

Fisher™ Vee-Ball™ V150, V200, and V300 Rotary Control Valves

This bulletin covers the DN 25 through 600 (NPS 1 through 24) V150, V200 and V300 Vee-Ball control valves. The Vee-Ball valve combines globe valve ruggedness with the efficiency of a rotary valve. The Vee-Ball valve is a segmented ball valve which features a contoured segmented V-Notch ball. A shearing action between the V-notch ball and the ball seal (figure 1) promotes smooth, nonclogging operation. The unrestricted straight-through flow design provides high capacity for gas, steam, liquids, and fibrous slurries.

V150, V200, and V300 valves mate with a variety of ASME raised face flanges, as well as with EN flanges (see Specifications).

To meet specific application requirements, a variety of metal and soft ball seal materials are available. A splined drive shaft combines with a variety of power operated and manual actuators to provide reliable, high-performance throttling or on-off operation for many different applications in the process industries.

Features

- **Trim Versatility**—Trim components are interchangeable between V150, V200, and V300 valves. This feature allows you to reduce your spare parts inventory and maintenance procedures. The seal assembly can be changed without removing the actuator or without removing the ball from the valve body.
- **Easy Installation**—Flanged body design of the V150 and V300 eliminates exposed line flange bolting, reduces alignment and installation time, and promotes secure valve installations and piping integrity. The V200 is available with flanges in NPS 2 through 8.



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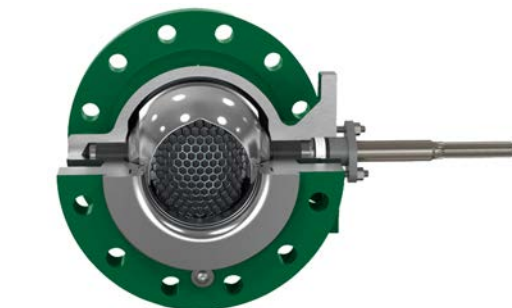
V150



X0337

V200

Typical Vee-Ball Valves with Fisher 2052 Actuators and FIELDVUE™ DVC6200 Digital Valve Controllers



X1560

V300

NPS 6 V300 Cutaway Image with Optional Cavitrol™ Hex Anti-Cavitation Trim

Specifications

Valve Sizes

See table 1

Valve End Connection Styles

V150: Flanged valves that mate with CL150 raised-face flanges and EN 1092-1 Type B raised-face and Type F Recess

V200: Flangeless (all sizes) and flanged valves that mate with CL600 raised-face flanges (NPS 2-8)

V300: Flanged valves that mate with CL300 raised-face flanges and EN 1092-1 Type B raised-face and Type F Recess

Maximum Inlet Pressures⁽¹⁾

V150 or V300 WCC (or 1.0619 Steel), CF3M (or 1.4409 SST), CG8M, LCC, M35-2, CK3McuN, CD3MN, and CD3MWCuN Valves: Consistent with CL150 for V150 or CL300 for V300 pressure-temperature ratings per ASME B16.34 or with PN pressure-temperature ratings shown in table 1. **Note:** CF3M is the standard material offering in Europe and Asia-Pacific. 1.0619 Steel and 1.4409 SST are also standard material offerings in Europe.

V200 WCC, CG8M, and LCC Valves: Consistent with applicable pressure-temperature ratings in table 1 per ASME B16.34.

CW2M: Consistent with applicable pressure-temperature ratings shown in table 7. Do not exceed the material temperature capabilities shown below or the pressure drop limitations.

Maximum Shutoff Pressure/Temperature Ratings⁽¹⁾

Composition (Fisher TCM Plus or TCM Ultra), Flat Metal (NPS 3 through 12 valves only), HD and High Temperature HD Metal Ball Seals and Flow Ring: See table 9.

Shutoff Classification⁽¹⁾

Fisher TCM Plus or Ultra Ball Seal (Forward Flow): Class VI per ANSI/FCI 70-2 and per IEC 60534-4, **Flat Metal Ball Seal for NPS 3 through 12 only (Forward Flow):** Class IV per ANSI/FCI 70-2 and per IEC 60534-4,

HD (Heavy Duty) Ball Seal (Bidirectional Flow): 0.01% of valve capacity; Class IV per ANSI/FCI 70-2 and IEC 60534-4; Maximum allowable pressure drop in reverse flow is 6.9 bar (100 psi);

High Temperature HD (Heavy Duty) Ball Seal

(Bidirectional Flow): Class III per ANSI/FCI 70-2 and IEC 60534-4

Flow Ring Construction (Bidirectional Flow): 5% of valve capacity at full travel

Micro-Notch Ball with HD Seal: 4 SCFH (Leakage rate equivalent to Class IV for standard ball. This is based on the capacity of a standard ball.)

Construction Materials

See tables 5 and 6

Temperature Capabilities^(1,2)

Composition Seals

Fisher TCM Plus: -46 to 232°C (-50 to 450°F)

Fisher TCM Ultra: -46 to 260°C (-50 to 500°F)

HD Metal Seals: -46 to 288°C (-50 to 550°F)

PEEK HD Seal: -46 to 232°C (-50 to 450°F)

High Temperature HD Metal Seal: 288 to 427°C (550 to 800°F). Contact your [Emerson sales office](#) if higher temperatures are required.

Ceramic Micro-Notch Ball: -46 to 93°C (-50 to 200°F)⁽⁴⁾

Flow Ring or Flat Metal Seal : -198 to 425°C (-325 to 800°F)

PEEK/PTFE Bearings: -198 to 260°C (-325 to 500°F)

Packing Constructions

PTFE V-ring: -46 to 232°C (-50 to 450°F)

Graphite: -198 to 538°C (-325 to 1000°F)

ENVIRO-SEAL™ Single PTFE V-ring: -46 to 232°C (-50 to 450°F) (for 100 ppm service requirements)

ENVIRO-SEAL Graphite: -7 to 316°C (20 to 600°F) (for 100 ppm service requirements). This packing arrangement can be used to 371°C (700°F) for non-environmental service.

Flow Characteristic

Modified equal percentage

Dimensions

See figures 10, 11, and 13 for dimensions

Face-to-Face Dimensions

■ Standard Face-to-Face dimensions comply with ISA S75.08.02

■ ASME B16.10 short face-to-face dimensions are available as an option for NPS 1 through 12 valves. Note that ASME B16.10 short dimensions are longer than ISA S75.08.02. See figure 14 for dimensions.

(continued)

Specifications (continued)

| | |
|--|--|
| <p>Standard Flow Direction Forward (into the convex face of the V-notch ball)</p> <p>Flow Coefficients, Flow Coefficient Ratio⁽³⁾, and Noise Levels See Fisher Catalog 12</p> <p>Maximum Ball Rotation 90 degrees</p> <p>Actuator Mounting Standard valve construction is for right-hand mounting, as viewed from upstream end of valve. Left-hand (optional) mounting is available upon request⁽⁵⁾</p> <p>Valve/Actuator Action With diaphragm or piston rotary actuator, the valve is field-reversible between PDTC or PDO:</p> | <p>■ push-down-to-close (extending actuator rod closes valve) and ■ push-down-to-open (extending actuator rod opens valve)</p> <p>Approximate Weight See table 2</p> <p>Options</p> <ul style="list-style-type: none"> ■ Pipe plug at end of follower shaft for all sizes, ■ Line flange bolting, ■ Materials that are compatible with sour service, ■ Alloy construction materials, ■ ENVIRO-SEAL packing system: See figure 9 and Bulletin 59.3:041, ENVIRO-SEAL Packing Systems for Rotary Valves (D101638X012) for more information, ■ Micro-Notch construction for NPS 1 valves (see Micro-Notch Construction section), ■ Alloy trim material, ■ Chrome Carbide coated internals (NPS 2 through 12), ■ Rotary attenuator to reduce aerodynamic noise and cavitation effects, ■ Double D, Square, and Keyed shaft options, ■ Cavitrol Hex anti-cavitation trim |
|--|--|

1. The pressure/temperature limits in this bulletin, and any applicable code or standard limitation, should not be exceeded.
 2. Additional limits are shown in tables 7, 8 and 9.
 3. Ratio of maximum flow coefficients to minimum usable flow coefficient can also be called rangeability.
 4. For the CG8M and alloy 6 Micro-Notch constructions, pressure and temperature capabilities are the same as for standard constructions.
 5. True left-hand mount is not available for Micro-Notch constructions, as it will cause the ball to rotate to the bottom of the valve body.

| | | | |
|--------------------------|---|---|----|
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Features (continued)

- **Application Versatility**—The valves are available with ISA S75.08.02 and IEC 534-3-2 face-to-face dimensions as a standard construction, and optional ASME B16.10 short face-to-face dimensions. IEC 534.3.2 face-to-face dimensions are equivalent to S75.08.02 face-to-face dimensions.
- **Long Service Life**—The solid HD ball seal (figures 1 and 2) construction provides long service life in demanding applications. The constant wiping action of the seal across the ball's sealing surface prevents scale and sludge buildup, and provides excellent service on steam, gases, slurries, and various liquid applications.
- **Excellent Flow Control**—Precise contouring of the Vee-Ball provides a modified equal percentage flow characteristic. For very precise control of low flow rates, the Micro-Notch option is available on the NPS 1 valve. See the Micro-Notch Construction section of this bulletin for more information.
- **Sour Service Capability**—Materials are available for applications involving sour liquids and gases. These constructions comply with NACE MR0175-2002, MR0175-2003, MR0103, and MR0175/ISO 15156.
- **Smooth Valve Operation**—Precision machined parts and pressure balanced seal designs allow smooth, precise movement of the ball.
- **Quick and Easy Maintenance**—Ball seal inspection and replacement is done at the valve body inlet without removing the actuator or disassembling the valve. Valve maintenance requires no special tools.
- **Structural Integrity**—One-piece valve body improves structural integrity of the pressure boundary by eliminating leak paths that could be caused by the gaskets in two-piece, bolted valve designs.
- **Exceptional Environmental Capabilities**—The optional ENVIRO-SEAL packing systems are designed with very smooth shaft surfaces and live loading to provide exceptional sealing. The seal of the ENVIRO-SEAL system can restrict emissions to less than the EPA (Environmental Protection Agency) limit of 100 ppm (parts per million).
- **Severe Service Trim Options**—Fisher Vee-Ball Series valves with the severe service attenuator or Cavitrol Hex anti-cavitation trim installed combine the efficiency of a rotary valve with the energy absorbing capability of a special trim to provide improved performance for demanding applications. The Fisher attenuator and Cavitrol Hex trim options were designed for gas and liquid service to reduce noise and cavitation effects that cause pipeline vibration.

