

# Fisher® EU and EW Valves NPS 16 through 24 x 20

The Fisher NPS 16 through 24 × 20 CL150 through CL600 EUT-2, EWT-2, EUD, EWD, EUT, and EWT control valves (figures 2 and 3) are used for either throttling or on-off control of a wide variety of liquids and gasses.

CL900 NPS 16 and 20 x 16 valves are available upon request. Please contact your Emerson Process Management sales office for more details. These valves have single ports, balanced valve plugs, and cage guiding.

EUT-2 and EWT-2 valves with a hanging cage (figure 2) are available for demanding applications in oil and natural gas to 232°C (450°F). The hanging cage, with the seat ring threaded into the cage, gives these valves easy-maintenance trim--no trim parts are threaded into the valve body. The seal between the plug and cage and the seal between the seat ring and valve body are spring-loaded PTFE seals.

EUD and EWD valves (figure 3) have a bolted-in seat ring. These valves have metal-to-metal seating and use two graphite piston rings between the valve plug and cage. They are used primarily for high temperature (over 232°C [450°F]) service. Bore Seal trim is used to obtain Class V shutoff above 316°C (600°F).

EUT and EWT valves (figure 1) have a bolted-in seat ring. These valves have metal-to-metal seating and use PEEK anti-extrusion rings to obtain temperatures up to 316°C (600°F).

These valves share the following characteristics: multiple trim material choices, trim part interchangeability, and different cage styles to provide particular flow characteristics to handle specific applications.



To help reduce aerodynamic noise in gas service, Whisper Trim™ III (figure 4) and WhisperFlo™ cages are available. To eliminate liquid cavitation damage, Cavitrol™ III cages are available. For cavitating liquids with particulate, DST (dirty service trim) is available.



Specifications

Valve Sizes

EUT-2, EUD, and EWT: ■ NPS 16 and ■ 20  
EWT-2, EWD, and EWT: ■ NPS 20 x 16,  
■ 24 x 16, and ■ 24 x 20 valves (size designations  
are end connection size x nominal trim size)

End Connection Styles

**Flanged:** CL150, 300, and 600 raised-face or ring-type  
joint flanges per ASME B16.5  
**Buttwelding:** All ASME B16.25 schedules through  
schedule 120 that are compatible with the ASME  
B16.34 valve body rating

For other end connections, contact your Emerson  
Process Management sales office for details.

Maximum Inlet Pressure<sup>(1)</sup>

**Flanged:** Consistent with CL150, 300, and 600  
pressure-temperature ratings per ASME B16.34  
**Buttwelding:** Consistent with CL600 per  
ASME B16.34

Material Temperature and Pressure Drop  
Capabilities<sup>(1)</sup>

See table 1 and figures 5 and 6.

Shutoff Classifications per ANSI/FCI 70-2 and IEC  
60534-4

EUT and EWT with Metal Seats

Standard: Class V

EUT-2 and EWT-2 with Metal Seats

Standard (for all trims except 2-Stage Cavitrol Trim):  
Class IV

Standard (for 2-Stage Cavitrol Trim): Class V

Optional (for all trims except 2-Stage Cavitrol Trim):  
Class V

EUT-2 and EWT-2 with Soft Metal Seats

Class V

EUD and EWD with Metal Seats

Standard: Class III

Optional: Class IV and V

Construction Materials

**Valve Body and Bonnet:** ■ WCC steel, ■ WC9 steel,  
■ LCC steel, or ■ CF8M (316 stainless steel). For  
other materials, consult your Emerson Process  
Management sales office

**Trim and Other Parts:** See tables 1, 2, and 3.

Flow Characteristics

**Standard Cages:** ■ Linear or ■ equal percentage

**Whisper Trim III and Cavitrol III Cages:** Linear

**WhisperFlo Cages:** Linear

For other characteristics, contact your Emerson  
Process Management sales office for details.

Flow Direction

**Standard and Cavitrol III Cages:** Down

**Whisper Trim III Cages:** Up

**WhisperFlo Cages:** Up

Flow Coefficients

See the section titled Coefficients in this bulletin, or  
Fisher Catalog 12

Port Diameters

See tables 4 and 5

Valve Plug Travel

102 through 432 mm (4 to 17 inches).

Contact your Emerson Process Management sales  
office for further details if needed

Yoke Boss and Stem Diameters

■ 127 mm (5-inch) or ■ 127 mm (5H-inch) diameter  
yoke boss, each with 31.8 mm  
(1.25 inch) diameter valve stem

Typical Bonnet Style

Standard Plain (style 1 extension)

Approximate Weights

See figure 7

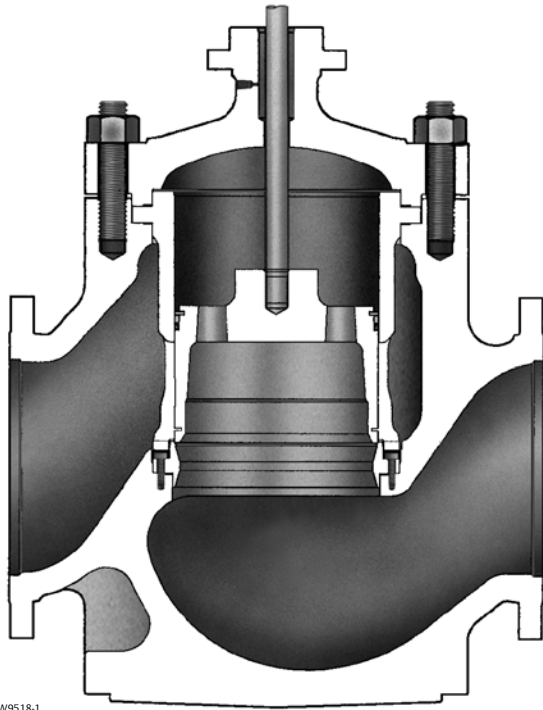
1. The pressure/temperature limits in this bulletin and any applicable standard or code limitation for valve should not be exceeded.

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Figure 1. Fisher EUT / EWT Valve with PEEK Anti-Extrusion Rings



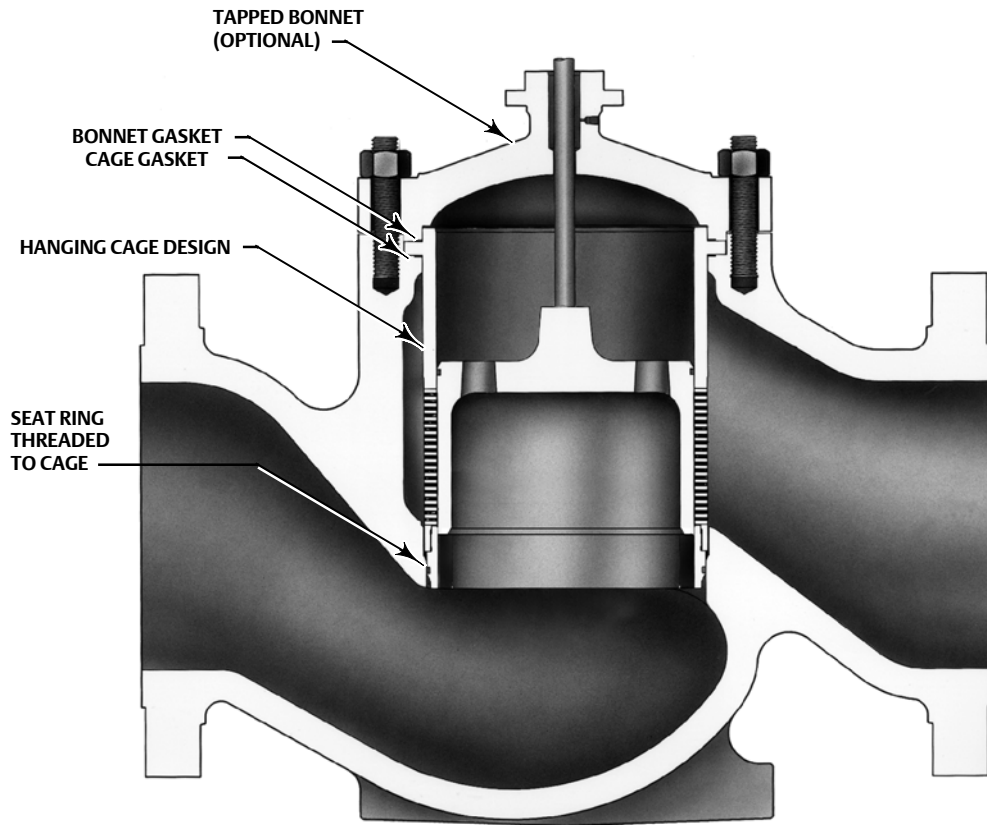
## Features

- **Stable Control at High Pressure Drops**— Rugged cage guiding stabilizes the valve plug at all points in its travel range. This guiding reduces vibration, mechanical noise, and the need for hydraulic snubbers.
- **Economy**— Streamlined flow passages provide greater capacities per initial investment than most

globe valves of the same size. Balanced valve plug design can allow use of smaller actuators for high pressure drops.

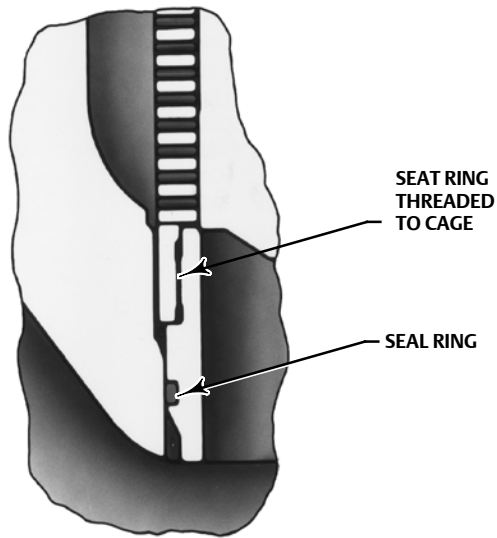
- **Cost-Effective Operation**— Increased wear resistance of the standard hardened stainless steel trim means long-lasting service.
- **Easy Maintenance**— The valve can stay in the pipeline during removal of trim parts for inspection or maintenance.

