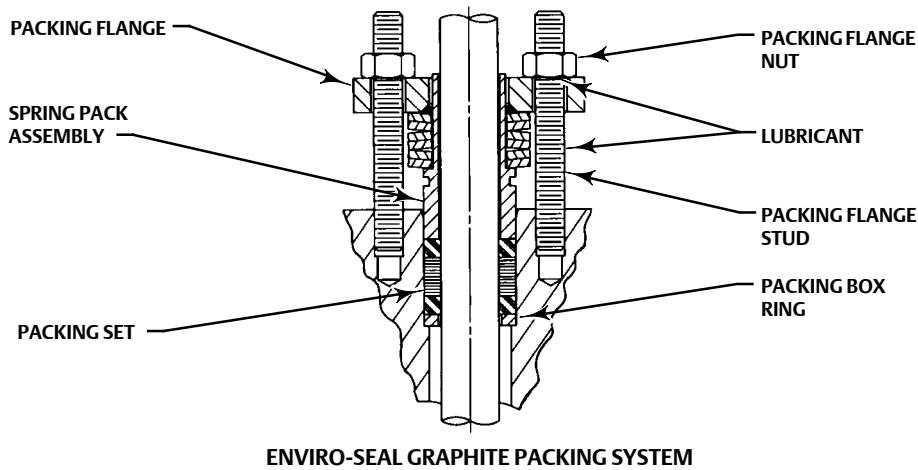
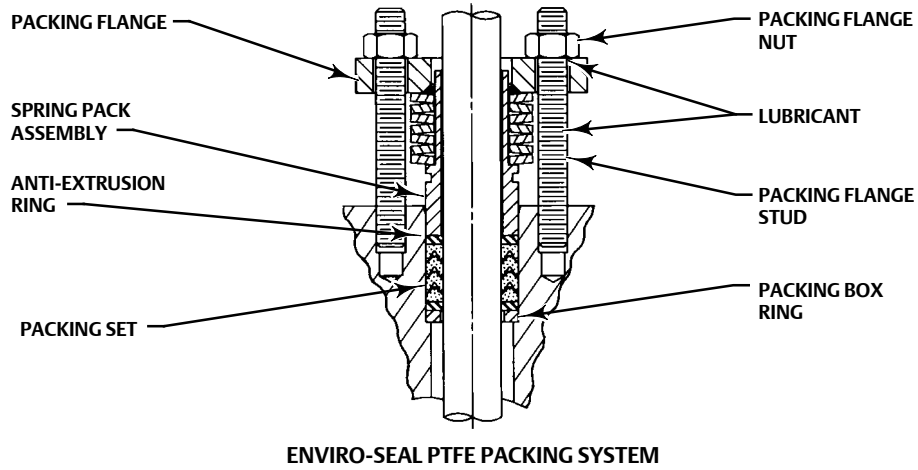
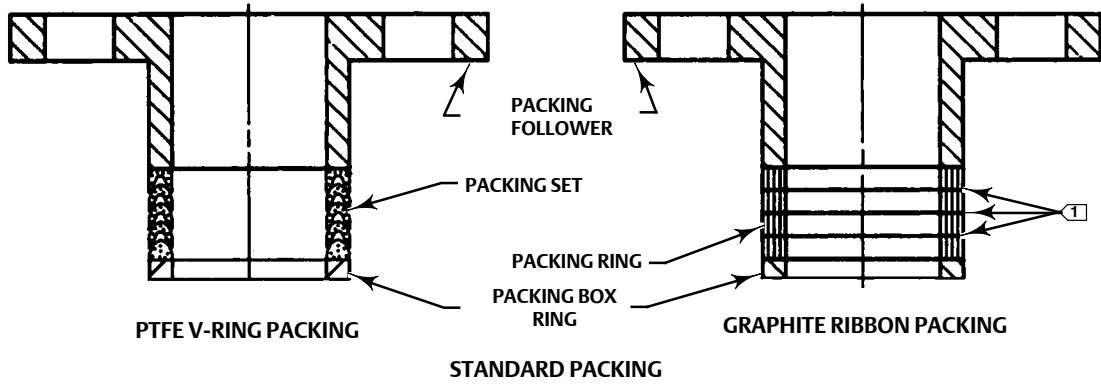
ARROW SHOWS FLOW DIRECTION FOR NOVEX METAL SEAL, AND PREFERRED FLOW DIRECTION FOR PHOENIX METAL SEAL