Table 1. Valve Body Materials, End Connections, and Ratings

| VALVE DESIGN | VALVE BODY MATERIAL | SIZE | RATINGS |
|-------------------------|--|---|--------------------------------|
| | | NPS / DN | ASME / PN |
| V150 | WCC | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12, 14, 16, 20, 24x20 ⁽⁵⁾ | CL150 |
| | WCC / 1.0619 ⁽¹⁾ | DN 80, 100, 150 | PN 10-16 |
| | | DN 200, 250, 300 | PN 10 or PN 16 |
| | LCC | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | CL150 |
| | | DN 80, 100, 150 | PN 10-16 |
| | | DN 200, 250, 300 | PN 10 or PN 16 |
| | CF3M ⁽²⁾ | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | CL150 |
| | CF3M/1.4409 ⁽¹⁾ | DN 80, 100, 150 | PN 10-16 |
| | | DN 200, 250, 300 | PN 10 or PN 16 |
| | R50550 | NPS 1, 1-1/2, 2, 3, 4, 6 | CL150 |
| | CG8M | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12, 14, 16, 20, 24x20 ⁽⁵⁾ | |
| | CW2M | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | |
| | M35-2 | NPS 1, 1-1/2, 2, 3, 4, 6, 8 | |
| CD3MN ⁽³⁾ | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | | |
| CD3MWCuN ⁽³⁾ | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | | |
| CK3MCuN | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | | |
| | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | | |
| V200 ⁽⁴⁾ | WCC, LCC, CG8M, or CF3M ⁽²⁾ | NPS 1, 1-1/2, 2 | CL150/300/600 flangeless |
| | | NPS 3, 4 | CL150 and CL300/600 flangeless |
| | | NPS 6, 8 | CL150/300 and CL600 flangeless |
| | | NPS 10 | CL150 flangeless |
| | WCC, LCC, or CG8M | NPS 2, 3, 4, 6, 8 | CL600 |
| | CW2M, M35-2, or CK3MCuN | NPS 1, 1-1/2, 2, 3, 4, 6, 8 | CL150/300/600 flangeless |
| CK3MCuN | NPS 10 | CL150 flangeless | |
| V300 | WCC | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12, 14, 16, 20 | CL300 |
| | WCC / 1.0619 ⁽¹⁾ | DN 25, 40, 50 | PN 10-40 |
| | | DN 80, 100, 150 | PN 25-40 |
| | | DN 200, 250, 300 | PN 25 or PN 40 |
| | LCC | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | CL300 |
| | | DN 25, 40, 50 | PN 10-40 |
| | | DN 80, 100, 150 | PN 25-40 |
| | | DN 200, 250, 300 | PN 25 or PN 40 |
| | CF3M ⁽²⁾ | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | CL300 |
| | CF3M/1.4409 ⁽¹⁾ | DN 25, 40, 50 | PN 10-40 |
| | | DN 80, 100, 150 | PN 25-40 |
| | R50550 | NPS 1, 1-1/2, 2, 3, 4 | CL300 |
| | CF3M/1.4409 ⁽¹⁾ | DN 200, 250, 300 | PN 25 or PN 40 |
| | CG8M | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12, 14, 16, 20 | CL300 |
| | CW2M | NPS 1, 1-1/2, 2, 3, 4, 6, 8 | |
| | M35-2 | NPS 1, 1-1/2, 2, 3, 4, 6, 8 | |
| | CD3MN ⁽³⁾ | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | |
| CD3MWCuN ⁽³⁾ | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | | |
| CK3MCuN | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | | |
| | NPS 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12 | | |

1. WCC and EN Stl 1.0619 are dual certified. CF3M and EN SST 1.4409 are dual certified.
2. CF3M is a standard offering in Europe and Asia Pacific.
3. NORSOK compliant materials available upon request.
4. Flangeless V200 assemblies mate with raised-face flanges.
5. Valve body mates with NPS 24 ASME CL150 flanges. Internal based on NPS 20 valve design.

Figure 1. Vee-Ball Construction Features, Seals (Fisher V150 Shown)

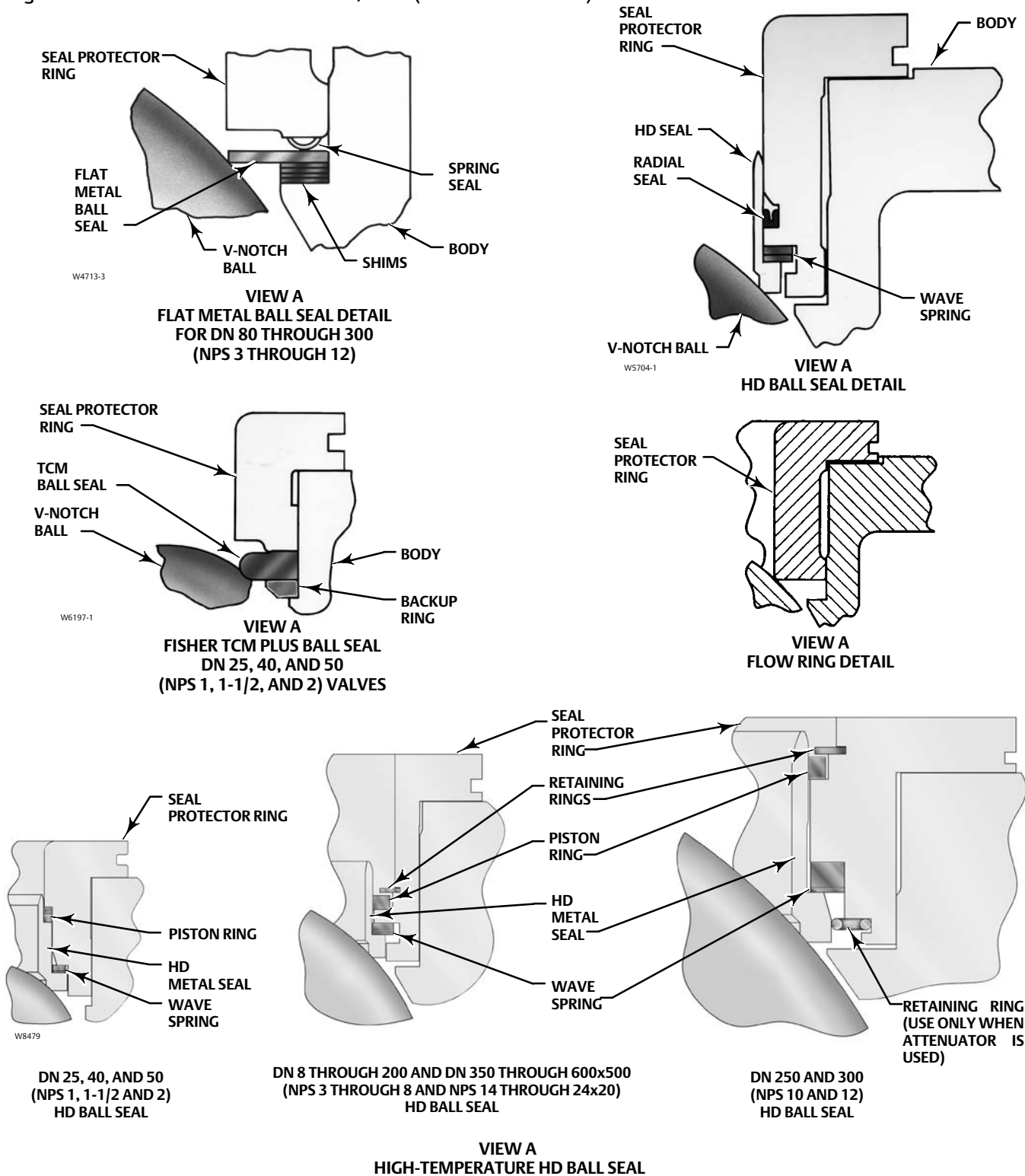
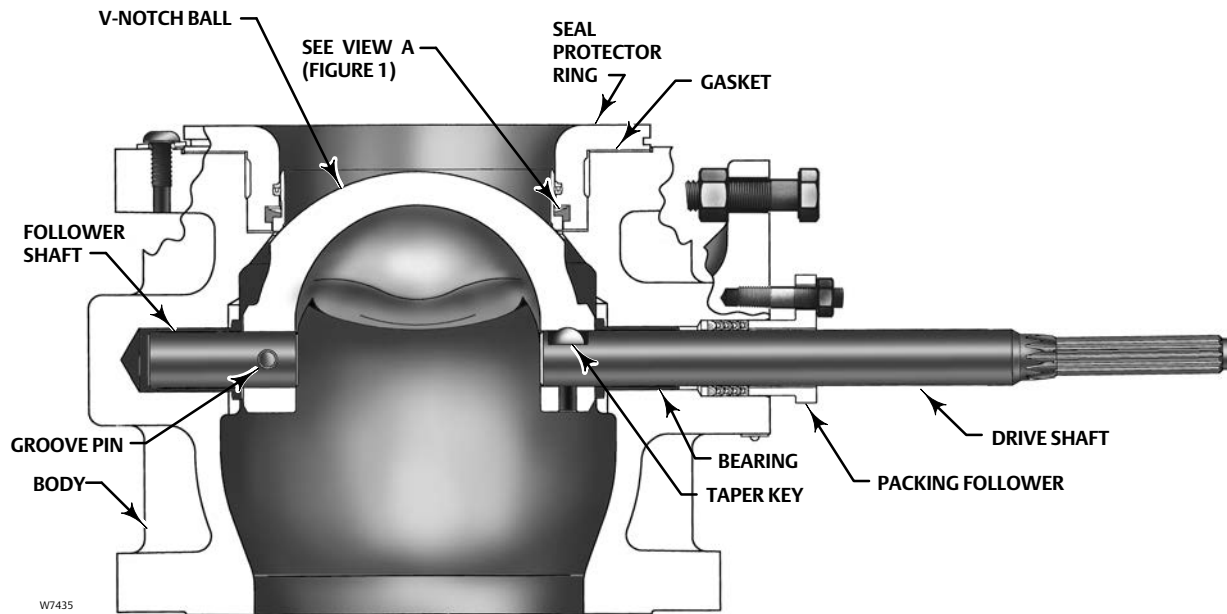
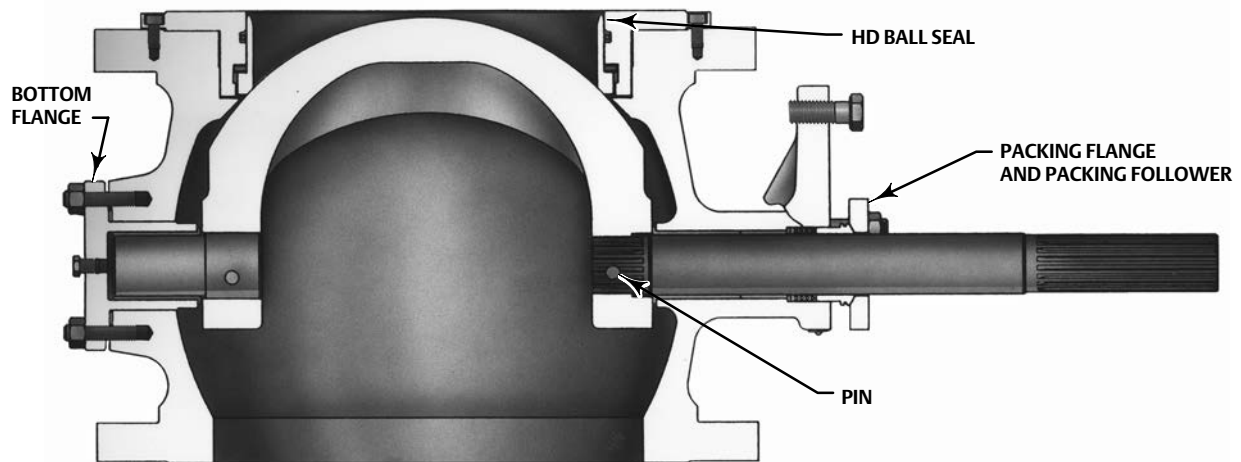


Figure 2. Vee-Ball Construction Features (Fisher V150 Shown)



DN 80 THROUGH 300
(NPS 3 THROUGH 12) VALVES
(HD BALL SEAL SHOWN)



DN 350, 400, 500 and 600x500
(NPS 14, 16, 20, and 24x20) VALVES
(HD BALL SEAL)

Table 2. Valve Weights, Approximate

| VALVE SIZE | | V150 | | V200 | | V300 | |
|------------|-------|------|------|------|-----|------|------|
| DN | NPS | kg | lbs | kg | lbs | kg | lbs |
| 25 | 1 | 5.6 | 13 | 4.5 | 10 | 8 | 17 |
| 40 | 1-1/2 | 8.2 | 19 | 6.4 | 14 | 12 | 27 |
| 50 | 2 | 9.1 | 21 | 10 | 23 | 17 | 38 |
| 80 | 3 | 13 | 43 | 15 | 34 | 28 | 61 |
| 100 | 4 | 26 | 57 | 22 | 48 | 37 | 81 |
| 150 | 6 | 42 | 93 | 36 | 80 | 60 | 133 |
| 200 | 8 | 72 | 158 | 62 | 136 | 103 | 226 |
| 250 | 10 | 107 | 235 | 114 | 252 | 200 | 440 |
| 300 | 12 | 157 | 347 | --- | --- | 293 | 645 |
| 350 | 14 | 247 | 545 | --- | --- | 374 | 825 |
| 400 | 16 | 333 | 735 | --- | --- | 510 | 1125 |
| 500 | 20 | 524 | 1155 | --- | --- | 755 | 1661 |
| 600x500 | 24x20 | 757 | 1666 | --- | --- | --- | --- |

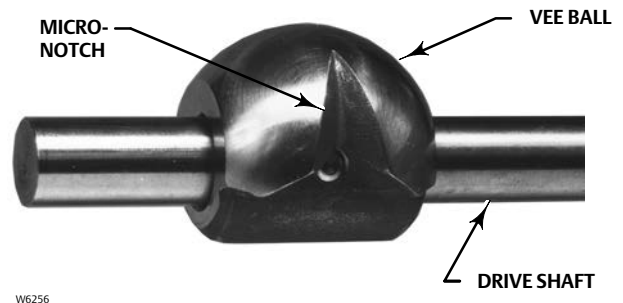
Series B

NPS 3 through 12 have been changed to reduce parts and to improve control performance. The V-notch Ball now resembles the NPS 14 through 24x20 V-notch Ball. The pressed-in bushings have been eliminated, as well as the thrust washer.

