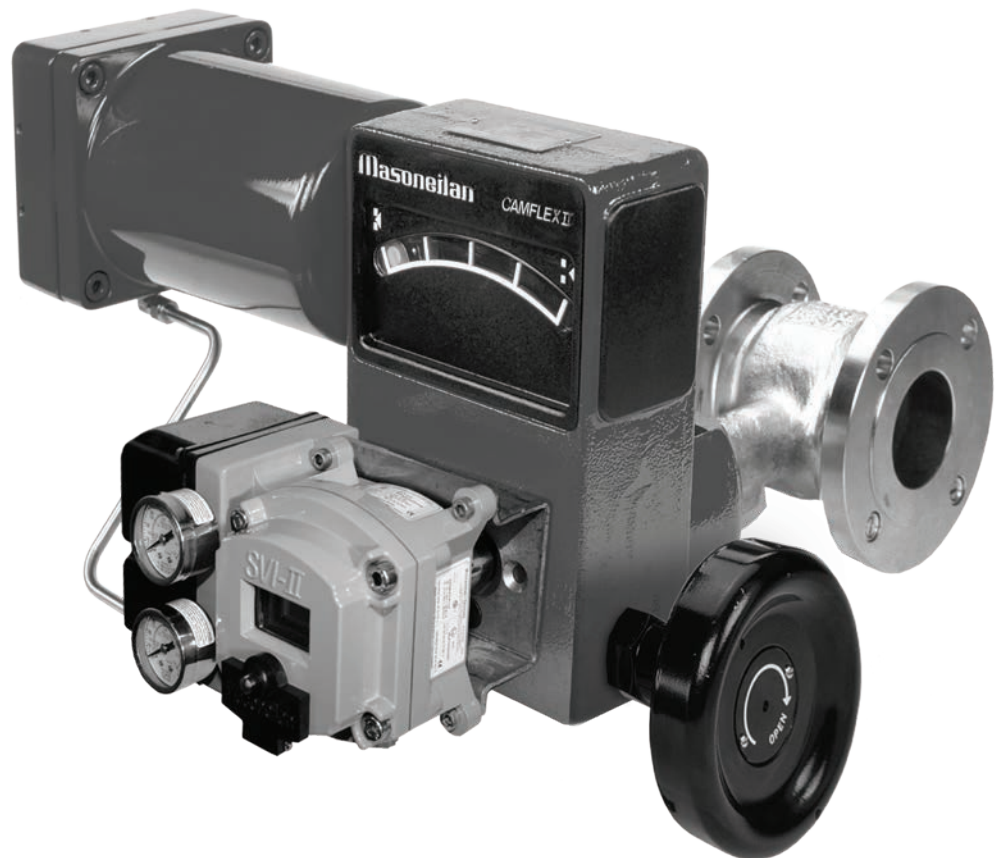


# Masoneilan\* 35002 Series Camflex\* II

## Rotary Control Valves

Complete line of eccentric plug control valves effectively combining enhanced control performance, simplicity and long-term reliability for a broad range of applications.





# Table of Contents

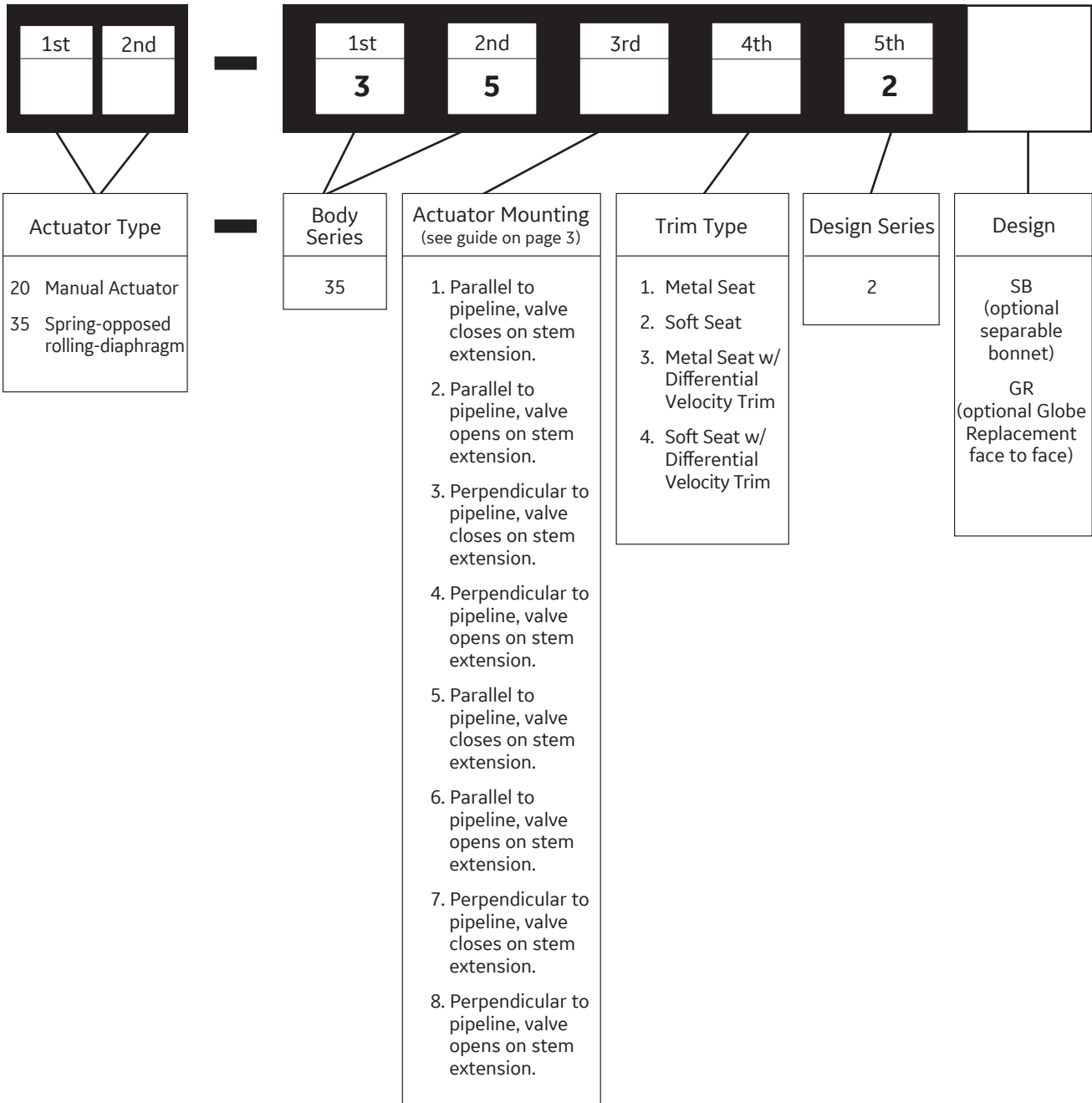
|   |     |                                    |       |
|---|-----|------------------------------------|-------|
| Features .....                              | 1   | $C_v$ and $F_L$ Versus Travel..... | 6-7   |
| Numbering System .....                      | 2   | $C_v$ Versus Travel.....           | 8     |
| Actuator Mounting Guide.....                | 3   | Materials of Construction .....    | 9-13  |
| General Data / Ratings and Connections..... | 4-6 | Dimensions and Weights .....       | 14-15 |

## Features

The Camflex II valve is a heavy-duty, automatic-throttling control valve that incorporates the following features:

- The flangeless body rating is a rugged ANSI Class 600.
- Heavy-duty guide lugs assure quick, positive alignment during installation.
- The flanged version is available in 1 in. through 12 in. (25 mm through 300 mm) sizes in 150 or 300 ANSI, and 1 in. through 8 in. (25 mm through 200 mm) in 600 ANSI.
- The optional Camflex GR (Globe Replacement) version is available in 1 in through 6 in. sizes (25mm through 150mm) in ANSI Class 150, 300, and 600 ratings and allows direct replacement of conventional reciprocating globe valves.
- Separable bonnet design is available.
- Straight through flow pattern provides greater flow capacities.
- Standard integral extension bonnet allows for a wide range of fluid temperature applications (-320°F to 750°F), (-196°C to 400°C).
- The unique self-aligning eccentric rotating plug provides tight shutoff and low dynamic forces.
- A large variety of reduced-trim options are available in all sizes.
- The triple, over-sized bearing system provides exceptional plug shaft guiding.
- The shouldered shaft design provides robust blowout prevention.
- An optional patented differential velocity device (DVD) separates compressible flowstreams into a high velocity core and a low velocity envelope flowstream. This provides up to 18 dBA noise attenuation.
- Optional alloy constructions are available.
- The powerful, low-profile, spring-diaphragm actuator guarantees positive fail-safe action.
- Splined shaft and actuator linkages, combined with low-friction techniques, contribute to reduced deadband and hysteresis.
- The valve position indicator is large and highly visible.
- The actuator linkage (purge option available) is totally enclosed).