REVERSE FLOW



7581181-A
A6882

Figure 5. Typical Packing Arrangement



C0785*A

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 | 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 | |

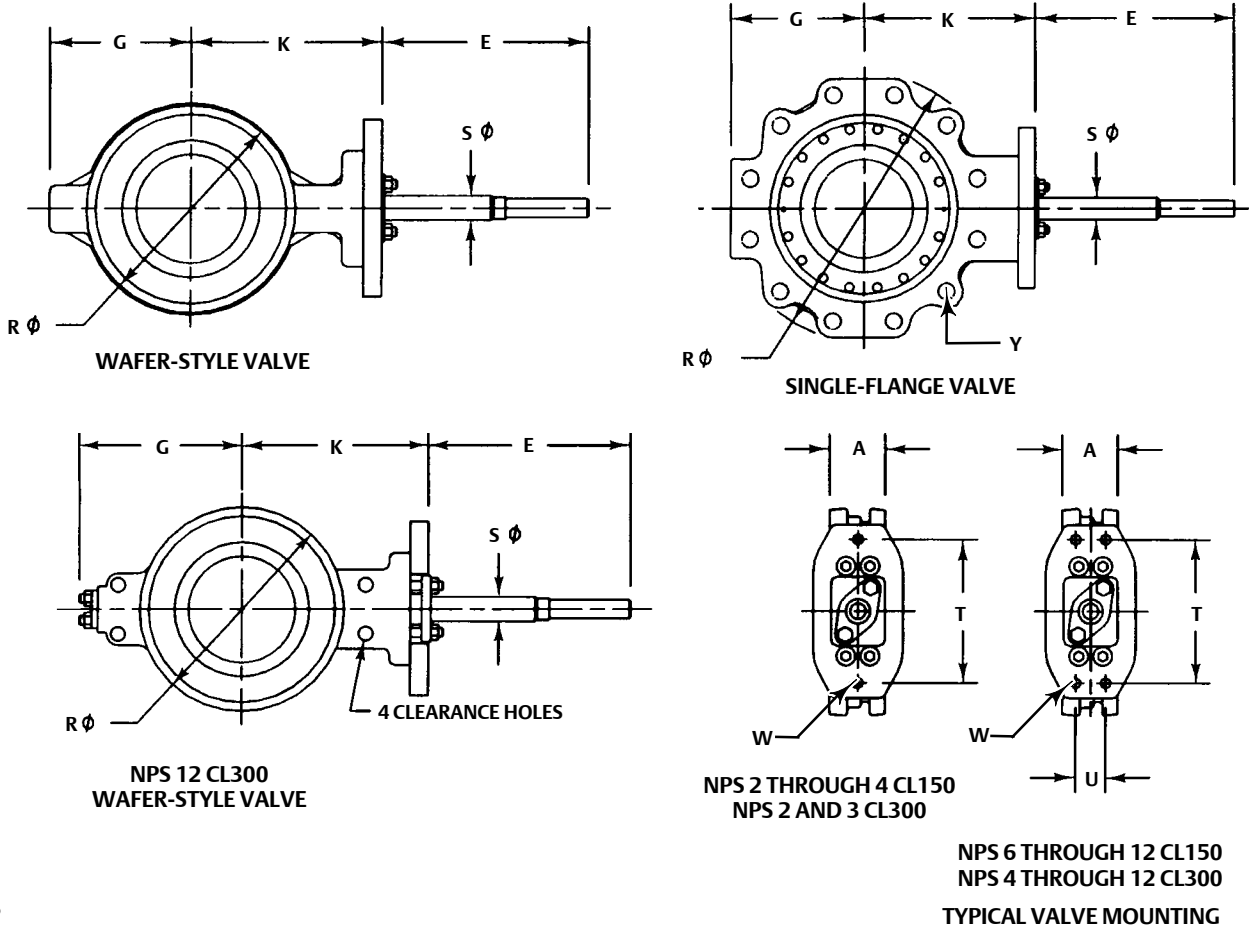
1. This nominal valve shaft diameter is the shaft diameter through the packing box. Use this diameter when selecting Fisher actuators.
 2. Disc chordal swing diameter at valve face. Please verify with piping.

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 | 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 | | | |
| 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)



1480833-B
1480835-D
82433

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

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