Micro-Notch Construction

For very precise control of low flow rates, the Micro-Notch construction (see figure 3) is available on DN 25 (NPS 1) valves. Three Micro-Notch ball materials are available: chrome-plated CG8M (317 stainless steel), solid alloy 6, and solid VTC ceramic. A VTC ceramic HD seal is standard with the VTC ceramic ball. For the CG8M and alloy 6 constructions, pressure and temperature capabilities are the same as for standard constructions. For the ceramic construction, maximum temperature is 93°C (200°F).

Figure 3. Typical Micro-Notch Ball and Shaft



For further information, please refer to the Fisher Vee-Ball V150, V200 and V300 Rotary Control Valves NPS 1 through 12 instruction manual ([D101554X012](#)).

In addition to the standard Micro-Notch offering, options are available in both low (Micro-Scratch) and high (Macro-Notch) flow construction. Contact your [Emerson sales office](#) for more information.

Severe Service Attenuator

Fisher Vee-Ball series valves (V150, V200 flanged and flangeless, and V300), with the severe service attenuator, combine the efficiency of a rotary valve with the energy absorbing capability of a special trim to provide improved performance for demanding applications. The Fisher attenuator design can be utilized in both liquid and gas service to reduce cavitation and noise effects that cause pipeline vibration. See table 3 for a competitive comparison.

The attenuator will not change the NACE compliance of the Vee-Ball valve. When a rotary noise attenuator is installed in a Vee-Ball valve, the V-Notch is no longer a point of high-velocity erosion. As a result, the CoCr-A V-Notch option is not required when a rotary attenuator is used. The rotary attenuator and CoCr-A V-Notch options are not available together.

Features

- **Trim Versatility** — Trim components are interchangeable for Fisher V150, V200, and V300 valves. This feature allows you to reduce your spare parts inventory and maintenance procedures.
- **Attenuator-Ball Fabrication** — The ball-attenuator construction provides structural integrity because of its rugged fabrication weld.

- **Attenuator Performance** — Up to -10 dBA acoustical attenuation, and a $K_c = 1.0$ for hydrodynamics are achievable depending on service conditions.
- **Valve Sizes and End Connection Styles** — NPS 4 through 20 applicable Vee-Ball valves that mate with ASME CL150, CL300, and CL600 raised-face flanges. In addition, DN100 through DN300 valve sizes that mate with PN10, 16, 25, or 40 raised-face flanges.

Attenuator Ball Material

Standard attenuator ball material is CG8M, M35-1, CW2M, or CK3McuN.

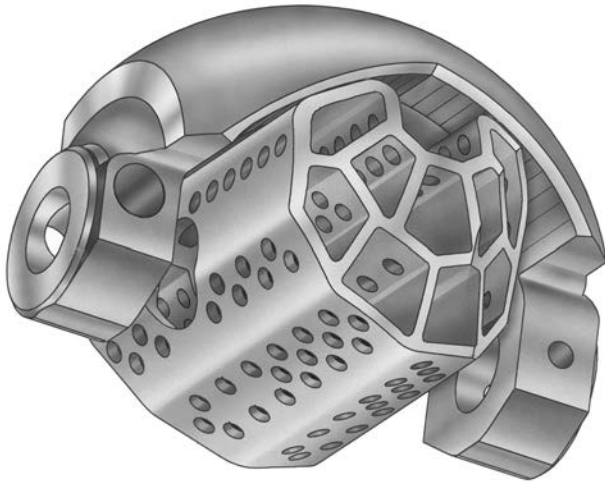
Standard Flow Direction

Forward flow direction is into the convex face of the V-notch ball. The valve with the attenuator must be placed in the forward flow direction for the attenuator to be effective.

Actuator Mounting

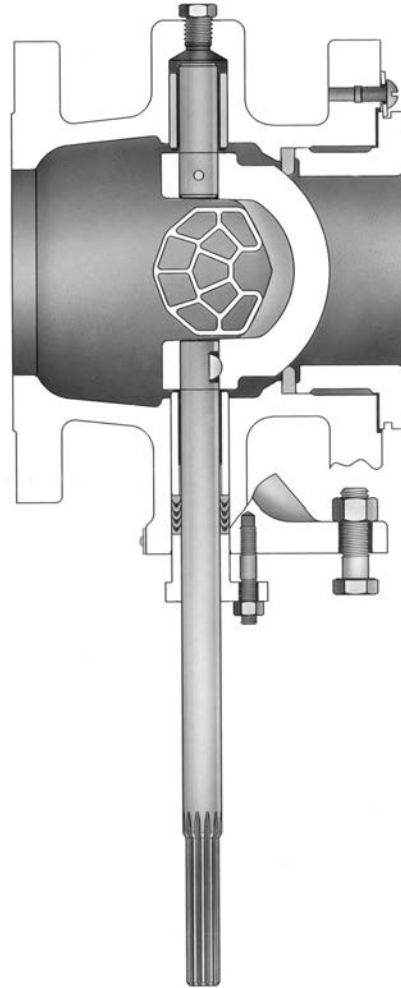
Right-hand or left-hand as viewed from the upstream end of the valve. Counter-clockwise to close for both mounting styles.

Figure 4. Fisher Vee-Ball Series Noise Attenuator Ball



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Figure 5. Fisher Vee-Ball Series Rotary Attenuator Construction



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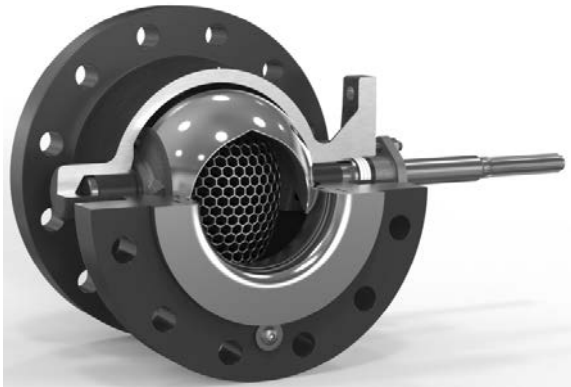
Table 3. Segmented Ball Benefits Analysis Comparison

| Benefits | Typical Competitive Device | Fisher Vee-Ball Attenuator |
|--|----------------------------|----------------------------|
| Predictable Performance | No | Yes |
| -10 dBA Aerodynamic Noise Attenuation | No | Yes |
| Superior Attenuation Effect at Critical Opening Position | No | Yes |
| Maximum Pressure Drop Capability | No | Yes |
| Heavy Duty, Integrally Welded Attenuator/Ball Assembly | No | Yes |
| Valve Splined Shaft Connects to Clamped Actuator Lever to Minimize Lost Motion | No | Yes |
| Superior Soft Seats for Tight Shutoff | No | Yes |
| Moderate Kc Improvement vs Unattenuated Device | Yes | Yes |
| Trunnion Mounted Ball for Superior Wear Resistance | Yes | Yes |
| Heavy Duty Metal Seats for Demanding Applications | Yes | Yes |

Cavitrol Hex Anti-Cavitation Trim

Designed for the V150, V300, and V200 flanged CL600 valve designs, the Fisher Cavitrol Hex trim option provides improved performance for severe service applications and maintains the efficiency of a rotary valve. The Cavitrol Hex reduces cavitation and noise effects that cause pipeline vibration

Figure 6. Fisher NPS 6 V300 Cutaway Image with Optional Cavitrol Hex Anti-Cavitation Trim

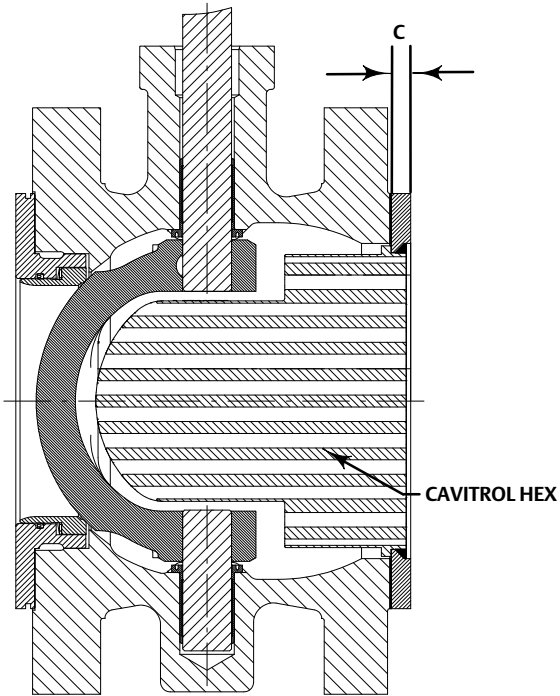


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Features

- **Retrofitability** — Convert previously installed Fisher Vee-Ball Series valves with the Cavitrol Hex anti-cavitation trim after minimal modification to the valve body outlet flange.
- **Materials** — Standard Cavitrol Hex trim material is S31603. R31233 material is also available when a harder, more erosion-resistant trim option is required.
- **Performance** — A $K_c=1.0$ for hydrodynamics is achievable at extreme service conditions.
- **Standard Flow Direction** — Forward flow is into the convex face of the V-notch ball. The valve with the Cavitrol Hex trim should be installed in the forward flow direction for the anti-cavitation trim to be most effective.
- **Actuator Mounting** — Right hand or left hand as viewed from the upstream end of the valve. Counter-clockwise to close action only for both mounting styles.
- **Valve Sizes and End Connection Styles** — NPS 4 through 12, applicable Vee-Ball valves that mate with CL150, 300 or 600 raised face flanges.

Figure 7. Fisher NPS 8 V300 Cavitrol Hex Cross Sectional View



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Table 4. Fisher Cavitrol Hex Dimensions and Weight

| VALVE SIZE | FLANGE THICKNESS C (ADD TO OVERALL FACE-TO-FACE DIMENSION) | | WEIGHT | |
|------------|--|-----|--------|------|
| | NPS | mm | Inch | kg |
| 4 | 12.7 | 0.5 | 3.3 | 7.3 |
| 6 | 12.7 | 0.5 | 7.8 | 17.3 |
| 8 | 12.7 | 0.5 | 12.8 | 28.3 |
| 10 | 12.7 | 0.5 | 24.0 | 53.1 |
| 12 | 12.7 | 0.5 | 35.7 | 78.8 |