# Numbering System

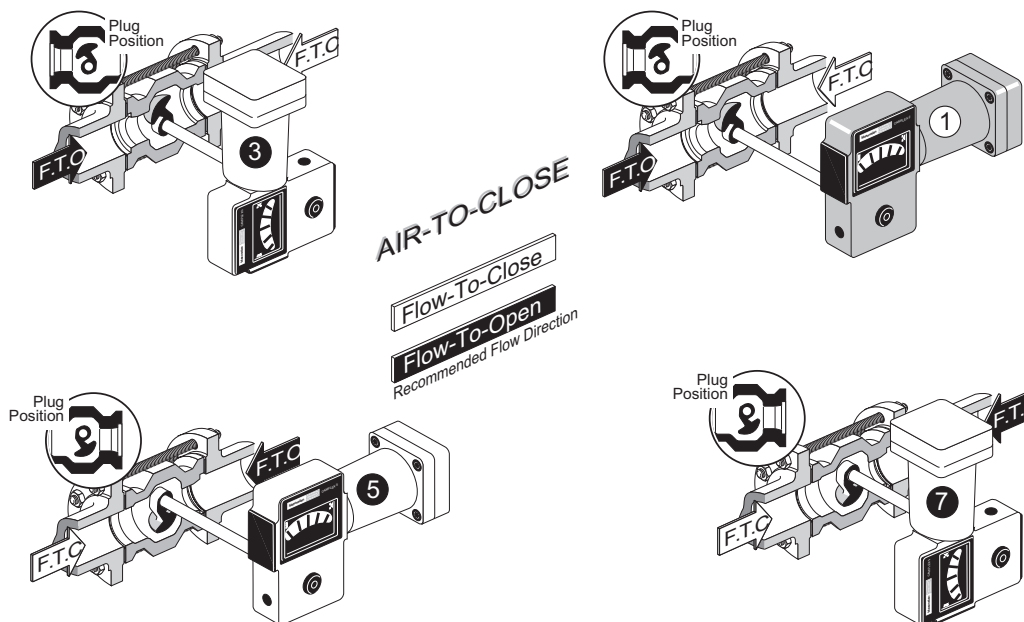
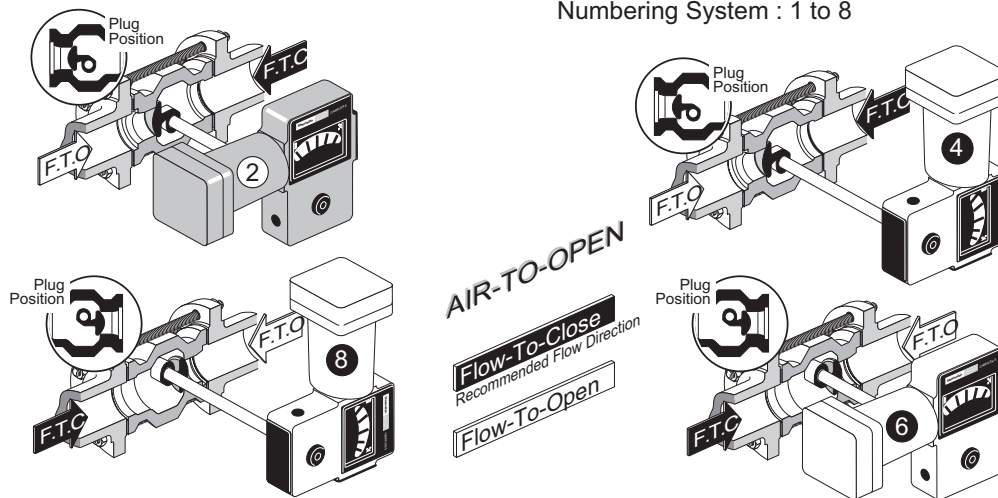


# Actuator Mounting Guide

Camflex II Control Valves  
(Mounted On Horizontal Pipeline)

3 5 - 3 5 . 0 2

Actuator Position in Relation to Valve Body  
Numbering System : 1 to 8



**NOTES:**

- 2. Standard actuator mounting positions are shaded:
- 2. Plug positions are shown in the initial position without air on actuator.
- 3. The actuator must be always mounted above the pipeline.

**Notes:**

- It is recommended that the actuator always be mounted as shown above. For other positions, consult your local sales office.
- Installation is assumed to be in the horizontal pipeline for orientation of the airset and other accessories unless specified on the order.
- Action and orientation are field reversible without additional parts.
- Operating efficiencies may vary depending on valve configuration.
- The above schematic does not reflect every possible body/actuator orientation, but should serve as an effective guide.

# General Data

## • Body

|                       |  |
|-----------------------|--|
| Type:                 | <ul style="list-style-type: none"><li>• cast with integral bonnet</li><li>• cast with separable bonnet – 1 in.-8 in.</li></ul>   |
| Flow Direction:       | flow to open or flow to close<br>(Differential Velocity Device trim flow to open only)   |
| Materials:            | <ul style="list-style-type: none"><li>• carbon steel</li><li>• 316 stainless steel (flangeless)</li><li>• 316L stainless steel (flanged)</li><li>• Hastelloy C (1 in.-4 in.) (DN 25-100)<sup>1</sup></li></ul>   |
| Body Pressure Rating: | ANSI Class 600 (per B16.34) standard (1 in.-12 in.) (DN 25-300), except for flanged construction:<br>valve rating is limited by flange rating  |
| End Connections:      | <ul style="list-style-type: none"><li>• <b>threaded</b> – NPT for ANSI Class 600 rated connections (1 in.) (DN 25)</li><li>• <b>flangeless</b> – clamps between ANSI Class 150, 300 or 600 rated flanges (flange rating must be specified for 8 in.-12 in. (DN 200-300) valve for locator lug drilling and tapping)</li><li>• <b>flanged</b> - bolts to ANSI Class 150 or 300 rated flanges (1 in.-12 in.) (DN 25-300)<br/>ANSI Class 600 rated flanges (1 in.- 8 in.) (DN 25-200)</li><li>• <b>GR flanged</b> - bolts to ANSI Class 150, 300 or 600 rated flanges (1 in. - 6 in.) (DN 25-150)</li></ul> |

## • Trim

|                       |   |
|-----------------------|---|
| Plug Type:            | self-aligning eccentrically rotating  |
| Materials:            | <ul style="list-style-type: none"><li>• 1 in.-2 in. (DN 25-100): solid Stellite No. 6</li><li>• 3 in.-4 in. (DN 80 &amp; 100): solid Stellite No. 6 optional</li><li>• 3 in.-12 in. (DN 80-300): 316L stainless steel with hardfaced seating surface</li><li>• 1 in.-4 in. (DN 25-100): Hastelloy C<sup>1</sup></li></ul>   |
| Seat Ring:            | solid clamped   |
| Materials:            | <ul style="list-style-type: none"><li>• 1 in.-12 in. (DN 25-300): 316 stainless steel</li><li>• 1 in.-4 in. (DN 25-100): Hastelloy C<sup>1</sup></li><li>• 1 in.-12 in. (DN 150-300): 316 stainless steel with hardfaced seat</li><li>• 1 in.-4 in. (DN 25-100): solid Stellite No. 6 optional</li><li>• 1 in.-12 in. (DN 25-300): 316 stainless steel with PTFE insert (to 450°F), (232°C)<sup>2</sup></li></ul> |
| Retainer:             | 316 Stainless Steel   |
| Capacity:             | full area and reduced capacity in all sizes   |
| Flow Characteristic:  | <ul style="list-style-type: none"><li>• standard trim: linear</li><li>• low flow trim (.036 + .07 factor): linear (requires SVI)</li><li>• differential velocity device: linear</li></ul>   |
| C <sub>v</sub> Ratio: | <ul style="list-style-type: none"><li>• standard trim &gt;100:1</li><li>• low flow trim 15:1</li><li>• differential velocity device &gt;50:1</li></ul>  |