Figure 2. Typical Fisher EUT-2 or EWT-2 Valve



W6088-2

COMPLETE VALVE



W6089-1A

SEAT RING SEAL DETAIL

Figure 3. Typical Fisher EUD or EWD Valve

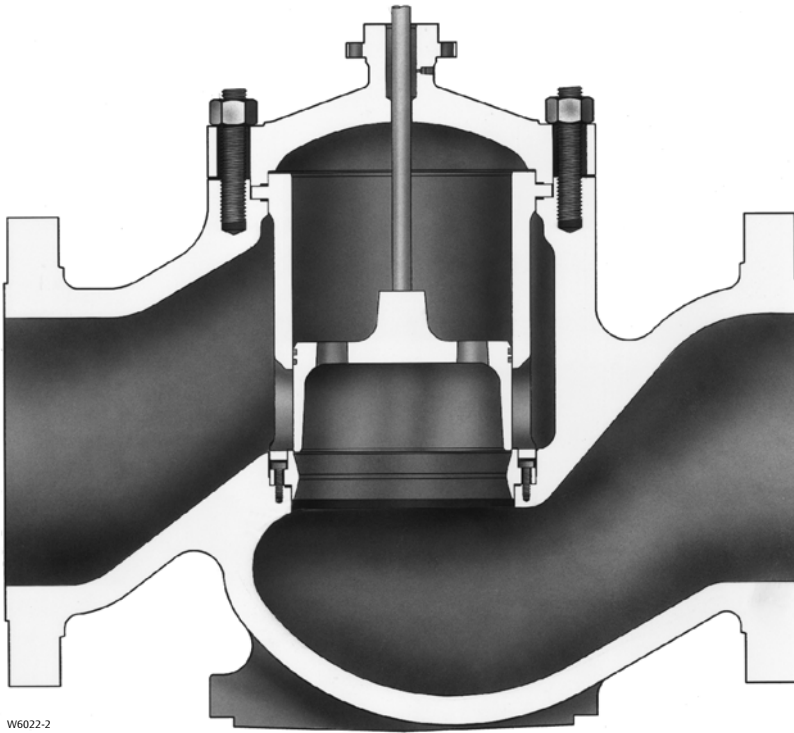


Figure 4. Fisher EWT-2 Valve with Whisper Trim III D3 Cage, Baffle, and Lower Metal Piston Ring

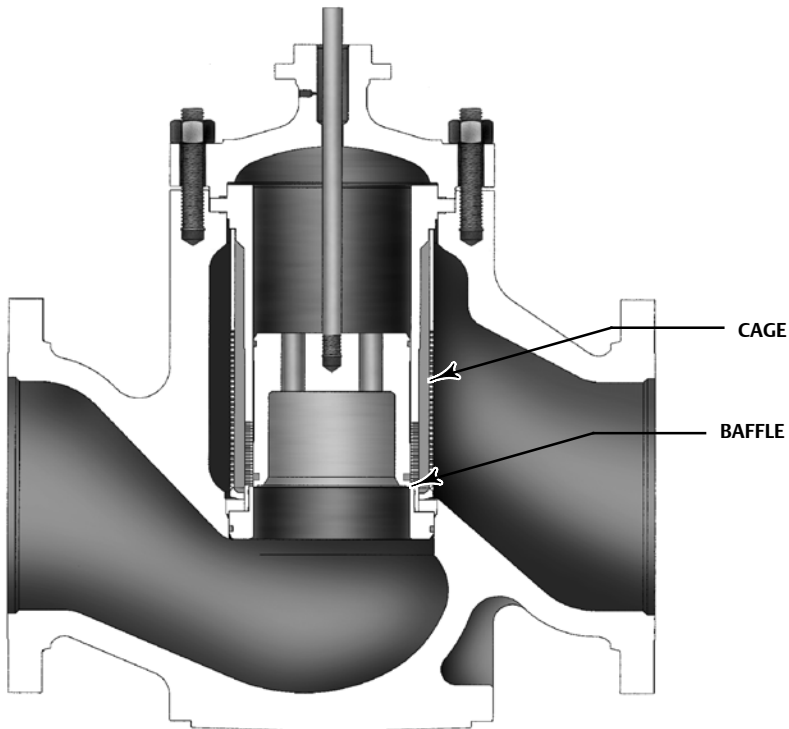


Table 1. Construction Materials

| PART                                                                               |                         | MATERIAL                                                    | TEMPERATURE                                           |                                                         |              |
|------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|--------------|
|                                                                                    |                         |                                                             | °C                                                    | °F                                                      |              |
| Valve Body and Bonnet                                                              |                         | WCC Steel<br>WC9 Steel<br>CF8M (316 Stainless Steel)<br>LCC | -29 to 427<br>-29 to 593<br>-198 to 593<br>-46 to 343 | -20 to 800<br>-20 to 1100<br>-325 to 1000<br>-50 to 650 |              |
| Cage, Seat Ring, and Valve Plug                                                    |                         | See tables 2 and 3                                          | See figures 5 and 6                                   |                                                         |              |
| Soft Metal Seat (with trim 233 in EUT-2 and EWT-2 valves only)                     |                         | CF8M                                                        | See figures 5 and 6                                   |                                                         |              |
| Valve Stem                                                                         |                         | S20910 SST                                                  | Not a Limiting Factor                                 |                                                         |              |
| Valve-to-Bonnet Bolting                                                            | WCC Valve               | SA-193-B7 Studs                                             | -29 to 427                                            | -20 to 800                                              |              |
|                                                                                    |                         | SA-194-2H Nuts                                              |                                                       |                                                         |              |
|                                                                                    | LCC Valve               | SA-193-B7 Studs                                             | -46 to 343                                            | -50 to 650                                              |              |
|                                                                                    |                         | SA-194-2H Nuts                                              |                                                       |                                                         |              |
|                                                                                    | WC9 Valve               | SA-193-B7 Studs                                             | -29 to 427                                            | -20 to 800                                              |              |
|                                                                                    |                         | SA-194-2H Nuts                                              |                                                       |                                                         |              |
|                                                                                    | CF8M Valve              | S20910 CrCt Studs                                           | -198 to 538                                           | -325 to 1000                                            |              |
|                                                                                    |                         | S20910 Nuts                                                 |                                                       |                                                         |              |
|                                                                                    |                         | B8M Class 2 studs                                           | -198 to 427                                           | -325 to 800                                             |              |
|                                                                                    |                         | 8M nuts                                                     |                                                       |                                                         |              |
| SA-193-B7 Studs                                                                    |                         | -29 to 427                                                  | -20 to 800                                            |                                                         |              |
| SA-194-2H Nuts                                                                     |                         |                                                             |                                                       |                                                         |              |
| Seat Ring Cap Screws                                                               |                         | S17400<br>N07718                                            | -29 to 354<br>-198 to 593                             | -20 to 700<br>-325 to 1100                              |              |
| Bonnet, Seat Ring, and Cage Gaskets                                                |                         | N06600/Graphite                                             | Oxidizing                                             | -198 to 427                                             | -325 to 800  |
|                                                                                    |                         |                                                             | Non-Oxidizing                                         | -198 to 593                                             | -325 to 1100 |
| EUD and EWD Piston Ring or Lower Graphite Piston Ring (254 mm [10 inch] port only) |                         | Graphite (Fisher Designation FMS 17F27)                     | Oxidizing                                             | -198 to 427                                             | -325 to 800  |
|                                                                                    |                         |                                                             | Non-Oxidizing                                         | -198 to 482                                             | -325 to 900  |
|                                                                                    |                         | Graphite (Fisher Designation FMS 17F39)                     | Oxidizing                                             | -198 to 538                                             | -325 to 1000 |
|                                                                                    |                         |                                                             | Non-Oxidizing                                         | -198 to 593                                             | -325 to 1100 |
| EUD and EWD Bore Seal                                                              |                         | N07718                                                      | -198 to 593                                           | -325 to 1100                                            |              |
| EUT-2 and EWT-2 Seat Ring Seal Ring and Plug Seal Ring                             |                         | N10276/Glass and Moly-Filled PTFE                           | -73 to 232                                            | -100 to 450                                             |              |
| EUT and EWT valves with PEEK anti-extrusion rings                                  | Backup ring             | S41000                                                      | Not a Limiting Factor                                 | Not a Limiting Factor                                   |              |
|                                                                                    |                         | S31600                                                      |                                                       |                                                         |              |
|                                                                                    | Retaining ring          | 18-8                                                        |                                                       |                                                         |              |
|                                                                                    | Seal ring               | PTFE/graphite with N10276 spring                            | 232 to 316                                            | 450 to 600                                              |              |
| For applications using a lower metal piston ring                                   | Lower metal piston ring | Iron / N07750                                               | -73 to 427                                            | -100 to 800                                             |              |
| Packing (Temperatures shown are in-body temperatures with plain bonnet.)           |                         | PTFE V-Ring                                                 |                                                       | -46 to 232                                              | -50 to 450   |
|                                                                                    |                         | PTFE Composition                                            |                                                       | -46 to 232                                              | -50 to 450   |
|                                                                                    |                         | Graphite Ribbon/Filament                                    | Oxidizing                                             | -198 to 354                                             | -325 to 700  |
|                                                                                    |                         |                                                             | Non-Oxidizing                                         | -198 to 538                                             | -325 to 1000 |
| Packing Flange, Studs, and Nuts                                                    |                         | Steel                                                       |                                                       | -29 to 427                                              | -20 to 800   |
|                                                                                    |                         | S31600 (316 Stainless Steel)                                |                                                       | -198 to 593                                             | -325 to 1100 |
| Packing Follower, Spring (PTFE V-Ring Packing), or Lantern Ring                    |                         | S31600                                                      | Not a Limiting Factor                                 |                                                         |              |
| Packing Box Ring                                                                   |                         | S17400                                                      |                                                       | -101 to 427                                             | -150 to 800  |
|                                                                                    |                         | S31600                                                      |                                                       | -198 to 593                                             | -325 to 1100 |