Figure 8. Fisher NPS 10 Fisher Cavitrol Hex Trim



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Table 5. Materials of Construction for DN 25 through 300 (NPS 1 through 12) Valves

| PART | | MATERIAL |
|--|--|--|
| Valve Body and Seal Protector Ring or Flow Ring | | WCC steel (EN 1.0619), CG8M (317 SST), R50550 ⁽¹⁰⁾ , CF3M ⁽¹⁾ (316L SST EN 1.4409 or optional EN 1.4581), CD3MN, CD3MWCuN, CW2M (CW2M valve available with Fisher TCM Plus seal only), M35-2 or CK3MCuN |
| Backup Ring [DN 25, 40, and 50 (NPS 1, 1-1/2, and 2) only] | | CG8M, CF3M ⁽¹⁾ , R50550, or CW2M |
| Segmented V-Notch Ball | | CG8M, R50550, CF3M, CW2M, chromium-plated CF3M, chromium-plated CG8M, chromium-plated CG8M with alloy 6 notch, chromium-plated CF3M with alloy 6 notch, chromium-plated CD3MN, chromium-plated CD3MWCuN, M35-1, or CK3MCuN |
| Seal | Fisher TCM | Fisher TCM Plus and Fisher TCM Ultra |
| | Flat Metal Seal, Shims, and Spring Seal ⁽⁷⁾ | Spring Tempered S31600 (316 stainless steel) or Spring Tempered S30200 (302 stainless steel) for NPS 12 valves only |
| | HD (Heavy-Duty) Ball Seal | CF10SMnN ⁽²⁾ , CD7MCuN ⁽³⁾ (alloy 255 duplex stainless steel) or R30006 (Alloy 6) |
| | High Temperature HD Seal | R30006 (Alloy 6) |
| Wave Spring (use with HD seal) | | N07750 |
| HD Seal Radial Seal | | Graphite reinforced PTFE |
| High Temp HD Seal Piston Ring | | Graphite FMS 17F39 |
| Bearings | | PEEK ⁽⁴⁾ /Carbon-filled PTFE liner, S31603 Nitride, R30006 (alloy 6), silver-plated R30006, N10276 with carbon-filled PTFE liner, or N10276 with glass-filled PTFE liner R50400 PTFE/carbon liner (through NPS 6), R50400 PTFE/glass liner (through NPS 6) |
| Seal Retainer Gasket | | Laminated graphite |
| Packing | | PTFE V-ring with one carbon-filled PTFE ring ⁽⁵⁾ , PTFE V-ring, graphite ribbon, ENVIRO-SEAL PTFE, or ENVIRO-SEAL graphite |
| Shafts | | S20910, S17400 (17-4PH stainless steel), N10276, N05500, S31254 ⁽⁸⁾ , R50550, or S32760 ⁽⁸⁾ |
| Groove Pin | | R50550, S31600 or N10276 |
| Taper Key | | R50550, R30006 ⁽⁶⁾ , S20910, or N10276 |
| Taper Pin [DN 25, 40, and 50 (NPS 1, 1-1/2, and 2) only] | | R50550, S20910, or N10276 |
| Pipe Plug (Optional) | | S31600 N10276, or S31603 (316L stainless steel) |
| Seal Retainer Screws and Washers | | Stainless steel |
| Packing Follower and Packing Box Ring | | R50550, CF8M (316 stainless steel), N10276, S312254, or N10276 with separate S31600 packing box flange |
| Actuator Mounting Bolts and Nuts | | Grade 5 steel or strain-hardened B8M stainless steel |
| Spacer and Bushing | | S31700, N10276, or S31603 |
| Packing Follower Bolting and Optional Line Bolting | | SA-193-B7, SA-193-B7M, or strain-hardened SA-193-B8M |
| Attenuator ⁽⁹⁾ | | CG8M, M35-1, CW2M, or CK3MCuN |
| Cavitrol Hex | | S31603 or R31233 |

1. CF3M is available in all areas as a special order and is the standard material offered in Europe.
2. Recommended for lubricated and non-lubricated service and where corrosion properties similar to 304 stainless steel are acceptable.
3. Recommended for lubricated service and where corrosion properties equal to or better than 317 stainless steel are required.
4. PEEK is poly-ether-ether-ketone.
5. The carbon-filled PTFE ring is used for grounding.
6. Standard material offered in North America.
7. Offered for lubricated service only.
8. S31254 and S32760 shafts may cause the valve to be derated. Contact your [Emerson sales office](#).
9. Attenuator material will match segmented V-Notch ball material.
10. R50550 is available with TCM seat. For other seal availability contact your Emerson sales office.

Table 6. Materials of Construction for DN 350, 400, 500, and 600x500 (NPS 14, 16 20, and 24x20) Valves

| PART | | MATERIAL |
|--|-----------------------|--|
| Valve Body, Seal Protector Ring, and Flow Ring | | WCC steel or CG8M (317 stainless steel) |
| Segmented V-Notch Ball | | Chromium-plated CG8M, CG8M, Chromium-plated CG8M with alloy 6 notch |
| Ball Seal | Fisher TCM | Fisher TCM Plus and Fisher TCM Ultra |
| | HD (Heavy-Duty Metal) | CF10SMnN ⁽¹⁾ , CD7MCuM ⁽²⁾ (alloy 225 duplex stainless steel) or CG8M/CoCr-A |
| Wave Spring (use with HD seal) | | N07750 |
| Radial Seal (use with HD seal) | | PTFE with N10276 spring |
| Bearings | | PEEK/PTFE ⁽³⁾ , S44004 (440C stainless steel--use with S17400 [17-4PH stainless steel] shafts, alloy 6B, and silver plated alloy 6B |
| Thrust Washer (use with metal bearings) | | Alloy 6B |
| Seal Retainer Gasket | | Laminated Graphite |
| Packing | | PTFE V-ring with one conductive V-ring ⁽⁴⁾ , PTFE V-ring, graphite ribbon, ENVIRO-SEAL PTFE, or ENVIRO-SEAL graphite |
| Shafts | | S17400 (17-4 stainless steel) or S20910 |
| Pins | | S20910 |
| Pipe Plug | | S31700 (317 stainless steel) |
| Packing Follower Bolting | | B7M steel or strain-hardened B8M stainless steel |
| Retainer Screw | | B8M stainless steel |
| Packing Follower and Packing Box ring | | S31600 (316 stainless steel) |
| Packing Flange | | Steel or S31600 |
| Actuator Mounting Bolts and Nuts | | Grade 5 steel or strain-hardened B8M stainless steel |
| Gasket (used with bottom flange) | | S31603 (316L stainless steel) spiral wound |
| Stud and Hex Nut (used with bottom flange) | | B7 steel or strain-hardened B8M stainless steel |
| Attenuator | | CG8M |

1. Recommended where corrosion properties similar to 304 stainless steel are acceptable.
 2. Recommended for lubricated service and where corrosion properties equal to or better than S31700 stainless steel.
 3. PEEK (Poly-ether-ether-ketone) w/PTFE liner.
 4. A carbon-filled PTFE ring is used for grounding.

Figure 9. Typical ENVIRO-SEAL Packing Arrangements

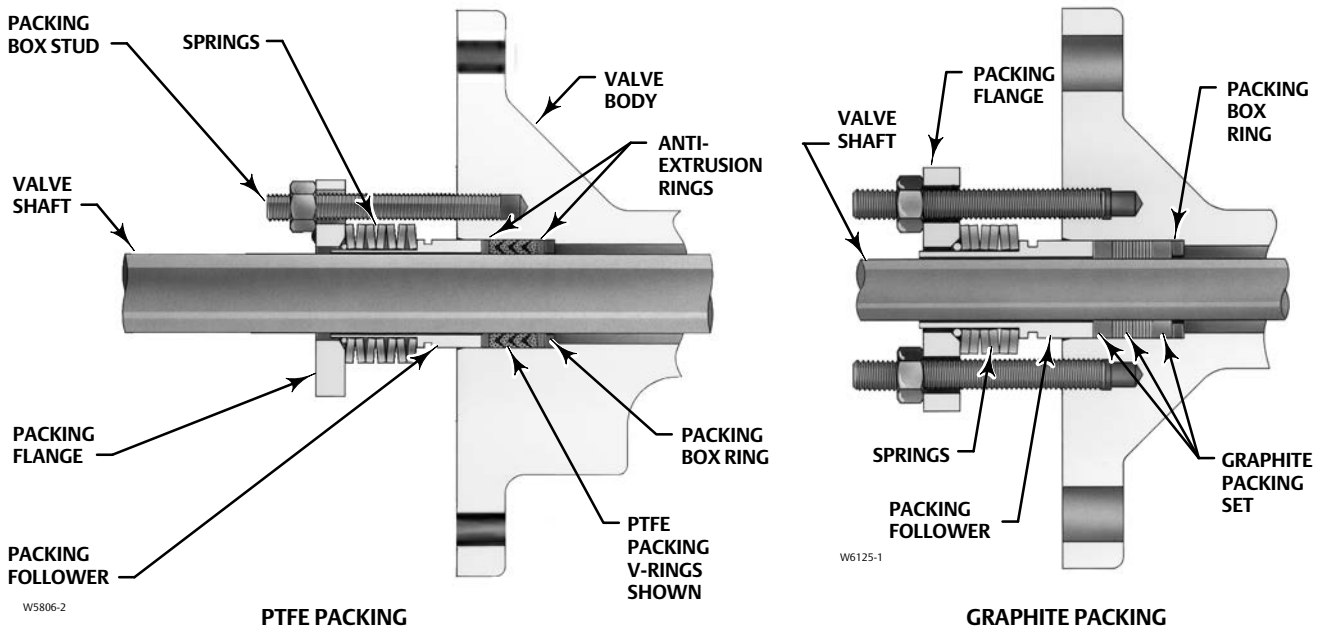


Table 7. Maximum Allowable Inlet Pressure for CW2M Valves

| TEMPERATURE | CW2M ⁽¹⁾ | | | | | |
|-------------|---------------------|--------------------|----------------------|----------------------|----------------------|----------------------|
| | 150 ⁽²⁾ | 300 ⁽²⁾ | PN 10 ⁽²⁾ | PN 16 ⁽²⁾ | PN 25 ⁽²⁾ | PN 40 ⁽²⁾ |
| °C | Bar | | | | | |
| -46 to 38 | 20.0 | 51.7 | 10.0 | 16.0 | 25.0 | 40.0 |
| 50 | 19.5 | 51.7 | 9.9 | 15.9 | 24.8 | 39.6 |
| 100 | 17.7 | 51.5 | 9.4 | 15.1 | 23.6 | 37.8 |
| 150 | 15.8 | 50.3 | 9.4 | 15.1 | 23.6 | 37.8 |
| 200 | 13.8 | 48.3 | 9.1 | 14.6 | 22.9 | 36.6 |
| 232 | 12.7 | 47.0 | 9.1 | 14.6 | 22.9 | 36.6 |
| °F | Psi | | | | | |
| -50 to 100 | 290 | 750 | 145 | 232 | 362 | 580 |
| 200 | 260 | 750 | 144 | 230 | 359 | 575 |
| 300 | 230 | 730 | 137 | 219 | 342 | 548 |
| 400 | 200 | 700 | 133 | 212 | 331 | 530 |
| 450 | 185 | 680 | 133 | 212 | 331 | 530 |

1. This material is not listed in EN 12516-1 or ASME B16.34. Also see the Installation section.
2. The designations PN or 150 and 300 are used only to indicate relative pressure-retaining capabilities and are not EN or ASME pressure-temperature rating class designations.

Pressure Drops

Pressure drop limits of any given valve are based on valve body, and trim material limits. To find the appropriate pressure drop limitation, choose the desired valve size and temperature range. Then search

table 8 for body limitations and table 9 for trim limitations. Information on limits for S31254, CW2M, M35-2, CD3MN, CD3MWCuN, and other alloy constructions can be obtained by contacting your [Emerson sales office](#). The lowest number from the tables is the appropriate limit. The tables for both trim and body limits must be consulted.

Table 8. Maximum Allowable Shutoff Pressure Drops (Body Ratings)
(Tables for both trim and body limits must be consulted)