## • Actuators

### Spring-Opposed Rolling Diaphragm

|                      |  |
|----------------------|--|
| Size:                | <ul style="list-style-type: none"><li>• 4½ in. diameter with 3½ in. (89mm) stroke (1 in.-2 in. valves), (DN 25-50)</li><li>• 6 in. diameter with 5¾ in. (146mm) stroke (3 in.-4 in. valves), (DN 80-100)</li><li>• 7 in. diameter with 7¼ in. (184mm) stroke (6 in.-12 in. valves), (DN 150-300)</li><li>• 9 in. diameter with 7¼ in. (184mm) stroke (6 in.-12 in. valves), (DN 150-300)</li></ul> |
| Range:               | <ul style="list-style-type: none"><li>• 7-15 psi (1 in.-4 in.), (DN 25-100)</li><li>• 7-24 psi (6 in.-12 in.), (DN 150-300)(7 in. diameter actuator)</li><li>• 7-24 psi (6 in.-12 in.), (DN 150-300) (9 in. diameter actuator, Air to Close)</li><li>• 8-25 psi (6 in.-12 in.), (DN 150-300) (9 in. diameter actuator, Air to Open)</li></ul>  |
| Air Connection:      | 1/4 in. NPT  |
| Yoke:                | cast iron  |
| Bearing:             | sealed radial  |
| Auxiliary Handwheel: | solid disk with locking nut: <ul style="list-style-type: none"><li>• 6½ in. diameter (1 in.-4 in. valves), (DN 25-100)</li><li>• 10 in. diameter (6 in.-12 in. valves), (DN 150-300)</li></ul>   |

### Manual Actuator

|           |  |
|-----------|--|
| Type:     | Solid disk with detent anti-rotation device. Continuously connected.   |
| Sizes:    | <ul style="list-style-type: none"><li>• 7 in. (178mm) diameter (1 in.-2 in. valves), (DN 25-50)</li><li>• 8⅞ in. (225mm) diameter (3 in. &amp; 4 in. valves), (DN 80-100)</li><li>• 16⅞ in. (410mm) diameter (6 in.-12 in. valves), (DN 150-300)</li></ul> |
| Material: | aluminum   |
| Yoke:     | cast iron  |
| Bearing:  | sealed radial ball   |

<sup>1</sup> See materials of construction

<sup>2</sup> Not available in .2 factor or Low Flow Trim sizes

# General Data

## Standard Spring Diaphragm Actuator Materials

| Description           | Material   |
|-----------------------|--|
| Yoke                  | Cast Iron  |
| Yoke Covers           | Polycarbonate  |
| Spring Barrel         | Die Cast Aluminum  |
| Diaphragm Case        | Die Cast Aluminum  |
| Piston                | Die Cast Aluminum  |
| Diaphragm             | Buna-N with Dacron Insert  |
| Piston Rod            | 303 St. St.  |
| Clevis                | Carbon Steel Zinc Dichromate Plated                              |
| Clevis Pin            | 17-4 PH (H1075) St. St.  |
| Lever                 | Steel With Epoxy Surface   |
| Lever Bearing         | PTFE Filament Surface Bonded to Glass Reinforced Plastic Backing |
| Handwheel and Locknut | Aluminum   |

## Standard Actuator Characteristics and Travel Times

[Measured with direct positioner at 30 psi (2 bar) supply, 4700P positioner with tubing size ¼ in.]

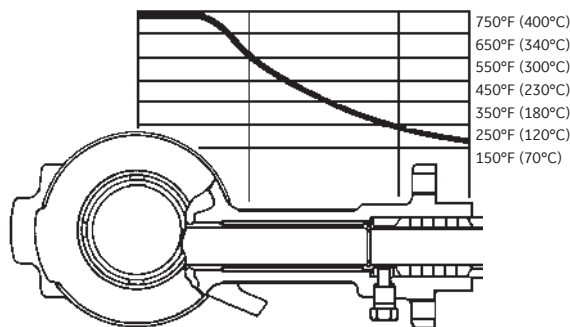
| Actuator Diameter |      | Diaphragm Effective Area |                 | Actuator Stroke |      | Travel Time (sec.)           |                              |
|-------------------|------|--------------------------|-----------------|-----------------|------|------------------------------|------------------------------|
| in.               | cm   | sq. in.                  | cm <sup>2</sup> | in.             | cm   | Increasing Instrument Signal | Decreasing Instrument Signal |
| 4½                | 11.4 | 14                       | 90              | 3½              | 8.9  | 1.2                          | 2.4                          |
| 6                 | 15.2 | 24                       | 155             | 5¾              | 14.6 | 3                            | 6.3                          |
| 7                 | 17.8 | 36                       | 232             | 7¼              | 18.4 | 7.6                          | 9.8                          |
| 9                 | 22.9 | 75                       | 483             | 7¼              | 18.4 | 17                           | 24                           |

## Temperature/Seat Leakage

| Valve Size |        | Seat Type              | Temp. Range <sup>1</sup>        |                   | Max. Seat Leakage, ANSI FCI/70.2 Class |
|------------|--------|------------------------|---------------------------------|-------------------|--|
| in.        | DN     |                        | Min.                            | Max.              |  |
| 1-12       | 25-300 | Metal                  | -320°F <sup>1</sup><br>(-196°C) | +750°F<br>(400°C) | IV                                     |
|            |        | Soft Seat <sup>2</sup> | -320°F <sup>1</sup><br>(-196°C) | +450°F<br>(232°C) | VI                                     |

<sup>1</sup> For Stainless Steel Bodies only.

<sup>2</sup> Temperature limited by Teflon® Seal.



### Temperature Gradient Across Standard Integral Bonnet

The ability of the Camflex valve to handle a wide range of process fluid temperatures is due to the long, integrally-cast bonnet. This affords ample radiation surface to normalize the packing temperatures.