**Table 2. Typical Combinations of Metal Trim Materials for All Valves Except Those with WhisperFlo Trim<sup>(1)</sup>**

| Valve Design | Trim Designation   | Valve Plug                              | Seat Ring                | Cage          | Seat Ring Cap Screws | Temperature  |
|--------------|--------------------|-----------------------------------------|--------------------------|---------------|----------------------|--------------|
| EUT-2, EWT-2 | 231 <sup>(2)</sup> | CA6NM HT                                | CB7CU-1 H1075            | CB7CU-1 H1075 | ---                  | See figure 5 |
|              | 232 <sup>(3)</sup> | CF8M with CoCr-A on Seat and Guide      | CF8M with CoCr-A on seat | CF8M ENC      | ---                  |              |
| EUD, EWD     | 226                | CA6NM                                   | CB7CU-1 H1075            | CB7CU-1 H1075 | S17400 H1100         | See figure 6 |
|              | 227A               | WC9 Steel with CoCr-A on Seat and Guide | CF8M with CoCr-A on seat | WC9 Nitrided  | N07718               |              |
|              | 229 <sup>(3)</sup> | CF8M with CoCr-A on Seat and Guide      | CF8M with CoCr-A on seat | CF8M ENC      | N07718               |              |
| EUT, EWT     | 231                | CA6NM HT                                | CB7CU-1 H1075            | CB7CU-1 H1075 | S17400 H1100         | See figure 6 |
|              | 232 <sup>(3)</sup> | CF8M with CoCr-A on Seat and Guide      | CF8M with CoCr-A on seat | CF8M ENC      | N07718               |              |

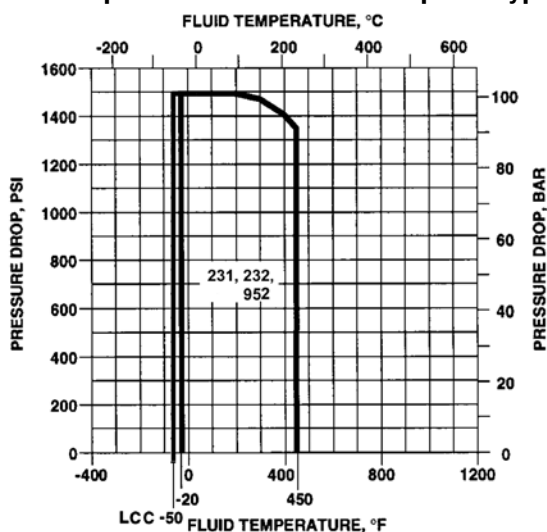
1. For WhisperFlo trims, see table 3.  
2. Cavitrol III cage is standard with trim 231  
3. NACE MR0175 approved trim materials.

**Table 3. WhisperFlo Metal Trim Materials and Valve Body/Trim Temperature Capabilities**

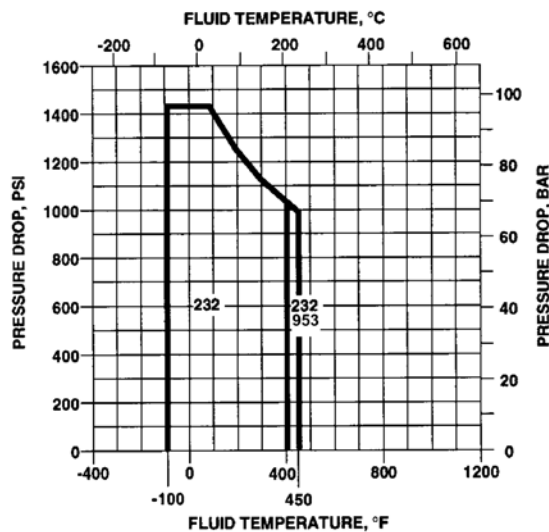
| Valve Design | Trim Designation   | Valve Plug                         | Seat Ring                | Cage                  | Seat Ring Cap Screws | Temperature  |
|--------------|--------------------|------------------------------------|--------------------------|-----------------------|----------------------|--------------|
| EUT-2, EWT-2 | 952                | CA6NM HT                           | CF8M with CoCr-A on seat | 410 SST/ ENC/Ultimet  | ---                  | See figure 5 |
|              | 953 <sup>(1)</sup> | CF8M with CoCr-A on Seat and Guide | CF8M with CoCr-A on seat | 316L SST/ ENC/Ultimet | ---                  |              |
| EUD, EWD     | 950                | CA6NM HT                           | CF8M with CoCr-A on seat | 410 SST/ ENC/Ultimet  | N07718               | See figure 6 |
|              | 951 <sup>(1)</sup> | CF8M with CoCr-A on Seat and Guide | CF8M with CoCr-A on seat | 316L SST/ ENC/Ultimet | N07718               |              |
| EUT, EWT     | 952                | CA6NM HT                           | CF8M with CoCr-A on seat | 410 SST/ ENC/Ultimet  | N07718               | See figure 6 |
|              | 953 <sup>(1)</sup> | CF8M with CoCr-A on Seat and Guide | CF8M with CoCr-A on seat | 316L SST/ ENC/Ultimet | N07718               |              |

1. NACE MR0175 approved trim materials.

Figure 5. Temperature and Pressure Drops for Typical Trim Used in Fisher EUT-2 and EWT-2 Valves



FOR STANDARD METAL SEATING WITH CL600 <sup>1</sup>  
WCC/LCC STEEL BODY



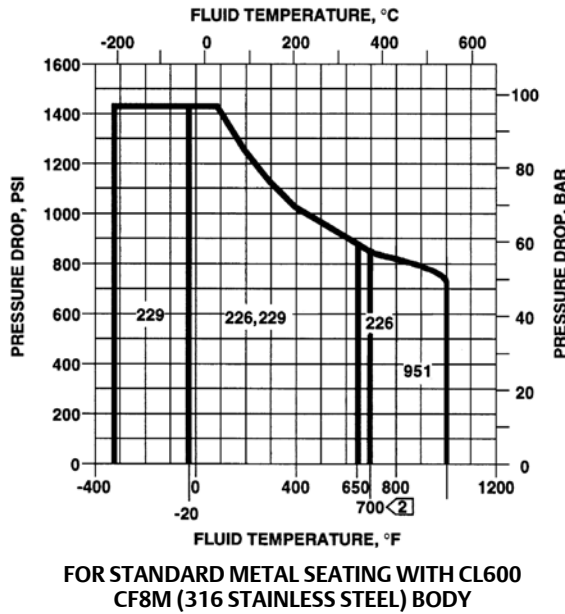
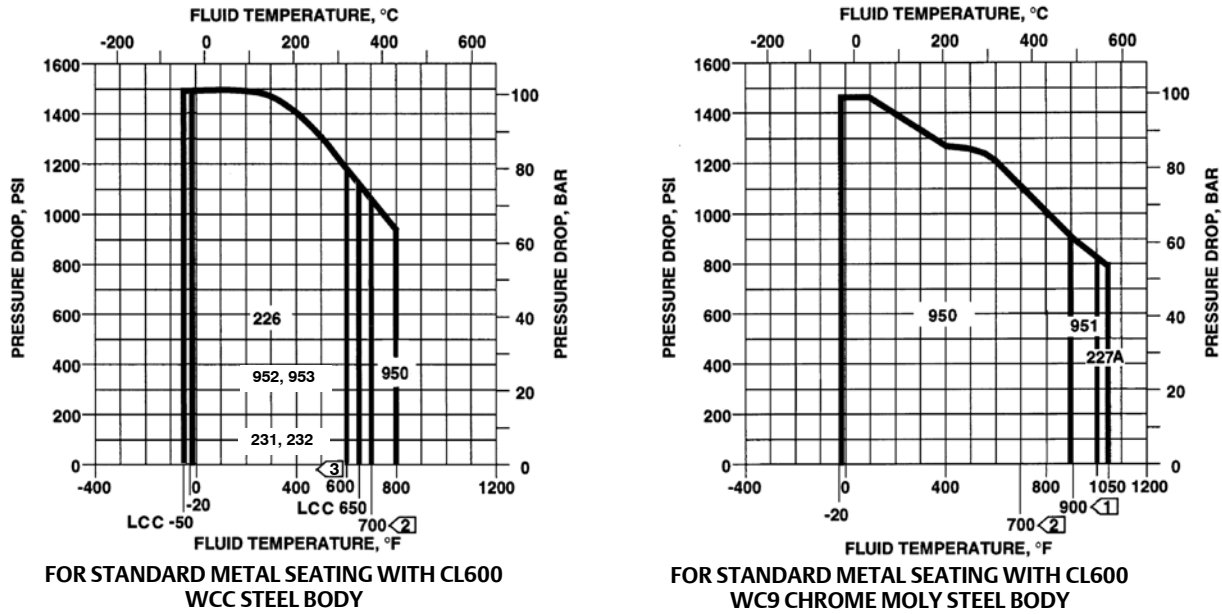
FOR STANDARD METAL SEATING WITH CL600 <sup>1</sup>  
CF8M (316 STAINLESS STEEL) BODY

MC140-1/AR.1  
A6890

NOTES:

<sup>1</sup> DO NOT EXCEED THE MAXIMUM PRESSURE AND TEMPERATURE FOR THE CLASS RATING OF THE BODY MATERIAL USED, EVEN THOUGH THE TRIMS SHOWN MAY HAVE HIGHER CAPABILITIES.

Figure 6. Temperature and Pressure Drops for Typical Trim Used in Fisher EUD, EWD, EUT, and EWT Valves



MC140-2/AR 1  
A6891

NOTES:

- ① 482°C (900°F) LIMIT -- WCC STEEL VALVE PLUG
  - ② 371°C (700°F) LIMIT -- S17400 SEAT RING BOLTING
  - ③ 316°C (600°F) LIMIT -- EUT AND EWT VALVES WITH 231, 232, 952, AND 953 TRIMS
- DO NOT EXCEED THE MAXIMUM PRESSURE AND TEMPERATURE FOR THE CLASS RATING OF THE BODY MATERIAL USED, EVEN THOUGH THE TRIMS SHOWN MAY HAVE HIGHER CAPABILITIES.