| TEMPERATURE RANGE | PRESSURE CLASS | | | | | | | | | | | | | |
|-------------------|----------------|------------|------------|-----------|--------------|-----------|------------|------------|-----------|--------------|-----------|------------|------------|-----------|
| | WCC CL150 | CF3M CL150 | CG8M CL150 | LCC CL150 | R50550 CL150 | WCC CL300 | CF3M CL300 | CG8M CL300 | LCC CL300 | R50550 CL300 | WCC CL600 | CF3M CL600 | CG8M CL600 | LCC CL600 |
| °C | Bar | | | | | | | | | | | | | |
| -46 to -29 | --(1) | 15.9 | 19.0 | 20 | 18.3 | --(1) | 41.4 | 49.6 | 51.7 | 47.2 | --(1) | 82.7 | 99.3 | 103 |
| -29 to 38 | 20.0 | 15.9 | 19.0 | 20 | 18.3 | 51.7 | 41.4 | 49.6 | 51.7 | 47.2 | 103 | 82.7 | 99.3 | 103 |
| 93 | 17.9 | 13.4 | 16.2 | 17.9 | 15.5 | 51.7 | 34.8 | 42.7 | 51.7 | 40.7 | 103 | 70.0 | 85.5 | 103 |
| 149 | 15.9 | 12.1 | 14.8 | 15.9 | 12.8 | 50.3 | 31.4 | 38.6 | 50.3 | 33.0 | 100 | 62.7 | 77.2 | 100 |
| 177 | --(2) | --(2) | --(2) | --(2) | 11.7 | --(2) | --(2) | --(2) | --(2) | 30.0 | --(2) | --(2) | --(2) | --(2) |
| 204 | 13.8 | 11.0 | 13.4 | 13.8 | --- | 48.6 | 28.6 | 35.5 | 48.6 | --- | 97.2 | 56.9 | 70.6 | 97.2 |
| 232 | 12.8 | 10.7 | 12.8 | 12.8 | --- | 47.2 | 27.9 | 34.5 | 47.2 | --- | 94.5 | 54.8 | 68.6 | 94.5 |
| 260 | 11.7 | 10.0 | 11.7 | 11.7 | --- | 45.9 | 26.2 | 33.1 | 45.9 | --- | 91.7 | 52.7 | 65.8 | 91.7 |
| 316 | 10.7 | 9.9 | 10.7 | 10.7 | --- | 43.8 | 25.5 | 32.1 | 43.8 | --- | 87.6 | 51.0 | 64.1 | 87.6 |
| 343 | 9.65 | 9.7 | 8.62 | 9.65 | --- | 41.7 | 23.8 | 31.0 | 41.7 | --- | 83.4 | 49.6 | 62.4 | 83.4 |
| 371 | 8.62 | 8.6 | 7.58 | --- | --- | 40.7 | 23.8 | 30.7 | --- | --- | 81.0 | 48.3 | 60.0 | --- |
| 399 | 6.55 | 6.6 | 6.55 | --- | --- | 34.8 | 23.1 | 29.3 | --- | --- | 69.6 | 46.2 | 58.9 | --- |
| 427 | 5.52 | 5.5 | 5.52 | --- | --- | 28.3 | 22.8 | 29.0 | --- | --- | 56.9 | 45.5 | 58.3 | --- |
| °F | Psi | | | | | | | | | | | | | |
| -50 to -20 | --(1) | 230 | 275 | 290 | 265 | --(1) | 600 | 720 | 750 | 695 | --(1) | 1200 | 1440 | 1500 |
| -20 to 100 | 290 | 230 | 275 | 290 | 265 | 750 | 600 | 720 | 750 | 695 | 1500 | 1200 | 1440 | 1500 |
| 200 | 260 | 195 | 235 | 260 | 225 | 750 | 505 | 620 | 750 | 590 | 1500 | 1015 | 1240 | 1500 |
| 300 | 230 | 175 | 215 | 230 | 185 | 730 | 455 | 560 | 730 | 480 | 1455 | 910 | 1120 | 1455 |
| 350 | --(2) | --(2) | --(2) | --(2) | 170 | --(2) | --(2) | --(2) | --(2) | 435 | --(2) | --(2) | --(2) | --(2) |
| 400 | 200 | 160 | 195 | 200 | --- | 705 | 415 | 515 | 705 | --- | 1410 | 825 | 1025 | 1410 |
| 450 | 185 | 155 | 185 | 185 | --- | 685 | 405 | 500 | 685 | --- | 1370 | 795 | 995 | 1370 |
| 500 | 170 | 145 | 170 | 170 | --- | 665 | 380 | 480 | 665 | --- | 1330 | 765 | 955 | 1330 |
| 550 | 155 | 143 | 155 | 155 | --- | 635 | 370 | 465 | 635 | --- | 1270 | 740 | 930 | 1270 |
| 600 | 140 | 140 | 140 | 140 | --- | 605 | 360 | 450 | 605 | --- | 1210 | 720 | 905 | 1210 |
| 650 | 125 | 125 | 125 | 125 | --- | 590 | 350 | 445 | 590 | --- | 1175 | 700 | 890 | 1175 |
| 700 | 110 | 110 | 110 | --- | --- | 570 | 345 | 430 | --- | --- | 1135 | 685 | 870 | --- |
| 750 | 95 | 95 | 95 | --- | --- | 505 | 335 | 425 | --- | --- | 1010 | 670 | 855 | --- |
| 800 | 80 | 80 | 80 | --- | --- | 410 | 330 | 420 | --- | --- | 825 | 660 | 845 | --- |

1. Low temperature for these materials limited to -29°C (-20°F).
2. Refer to ASME B16.34.

Table 9. Maximum Allowable Shutoff Pressure Drops based on Trim (Bearing and Seal)
(Note: Do not exceed the PN or ASME pressure/temperature rating of the valve or mating flanges)

| BEARING MATERIAL | BALL SEAL | TEMPERATURE RANGE, °C | VALVE SIZE, DN | | | | | | | | | | | | | | |
|----------------------------|----------------------------------|-----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------|------|--------------------|-------|------|------|
| | | | 25 | 40 | 50 | 80 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 500 ⁽⁴⁾ | | | |
| | | | Bar | | | | | | | | | | | | | | |
| | | | Shaft Size, Inches | | | | | | | | | | | | | | |
| 1/2 | 5/8 | 5/8 | 3/4 | 3/4 | 1 | 1-1/4 | 1-1/4 | 1-1/2 | 1-3/4 | 2-1/8x2 | 2-1/8 | 2-1/2 | | | | | |
| PEEK/PTFE | Fisher TCM Plus or Ultra | -46 to 38 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 40.2 | 37.6 | 31.0 | 23.8 | 31.0 | 31.0 | |
| | | 93 | 37.9 | 37.9 | 37.9 | 37.9 | 37.9 | 37.9 | 37.9 | 37.9 | 37.9 | 37.9 | 37.6 | 31.0 | 23.8 | 31.0 | 31.0 |
| | | 149 | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 | 23.8 | 24.1 | 24.1 |
| | | 204 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 |
| | | 232 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.44 | 3.45 |
| | HD Seal ⁽¹⁾ | -46 to 260 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 40.9 | 38.1 | 31.0 | 26.5 | 31.0 | 31.0 | |
| | Flat Metal ⁽²⁾ | -73 to 260 | --- | --- | --- | 20.7 | 20.7 | 20.7 | 20.7 | 20.7 | 10.3 | 10.3 | --- | --- | --- | --- | |
| Flow Ring | 260 | 103.4 | 103.4 | 103.4 | 103.4 | 72.4 | 75.2 | 73.8 | 40.5 | 37.7 | 40.5 | 35.0 | 48.8 | 44.7 | | | |
| R30006 | HD Seal ⁽¹⁾ | -46 to 288 | 51.7 | 50.0 | 25.7 | 17.5 | 11.0 | 10.9 | 11.2 | 6.14 | 5.72 | 6.14 | 7.52 | 7.51 | 6.83 | | |
| | High Temp HD Seal ⁽¹⁾ | 228 to 427 | 38.3 ⁽³⁾ | 37.5 ⁽³⁾ | 19.3 ⁽³⁾ | 13.2 ⁽³⁾ | 8.3 ⁽³⁾ | 8.2 ⁽³⁾ | 8.4 ⁽³⁾ | 4.6 ⁽³⁾ | 4.3 ⁽³⁾ | 4.62 | 5.65 | 5.65 | 5.10 | | |
| | Flat Metal ⁽²⁾ | -73 to 427 | --- | --- | --- | 17.0 | 10.1 | 10.7 | 10.6 | 5.86 | 5.52 | --- | --- | --- | --- | | |
| | Flow Ring | 427 | 74.5 | 49.6 | 26.8 | 18.8 | 10.9 | 11.2 | 11.1 | 6.07 | 5.65 | 6.07 | 7.31 | 7.30 | 6.69 | | |
| R30006 Silver Plated | HD Seal ⁽¹⁾ | -46 to 288 | 51.7 | 51.7 | 51.7 | 35.0 | 22.1 | 21.8 | 22.5 | 12.3 | 11.4 | 12.3 | 13.2 | 15.0 | 13.7 | | |
| | High Temp HD Seal ⁽¹⁾ | 228 to 427 | 38.3 ⁽³⁾ | 38.3 ⁽³⁾ | 38.3 ⁽³⁾ | 26.3 ⁽³⁾ | 16.5 ⁽³⁾ | 16.3 ⁽³⁾ | 16.9 ⁽³⁾ | 9.2 ⁽³⁾ | 8.6 ⁽³⁾ | 9.16 | 11.2 | 11.2 | 10.2 | | |
| | Flat Metal ⁽²⁾ | -73 to 427 | --- | --- | --- | 20.7 | 20.1 | 20.7 | 20.7 | 10.3 | 10.3 | --- | --- | --- | --- | | |
| | Flow Ring | 427 | 103.4 | 103.4 | 53.5 | 37.6 | 21.8 | 22.5 | 22.2 | 12.1 | 11.3 | 12.1 | 14.6 | 14.6 | 13.4 | | |
| S31603L Nitride | HD Seal ⁽¹⁾ | -46 to 288 | 51.0 | 51.0 | 51.0 | 51.7 | 36.7 | 36.3 | 37.4 | 20.5 | 19.1 | 20.5 | 25.0 | 25.0 | 14.0 | | |
| | High Temp HD Seal ⁽¹⁾ | 228 to 427 | --- | --- | --- | 38.3 ⁽³⁾ | 27.6 ⁽³⁾ | 27.2 ⁽³⁾ | 28.1 ⁽³⁾ | 15.4 ⁽³⁾ | 14.3 ⁽³⁾ | 15.3 | 18.7 | 18.7 | 17.0 | | |
| | Flat Metal ⁽²⁾ | -73 to 427 | --- | --- | --- | 20.7 | 20.7 | 20.7 | 20.7 | 10.3 | 10.3 | --- | --- | --- | --- | | |
| R50400 PTFE or N10276 PTFE | Fisher TCM Plus or Ultra | 427 | 99.3 | 99.3 | 88.9 | 62.7 | 36.3 | 37.4 | 37.0 | 20.2 | 18.8 | 20.2 | 24.3 | 24.3 | 22.3 | | |
| | | -46 to 38 | 51.7 | 51.7 | 51.7 | 51.7 | 36.75 | 36.3 | 37.4 | 20.5 | 19.1 | 20.5 | 25 | 25 | 22.75 | | |
| | | 93 | 37.9 | 37.9 | 37.9 | 37.9 | 36.75 | 36.3 | 37.4 | 20.5 | 19.1 | 20.5 | 25 | 25 | 22.75 | | |
| | | 149 | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 | 24.1 | 20.5 | 19.1 | 20.5 | 25 | 25 | 22.75 | | |
| | | 204 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | | |
| | 232 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 | | | |
| Flow Ring | 260 | 103.4 | 103.4 | 103.4 | 103.4 | 72.4 | 75.2 | 73.8 | 40.5 | 37.7 | 40.5 | 35.0 | 48.8 | 44.7 | | | |

-continued-

Table 9. Maximum Allowable Shutoff Pressure Drops based on Trim (Bearing and Seal)
(Note: Do not exceed the PN or ASME pressure/temperature rating of the valve or mating flanges) (cont.)