## Maximum Rated Flow Coefficients (C<sub>v</sub>) and Critical Flow Factors (F<sub>L</sub>) at Maximum Opening (50°)

| Valve Size |     | Factor | Flow to Open         |                | Flow to Close        |                |
|------------|-----|--------|----------------------|----------------|----------------------|----------------|
| inches     | DN  |        | Rated C <sub>v</sub> | F <sub>L</sub> | Rated C <sub>v</sub> | F <sub>L</sub> |
| 1          | 25  | 0.036  | .5                   | 0.98           | .5                   | 0.86           |
|            |     | 0.07   | 1                    | 0.98           | 1                    | 0.86           |
|            |     | 0.2    | 2.8                  | 0.88           | 3                    | 0.7            |
|            |     | 0.4    | 5.6                  | 0.88           | 6                    | 0.7            |
|            |     | 0.6    | 8.4                  | 0.88           | 9                    | 0.7            |
|            |     | 1      | 14                   | 0.85           | 15                   | 0.68           |
|            |     | DVD    | 5                    |                |                      |                |
| 1.5        | 40  | 0.4    | 13.2                 | 0.88           | 15.6                 | 0.7            |
|            |     | 0.6    | 19.8                 | 0.88           | 23.4                 | 0.7            |
|            |     | 1      | 33                   | 0.85           | 39                   | 0.68           |
|            |     | DVD    | 12.5                 |                |                      |                |
| 2          | 50  | 0.4    | 20                   | 0.88           | 21.2                 | 0.7            |
|            |     | 0.6    | 30                   | 0.88           | 31.8                 | 0.7            |
|            |     | 1      | 50                   | 0.85           | 53                   | 0.68           |
|            |     | DVD    | 18                   |                |                      |                |
| 3          | 80  | 0.4    | 54                   | 0.88           | 58                   | 0.7            |
|            |     | 0.6    | 81                   | 0.88           | 87                   | 0.7            |
|            |     | 1      | 135                  | 0.85           | 145                  | 0.68           |
|            |     | DVD    | 48                   |                |                      |                |
| 4          | 100 | 0.4    | 92                   | 0.88           | 92                   | 0.7            |
|            |     | 0.6    | 138                  | 0.88           | 138                  | 0.7            |
|            |     | 1      | 230                  | 0.85           | 230                  | 0.68           |
|            |     | DVD    | 78                   |                |                      |                |
| 6          | 150 | 0.4    | 200                  | 0.88           | 200                  | .07            |
|            |     | 0.6    | 300                  | 0.88           | 300                  | 0.7            |
|            |     | 1      | 500                  | 0.85           | 500                  | 0.68           |
|            |     | DVD    | 181                  |                |                      |                |
| 8          | 200 | 0.4    | 340                  | 0.88           | 340                  | 0.7            |
|            |     | 0.6    | 510                  | 0.88           | 510                  | 0.7            |
|            |     | 1      | 850                  | 0.85           | 850                  | 0.68           |
|            |     | DVD    | 308                  |                |                      |                |
| 10         | 250 | 0.4    | 520                  | 0.88           | 520                  | 0.7            |
|            |     | 0.6    | 780                  | 0.88           | 780                  | 0.7            |
|            |     | 1      | 1300                 | 0.85           | 1300                 | 0.68           |
|            |     | DVD    | 486                  |                |                      |                |
| 12         | 300 | 0.4    | 700                  | 0.88           | 700                  | 0.7            |
|            |     | 0.6    | 1050                 | 0.88           | 1050                 | 0.7            |
|            |     | 1      | 1750                 | 0.85           | 1750                 | 0.68           |
|            |     | DVD    | 684                  |                |                      |                |

**Note:** Low flow trims (.036+.07 factor) require use of SVI II AP or SVI FF digital positioners.

# Ratings and Connections

| Valve Size |         | ANSI Class |         |         |
|------------|---------|------------|---------|---------|
| in.        | DN      | 150        | 300     | 600     |
| 1-2        | 25-50   | ▲ ○ ● □    | ▲ ○ ● □ | ▲ ○ ● □ |
| 3-6        | 80-150  | ○ ● □      | ○ ● □   | ○ ● □   |
| 8          | 80-200  | ○ ●        | ○ ●     | ○ ●     |
| 10-12      | 250-300 | ○ ●        | ○ ●     | ○       |

**Note:** For flangeless valve sizes 8 in.-12 in., (200mm-300mm), please specify ANSI Class rating.  
Face to Face: ISA S75.04

▲ Threaded ○ Flangeless ● RF Flanged □ GR Flanged

## C<sub>v</sub> and F<sub>L</sub> Versus Travel

Flow Direction: Flow to Open

Flow Characteristics: Linear

ANSI Class: 150 through 600

Sizes: 1 in. through 12 in. (DN 25-300)

| Percent of Plug Rotation                   |              | 10               | 20   | 30                   | 40   | 50   | 60   | 70   | 80   | 90   | 100  |      |      |      |      |  |  |
|--|--------------|------------------|------|----------------------|------|------|------|------|------|------|------|------|------|------|------|--|--|
| F <sub>L</sub> Full Area                   |              | 0.96             | 0.93 | 0.91                 | 0.89 | 0.88 | 0.87 | 0.87 | 0.86 | 0.86 | 0.85 |      |      |      |      |  |  |
| F <sub>L</sub> Reduced Area (.6, .4, & .2) |              | 0.96             | 0.93 | 0.91                 | 0.89 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |      |      |      |      |  |  |
| Valve Size                                 | Orifice Dia. | Act. Stem Travel |      | Rated C <sub>v</sub> |      |      |      |      |      |      |      |      |      |      |      |  |  |
|  |              | in.              | mm   | in.                  | mm   |      |      |      |      |      |      |      |      |      |      |  |  |
| in.  | DN           | in.              | mm   | in.                  | mm   |      |      |      |      |      |      |      |      |      |      |  |  |
| 1  | 25           | .321             | 8.2  | 3.50                 | 89   | 0.4  | 0.8  | 1.1  | 1.4  | 1.7  | 2.0  | 2.3  | 2.5  | 2.7  | 2.8  |  |  |
|  |              | .500             | 12.7 | 3.50                 | 89   | 0.5  | 0.9  | 1.4  | 2.0  | 2.7  | 3.5  | 4.2  | 4.8  | 5.2  | 5.6  |  |  |
|  |              | .579             | 14.7 | 3.50                 | 89   | 0.6  | 1.3  | 2.2  | 3.1  | 4.2  | 5.3  | 6.4  | 7.2  | 7.9  | 8.4  |  |  |
|  |              | .718             | 18.2 | 3.50                 | 89   | 0.9  | 2.1  | 3.7  | 5.7  | 7.8  | 9.6  | 11.1 | 12.4 | 13.3 | 14   |  |  |
| 1½   | 40           | .750             | 19.1 | 3.50                 | 89   | 1.1  | 2.1  | 3.3  | 4.7  | 6.5  | 8.4  | 9.9  | 11.2 | 12.3 | 13.2 |  |  |
|  |              | .907             | 23.0 | 3.50                 | 89   | 1.4  | 3.2  | 5.1  | 7.4  | 10.0 | 12.7 | 15.0 | 17.1 | 18.6 | 19.8 |  |  |
|  |              | 1.125            | 28.6 | 3.50                 | 89   | 2.0  | 5.0  | 8.6  | 13   | 19   | 22   | 26   | 29   | 32   | 33   |  |  |
| 2  | 50           | 1.000            | 25.4 | 3.50                 | 89   | 1.6  | 3.2  | 5.0  | 7.2  | 9.8  | 12.6 | 15.0 | 17.0 | 18.7 | 20   |  |  |
|  |              | 1.159            | 29.4 | 3.50                 | 89   | 2.1  | 4.8  | 7.7  | 11.2 | 15.1 | 19.1 | 22.7 | 25.8 | 28.2 | 30   |  |  |
|  |              | 1.437            | 36.5 | 3.50                 | 89   | 3.1  | 7.5  | 13.3 | 20.5 | 28   | 34.2 | 39.8 | 44.2 | 47.5 | 50   |  |  |
| 3  | 80           | 1.500            | 38.1 | 5.75                 | 146  | 4.9  | 9.4  | 14.1 | 20.0 | 26.5 | 33.5 | 39.8 | 45.4 | 50.2 | 54   |  |  |
|  |              | 1.874            | 47.6 | 5.75                 | 146  | 5.7  | 12.1 | 19.6 | 27.6 | 37.5 | 47.9 | 58.4 | 68.0 | 75.9 | 81   |  |  |
|  |              | 2.324            | 59.0 | 5.75                 | 146  | 8.8  | 17.7 | 29.8 | 44.5 | 60.7 | 78.3 | 96.2 | 113  | 127  | 135  |  |  |
| 4  | 100          | 2.000            | 50.8 | 5.75                 | 146  | 8.4  | 16.1 | 24.0 | 34.1 | 45.1 | 57.1 | 67.8 | 77.4 | 85.6 | 92   |  |  |
|  |              | 2.419            | 61.4 | 5.75                 | 146  | 9.7  | 20.7 | 33.4 | 47.0 | 63.8 | 81.6 | 99.4 | 116  | 129  | 138  |  |  |
|  |              | 3.000            | 76.2 | 5.75                 | 146  | 15.0 | 30.2 | 50.8 | 75.8 | 104  | 133  | 164  | 193  | 216  | 230  |  |  |
| 6  | 150          | 3.000            | 76.2 | 7.25                 | 184  | 18.2 | 34.9 | 52.2 | 74.1 | 98.0 | 124  | 147  | 168  | 186  | 200  |  |  |
|  |              | 3.629            | 92.2 | 7.25                 | 184  | 21.2 | 44.9 | 72.7 | 102  | 139  | 177  | 216  | 252  | 281  | 300  |  |  |
|  |              | 4.500            | 114  | 7.25                 | 184  | 32.7 | 65.7 | 110  | 165  | 225  | 290  | 356  | 419  | 470  | 500  |  |  |
| 8  | 200          | 3.797            | 96.4 | 7.25                 | 184  | 22.0 | 44.2 | 71.9 | 107  | 150  | 196  | 241  | 283  | 317  | 340  |  |  |
|  |              | 4.840            | 123  | 7.25                 | 184  | 31.3 | 63.6 | 114  | 178  | 246  | 313  | 374  | 425  | 468  | 510  |  |  |
|  |              | 6.000            | 152  | 7.25                 | 184  | 42.8 | 111  | 201  | 316  | 434  | 542  | 639  | 725  | 798  | 850  |  |  |
| 10   | 250          | 4.746            | 121  | 7.25                 | 184  | 33.7 | 67.6 | 110  | 164  | 230  | 300  | 369  | 432  | 485  | 520  |  |  |
|  |              | 6.050            | 154  | 7.25                 | 184  | 47.8 | 97.3 | 175  | 273  | 376  | 478  | 572  | 650  | 716  | 780  |  |  |
|  |              | 7.500            | 191  | 7.25                 | 184  | 65.5 | 170  | 307  | 483  | 663  | 828  | 977  | 1109 | 1221 | 1300 |  |  |
| 12   | 300          | 5.780            | 147  | 7.25                 | 184  | 45.3 | 91.0 | 148  | 221  | 309  | 403  | 497  | 582  | 652  | 700  |  |  |
|  |              | 7.460            | 189  | 7.25                 | 184  | 64.4 | 131  | 235  | 367  | 506  | 644  | 769  | 875  | 964  | 1050 |  |  |
|  |              | 9.250            | 235  | 7.25                 | 184  | 88.1 | 228  | 414  | 650  | 893  | 1115 | 1315 | 1493 | 1644 | 1750 |  |  |