Table 4. Port Diameters for Fisher EUT-2 and EWT-2 CL 150 through CL600 Valves

| Valve Size, NPS | TRIM                                                          | PORT DIAMETER |        |
|-----------------|---------------------------------------------------------------|---------------|--------|
|                 |                                                               | mm            | Inches |
| 16              | Cast cages <sup>(1)</sup> , WhisperFlo, and Cav III           | 374.7         | 14.75  |
|                 | Whisper Trim III A, B, and C                                  | 412.8         | 16.25  |
|                 | Whisper Trim III D                                            | 355.6         | 14.00  |
| 20 × 16         | Cast cages <sup>(1)</sup> , WhisperFlo, and Cav III           | 374.7         | 14.75  |
|                 | Drilled cages <sup>(1)</sup> and Whisper Trim III A, B, and C | 412.8         | 16.25  |
|                 | Whisper Trim III D                                            | 355.6         | 14.00  |
| 24 × 16         | Cast cages <sup>(1)</sup> , WhisperFlo, and Cav III           | 374.7         | 14.75  |
|                 | Drilled cages <sup>(1)</sup> and Whisper Trim III A, B, and C | 412.8         | 16.25  |
|                 | Whisper Trim III D                                            | 355.6         | 14.00  |
| 20              | WhisperFlo and Cav III                                        | 463.6         | 18.25  |
|                 | Drilled cages <sup>(1)</sup> and Whisper Trim III A, B, and C | 501.7         | 19.75  |
|                 | Whisper Trim III D                                            | 431.8         | 17.00  |
| 24 × 20         | WhisperFlo and Cav III                                        | 463.6         | 18.25  |
|                 | Drilled cages <sup>(1)</sup> and Whisper Trim III A, B, and C | 501.7         | 19.75  |
|                 | Whisper Trim III D                                            | 431.8         | 17.00  |

1. Linear or equal percentage.

Table 5. Port Diameters for Fisher EUD, EWD, EUT and EWT CL 150 through CL600 Valves

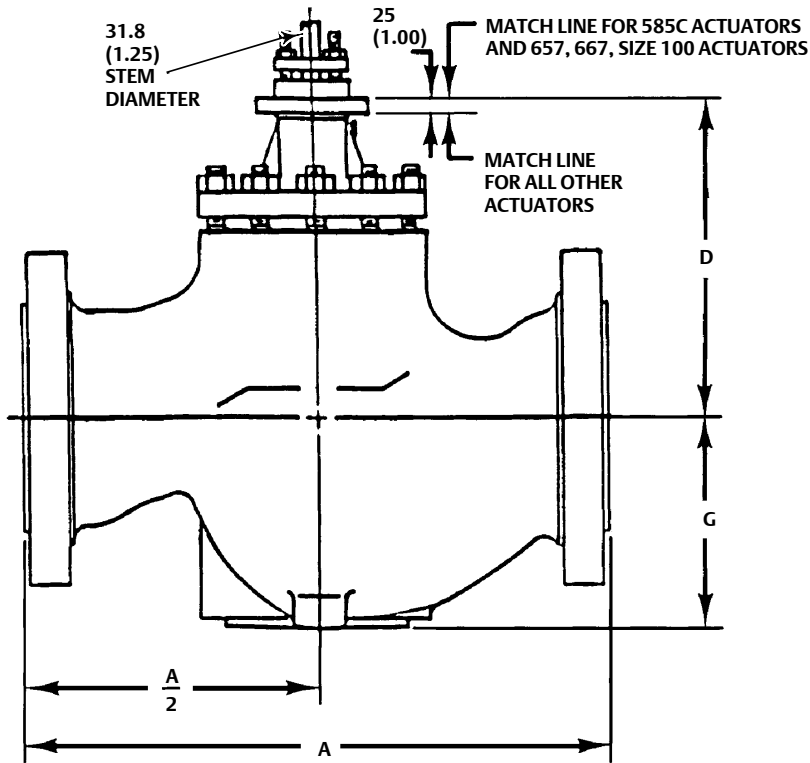
| Valve Size, NPS | TRIM                                                                            | PORT DIAMETER |        |
|-----------------|---------------------------------------------------------------------------------|---------------|--------|
|                 |                                                                                 | mm            | Inches |
| 16              | Linear; Equal Percentage; Whisper Trim III A, B, and C; WhisperFlo; and Cav III | 374.7         | 14.75  |
|                 | Whisper Trim III D                                                              | 355.6         | 14.00  |
| 20 × 16         | Linear; Equal Percentage; Whisper Trim III A, B, and C; WhisperFlo; and Cav III | 374.7         | 14.75  |
|                 | Whisper Trim III D                                                              | 355.6         | 14.00  |
| 24 × 16         | Linear; Equal Percentage; Whisper Trim III A, B, and C; WhisperFlo; and Cav III | 374.7         | 14.75  |
|                 | Whisper Trim III D                                                              | 355.6         | 14.00  |
| 20              | Linear; Equal Percentage; Whisper Trim III A, B, and C; WhisperFlo; and Cav III | 463.6         | 18.25  |
|                 | Whisper Trim III D                                                              | 431.8         | 17.00  |
| 24 × 20         | Linear; Equal Percentage; Whisper Trim III A, B, and C; WhisperFlo; and Cav III | 463.6         | 18.25  |
|                 | Whisper Trim III D                                                              | 431.8         | 17.00  |

Table 6. Dimensions and Approximate Weights

| END CONNECTION |                     | APPROXIMATE WEIGHT (LONG-NECK VALVE <sup>(2)</sup> ) |       | DIMENSION |       |       |       |       |       |     |       |                                           |       |     |       |                                |       |     |       |
|----------------|---------------------|------------------------------------------------------|-------|-----------|-------|-------|-------|-------|-------|-----|-------|-------------------------------------------|-------|-----|-------|--------------------------------|-------|-----|-------|
|                |                     |                                                      |       | A         |       |       |       |       |       | G   |       | Standard Plain Bonnet (Style 1 Extension) |       |     |       |                                |       |     |       |
| Size, NPS      | Type <sup>(1)</sup> | Kg                                                   | Lb    | CL150     |       | CL300 |       | CL600 |       |     |       | Short-Neck Valve <sup>(2)</sup>           |       |     |       | Long-Neck Valve <sup>(2)</sup> |       |     |       |
|                |                     |                                                      |       | mm        | Inch  | mm    | Inch  | mm    | Inch  | D   |       | Max. Travel                               |       | D   |       | Max. Travel                    |       |     |       |
|                |                     |                                                      |       | mm        | Inch  | mm    | Inch  | mm    | Inch  | mm  | Inch  | mm                                        | Inch  | mm  | Inch  | mm                             | Inch  | mm  | Inch  |
| 16             | RF                  | 2540                                                 | 5600  | 1016      | 40.00 | 1057  | 41.62 | 1108  | 43.62 | 437 | 17.19 | 663                                       | 26.12 | 127 | 5.00  | 816                            | 32.12 | 226 | 8.88  |
|                | RTJ                 |                                                      |       | 1026      | 40.38 | 1073  | 42.25 | 1111  | 43.75 |     |       |                                           |       |     |       |                                |       |     |       |
|                | BW                  | 2270                                                 | 5000  | ---       | ---   | ---   | ---   | 1108  | 43.62 |     |       |                                           |       |     |       |                                |       |     |       |
| 20 × 16        | RF                  | 3540                                                 | 7800  | 1267      | 49.88 | 1308  | 51.50 | 1372  | 54.00 | 487 | 19.19 | 706                                       | 27.81 | 226 | 8.88  | 859                            | 33.81 | 276 | 10.88 |
|                | RTJ                 |                                                      |       | 1276      | 50.25 | 1327  | 52.25 | 1378  | 54.25 |     |       |                                           |       |     |       |                                |       |     |       |
|                | BW                  | 3130                                                 | 6900  | ---       | ---   | ---   | ---   | 1372  | 54.00 |     |       |                                           |       |     |       |                                |       |     |       |
| 20             | RF                  | 5220                                                 | 11500 | 1267      | 49.88 | 1308  | 51.50 | 1372  | 54.00 | 514 | 20.25 | 917                                       | 36.12 | 276 | 10.88 | 1121                           | 44.12 | 378 | 14.88 |
|                | RTJ                 |                                                      |       | ---       | ---   | ---   | ---   | ---   | ---   |     |       |                                           |       |     |       |                                |       |     |       |
|                | BW                  | 4810                                                 | 10600 | ---       | ---   | ---   | ---   | 1372  | 54.00 |     |       |                                           |       |     |       |                                |       |     |       |
| 24 × 16        | RF                  | 5220                                                 | 11500 | 1556      | 61.25 | 1600  | 63.00 | 1676  | 66.00 | 526 | 20.69 | 816                                       | 32.12 | 226 | 8.88  | 1121                           | 44.12 | 378 | 14.88 |
|                | RTJ                 |                                                      |       | 1565      | 61.62 | 1623  | 63.88 | 1686  | 66.38 |     |       |                                           |       |     |       |                                |       |     |       |
|                | BW                  | 4630                                                 | 10200 | ---       | ---   | ---   | ---   | 1676  | 66.00 |     |       |                                           |       |     |       |                                |       |     |       |
| 24 × 20        | RF                  | 7710                                                 | 17000 | 1556      | 61.25 | 1600  | 63.00 | 1676  | 66.00 | 565 | 22.25 | 917                                       | 36.12 | 276 | 10.88 | 1121                           | 44.12 | 378 | 14.88 |
|                | RTJ                 |                                                      |       | 1565      | 61.62 | 1623  | 63.88 | 1686  | 66.38 |     |       |                                           |       |     |       |                                |       |     |       |
|                | BW                  | 7120                                                 | 15700 | ---       | ---   | ---   | ---   | 1676  | 66.00 |     |       |                                           |       |     |       |                                |       |     |       |

1. RF--raised face; RTJ--ring-type joint; BW--butt-welding.  
 2. For longer travels, the neck of the valve (the portion of the valve body that supports the bonnet) is longer to accommodate the travel. The longer neck increases the D dimension.