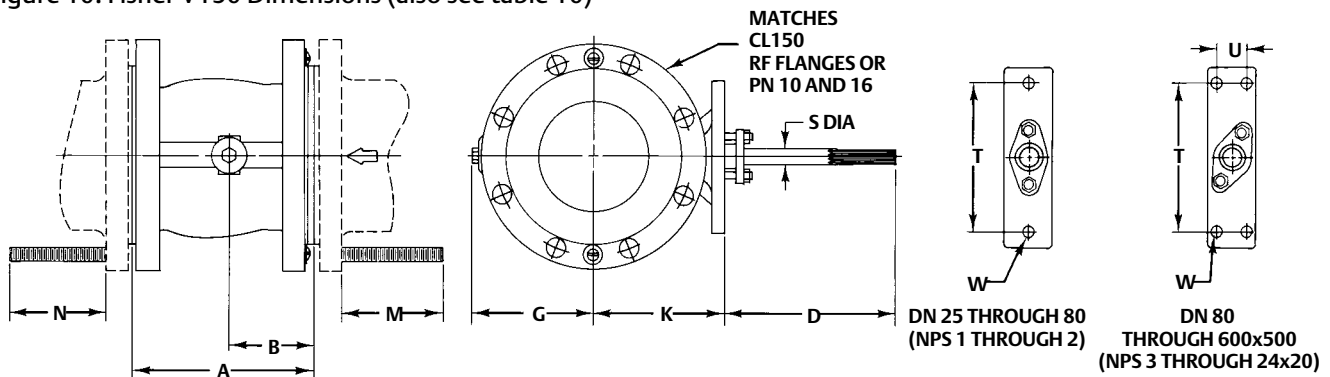
| BEARING MATERIAL | BALL SEAL | TEMPERATURE RANGE, °F | VALVE SIZE, NPS | | | | | | | | | | | | | |
|---|----------------------------------|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------|---------|-------------------|-------|-----|
| | | | 1 | 1-1/2 | 2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 20 ⁽⁴⁾ | | |
| | | | Psi | | | | | | | | | | | | | |
| | | | Shaft Size, Inches | | | | | | | | | | | | | |
| | | | 1/2 | 5/8 | 5/8 | 3/4 | 3/4 | 1 | 1-1/4 | 1-1/4 | 1-1/2 | 1-3/4 | 2-1/8x2 | 2-1/8 | 2-1/2 | |
| PEEK/PTFE | Fisher TCM Plus or Ultra | -50 to 100 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 583 | 545 | 450 | 345 | 450 | 450 |
| | | 200 | 550 | 550 | 550 | 550 | 550 | 550 | 550 | 550 | 550 | 545 | 450 | 345 | 450 | 450 |
| | | 300 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 345 | 350 | 350 |
| | | 400 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |
| | | 450 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | HD Seal ⁽¹⁾ | -50 to 500 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 593 | 553 | 450 | 384 | 450 | 450 |
| | Flat Metal ⁽²⁾ | -100 to 500 | --- | --- | --- | 300 | 300 | 300 | 300 | 300 | 150 | 150 | --- | --- | --- | --- |
| Flow Ring | 500 | 1500 | 1500 | 1500 | 1500 | 1050 | 1090 | 1070 | 587 | 547 | 587 | 508 | 708 | 648 | | |
| R30006 | HD Seal ⁽¹⁾ | -50 to 550 | 750 | 725 | 373 | 254 | 160 | 158 | 163 | 89 | 83 | 89 | 109 | 109 | 99 | |
| | High Temp HD Seal ⁽¹⁾ | 550 to 800 | 555 ⁽³⁾ | 544 ⁽³⁾ | 280 ⁽³⁾ | 191 ⁽³⁾ | 120 ⁽³⁾ | 119 ⁽³⁾ | 122 ⁽³⁾ | 67 ⁽³⁾ | 62 ⁽³⁾ | 67 | 82 | 82 | 74 | |
| | Flat Metal ⁽²⁾ | -100 to 800 | --- | --- | --- | 246 | 146 | 155 | 154 | 85 | 80 | --- | --- | --- | --- | |
| | Flow Ring | 800 | 1080 | 720 | 388 | 273 | 158 | 163 | 161 | 88 | 82 | 88 | 106 | 106 | 97 | |
| R30006 Silver Plated | HD Seal ⁽¹⁾ | -50 to 550 | 750 | 750 | 750 | 508 | 320 | 316 | 326 | 178 | 166 | 178 | 192 | 218 | 198 | |
| | High Temp HD Seal ⁽¹⁾ | 550 to 800 | 555 ⁽³⁾ | 555 ⁽³⁾ | 555 ⁽³⁾ | 381 ⁽³⁾ | 240 ⁽³⁾ | 237 ⁽³⁾ | 245 ⁽³⁾ | 134 ⁽³⁾ | 125 ⁽³⁾ | 133 | 163 | 163 | 148 | |
| | Flat Metal ⁽²⁾ | -100 to 800 | --- | --- | --- | 300 | 292 | 300 | 300 | 150 | 150 | --- | --- | --- | --- | |
| | Flow Ring | 800 | 1500 | 1500 | 776 | 546 | 316 | 326 | 322 | 176 | 164 | 176 | 212 | 212 | 194 | |
| S31603L Nitride | HD Seal ⁽¹⁾ | -50 to 550 | 740 | 740 | 740 | 750 | 533 | 527 | 543 | 297 | 277 | 297 | 363 | 363 | 203 | |
| | High Temp HD Seal ⁽¹⁾ | 550 to 800 | --- | --- | --- | 555 ⁽³⁾ | 400 ⁽³⁾ | 395 ⁽³⁾ | 407 ⁽³⁾ | 223 ⁽³⁾ | 208 ⁽³⁾ | 222 | 272 | 272 | 247 | |
| | Flat Metal ⁽²⁾ | -100 to 800 | --- | --- | --- | 300 | 300 | 300 | 300 | 150 | 150 | --- | --- | --- | --- | |
| | Flow Ring | 800 | 1440 | 1440 | 1290 | 910 | 527 | 543 | 537 | 293 | 273 | 293 | 353 | 353 | 323 | |
| R50400 PTFE or N10276 PTFE | Fisher TCM Plus or Ultra | -50 to 100 | 750 | 750 | 750 | 750 | 533 | 527 | 543 | 297 | 277 | 297 | 363 | 363 | 330 | |
| | | 200 | 550 | 550 | 550 | 550 | 533 | 527 | 543 | 297 | 277 | 297 | 363 | 363 | 330 | |
| | | 300 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 297 | 277 | 297 | 363 | 363 | 330 | |
| | | 400 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | |
| | | 450 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | |
| | Flow Ring | 500 | 1500 | 1500 | 1500 | 1500 | 1050 | 1090 | 1070 | 587 | 547 | 587 | 508 | 708 | 648 | |
| 1. Pressure drops shown for HD seals are for forward flow only. For reverse flow with HD seal, limit pressure drop to 6.9 bar (100 psig). 2. Lubricated service only. 3. Consult your Emerson sales office if higher pressure drops are required. 4. This column is also appropriate for the DN 600x500 (NPS 24x20). | | | | | | | | | | | | | | | | |

Table 10. Fisher V150 Dimensions

| VALVE SIZE | V150 DIMENSIONS (ISA S75.08.02) ⁽¹⁾ | | | | | | | | | | | APPROXIMATE WEIGHT |
|--------------------|--|-------|-------|-------|-------|--------------------|--------------------|----------------------|-------|------|------|--------------------|
| | A ⁽⁶⁾ | B | D | G | K | M ^(3,4) | N ^(3,5) | S Diameter | T | U | W | |
| DN | mm | | | | | | | | | | | kg |
| 25 | 102 | 56 | | 83 | 95 | 79 | 73 | 13 | | | | 5.9 |
| 40 | 114 | 62 | 188 | 90 | 121 | 92 | 80 | 15.9 and 15.9 x 12.7 | 117 | --- | 14.2 | 8.6 |
| 50 | 124 | 67 | | 87 | 127 | 100 | 87 | 15.9 and 15.9 x 12.7 | | | | 9.5 |
| 80 | 165 | 79 | | 100 | 130 | 106 | 100 | 19.1 | | | 14.2 | 19.5 |
| 100 | 194 | 101 | 214 | 133 | 141 | 119 | 100 | 19.1 | 152 | 31.8 | 14.2 | 26 |
| 150 | 229 | 109 | | 151 | 164 | 127 | 114 | 25.4 | | | 14.2 | 42 |
| 200 | 243 | 124 | | 184 | 232 | 133 | 127 | 31.8 | | | | 72 |
| 250 | 297 | 147 | 208 | 222 | 260 | 146 | 133 | 31.8 | 235 | 46.0 | 17.5 | 107 |
| 300 | 338 | 174 | | 268 | 303 | 152 | 133 | 38.1 | | | | 158 |
| 350 ⁽²⁾ | 381 | 206 | | 295 | 343 | 152 | 133 | 44.5 | 273 | 50.8 | 19.1 | 248 |
| 400 ⁽²⁾ | 406 | 229 | 356 | 330 | 365 | 152 | 133 | 54.0 | 273 | 50.8 | 19.1 | 333 |
| 500 | 508 | 235 | | 406 | 457 | 178 | 159 | 63.5 | 337 | 76.2 | 22.4 | 525 |
| 600x500 | 608 | 373 | | 406 | 457 | 192 | 171 | 63.5 | 337 | 76.2 | 22.4 | 757 |
| NPS | Inch | | | | | | | | | | | lbs |
| 1 | 4.00 | 2.21 | | 3.19 | 3.75 | 3.12 | 2.88 | 1/2 | | | | 13 |
| 1-1/2 | 4.50 | 2.46 | 7.38 | 3.38 | 4.75 | 3.62 | 3.12 | 5/8 and 5/8 x 1/2 | 4.62 | --- | 0.56 | 19 |
| 2 | 4.88 | 2.63 | | 4.19 | 5.00 | 3.94 | 3.44 | 5/8 and 5/8 x 1/2 | | | | 21 |
| 3 | 6.50 | 3.10 | | 4.62 | 5.12 | 4.19 | 3.94 | 3/4 | | | 0.56 | 43 |
| 4 | 7.62 | 3.99 | 8.44 | 5.25 | 5.56 | 4.69 | 3.94 | 3/4 | 6.00 | 1.25 | 0.56 | 57 |
| 6 | 9.00 | 4.29 | | 5.94 | 6.44 | 5.00 | 4.50 | 1 | | | 0.56 | 93 |
| 8 | 9.56 | 4.88 | | 7.69 | 9.12 | 5.25 | 5.00 | 1-1/4 | | | | 158 |
| 10 | 11.69 | 5.77 | 8.19 | 8.75 | 10.25 | 5.75 | 5.25 | 1-1/4 | 9.25 | 1.81 | 0.69 | 235 |
| 12 | 13.31 | 6.87 | | 10.56 | 11.94 | 6.00 | 5.25 | 1-1/2 | | | | 347 |
| 14 ⁽²⁾ | 15.00 | 8.12 | | 11.62 | 13.50 | 6.00 | 5.25 | 1-3/4 | 10.75 | 2.00 | 0.75 | 545 |
| 16 ⁽²⁾ | 16.00 | 9.00 | 14.00 | 13.00 | 14.38 | 6.00 | 5.25 | 2-1/8 | 10.75 | 2.00 | 0.75 | 735 |
| 20 | 20.00 | 9.25 | | 16.00 | 18.00 | 7.00 | 6.25 | 2-1/2 | 13.25 | 3.00 | 0.88 | 1155 |
| 24x20 | 23.94 | 14.69 | | 16.00 | 18.00 | 7.56 | 6.75 | 2-1/2 | 13.25 | 3.00 | 0.88 | 1666 |

1. Inlet flange stud bolt length is longer than the standard length specified in ASME B16.5. See dimension M below.
 2. DN350 and 400 (NPS 14 and 16) valves are available in ASME B16.10 short, only. See dimension A for ASME B16.10 short shown in figure 14.
 3. Clearance necessary to remove flange bolts.
 4. DN25 and NPS 1 constructions have threaded inlet flange holes.
 5. For valve assemblies with the Cavtrol Hex anti-cavitation trim installed, the required outlet flange bolt length and the clearance necessary to remove the bolt will be 12.7 mm (1/2 inch) longer than dimension N specified. In this case, use dimension M to determine the outlet flange bolt length.
 6. For valve assemblies with Cavtrol Hex anti-cavitation trim installed, dimension A will be 12.7 mm (1/2 inch) larger than specified.

Figure 10. Fisher V150 Dimensions (also see table 10)