# C<sub>v</sub> and F<sub>L</sub> Versus Travel

Flow Direction: Flow to Close

Flow Characteristics: Linear

ANSI Class: 150 through 600

Sizes: 1 in. through 12 in. (DN 25-300)

| Percent of Plug Rotation                   |     |              |      |                  |     | 10                   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  |
|--|-----|--------------|------|------------------|-----|----------------------|------|------|------|------|------|------|------|------|------|
| F <sub>L</sub> Full Area                   |     |              |      |                  |     | 0.94                 | 0.91 | 0.88 | 0.83 | 0.80 | 0.77 | 0.74 | 0.72 | 0.70 | 0.68 |
| F <sub>L</sub> Reduced Area (.6, .4, & .2) |     |              |      |                  |     | 0.94                 | 0.91 | 0.88 | 0.83 | 0.80 | 0.77 | 0.74 | 0.72 | 0.70 | 0.7  |
| Valve Size                                 |     | Orifice Dia. |      | Act. Stem Travel |     | Rated C <sub>v</sub> |      |      |      |      |      |      |      |      |      |
| in.  | DN  | in.          | mm   | in.              | mm  |                      |      |      |      |      |      |      |      |      |      |
| 1  | 25  | .321         | 8.2  | 3.50             | 89  | 0.4                  | 0.9  | 1.2  | 1.5  | 1.8  | 2.1  | 2.5  | 2.7  | 2.9  | 3    |
|  |     | .500         | 12.7 | 3.50             | 89  | 0.5                  | 1.0  | 1.5  | 2.1  | 2.9  | 3.8  | 4.5  | 5.1  | 5.6  | 6    |
|  |     | .579         | 14.7 | 3.50             | 89  | 0.6                  | 1.4  | 2.4  | 3.3  | 4.5  | 5.7  | 6.9  | 7.7  | 8.5  | 9    |
|  |     | .718         | 18.2 | 3.50             | 89  | 1.0                  | 2.3  | 4.0  | 6.1  | 8.4  | 10.3 | 11.9 | 13.3 | 14.3 | 15   |
| 1½   | 40  | .750         | 19.1 | 3.50             | 89  | 1.3                  | 2.5  | 3.9  | 5.6  | 7.7  | 9.9  | 11.7 | 13.2 | 14.5 | 15.6 |
|  |     | .907         | 23.0 | 3.50             | 89  | 1.7                  | 3.8  | 6.0  | 8.7  | 11.8 | 15.0 | 17.7 | 20.2 | 22.0 | 23.4 |
|  |     | 1.125        | 28.6 | 3.50             | 89  | 2.4                  | 5.9  | 10.2 | 15.4 | 22.5 | 26.0 | 30.7 | 34.3 | 37.8 | 39   |
| 2  | 50  | 1.000        | 25.4 | 3.50             | 89  | 1.7                  | 3.4  | 5.3  | 7.6  | 10.4 | 13.4 | 15.9 | 18.0 | 19.8 | 21.2 |
|  |     | 1.159        | 29.4 | 3.50             | 89  | 2.2                  | 5.1  | 8.2  | 11.9 | 16.0 | 20.2 | 24.1 | 27.3 | 29.9 | 31.8 |
|  |     | 1.437        | 36.5 | 3.50             | 89  | 3.3                  | 8.0  | 14.1 | 21.7 | 29.7 | 36.3 | 42.2 | 46.9 | 50.4 | 53   |
| 3  | 80  | 1.500        | 38.1 | 5.75             | 146 | 5.3                  | 10.1 | 15.1 | 21.5 | 28.5 | 36.0 | 42.7 | 48.8 | 53.9 | 58   |
|  |     | 1.874        | 47.6 | 5.75             | 146 | 6.1                  | 13.0 | 21.1 | 29.6 | 40.3 | 51.4 | 62.7 | 73.0 | 81.5 | 87   |
|  |     | 2.324        | 59.0 | 5.75             | 146 | 9.5                  | 19.0 | 32.0 | 47.8 | 65.2 | 84.1 | 103  | 121  | 136  | 145  |
| 4  | 100 | 2.000        | 50.8 | 5.75             | 146 | 8.4                  | 16.1 | 24.0 | 34.1 | 45.1 | 57.1 | 67.8 | 77.4 | 85.6 | 92   |
|  |     | 2.419        | 61.4 | 5.75             | 146 | 9.7                  | 20.7 | 33.4 | 47.0 | 63.8 | 81.6 | 99.4 | 116  | 129  | 138  |
|  |     | 3.000        | 76.2 | 5.75             | 146 | 15.0                 | 30.2 | 50.8 | 75.8 | 104  | 133  | 164  | 193  | 216  | 230  |
| 6  | 150 | 3.000        | 76.2 | 7.25             | 184 | 18.2                 | 34.9 | 52.2 | 74.1 | 98.0 | 124  | 147  | 168  | 186  | 200  |
|  |     | 3.629        | 92.2 | 7.25             | 184 | 21.2                 | 44.9 | 72.7 | 102  | 139  | 177  | 216  | 252  | 281  | 300  |
|  |     | 4.500        | 114  | 7.25             | 184 | 32.7                 | 65.7 | 110  | 165  | 225  | 290  | 356  | 419  | 470  | 500  |
| 8  | 200 | 3.797        | 96.4 | 7.25             | 184 | 22.0                 | 44.2 | 71.9 | 107  | 150  | 196  | 241  | 283  | 317  | 340  |
|  |     | 4.840        | 123  | 7.25             | 184 | 31.3                 | 63.6 | 114  | 178  | 246  | 313  | 374  | 425  | 468  | 510  |
|  |     | 6.000        | 152  | 7.25             | 184 | 42.8                 | 111  | 201  | 316  | 434  | 542  | 639  | 725  | 798  | 850  |
| 10   | 250 | 4.746        | 121  | 7.25             | 184 | 33.7                 | 67.6 | 110  | 164  | 230  | 300  | 369  | 432  | 485  | 520  |
|  |     | 6.050        | 154  | 7.25             | 184 | 47.8                 | 97.3 | 175  | 273  | 376  | 478  | 572  | 650  | 716  | 780  |
|  |     | 7.500        | 191  | 7.25             | 184 | 65.5                 | 170  | 307  | 483  | 663  | 828  | 977  | 1109 | 1221 | 1300 |
| 12   | 300 | 5.780        | 147  | 7.25             | 184 | 45.3                 | 91.0 | 148  | 221  | 309  | 403  | 497  | 582  | 652  | 700  |
|  |     | 7.460        | 189  | 7.25             | 184 | 64.4                 | 131  | 235  | 367  | 506  | 644  | 769  | 875  | 964  | 1050 |
|  |     | 9.250        | 235  | 7.25             | 184 | 88.1                 | 228  | 414  | 650  | 893  | 1115 | 1315 | 1493 | 1644 | 1750 |