Figure 7. Dimensions and Approximate Weights (also see table 6)



mm  
(INCH)

# Coefficients

Table 7. Fisher EUT-2, EUD, and EUT; CL150, 300, and 600; Linear; Flow Down

| Linear          |                 |               |        |              |        |                             |                  |                                       |       |       |       |       |       |       |       |       | Linear Characteristic |       |                |
|-----------------|-----------------|---------------|--------|--------------|--------|-----------------------------|------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------------|-------|----------------|
| Valve Type      | Valve Size, NPS | Port Diameter |        | Total Travel |        | Construction <sup>(1)</sup> | Flow Coefficient | Valve Opening—Percent of Total Travel |       |       |       |       |       |       |       |       |                       |       | F <sub>L</sub> |
|                 |                 | mm            | Inches | mm           | Inches |                             |                  | Min <sup>(2)</sup>                    | 10    | 20    | 30    | 40    | 50    | 60    | 70    | 80    | 90                    | 100   |                |
| EUT-2, EUD, EUT | 16              | 374.7         | 14.75  | 102          | 4.00   | SNC                         | C <sub>v</sub>   | 46                                    | 270   | 520   | 790   | 1080  | 1380  | 1690  | 1980  | 2240  | 2450                  | 2630  | 0.88           |
|                 |                 |               |        |              |        |                             | K <sub>v</sub>   | 39.8                                  | 234   | 450   | 683   | 934   | 1194  | 1462  | 1713  | 1938  | 2119                  | 2275  | ---            |
|                 |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.643 | 0.684 | 0.667 | 0.645 | 0.650 | 0.664 | 0.694 | 0.721 | 0.749                 | 0.755 | ---            |
|                 |                 | 374.7         | 14.75  | 127          | 5.00   | SNC                         | C <sub>v</sub>   | 46                                    | 335   | 650   | 1000  | 1380  | 1770  | 2120  | 2410  | 2630  | 2780                  | 2860  | 0.88           |
|                 |                 |               |        |              |        |                             | K <sub>v</sub>   | 39.8                                  | 290   | 562   | 865   | 1194  | 1531  | 1834  | 2085  | 2275  | 2405                  | 2474  | ---            |
|                 |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.650 | 0.677 | 0.652 | 0.650 | 0.666 | 0.709 | 0.745 | 0.755 | 0.739                 | 0.763 | ---            |
| EUD, EUT        | 20              | 436.6         | 18.25  | 203          | 8.00   | SND                         | C <sub>v</sub>   | 56                                    | 315   | 625   | 920   | 1230  | 1570  | 1920  | 2260  | 2530  | 2800                  | 3010  | 0.89           |
|                 |                 |               |        |              |        |                             | K <sub>v</sub>   | 48.4                                  | 272   | 541   | 796   | 1064  | 1358  | 1661  | 1955  | 2188  | 2422                  | 2604  | ---            |
|                 |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.655 | 0.653 | 0.673 | 0.671 | 0.649 | 0.650 | 0.650 | 0.663 | 0.667                 | 0.684 | ---            |
|                 |                 | 463.6         | 18.25  | 276          | 10.88  | SND                         | C <sub>v</sub>   | 56                                    | 255   | 670   | 1030  | 1460  | 1930  | 2370  | 2780  | 3100  | 3390                  | 3650  | 0.89           |
|                 |                 |               |        |              |        |                             | K <sub>v</sub>   | 48.4                                  | 221   | 580   | 891   | 1263  | 1669  | 2050  | 2405  | 2682  | 2932                  | 3157  | ---            |
|                 |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.648 | 0.656 | 0.681 | 0.656 | 0.649 | 0.653 | 0.667 | 0.690 | 0.719                 | 0.733 | ---            |
|                 |                 | 463.6         | 18.25  | 378          | 14.88  | LND                         | C <sub>v</sub>   | 56                                    | 375   | 865   | 1370  | 1940  | 2460  | 2910  | 3330  | 3614  | 3811                  | 3920  | 0.89           |
|                 |                 |               |        |              |        |                             | K <sub>v</sub>   | 48.4                                  | 324   | 748   | 1185  | 1678  | 2128  | 2517  | 2880  | 3126  | 3296                  | 3391  | ---            |
|                 |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.651 | 0.674 | 0.668 | 0.651 | 0.661 | 0.676 | 0.707 | 0.736 | 0.755                 | 0.748 | ---            |
| EUT-2           | 20              | 501.7         | 19.75  | 203          | 8.00   | SND                         | C <sub>v</sub>   | 60                                    | 340   | 675   | 990   | 1340  | 1710  | 2110  | 2420  | 2720  | 2960                  | 3180  | 0.89           |
|                 |                 |               |        |              |        |                             | K <sub>v</sub>   | 51.9                                  | 294   | 584   | 856   | 1159  | 1479  | 1825  | 2093  | 2353  | 2560                  | 2751  | ---            |
|                 |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.654 | 0.664 | 0.682 | 0.668 | 0.656 | 0.647 | 0.659 | 0.665 | 0.681                 | 0.694 | ---            |
|                 |                 | 501.7         | 19.75  | 276          | 10.88  | SND                         | C <sub>v</sub>   | 60                                    | 465   | 905   | 1370  | 1880  | 2360  | 2760  | 3080  | 3350  | 3610                  | 3830  | 0.89           |
|                 |                 |               |        |              |        |                             | K <sub>v</sub>   | 51.9                                  | 402   | 783   | 1185  | 1626  | 2041  | 2387  | 2664  | 2898  | 3123                  | 3313  | ---            |
|                 |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.650 | 0.673 | 0.665 | 0.654 | 0.657 | 0.669 | 0.685 | 0.711 | 0.726                 | 0.742 | ---            |
|                 |                 | 501.7         | 19.75  | 378          | 14.88  | LND                         | C <sub>v</sub>   | 60                                    | 410   | 935   | 1500  | 2130  | 2650  | 3070  | 3510  | 3870  | 4150                  | 4340  | 0.89           |
|                 |                 |               |        |              |        |                             | K <sub>v</sub>   | 51.9                                  | 355   | 809   | 1298  | 1842  | 2292  | 2656  | 3036  | 3348  | 3590                  | 3754  | ---            |
|                 |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.648 | 0.678 | 0.659 | 0.648 | 0.661 | 0.690 | 0.718 | 0.749 | 0.753                 | 0.737 | ---            |

Table 8. Fisher EUT-2, EUD, and EUT; CL150, 300, and 600; Equal Percentage; Flow Down

| Equal Percentage |                 |               |        |              |        |                             |                  |                                       |       |       |       |       |       |       |       | Equal Percentage Characteristic |       |       |                |
|------------------|-----------------|---------------|--------|--------------|--------|-----------------------------|------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|---------------------------------|-------|-------|----------------|
| Valve Type       | Valve Size, NPS | Port Diameter |        | Total Travel |        | Construction <sup>(1)</sup> | Flow Coefficient | Valve Opening—Percent of Total Travel |       |       |       |       |       |       |       |                                 |       |       | F <sub>L</sub> |
|                  |                 | mm            | Inches | mm           | Inches |                             |                  | Min <sup>(2)</sup>                    | 10    | 20    | 30    | 40    | 50    | 60    | 70    | 80                              | 90    | 100   |                |
|                  |                 |               |        |              |        |                             |                  |                                       |       |       |       |       |       |       |       |                                 |       |       |                |
| EUT-2, EUD, EUT  | 16              | 374.7         | 14.75  | 102          | 4.00   | SNC                         | C <sub>v</sub>   | 23                                    | 49.0  | 87.0  | 130   | 188   | 274   | 426   | 640   | 915                             | 1250  | 1630  | 0.78           |
|                  |                 |               |        |              |        |                             | K <sub>v</sub>   | 19.9                                  | 42.4  | 75.3  | 112   | 163   | 237   | 368   | 554   | 791                             | 1081  | 1410  | ---            |
|                  |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.625 | 0.634 | 0.668 | 0.673 | 0.643 | 0.591 | 0.574 | 0.577                           | 0.593 | 0.621 | ---            |
|                  |                 | 374.7         | 14.75  | 127          | 5.00   | SNC                         | C <sub>v</sub>   | 23                                    | 58.1  | 106   | 166   | 274   | 464   | 758   | 1150  | 1630                            | 2210  | 2540  | 0.78           |
|                  |                 |               |        |              |        |                             | K <sub>v</sub>   | 19.9                                  | 50.3  | 91.7  | 144   | 237   | 401   | 656   | 995   | 1410                            | 1912  | 2197  | ---            |
|                  |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.613 | 0.647 | 0.689 | 0.643 | 0.585 | 0.565 | 0.589 | 0.621                           | 0.623 | 0.685 | ---            |
| EUD, EUT         | 20              | 463.6         | 18.25  | 203          | 8.00   | SND                         | C <sub>v</sub>   | 25                                    | 67.5  | 113   | 174   | 282   | 439   | 726   | 1170  | 1700                            | 2200  | 2680  | 0.80           |
|                  |                 |               |        |              |        |                             | K <sub>v</sub>   | 21.6                                  | 58.4  | 97.7  | 151   | 244   | 380   | 628   | 1012  | 1471                            | 1903  | 2318  | ---            |
|                  |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.677 | 0.624 | 0.647 | 0.681 | 0.645 | 0.584 | 0.566 | 0.585                           | 0.602 | 0.621 | ---            |
|                  |                 | 463.6         | 18.25  | 276          | 10.88  | SND                         | C <sub>v</sub>   | 25                                    | 76.8  | 132   | 204   | 333   | 535   | 880   | 1390  | 2000                            | 2570  | 3250  | 0.80           |
|                  |                 |               |        |              |        |                             | K <sub>v</sub>   | 21.6                                  | 66.4  | 114   | 176   | 288   | 463   | 761   | 1202  | 1730                            | 2223  | 2811  | ---            |
|                  |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.657 | 0.633 | 0.666 | 0.670 | 0.616 | 0.580 | 0.573 | 0.597                           | 0.622 | 0.628 | ---            |
|                  |                 | 463.6         | 18.25  | 378          | 14.88  | LND                         | C <sub>v</sub>   | 25                                    | 86.4  | 154   | 241   | 396   | 658   | 1080  | 1660  | 2360                            | 3140  | 3760  | 0.80           |
|                  |                 |               |        |              |        |                             | K <sub>v</sub>   | 21.6                                  | 74.7  | 133   | 208   | 343   | 569   | 934   | 1436  | 2041                            | 2716  | 3252  | ---            |
|                  |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.629 | 0.643 | 0.678 | 0.653 | 0.595 | 0.566 | 0.581 | 0.613                           | 0.624 | 0.658 | ---            |
| EUT-2            | 20              | 501.7         | 19.75  | 203          | 8.00   | SND                         | C <sub>v</sub>   | 30                                    | 69.8  | 117   | 180   | 293   | 460   | 759   | 1220  | 1760                            | 2280  | 2800  | 0.80           |
|                  |                 |               |        |              |        |                             | K <sub>v</sub>   | 25.9                                  | 60.4  | 101   | 156   | 253   | 398   | 657   | 1055  | 1522                            | 1972  | 2422  | ---            |
|                  |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.673 | 0.628 | 0.656 | 0.681 | 0.638 | 0.584 | 0.566 | 0.591                           | 0.608 | 0.623 | ---            |
|                  |                 | 501.7         | 19.75  | 276          | 10.88  | SND                         | C <sub>v</sub>   | 30                                    | 79.3  | 137   | 213   | 348   | 562   | 924   | 1450  | 2080                            | 2700  | 3410  | 0.80           |
|                  |                 |               |        |              |        |                             | K <sub>v</sub>   | 25.9                                  | 68.6  | 119   | 184   | 301   | 486   | 799   | 1254  | 1799                            | 2336  | 2950  | ---            |
|                  |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.651 | 0.636 | 0.665 | 0.659 | 0.613 | 0.578 | 0.576 | 0.603                           | 0.621 | 0.627 | ---            |
|                  |                 | 501.7         | 19.75  | 378          | 14.88  | LND                         | C <sub>v</sub>   | 30                                    | 88.6  | 160   | 250   | 412   | 693   | 1130  | 1730  | 2460                            | 3300  | 3860  | 0.80           |
|                  |                 |               |        |              |        |                             | K <sub>v</sub>   | 25.9                                  | 76.6  | 138   | 216   | 356   | 599   | 977   | 1496  | 2128                            | 2855  | 3339  | ---            |
|                  |                 |               |        |              |        |                             | X <sub>T</sub>   | 0.391                                 | 0.620 | 0.645 | 0.686 | 0.651 | 0.590 | 0.569 | 0.587 | 0.616                           | 0.621 | 0.677 | ---            |