1182625-K
82153-5

Table 11. Fisher V200 Flangeless Dimensions⁽¹⁾

| VALVE SIZE, NPS | V200 DIMENSIONS (ISA S75.08.02) | | | | | | | | | | | | | | ASME B16.5 RF FLANGES | APPROX WEIGHT |
|-----------------|---------------------------------|------|------|------|---------------------|-------|-------|-------|-------|-------|----------------------|------|------|------|-----------------------|---------------|
| | A | B | D | G | K | M | | | R | R1 | S | T | U | W | | |
| | | | | | | CL150 | CL300 | CL600 | | | | | | | | |
| mm | | | | | | | | | | | | | | | | |
| 1 | 102 | 56 | | 81 | 95 | 176 | 202 | 202 | 51 | 102 | 12.7 | | | | CL150, 300, and 600 | 4.3 |
| 1-1/2 | 114 | 62 | 188 | 89 | 121 | 189 | 224 | 224 | 73 | 119 | 15.7 and 15.7 x 12.7 | 117 | --- | 14.2 | | 6.4 |
| 2 | 124 | 67 | | 106 | 127 | 211 | 236 | 236 | 92 | 137 | 15.7 and 15.7 x 12.7 | | | | | 10 |
| 3 | 165 | 79 | | 117 | 130 | 254 | 279 | 286 | 127 | 167 | 19.1 | | | | CL150, 300, and 600 | 15 |
| 4 | 194 | 101 | 214 | 133 | 141 | 286 | 305 | 343 | 157 | 197 | 19.1 | 152 | 32 | 14.2 | | 22 |
| 6 | 229 | 109 | | 159 | 164 ⁽¹⁾ | 343 | 362 | 413 | 216 | 260 | 25.4 | | | | | 27 |
| 8 | 243 | 124 | | 195 | 232 | 343 | 387 | 426 | 270 | 314 | | | | | CL150 | 62 |
| 10 | 297 | 147 | 208 | 222 | 260 | 419 | --- | --- | 324 | 368 | 31.8 | 235 | 46 | 17.5 | | 114 |
| Inch | | | | | | | | | | | | | | | | |
| 1 | 4.00 | 2.21 | | 3.19 | 3.75 | 6.94 | 7.94 | 7.94 | 2 | 4.00 | 1/2 | | | | CL150, 300, and 600 | 10 |
| 1-1/2 | 4.50 | 2.46 | 7.38 | 3.50 | 4.75 | 7.44 | 8.81 | 8.81 | 2.88 | 4.68 | 5/8 and 5/8 x 1/2 | 4.62 | --- | 0.56 | | 14 |
| 2 | 4.88 | 2.63 | | 4.19 | 5.00 | 8.31 | 9.31 | 9.31 | 3.63 | 5.38 | 5/8 and 5/8 x 1/2 | | | | | 23 |
| 3 | 6.50 | 3.10 | | 4.62 | 5.12 | 10.00 | 11.00 | 11.25 | 5.00 | 6.56 | 3/4 | | | | CL150, 300, and 600 | 34 |
| 4 | 7.62 | 3.99 | 8.44 | 5.25 | 5.56 | 11.25 | 12.00 | 13.50 | 6.19 | 7.76 | 3/4 | 6.00 | 1.25 | 0.56 | | 48 |
| 6 | 9.00 | 4.29 | | 6.25 | 6.44 ⁽²⁾ | 13.50 | 14.25 | 16.25 | 8.50 | 10.24 | 1 | | | | | 60 |
| 8 | 9.56 | 4.88 | | 7.69 | 9.12 | 13.50 | 15.25 | 16.75 | 10.63 | 12.38 | | | | | CL150 | 136 |
| 10 | 11.69 | 5.77 | 8.19 | 8.75 | 10.25 | 16.50 | --- | --- | 12.75 | 14.50 | 1-1/4 | 9.25 | 1.81 | 0.69 | | 252 |

1. Multi-class valves are not interchangeable because of line bolting requirements. Please select the appropriate valve based on the pressure class of your piping.
2. 179 mm (7.06 inches) for NPS 6, CL600 valves only.

Figure 11. Fisher V200 Dimensions (also see table 11)

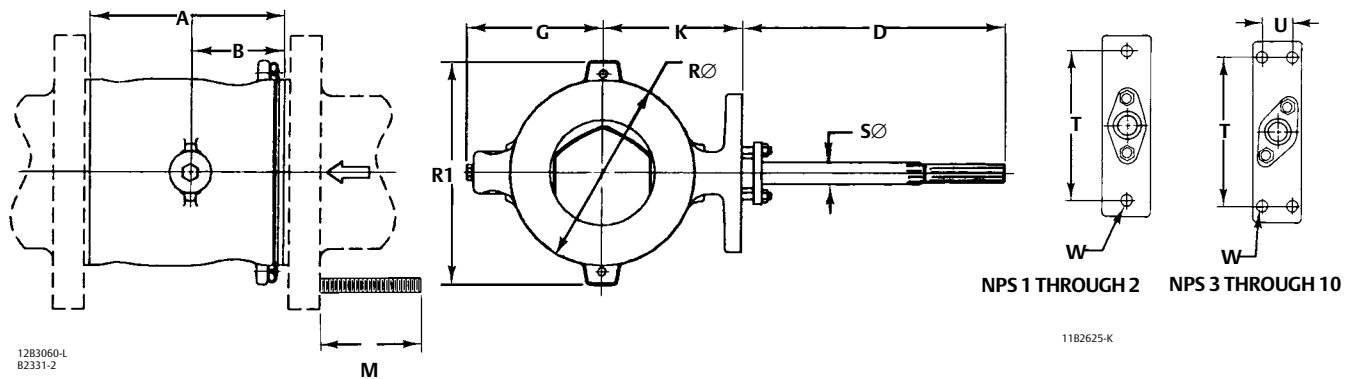


Table 12. Fisher V200 Flanged CL600 Dimensions

| VALVE SIZE | DIMENSIONS (ANSI/ISA 75.08.02) | | | | | | | | | | | | APPROXIMATE WEIGHT |
|------------|--------------------------------|------|------|------|------|------------------------|-------------|---------------------------|------------|------|------|------|--------------------|
| | A ⁽²⁾ | B | D | G | K | M (Qty) ⁽¹⁾ | Bolt Size | Threaded Holes Per Flange | S Diameter | T | U | W | |
| DN | mm | | | | | | | | | | | | kg |
| 50 | 124 | 67 | 188 | 106 | 127 | 121 (16) | 5/8-11 UNC | 4 | 16 | 117 | --- | 14.2 | 17 |
| 80 | 165 | 79 | 214 | 117 | 130 | 140 (16) | 3/4-10 UNC | 4 | 19 | 152 | 32 | | 28 |
| 100 | 194 | 101 | 214 | 133 | 141 | 165 (16) | 7/8-9 UNC | --- | 19 | 152 | 32 | 14.2 | 48 |
| 150 | 229 | 109 | 214 | 159 | 164 | 197 (24) | 1-8 UNC | 2 | 25 | 152 | 32 | 14.2 | 93 |
| 200 | 243 | 124 | 208 | 195 | 232 | 216 (24) | 1-1/8-8 UNC | 4 | 32 | 235 | 46 | 17.5 | 160 |
| NPS | Inch | | | | | | | | | | | | lbs |
| 2 | 4.88 | 2.63 | 7.38 | 4.19 | 5.00 | 4.75 (16) | 5/8-11 UNC | 4 | 5/8 | 4.62 | --- | 0.56 | 38 |
| 3 | 6.50 | 3.10 | 8.44 | 4.62 | 5.12 | 5.50 (16) | 3/4-10 UNC | 4 | 3/4 | 6.00 | 1.25 | | 61 |
| 4 | 7.62 | 3.99 | 8.44 | 5.25 | 5.56 | 6.50 (16) | 7/8-9 UNC | --- | 3/4 | 6.00 | 1.25 | 0.56 | 105 |
| 6 | 9.00 | 4.29 | 8.44 | 6.25 | 6.44 | 7.75 (24) | 1-8 UNC | 2 | 1 | 6.00 | 1.25 | 0.56 | 205 |
| 8 | 9.56 | 4.88 | 8.19 | 7.69 | 9.12 | 8.50 (24) | 1-1/8-8 UNC | 4 | 1-1/4 | 9.25 | 1.81 | 0.69 | 353 |

1. For valve assemblies with the Cavitrol Hex anti-cavitation trim installed, the required outlet flange bolt length and the clearance necessary to remove the bolt will be 12.7 mm (1/2 inch) longer than dimension M specified.
2. For valve assemblies with Cavitrol Hex anti-cavitation trim installed, dimension A will be 12.7 mm (1/2 inch) larger than specified.

Figure 12. Fisher V200 CL600 Flanged Dimensions (also see table 12)

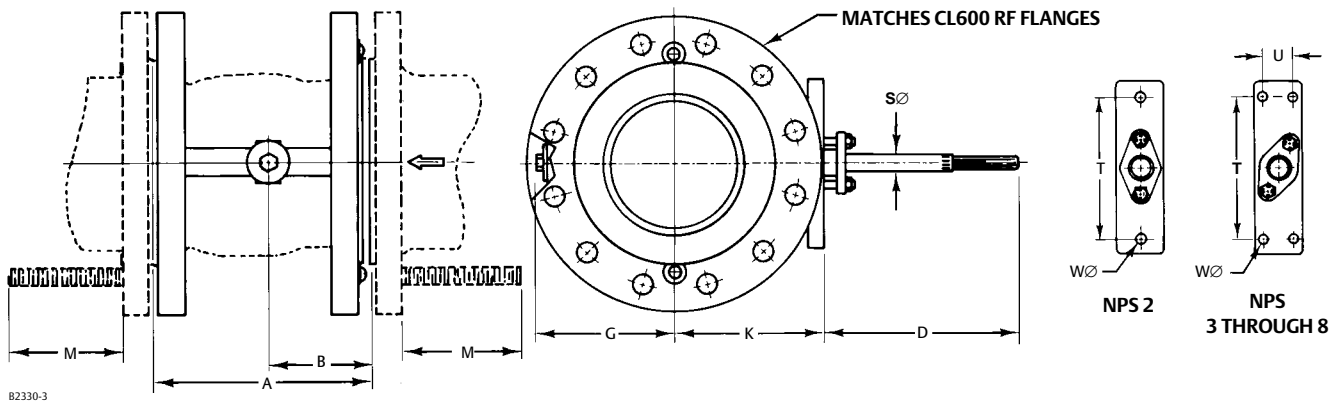


Table 13. Fisher V300 Dimensions

| VALVE SIZE, | V300 DIMENSIONS (ISA 575.08.02) | | | | | | | | | | | APPROXIMATE WEIGHT | |
|--------------------|---------------------------------|------|-------|-------|-------|------------------|--------------------|-------------------|-------|------|------|--------------------|------|
| | A ⁽⁵⁾ | B | D | G | K | M ⁽³⁾ | N ^(3,4) | S Diameter | T | U | W | | |
| DN ⁽¹⁾ | mm | | | | | | | | | | | kg | |
| 25 | 102 | 56 | | 81 | 95 | 100 | 94 | 13 | | | | | 8 |
| 40 | 114 | 62 | 188 | 89 | 121 | 114 | 108 | 16 and 16 X 13 | 117 | --- | | | 12 |
| 50 | 124 | 67 | | 106 | 127 | 106 | 100 | 16 and 16 X 13 | | | | | 17 |
| 80 | 165 | 79 | | 117 | 130 | 133 | 121 | 19 | | | | 14.2 | 28 |
| 100 | 194 | 101 | 214 | 133 | 141 | 140 | 127 | 19 | 152 | 32 | | | 37 |
| 150 | 229 | 109 | | 159 | 164 | 152 | 140 | 25 | | | | | 60 |
| 200 | 243 | 124 | | 195 | 232 | 165 | 152 | 32 | | | | | 103 |
| 250 | 297 | 147 | 208 | 222 | 260 | 186 | 173 | 32 | 235 | 46 | 17.5 | | 200 |
| 300 | 338 | 174 | | 268 | 303 | 198 | 186 | 38 | | | | | 293 |
| 350 ⁽²⁾ | 381 | 206 | | 295 | 343 | 152 | 133 | 44.5 | 273 | 50.8 | 19.1 | | 375 |
| 400 ⁽²⁾ | 406 | 229 | 356 | 330 | 365 | 152 | 133 | 54.0 | 273 | 50.8 | 19.1 | | 511 |
| 500 | 508 | 235 | | 406 | 457 | 224 | 203 | 63.5 | 337 | 76.2 | 22.4 | | 755 |
| NPS | Inch | | | | | | | | | | | lbs | |
| 1 | 4.00 | 2.21 | | 3.19 | 3.75 | 3.94 | 3.69 | 1/2 | | | | | 17 |
| 1-1/2 | 4.50 | 2.46 | 7.38 | 3.50 | 4.75 | 4.50 | 4.25 | 5/8 and 5/8 X 1/2 | 4.62 | --- | | | 27 |
| 2 | 4.88 | 2.63 | | 4.19 | 5.00 | 4.19 | 3.94 | 5/8 and 5/8 X 1/2 | | | | 0.56 | 38 |
| 3 | 6.50 | 3.10 | | 4.62 | 5.12 | 5.25 | 4.75 | 3/4 | | | | | 61 |
| 4 | 7.62 | 3.99 | 8.44 | 5.25 | 5.56 | 5.50 | 5.00 | 3/4 | 6.00 | 1.25 | | | 81 |
| 6 | 9.00 | 4.29 | | 6.25 | 6.44 | 6.00 | 5.50 | 1 | | | | | 133 |
| 8 | 9.56 | 4.88 | | 7.69 | 9.12 | 6.50 | 6.00 | 1-1/4 | | | | | 226 |
| 10 | 11.69 | 5.77 | 8.19 | 8.75 | 10.25 | 7.31 | 6.81 | 1-1/4 | 9.25 | 1.81 | 0.69 | | 440 |
| 12 | 13.31 | 6.87 | | 10.56 | 11.94 | 7.81 | 7.31 | 1-1/2 | | | | | 645 |
| 14 ⁽²⁾ | 15.00 | 8.12 | 14.00 | 11.62 | 13.50 | 7.75 | 7.00 | 1-3/4 | 10.75 | 2.00 | 0.75 | | 825 |
| 16 ⁽²⁾ | 16.00 | 9.00 | 14.00 | 13.31 | 14.38 | 8.25 | 7.50 | 2-1/8 | 10.75 | 2.00 | 0.75 | | 1125 |
| 20 | 20.00 | 9.25 | 14.00 | 16.00 | 18.00 | 8.81 | 8.00 | 2-1/2 | 13.25 | 3.00 | 0.88 | | 1661 |

1. DN25, 40, 50, 80, and 100 are the only sizes offered in V300 for Europe.
 2. DN350 and 400 (NPS 14 and 16) valves are available in ASME B16.10 short, only. See dimension A for ASME B16.10 short shown in figure 14.
 3. Clearance necessary to remove flange bolts.
 4. For valve assemblies with the Cavitrol Hex anti-cavitation trim installed, the required outlet flange bolt length and the clearance necessary to remove the bolt will be 12.7mm (1/2 inch) longer than dimension N specified. In this case, use dimension M to determine the outlet flange bolt length.
 5. For valve assemblies with Cavitrol Hex anti-cavitation trim installed, dimension A will be 12.7 mm (1/2 inch) larger than specified.