# C<sub>v</sub> Versus Travel

Differential Velocity Device (DVD)

Flow Direction: Flow to Open only

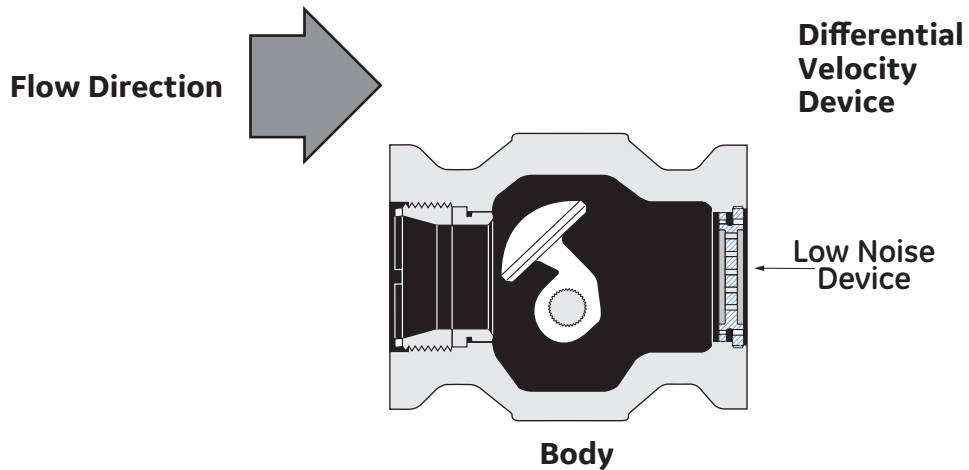
Flow Characteristics: Linear

ANSI Class: 150 through 600

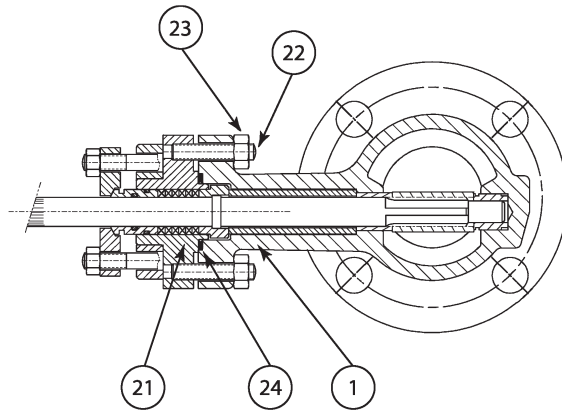
Sizes: 1 in. through 12 in. (DN 25-300)

| Percent of Plug Rotation |     |              |      |                  |     | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  |
|--------------------------|-----|--------------|------|------------------|-----|------|------|------|------|------|------|------|------|------|------|
| Valve Size               |     | Orifice Dia. |      | Act. Stem Travel |     |      |      |      |      |      |      |      |      |      |      |
| in.                      | DN  | in.          | mm   | in.              | mm  |      |      |      |      |      |      |      |      |      |      |
| 1                        | 25  | 0.579        | 14.7 | 3.5              | 89  | 0.52 | 1.04 | 1.88 | 2.62 | 3.23 | 3.76 | 4.22 | 4.58 | 4.84 | 5.00 |
| 1.5                      | 40  | 0.907        | 23.0 | 3.5              | 89  | 1.30 | 2.60 | 4.69 | 6.54 | 8.06 | 9.41 | 10.5 | 11.4 | 12.1 | 12.5 |
| 2                        | 50  | 1.159        | 29.4 | 3.5              | 89  | 1.88 | 3.75 | 6.75 | 9.42 | 11.6 | 13.6 | 15.2 | 16.5 | 17.4 | 18.0 |
| 3                        | 80  | 1.874        | 47.6 | 5.75             | 146 | 5.00 | 10.0 | 18.0 | 25.1 | 31.0 | 36.1 | 40.5 | 43.9 | 46.4 | 48.0 |
| 4                        | 100 | 2.419        | 61.4 | 5.75             | 146 | 8.13 | 16.3 | 29.3 | 40.8 | 50.3 | 58.7 | 65.8 | 71.4 | 75.4 | 77.0 |
| 6                        | 150 | 3.629        | 92.2 | 7.25             | 184 | 18.9 | 37.7 | 67.9 | 94.7 | 116  | 136  | 153  | 166  | 175  | 181  |
| 8                        | 200 | 4.84         | 123  | 7.25             | 184 | 32.1 | 64.2 | 116  | 161  | 199  | 232  | 260  | 282  | 298  | 308  |
| 10                       | 250 | 6.05         | 154  | 7.25             | 184 | 50.6 | 101  | 182  | 254  | 313  | 366  | 410  | 445  | 470  | 486  |
| 12                       | 300 | 7.46         | 189  | 7.25             | 184 | 71.3 | 143  | 257  | 358  | 441  | 515  | 577  | 626  | 661  | 684  |

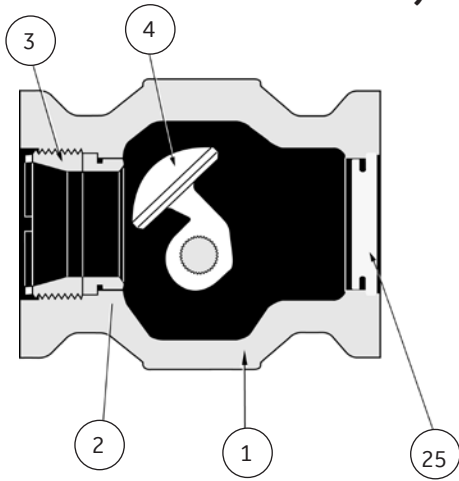
**Note:** The differential velocity device is used for aerodynamic noise reduction. It **must** be used with **.6 factor trim flow to open**.