1. Construction—SNC = short neck, cast windows; SND = short neck, drilled windows; LND = long neck, drilled windows.  
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

Table 9. Fisher EWT-2, EWD, and EWT; CL150, 300, and 600; Linear Cast-Window Cage; Flow Down

| Linear Cast-Window Cage |               |        |                |        |                             |                  |                                       |       |       |       |       |       |       |       |       | Linear Characteristic |       |                |
|-------------------------|---------------|--------|----------------|--------|-----------------------------|------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------------|-------|----------------|
| Valve Size, NPS         | Port Diameter |        | Maximum Travel |        | Construction <sup>(1)</sup> | Flow Coefficient | Valve Opening—Percent of Total Travel |       |       |       |       |       |       |       |       |                       |       | F <sub>L</sub> |
|                         | mm            | Inches | mm             | Inches |                             |                  | Min <sup>(2)</sup>                    | 10    | 20    | 30    | 40    | 50    | 60    | 70    | 80    | 90                    | 100   |                |
|                         |               |        |                |        |                             |                  |                                       |       |       |       |       |       |       |       |       |                       |       |                |
| 20 x 16                 | 374.7         | 14.75  | 102            | 4.00   | SNC                         | C <sub>v</sub>   | 46                                    | 269   | 524   | 814   | 1100  | 1390  | 1730  | 2070  | 2380  | 2670                  | 2960  | 0.88           |
|                         |               |        |                |        |                             | K <sub>v</sub>   | 39.8                                  | 233   | 453   | 704   | 952   | 1202  | 1496  | 1791  | 2059  | 2310                  | 2560  | ---            |
|                         |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.989 | 0.901 | 0.804 | 0.750 | 0.742 | 0.742 | 0.748 | 0.755 | 0.759                 | 0.767 | ---            |
| 20 x 16                 | 374.7         | 14.75  | 127            | 5.00   | SNC                         | C <sub>v</sub>   | 46                                    | 321   | 670   | 1030  | 1390  | 1810  | 2230  | 2590  | 2960  | 3300                  | 3580  | 0.88           |
|                         |               |        |                |        |                             | K <sub>v</sub>   | 39.8                                  | 278   | 580   | 891   | 1202  | 1566  | 1929  | 2240  | 2560  | 2855                  | 3097  | ---            |
|                         |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.994 | 0.843 | 0.759 | 0.742 | 0.738 | 0.751 | 0.761 | 0.772 | 0.759                 | 0.750 | ---            |
| 24 x 16                 | 374.7         | 14.75  | 102            | 4.00   | SNC                         | C <sub>v</sub>   | 46                                    | 351   | 604   | 590   | 1183  | 1470  | 1770  | 2090  | 2450  | 2820                  | 3190  | 0.88           |
|                         |               |        |                |        |                             | K <sub>v</sub>   | 39.8                                  | 304   | 522   | 510   | 1023  | 1272  | 1531  | 1808  | 2119  | 2439                  | 2759  | ---            |
|                         |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.994 | 0.914 | 0.808 | 0.751 | 0.738 | 0.742 | 0.744 | 0.758 | 0.766                 | 0.757 | ---            |
| 24 x 16                 | 374.7         | 14.75  | 140            | 5.50   | SNC                         | C <sub>v</sub>   | 46                                    | 418   | 817   | 1220  | 1600  | 2040  | 2540  | 3050  | 3530  | 3850                  | 4060  | 0.88           |
|                         |               |        |                |        |                             | K <sub>v</sub>   | 39.8                                  | 362   | 707   | 1055  | 1384  | 1765  | 2197  | 2638  | 3053  | 3330                  | 3512  | ---            |
|                         |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.986 | 0.820 | 0.744 | 0.739 | 0.744 | 0.759 | 0.769 | 0.759 | 0.746                 | 0.765 | ---            |

1. Construction—SNC = short-neck, cast windows.  
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

Table 10. Fisher EWT-2, EWD, and EWT; CL150, 300, and 600; Linear Drilled-Window Cage; Flow Down