Figure 13. Fisher V300 Dimensions (also see table 13)

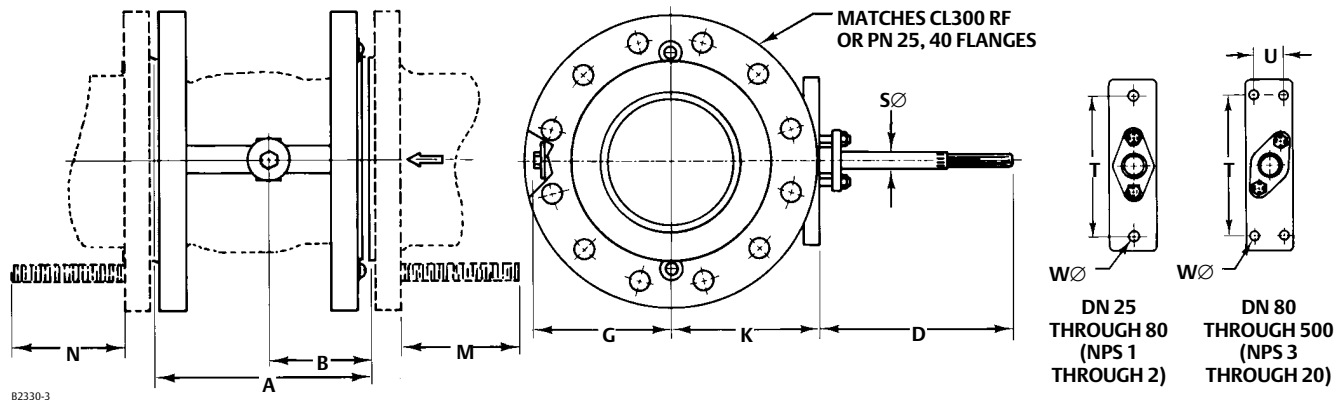


Table 14. Fisher V150 Optional Dimensions

| V150 OPTIONAL DIMENSIONS FOR NPS 1 THROUGH 12 (ASME B16.10 SHORT) | | | | | | | |
|--|-------|------------------|--------|--------------------|--------|--------------------|--------|
| VALVE SIZE | | A ⁽⁴⁾ | | M ^(1,2) | | N ^(2,3) | |
| DN | NPS | mm | Inches | mm | Inches | mm | Inches |
| 25 | 1 | 127 | 5.00 | 103 | 4.06 | 71 | 2.81 |
| 40 | 1-1/2 | 165 | 6.50 | 135 | 5.31 | 78 | 3.06 |
| 50 | 2 | 178 | 7.00 | 155 | 6.11 | 92 | 3.61 |
| 80 | 3 | 203 | 8.00 | 142 | 5.61 | 98 | 3.86 |
| 100 | 4 | 229 | 9.00 | 155 | 6.11 | 98 | 3.86 |
| 150 | 6 | 267 | 10.50 | 163 | 6.40 | 112 | 4.40 |
| 200 | 8 | 292 | 11.50 | 182 | 7.15 | 124 | 4.90 |
| 250 | 10 | 330 | 13.00 | 176 | 6.94 | 132 | 5.19 |
| 300 | 12 | 356 | 14.00 | 170 | 6.69 | 132 | 5.19 |

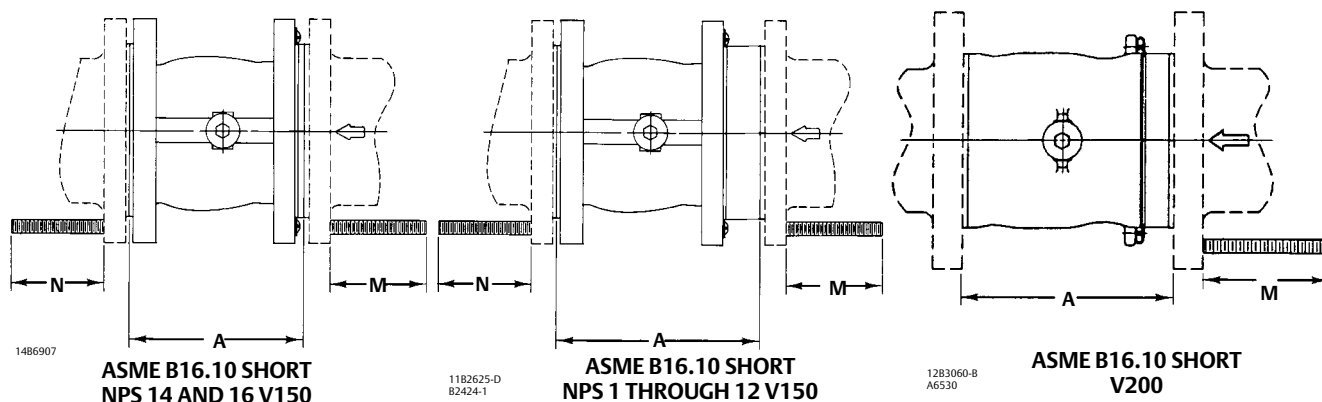
1. NPS 1 constructions have threaded inlet flange holes.
 2. Clearance necessary to remove flange bolts.
 3. For valve assemblies with the Cavitrol Hex anti-cavitation trim installed, the required outlet flange bolt length and the clearance necessary to remove the bolt will be 12.7 mm (1/2 inch) longer than dimension N specified.
 4. For valve assemblies with Cavitrol Hex anti-cavitation trim installed, dimension A will be 12.7 mm (1/2 inch) larger than specified.

Table 15. Fisher V200 Optional Dimensions

| V200 OPTIONAL DIMENSIONS (ASME B16.10 SHORT) ^(1,2) | | |
|---|-------|-------|
| VALVE SIZE, NPS | A | M |
| mm | | |
| 1 | 127 | 202 |
| 1-1/2 | 165 | 240 |
| 2 | 178 | 268 |
| 3 | 203 | 286 |
| 4 | 229 | 321 |
| 6 | 267 | 381 |
| 8 | 292 | 394 |
| 10 | 330 | 451 |
| Inch | | |
| 1 | 5.00 | 7.94 |
| 1-1/2 | 6.50 | 9.44 |
| 2 | 7.00 | 10.56 |
| 3 | 8.00 | 11.25 |
| 4 | 9.00 | 12.62 |
| 6 | 10.50 | 15.00 |
| 8 | 11.50 | 15.50 |
| 10 | 13.00 | 17.75 |

1. Available for CL150 valves only.
 2. ASME B16.10 short dimensions are actually longer than ISA S75.08.02 dimensions.

Figure 14. Fisher V150 and V200 Optional Dimensions (also see tables 14 and 15)



Notes:

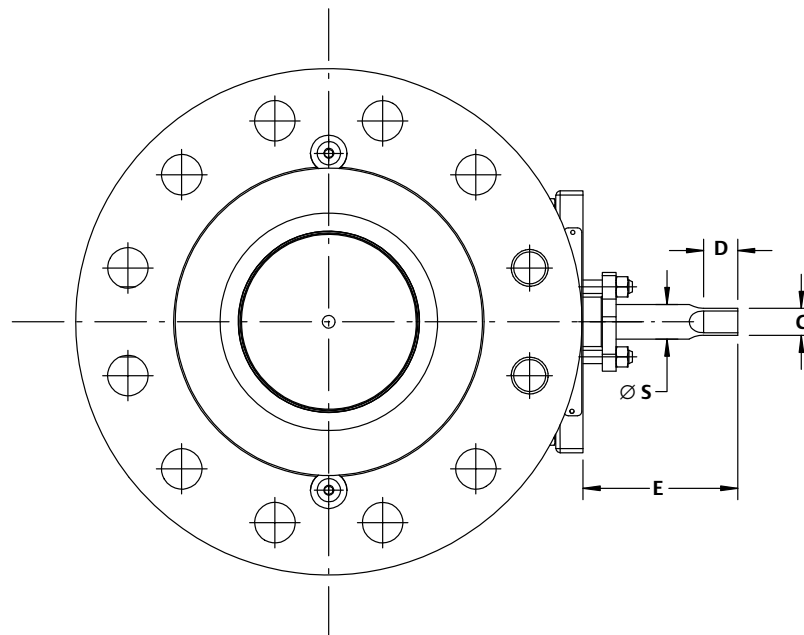
- NPS 1 through 12 valves are available with either ISA S75.08.02 face-to-face dimensions or ASME B16.10 short face-to-face dimensions. NPS 1 through 12 valves will be supplied in ISA S75.08.02 unless you specify otherwise. Note that ASME B16.10 short dimensions are actually longer than ISA S75.08.02.
- NPS 14 and 16 valves are available only with ASME B16.10 short face-to-face dimensions.
- NPS 20 valves are available only with a 508 mm (20-inch) face-to-face dimension.
- M and N dimensions shown for V150 are clearance necessary to remove flange bolts.

Table 16. Fisher Vee-Ball Square Shaft Dimensions

| VALVE SIZE/ PRESSURE RATING | | C | | D | | E | | S ⁽¹⁾ | |
|--------------------------------|-----------------------|------|--------|------|--------|-------|--------|------------------|--------|
| DN | NPS | mm | Inches | mm | Inches | mm | Inches | mm | Inches |
| DN25/ PN10-40 | NPS 1/ CL150-300 | 9.0 | 0.4 | 15.0 | 0.59 | 74.0 | 2.91 | 13.0 | 1/2 |
| DN40/ PN10-40 | NPS 1.5/ CL150-600 | 11.0 | 0.4 | 15.0 | 0.59 | 76.0 | 2.99 | 15.9 | 5/8 |
| DN50/ PN10-40 | NPS 2/ CL150-600 | 11.0 | 0.4 | 15.0 | 0.59 | 76.0 | 2.99 | 15.9 | 5/8 |
| DN80/ PN10-40 | NPS 3/ CL150-600 | 14.0 | 0.6 | 19.0 | 0.75 | 103.0 | 4.06 | 19.1 | 3/4 |
| DN100/ PN10-40 | NPS 4/ CL150-600 | 14.0 | 0.6 | 19.0 | 0.75 | 103.0 | 4.06 | 19.1 | 3/4 |
| DN150/ PN10-40 | NPS 6/ CL150-600 | 19.0 | 0.8 | 25.0 | 0.94 | 108.0 | 4.25 | 25.4 | 1 |
| DN200/ PN10-40 | NPS 8/ CL150-600 | 22.0 | 0.9 | 30.0 | 1.18 | 109.0 | 4.29 | 31.8 | 1 1/4 |
| DN250/ PN10-40 | NPS 10/ CL150-600 | 22.0 | 0.9 | 30.0 | 1.18 | 109.0 | 4.29 | 31.8 | 1 1/4 |
| DN300/ PN10-25 | NPS 12/ CL150-600 | 27.0 | 1.1 | 35.0 | 1.38 | 114.0 | 4.49 | 38.1 | 1 1/2 |
| --- | NPS 14/ CL150-300 | --- | 1.4 | --- | 1.77 | --- | 6.25 | --- | 1 3/4 |

1. This nominal Valve Shaft Diameter is the shaft diameter through the packing box. Use this diameter when selecting Fisher actuators.

Figure 15. Fisher Vee-Ball Square Shaft Dimensions (also see table16)



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