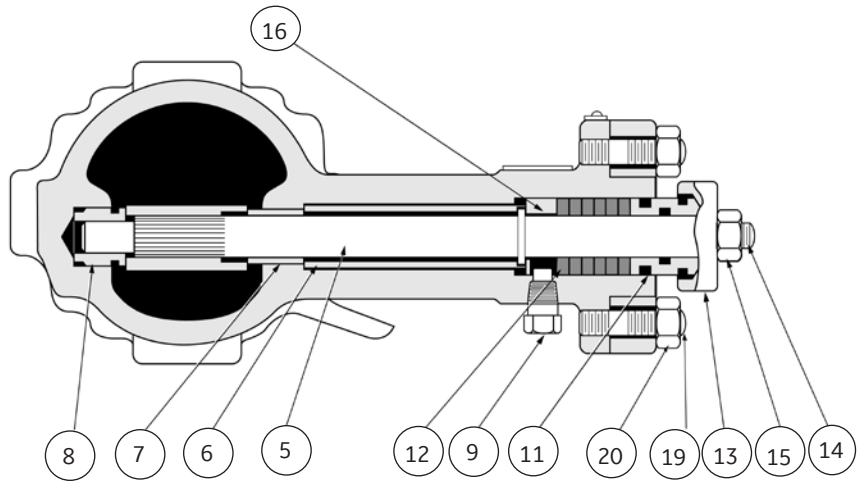
# Materials of Construction



**Body with Separable Bonnet**

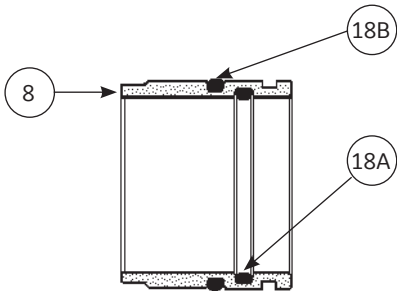


**Body**

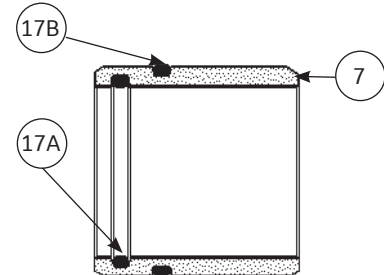


**Body with Integral Bonnet**

**Optional Slurry Package Seal Bushings**



Lower Guide Bushing



Upper Guide Bushing

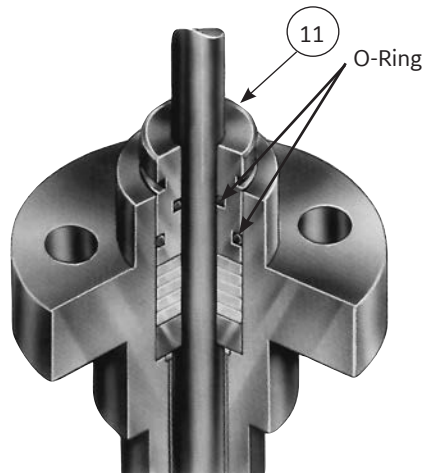
**Standard Camflex Packing Arrangement**

**EF Seal**

(Emission Free)

**Double O-Ring Seal Packing Follower**

Fugitive Emission Containment Package for Zero Leakage<sup>1</sup>



Provides long term reliable extremely low emission shaft seal performance. This economical solution to fugitive emissions will not compromise control performance, and is suitable for use in environmentally sensitive applications.

<sup>1</sup> Factory Mutual Certified Report

# Materials of Construction

## Carbon Steel Construction

| Ref. No.        | Temperature Range | Description             | -20°F  | +400°F | +450°F | +750°F |
|-----------------|-------------------|-------------------------|--|--------|--------|--------|
|                 |                   |                         | -29°C  | +205°C | +232°C | +400°C |
|                 |                   |                         | Materials  |        |        |        |
| 1               |                   | Body                    | A216 Gr WCC  |        |        |        |
| 2               |                   | Seat Ring               | 316 St. St. ASTM A351 Gr CF8M  |        |        |        |
|                 |                   |                         | 316 St. St. ASTM A351 Gr CF8M + Stellite Hardfacing Optional                     |        |        |        |
|                 |                   |                         | ASTM A479 TY 316 St. St. + PTFE 1 in. to 6 in. (DN 25-150)                       |        |        |        |
|                 |                   |                         | 316 St. St. A351 Gr CF8M + PTFE 8 in. to 12 in. (DN 200-300)                     |        |        |        |
| 3               |                   | Seat Ring Retainer      | 316 St. St. ASTM A351 Gr CF8M  |        |        |        |
| 4               |                   | Plug                    | Solid Stellite 1 in. to 2 in. (DN 25-50)   |        |        |        |
|                 |                   |                         | 316L St. St. ASTM A351 Gr CF3M + Stellite Hardfacing 3 in. to 12 in. (DN 80-300) |        |        |        |
| 5               |                   | Shaft                   | 17-4 PH ASTM A564 Gr 630 (H1075)   |        |        |        |
| 6               |                   | Spacer                  | ASTM A312 TY 316   |        |        |        |
| 7               |                   | Upper Guide             | ASTM A276 TY 440C  |        |        |        |
|                 |                   | Upper Guide + O-Ring    | STELLITE No. 6 + VITON   |        |        |        |
| 8               |                   | Lower Guide             | ASTM A276 TY 440C  |        |        |        |
|                 |                   | Lower Guide + O-Ring    | STELLITE No. 6 + VITON   |        |        |        |
| 9               |                   | Safety Pin              | ASTM A479 TY 316   |        |        |        |
| 11              |                   | Packing Follower        | ASTM A582 TY 303   |        |        |        |
|                 |                   | O-Ring Packing Follower | VITON  |        |        |        |
| 12              |                   | Packing                 | CARBON CORE BRAIDED PTFE   |        |        |        |
| 13              |                   | Packing Flange          | Carbon Steel ASTM A105 Zinc Plated   |        |        |        |
| 14              |                   | Packing Flange Stud     | 304 St. St. ASTM A193 Gr B8  |        |        |        |
| 15              |                   | Packing Flange Stud Nut | 304 St. St. ASTM A194 GR 8   |        |        |        |
| 16              |                   | Packing Box Ring        | ASTM A479 TY 316   |        |        |        |
| 19              |                   | Body Stud               | 304 St. St. ASTM A193 Gr B8  |        |        |        |
| 20              |                   | Body Stud Nuts          | 304 St. St. ASTM A194 Gr 8   |        |        |        |
| 21 <sup>1</sup> |                   | Bonnet                  | Carbon Steel A216 GR WCC   |        |        |        |
| 22 <sup>1</sup> |                   | Body / Bonnet Stud      | ASTM A 193 Gr B8 Class 2   |        |        |        |
| 23 <sup>1</sup> |                   | Body / Bonnet Nut       | ASTM A 194 Gr 8  |        |        |        |
| 24 <sup>1</sup> |                   | Body Gasket             | AISI 316L + GRAPHITE   |        |        |        |
| 25              |                   | DVD Low Noise Plate     | ASTM A479 TY 316   |        |        |        |

<sup>1</sup>Separable Bonnet version only.

## NACE Carbon Steel Construction

| Ref. No. | Temperature Range | Description             | -20°F  | +400°F | +750°F |  |
|----------|-------------------|-------------------------|--|--------|--------|--|
|          |                   |                         | -29°C  | +205°C | +400°C |  |
|          |                   |                         | Materials  |        |        |  |
| 1        |                   | Body                    | Carbon Steel A216 Gr WCC   |        |        |  |
| 2        |                   | Seat Ring               | 316 St. St. ASTM A351 Gr CF8M  |        |        |  |
|          |                   |                         | 316 St. St. ASTM A351 Gr CF8M + Stellite Hardfacing Optional                     |        |        |  |
| 3        |                   | Seat Ring Retainer      | 316 St. St. ASTM A351 Gr CF8M  |        |        |  |
| 4        |                   | Plug                    | Solid Stellite 1 in. to 2 in. (DN 25-50)   |        |        |  |
|          |                   |                         | 316L St. St. ASTM A351 Gr CF3M + Stellite Hardfacing 3 in. to 12 in. (DN 80-300) |        |        |  |
| 5        |                   | Shaft                   | ASTM A479 TY 316 St. St.   |        |        |  |
| 6        |                   | Spacer                  | ASTM A312 TY 316   |        |        |  |
| 7        |                   | Upper Guide             | STELLITE No. 6   |        |        |  |
|          |                   | Upper Guide + O-Ring    | STELLITE No. 6 + VITON   |        |        |  |
| 8        |                   | Lower Guide             | STELLITE No. 6   |        |        |  |
|          |                   | Lower Guide + O-Ring    | STELLITE No. 6 + VITON   |        |        |  |
| 9        |                   | Safety Pin              | ASTM A479 TY 316   |        |        |  |
| 11       |                   | Packing Follower        | ASTM A479 TY 316   |        |        |  |
|          |                   | O-Ring Packing Follower | VITON  |        |        |  |
| 12       |                   | Packing                 | CARBON CORE BRAIDED PTFE   |        |        |  |
| 13       |                   | Packing Flange          | Carbon Steel ASTM A105 Zinc Plated   |        |        |  |
| 14       |                   | Packing Flange Stud     | 304 St. St. ASTM A 193 GR B8   |        |        |  |
| 15       |                   | Packing Flange Stud Nut | 304 St. St. ASTM A194 GR 8   |        |        |  |
| 16       |                   | Packing Box Ring        | ASTM A479 TY 316   |        |        |  |
| 19       |                   | Body Stud               | 304 St. St. ASTM A193 Gr B8  |        |        |  |
| 20       |                   | Body Stud Nuts          | 304 St. St. ASTM A194 Gr 8   |        |        |  |
| 25       |                   | DVD Low Noise Plate     | ASTM A479 TY 316   |        |        |  |

**Note:** Standard materials and processes are in accordance with the requirements of NACE specification MR0103. Applications requiring compliance to MR0175-2003 or ISO 15156 must be reviewed by BHGE.