| Linear Drilled-Window Cage |                 |               |        |                |        |                             |                  |                                       |       |       |       |       |       |       |       |       | Linear Characteristic |       |                |
|----------------------------|-----------------|---------------|--------|----------------|--------|-----------------------------|------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------------|-------|----------------|
| Valve Type                 | Valve Size, NPS | Port Diameter |        | Maximum Travel |        | Construction <sup>(1)</sup> | Flow Coefficient | Valve Opening—Percent of Total Travel |       |       |       |       |       |       |       |       |                       |       | F <sub>L</sub> |
|                            |                 | mm            | Inches | mm             | Inches |                             |                  | Min <sup>(2)</sup>                    | 10    | 20    | 30    | 40    | 50    | 60    | 70    | 80    | 90                    | 100   |                |
|                            |                 |               |        |                |        |                             |                  |                                       |       |       |       |       |       |       |       |       |                       |       |                |
| EWD, EWT                   | 20 x 16         | 374.7         | 14.75  | 276            | 10.88  | LND                         | C <sub>v</sub>   | 46                                    | 262   | 550   | 874   | 1200  | 1560  | 1850  | 2190  | 2470  | 2760                  | 3040  | 0.89           |
|                            |                 |               |        |                |        |                             | K <sub>v</sub>   | 39.8                                  | 227   | 476   | 756   | 1038  | 1349  | 1600  | 1894  | 2137  | 2387                  | 2630  | ---            |
|                            |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.985 | 0.894 | 0.791 | 0.740 | 0.738 | 0.743 | 0.745 | 0.758 | 0.762                 | 0.760 | ---            |
|                            | 20 x 16         | 374.7         | 14.75  | 378            | 14.88  | LN-SD                       | C <sub>v</sub>   | 46                                    | 330   | 742   | 1160  | 1570  | 1970  | 2370  | 2740  | 3110  | 3430                  | 3660  | 0.89           |
|                            |                 |               |        |                |        |                             | K <sub>v</sub>   | 39.8                                  | 285   | 642   | 1003  | 1358  | 1704  | 2050  | 2370  | 2690  | 2967                  | 3166  | ---            |
|                            |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.985 | 0.815 | 0.739 | 0.739 | 0.740 | 0.754 | 0.764 | 0.768 | 0.752                 | 0.753 | ---            |
| EWT-2                      | 20 x 16         | 412.8         | 16.25  | 276            | 10.88  | LND                         | C <sub>v</sub>   | 52                                    | 322   | 679   | 1080  | 1480  | 1880  | 2210  | 2570  | 2880  | 3180                  | 3480  | 0.89           |
|                            |                 |               |        |                |        |                             | K <sub>v</sub>   | 45.0                                  | 279   | 587   | 934   | 1280  | 1626  | 1912  | 2223  | 2491  | 2751                  | 3010  | ---            |
|                            |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.988 | 0.888 | 0.786 | 0.742 | 0.738 | 0.759 | 0.744 | 0.754 | 0.762                 | 0.768 | ---            |
|                            | 20 x 16         | 412.8         | 16.25  | 378            | 14.88  | LN-SD                       | C <sub>v</sub>   | 52                                    | 390   | 868   | 1350  | 1850  | 2340  | 2810  | 3240  | 3670  | 4060                  | 4370  | 0.89           |
|                            |                 |               |        |                |        |                             | K <sub>v</sub>   | 45.0                                  | 337   | 751   | 1168  | 1600  | 2024  | 2431  | 2803  | 3175  | 3512                  | 3780  | ---            |
|                            |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.990 | 0.823 | 0.751 | 0.736 | 0.742 | 0.754 | 0.760 | 0.760 | 0.754                 | 0.746 | ---            |
| EWD, EWT                   | 24 x 16         | 374.7         | 14.75  | 378            | 14.88  | LND                         | C <sub>v</sub>   | 46                                    | 328   | 701   | 1140  | 1610  | 2060  | 2480  | 2860  | 3140  | 3340                  | 3490  | 0.89           |
|                            |                 |               |        |                |        |                             | K <sub>v</sub>   | 39.8                                  | 284   | 606   | 986   | 1393  | 1782  | 2145  | 2474  | 2716  | 2889                  | 3019  | ---            |
|                            |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.997 | 0.934 | 0.828 | 0.767 | 0.745 | 0.734 | 0.743 | 0.753 | 0.767                 | 0.764 | ---            |
|                            | 24 x 16         | 374.7         | 14.75  | 429            | 16.88  | LN-SD                       | C <sub>v</sub>   | 46                                    | 356   | 764   | 1240  | 1750  | 2210  | 2620  | 3030  | 3300  | 3500                  | 3670  | 0.89           |
|                            |                 |               |        |                |        |                             | K <sub>v</sub>   | 39.8                                  | 308   | 661   | 1073  | 1514  | 1912  | 2266  | 2621  | 2855  | 3028                  | 3175  | ---            |
|                            |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.994 | 0.919 | 0.816 | 0.757 | 0.743 | 0.741 | 0.751 | 0.759 | 0.759                 | 0.748 | ---            |
| EWT-2                      | 24 x 16         | 412.8         | 16.25  | 378            | 14.88  | LND                         | C <sub>v</sub>   | 52                                    | 363   | 765   | 1240  | 1750  | 2280  | 2740  | 3260  | 3670  | 3960                  | 4150  | 0.89           |
|                            |                 |               |        |                |        |                             | K <sub>v</sub>   | 45.0                                  | 314   | 662   | 1073  | 1514  | 1972  | 2370  | 2820  | 3175  | 3425                  | 3590  | ---            |
|                            |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.997 | 0.955 | 0.853 | 0.787 | 0.745 | 0.739 | 0.738 | 0.748 | 0.759                 | 0.763 | ---            |
|                            | 24 x 16         | 412.8         | 16.25  | 429            | 16.88  | LN-SD                       | C <sub>v</sub>   | 52                                    | 393   | 832   | 1350  | 1900  | 2440  | 2940  | 3480  | 3850  | 4110                  | 4310  | 0.89           |
|                            |                 |               |        |                |        |                             | K <sub>v</sub>   | 45.0                                  | 340   | 720   | 1168  | 1644  | 2111  | 2543  | 3010  | 3330  | 3555                  | 3728  | ---            |
|                            |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.997 | 0.942 | 0.834 | 0.775 | 0.746 | 0.738 | 0.743 | 0.757 | 0.767                 | 0.757 | ---            |
| EWD, EWT                   | 24 x 20         | 463.6         | 18.25  | 378            | 14.88  | LND                         | C <sub>v</sub>   | 56                                    | 457   | 995   | 1560  | 2130  | 2640  | 3310  | 3451  | 3650  | 3885                  | 4115  | 0.89           |
|                            |                 |               |        |                |        |                             | K <sub>v</sub>   | 48.4                                  | 395   | 861   | 1349  | 1842  | 2284  | 2863  | 2985  | 3157  | 3361                  | 3559  | ---            |
|                            |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.991 | 0.850 | 0.763 | 0.738 | 0.739 | 0.743 | 0.753 | 0.757 | 0.769                 | 0.766 | ---            |
|                            | 24 x 20         | 463.6         | 18.25  | 429            | 16.88  | LN-SD                       | C <sub>v</sub>   | 56                                    | 490   | 1080  | 1680  | 2300  | 2920  | 3420  | 3637  | 3903  | 4160                  | 4357  | 0.89           |
|                            |                 |               |        |                |        |                             | K <sub>v</sub>   | 48.4                                  | 424   | 934   | 1453  | 1990  | 2526  | 2958  | 3146  | 3376  | 3598                  | 3769  | ---            |
|                            |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.990 | 0.832 | 0.753 | 0.735 | 0.733 | 0.748 | 0.755 | 0.767 | 0.766                 | 0.754 | ---            |
| EWT-2                      | 24 x 20         | 501.7         | 19.75  | 378            | 14.88  | LND                         | C <sub>v</sub>   | 60                                    | 490   | 1163  | 1898  | 2561  | 3152  | 3672  | 4119  | 4494  | 4797                  | 5028  | 0.89           |
|                            |                 |               |        |                |        |                             | K <sub>v</sub>   | 51.9                                  | 434   | 1006  | 1642  | 2216  | 2727  | 3176  | 3563  | 3887  | 4149                  | 4349  | ---            |
|                            |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.992 | 0.873 | 0.775 | 0.743 | 0.736 | 0.735 | 0.747 | 0.758 | 0.760                 | 0.768 | ---            |
|                            | 24 x 20         | 501.7         | 19.75  | 429            | 16.88  | LN-SD                       | C <sub>v</sub>   | 60                                    | 591   | 1320  | 2050  | 2790  | 3470  | 4250  | 4530  | 4810  | 5010                  | 5210  | 0.89           |
|                            |                 |               |        |                |        |                             | K <sub>v</sub>   | 51.9                                  | 511   | 1142  | 1773  | 2413  | 3002  | 3676  | 3918  | 4161  | 4334                  | 4507  | ---            |
|                            |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.988 | 0.816 | 0.741 | 0.735 | 0.747 | 0.748 | 0.765 | 0.770 | 0.758                 | 0.749 | ---            |

1. Construction—LND - long neck, drilled windows; LN-SD = long neck with bonnet spacer, drilled windows.  
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

Table 11. Fisher EWT-2, EWD, and EWT; CL150, 300, and 600; Equal Percentage Cast-Window Cage; Flow Down

| Equal Percentage Cast-Window Cage |               |        |                |        |                             |                  |                                       |       |       |       |       |       |       |       |       | Equal Percentage Characteristic |                |      |
|-----------------------------------|---------------|--------|----------------|--------|-----------------------------|------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------------|----------------|------|
| Valve Size, NPS                   | Port Diameter |        | Maximum Travel |        | Construction <sup>(1)</sup> | Flow Coefficient | Valve Opening—Percent of Total Travel |       |       |       |       |       |       |       |       |                                 | F <sub>L</sub> |      |
|                                   | mm            | Inches | mm             | Inches |                             |                  | Min <sup>(2)</sup>                    | 10    | 20    | 30    | 40    | 50    | 60    | 70    | 80    | 90                              |                | 100  |
| 20 x 16                           | 374.7         | 14.75  | 102            | 4.00   | SNC                         | C <sub>v</sub>   | 23                                    | 29.8  | 61.3  | 99.1  | 152   | 233   | 355   | 544   | 818   | 1180                            | 1630           | 0.88 |
|                                   |               |        |                |        |                             | K <sub>v</sub>   | 19.9                                  | 25.8  | 53.0  | 85.7  | 131   | 202   | 307   | 471   | 708   | 1021                            | 1410           | ---  |
|                                   |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.997 | 0.990 | 0.993 | 0.990 | 0.987 | 0.986 | 0.896 | 0.802 | 0.744                           | 0.735          | ---  |
| 20 x 16                           | 374.7         | 14.75  | 127            | 5.00   | SNC                         | C <sub>v</sub>   | 23                                    | 37.2  | 77.4  | 132   | 233   | 388   | 652   | 1070  | 1630  | 2080                            | 2460           | 0.88 |
|                                   |               |        |                |        |                             | K <sub>v</sub>   | 19.9                                  | 32.2  | 67.0  | 114   | 202   | 336   | 564   | 926   | 1410  | 1799                            | 2128           | ---  |
|                                   |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.989 | 0.990 | 0.989 | 0.987 | 0.959 | 0.847 | 0.751 | 0.735 | 0.747                           | 0.755          | ---  |
| 20 x 16                           | 374.7         | 14.75  | 140            | 5.50   | SNC                         | C <sub>v</sub>   | 23                                    | 41.2  | 88.2  | 162   | 293   | 517   | 900   | 1470  | 2000  | 2420                            | 2830           | 0.88 |
|                                   |               |        |                |        |                             | K <sub>v</sub>   | 19.9                                  | 35.6  | 76.3  | 140   | 253   | 447   | 779   | 1272  | 1730  | 2093                            | 2448           | ---  |
|                                   |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.990 | 0.990 | 0.991 | 0.987 | 0.907 | 0.785 | 0.741 | 0.742 | 0.757                           | 0.762          | ---  |
| 24 x 16                           | 374.7         | 14.75  | 102            | 4.00   | SNC                         | C <sub>v</sub>   | 23                                    | 38.9  | 79.8  | 128   | 195   | 296   | 444   | 646   | 922   | 1290                            | 1700           | 0.88 |
|                                   |               |        |                |        |                             | K <sub>v</sub>   | 19.9                                  | 33.6  | 69.0  | 111   | 169   | 256   | 384   | 559   | 798   | 1116                            | 1471           | ---  |
|                                   |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.992 | 0.992 | 0.996 | 0.995 | 0.993 | 0.982 | 0.899 | 0.801 | 0.744                           | 0.735          | ---  |
| 24 x 16                           | 374.7         | 14.75  | 127            | 5.00   | SNC                         | C <sub>v</sub>   | 23                                    | 48.6  | 100   | 170   | 296   | 480   | 753   | 1180  | 1700  | 2130                            | 2580           | 0.88 |
|                                   |               |        |                |        |                             | K <sub>v</sub>   | 19.9                                  | 42.0  | 86.5  | 147   | 256   | 415   | 651   | 1021  | 1471  | 1842                            | 2232           | ---  |
|                                   |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.986 | 0.990 | 0.991 | 0.993 | 0.969 | 0.852 | 0.751 | 0.735 | 0.742                           | 0.757          | ---  |
| 24 x 16                           | 374.7         | 14.75  | 140            | 5.50   | SNC                         | C <sub>v</sub>   | 23                                    | 53.8  | 114   | 208   | 371   | 619   | 1010  | 1560  | 2030  | 2530                            | 3040           | 0.88 |
|                                   |               |        |                |        |                             | K <sub>v</sub>   | 19.9                                  | 46.5  | 98.6  | 180   | 321   | 535   | 874   | 1349  | 1756  | 2188                            | 2630           | ---  |
|                                   |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.989 | 0.990 | 0.993 | 0.995 | 0.908 | 0.781 | 0.732 | 0.745 | 0.758                           | 0.774          | ---  |

1. Construction—SNC = short-neck, cast windows.  
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

Table 12. Fisher EWT-2, EWD, and EWT; CL150, 300, and 600; Equal Percentage Drilled-Window Cage; Flow Down

| Equal Percentage Drilled-Window Cage |                 |               |        |                |        |                             |                  |                                       |       |       |       |       |       |       |       |       | Equal Percentage Characteristic |                |      |
|--------------------------------------|-----------------|---------------|--------|----------------|--------|-----------------------------|------------------|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------------|----------------|------|
| Valve Type                           | Valve Size, NPS | Port Diameter |        | Maximum Travel |        | Construction <sup>(1)</sup> | Flow Coefficient | Valve Opening—Percent of Total Travel |       |       |       |       |       |       |       |       |                                 | F <sub>L</sub> |      |
|                                      |                 | mm            | Inches | mm             | Inches |                             |                  | Min <sup>(2)</sup>                    | 10    | 20    | 30    | 40    | 50    | 60    | 70    | 80    | 90                              |                | 100  |
| EWD, EWT                             | 20 x 16         | 374.7         | 14.75  | 276            | 10.88  | LND                         | C <sub>v</sub>   | 23                                    | 42.8  | 93.5  | 170   | 278   | 445   | 750   | 1220  | 1810  | 2290                            | 2700           | 0.89 |
|                                      |                 |               |        |                |        |                             | K <sub>v</sub>   | 19.9                                  | 37.0  | 80.9  | 147   | 240   | 385   | 649   | 1055  | 1566  | 1981                            | 2336           | ---  |
|                                      |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.986 | 0.995 | 0.991 | 0.996 | 0.934 | 0.816 | 0.741 | 0.743 | 0.751                           | 0.764          | ---  |
|                                      | 20 x 16         | 374.7         | 14.75  | 378            | 14.88  | LN-SD                       | C <sub>v</sub>   | 23                                    | 55.7  | 123   | 213   | 340   | 584   | 974   | 1580  | 2210  | 2750                            | 3260           | 0.89 |
|                                      |                 |               |        |                |        |                             | K <sub>v</sub>   | 19.9                                  | 48.2  | 106   | 184   | 294   | 505   | 843   | 1367  | 1912  | 2379                            | 2820           | ---  |
|                                      |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.993 | 0.995 | 0.995 | 0.985 | 0.879 | 0.771 | 0.735 | 0.751 | 0.762                           | 0.764          | ---  |
| EWT-2                                | 20 x 16         | 412.8         | 16.25  | 276            | 10.88  | LND                         | C <sub>v</sub>   | 25                                    | 48.1  | 105   | 189   | 318   | 500   | 841   | 1370  | 2070  | 2640                            | 3100           | 0.89 |
|                                      |                 |               |        |                |        |                             | K <sub>v</sub>   | 21.6                                  | 41.6  | 90.8  | 163   | 275   | 433   | 727   | 1185  | 1791  | 2284                            | 2682           | ---  |
|                                      |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.996 | 0.990 | 0.995 | 0.997 | 0.951 | 0.833 | 0.748 | 0.739 | 0.744                           | 0.759          | ---  |
|                                      | 20 x 16         | 412.8         | 16.25  | 378            | 14.88  | LN-SD                       | C <sub>v</sub>   | 25                                    | 65.9  | 146   | 253   | 403   | 691   | 1150  | 1880  | 2640  | 3280                            | 3890           | 0.89 |
|                                      |                 |               |        |                |        |                             | K <sub>v</sub>   | 21.6                                  | 57.0  | 126   | 219   | 349   | 598   | 995   | 1626  | 2284  | 2837                            | 3365           | ---  |
|                                      |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.995 | 0.990 | 0.996 | 0.985 | 0.885 | 0.783 | 0.736 | 0.746 | 0.737                           | 0.754          | ---  |
| EWD, EWT                             | 24 x 16         | 374.7         | 14.75  | 378            | 14.88  | LND                         | C <sub>v</sub>   | 23                                    | 42.4  | 88.1  | 150   | 265   | 438   | 732   | 1250  | 2000  | 2650                            | 3110           | 0.89 |
|                                      |                 |               |        |                |        |                             | K <sub>v</sub>   | 19.9                                  | 36.7  | 76.2  | 130   | 229   | 379   | 633   | 1081  | 1730  | 2292                            | 2690           | ---  |
|                                      |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.993 | 0.998 | 0.997 | 0.995 | 0.998 | 0.928 | 0.814 | 0.746 | 0.755                           | 0.764          | ---  |
|                                      | 24 x 16         | 374.7         | 14.75  | 429            | 16.88  | LN-SD                       | C <sub>v</sub>   | 23                                    | 46.8  | 97.4  | 166   | 293   | 484   | 820   | 1400  | 2210  | 2860                            | 3270           | 0.89 |
|                                      |                 |               |        |                |        |                             | K <sub>v</sub>   | 19.9                                  | 40.5  | 84.3  | 144   | 253   | 419   | 709   | 1211  | 1912  | 2474                            | 2829           | ---  |
|                                      |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.998 | 0.992 | 0.991 | 0.997 | 0.994 | 0.905 | 0.797 | 0.739 | 0.743                           | 0.760          | ---  |
| EWT-2                                | 24 x 16         | 412.8         | 16.25  | 378            | 14.88  | LND                         | C <sub>v</sub>   | 25                                    | 49.6  | 103   | 176   | 311   | 513   | 853   | 1460  | 2350  | 3120                            | 3700           | 0.89 |
|                                      |                 |               |        |                |        |                             | K <sub>v</sub>   | 21.6                                  | 42.9  | 89.1  | 152   | 269   | 444   | 738   | 1263  | 2033  | 2699                            | 3201           | ---  |
|                                      |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.996 | 0.995 | 0.991 | 0.994 | 0.988 | 0.935 | 0.814 | 0.743 | 0.735                           | 0.748          | ---  |
|                                      | 24 x 16         | 412.8         | 16.25  | 429            | 16.88  | LN-SD                       | C <sub>v</sub>   | 25                                    | 53.1  | 110   | 188   | 332   | 549   | 921   | 1580  | 2510  | 3290                            | 3830           | 0.89 |
|                                      |                 |               |        |                |        |                             | K <sub>v</sub>   | 21.6                                  | 45.9  | 95.2  | 163   | 287   | 475   | 797   | 1367  | 2171  | 2846                            | 3313           | ---  |
|                                      |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.996 | 0.995 | 0.995 | 0.988 | 0.995 | 0.918 | 0.802 | 0.742 | 0.737                           | 0.754          | ---  |
| EWD, EWT                             | 24 x 20         | 463.6         | 18.25  | 378            | 14.88  | LND                         | C <sub>v</sub>   | 28                                    | 200   | 485   | 863   | 1505  | 2293  | 2900  | 3371  | 3610  | 3834                            | 3839           | 0.89 |
|                                      |                 |               |        |                |        |                             | K <sub>v</sub>   | 24.2                                  | 173   | 420   | 746   | 1302  | 1983  | 2509  | 2916  | 3123  | 3316                            | 3321           | ---  |
|                                      |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.992 | 0.987 | 0.996 | 0.991 | 0.918 | 0.801 | 0.739 | 0.742 | 0.759                           | 0.765          | ---  |
|                                      | 24 x 20         | 463.6         | 18.25  | 429            | 16.88  | LN-SD                       | C <sub>v</sub>   | 28                                    | 227   | 550   | 979   | 1707  | 2601  | 3290  | 3824  | 4095  | 4349                            | 4355           | 0.89 |
|                                      |                 |               |        |                |        |                             | K <sub>v</sub>   | 24.2                                  | 196   | 476   | 847   | 1477  | 2280  | 2846  | 3308  | 3543  | 3762                            | 3767           | ---  |
|                                      |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.994 | 0.994 | 0.984 | 0.986 | 0.889 | 0.776 | 0.735 | 0.742 | 0.761                           | 0.762          | ---  |
| EWT-2                                | 24 x 20         | 501.7         | 19.75  | 378            | 14.88  | LND                         | C <sub>v</sub>   | 30                                    | 285   | 415   | 750   | 1523  | 2530  | 3174  | 3708  | 3963  | 4251                            | 4608           | 0.89 |
|                                      |                 |               |        |                |        |                             | K <sub>v</sub>   | 25.9                                  | 247   | 359   | 649   | 1317  | 2188  | 2746  | 3207  | 3428  | 3677                            | 3986           | ---  |
|                                      |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.991 | 0.997 | 0.987 | 0.996 | 0.939 | 0.824 | 0.743 | 0.738 | 0.757                           | 0.759          | ---  |
|                                      | 24 x 20         | 501.7         | 19.75  | 429            | 16.88  | LN-SD                       | C <sub>v</sub>   | 30                                    | 310   | 500   | 924   | 1860  | 2780  | 3501  | 3948  | 4276  | 4684                            | 5034           | 0.89 |
|                                      |                 |               |        |                |        |                             | K <sub>v</sub>   | 25.9                                  | 268   | 433   | 799   | 1609  | 2405  | 3028  | 3415  | 3699  | 4052                            | 4354           | ---  |
|                                      |                 |               |        |                |        |                             | X <sub>T</sub>   | 0.391                                 | 0.992 | 0.991 | 0.997 | 0.985 | 0.882 | 0.776 | 0.735 | 0.748 | 0.758                           | 0.763          | ---  |

1. Construction—LND - long neck, drilled windows; LN-SD = long neck with bonnet spacer, drilled windows.  
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

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