# Materials of Construction

## Stainless Steel Construction

| Ref. No.        | Temperature Range | Description             | -320°F   | -58°F | +400°F | +450°F | +750°F |
|-----------------|-------------------|-------------------------|--|-------|--------|--------|--------|
|                 |                   |                         | -196°C   | -50°C | +205°C | +232°C | +400°C |
|                 |                   |                         | Materials  |       |        |        |        |
| 1               |                   | Body                    | Flangeless Body 316 St. St. ASTM A351 Gr CF8M<br>Flanged Body 316L St. St. ASTM A351 GR CF3M |       |        |        |        |
| 2               |                   | Seat Ring               | 316 St. St. ASTM A351 Gr CF8M  |       |        |        |        |
|                 |                   |                         | 316 St. St. ASTM A351 Gr CF8M + Stellite Hardfacing Optional                                 |       |        |        |        |
|                 |                   |                         | ASTM A479 TY 316 St. St. + PTFE 1 in. to 6 in. (DN 25-150)                                   |       |        |        |        |
|                 |                   |                         | 316 St. St. A351 Gr CF8M + PTFE 8 in. to 12 in. (DN 200-300)                                 |       |        |        |        |
| 3               |                   | Seat Ring Retainer      | 316 St. St. ASTM A351 Gr CF8M  |       |        |        |        |
| 4               |                   | Plug                    | Solid Stellite 1 in. to 2 in. (DN 25-50)   |       |        |        |        |
|                 |                   |                         | 316L St. St. ASTM A351 Gr CF3M + Stellite Hardfacing N°6 3 in. to 12 in. (DN 80-300)         |       |        |        |        |
| 5               |                   | Shaft                   | 316 St. St. ASTM A479 TY 316   |       |        |        |        |
|                 |                   |                         | ASTM A564 Gr 630 (H1075) Optional  |       |        |        |        |
| 6               |                   | Spacer                  | ASTM A 312 TY 316  |       |        |        |        |
| 7               |                   | Upper Guide             | STELLITE No. 6   |       |        |        |        |
|                 |                   |                         | Upper Guide + O-Ring   |       |        |        |        |
|                 |                   |                         | STELLITE No. 6 + VITON   |       |        |        |        |
| 8               |                   | Lower Guide             | STELLITE No. 6   |       |        |        |        |
|                 |                   |                         | Lower Guide + O-Ring   |       |        |        |        |
|                 |                   |                         | STELLITE No. 6 + VITON   |       |        |        |        |
| 9               |                   | Safety Pin              | ASTM A479 TY 316   |       |        |        |        |
| 11              |                   | Packing Follower        | ASTM A582 TY 303   |       |        |        |        |
|                 |                   |                         | O-Ring   |       |        |        |        |
|                 |                   |                         | VITON  |       |        |        |        |
| 12              |                   | Packing                 | CARBON CORE BRAIDED PTFE   |       |        |        |        |
| 13              |                   | Packing Flange          | ASTM A182 GR F304  |       |        |        |        |
| 14              |                   | Packing Flange Stud     | 304 St. St. ASTM A193 Gr B8  |       |        |        |        |
| 15              |                   | Packing Flange Stud Nut | 304 St. St. ASTM A194 Gr 8   |       |        |        |        |
| 16              |                   | Packing Box Ring        | ASTM A479 TY 316   |       |        |        |        |
| 19              |                   | Body Stud               | 304 St. St. ASTM A 193 Gr B8   |       |        |        |        |
| 20              |                   | Body Stud Nuts          | 304 St. St. ASTM A194 Gr 8   |       |        |        |        |
| 21 <sup>1</sup> |                   | Bonnet                  | 316L St. St. ASTM A351 Gr CF3M   |       |        |        |        |
| 22 <sup>1</sup> |                   | Body / Bonnet Stud      | 304 St. St. ASTM A193 GR B8 CL 2   |       |        |        |        |
| 23 <sup>1</sup> |                   | Body / Bonnet Nut       | 304 St. St. ASTM A194 GR 8   |       |        |        |        |
| 24 <sup>1</sup> |                   | Body Gasket             | AISI 316L + GRAPHITE   |       |        |        |        |
| 25              |                   | DVD Low Noise Plate     | ASTM A479 TY 316   |       |        |        |        |

<sup>1</sup> Separable Bonnet version only.

# Materials of Construction

## NACE Stainless Steel Construction

| Ref. No. | Temperature Range       | -20°F<br>-29°C   | +400°F<br>+205°C | +750°F<br>+400°C |
|----------|-------------------------|--|------------------|------------------|
|          | Description             | Materials  |                  |                  |
| 1        | Body                    | Flangeless Body 316 St. St. ASTM A351 Gr CF8M                                    |                  |                  |
|          |                         | Flanged Body 316L St. St. ASTM A351 Gr CF3M                                      |                  |                  |
| 2        | Seat Ring               | 316 St. St. ASTM A351 Gr CF8M  |                  |                  |
| 3        | Seat Ring Retainer      | 316 St. St. ASTM A351 Gr CF8M  |                  |                  |
| 4        | Plug                    | Solid Stellite 1 in. to 2 in. (DN 25-50)   |                  |                  |
|          |                         | 316L St. St. ASTM A351 Gr CF3M + Stellite Hardfacing 3 in. to 12 in. (DN 80-300) |                  |                  |
| 5        | Shaft                   | ASTM A479 TY 316 St. St.   |                  |                  |
| 6        | Spacer                  | ASTM A312 TY 316   |                  |                  |
| 7        | Upper Guide             | STELLITE No. 6   |                  |                  |
|          | Upper Guide + O-Ring    | STELLITE No. 6 + VITON   |                  |                  |
| 8        | Lower Guide             | STELLITE No. 6   |                  |                  |
|          | Lower Guide + O-Ring    | STELLITE No. 6 + VITON   |                  |                  |
| 9        | Safety Pin              | ASTM A479 TY 316   |                  |                  |
| 11       | Packing Follower        | ASTM A479 TY 316   |                  |                  |
|          | O-Ring                  | VITON  |                  |                  |
| 12       | Packing                 | CARBON CORE BRAIDED PTFE   |                  |                  |
| 13       | Packing Flange          | ASTM A182 GR F304  |                  |                  |
| 14       | Packing Flange Stud     | 304 St. St. ASTM A193 Gr B8  |                  |                  |
| 15       | Packing Flange Stud Nut | 304 St. St. ASTM A194 Gr 8   |                  |                  |
| 16       | Packing Box Ring        | ASTM A479 TY 316   |                  |                  |
| 19       | Body Stud               | 304 St. St. ASTM A 193 Gr B8   |                  |                  |
| 20       | Body Stud Nuts          | 304 St. St. ASTM A194 Gr 8   |                  |                  |
| 25       | DVD Low Noise Plate     | ASTM A479 TY 316   |                  |                  |

**Note:** Standard materials and processes are in accordance with the requirements of NACE specification MR0103. Applications requiring compliance to MR0175-2003 or ISO 15156 must be reviewed by BHGE.

# Materials of Construction

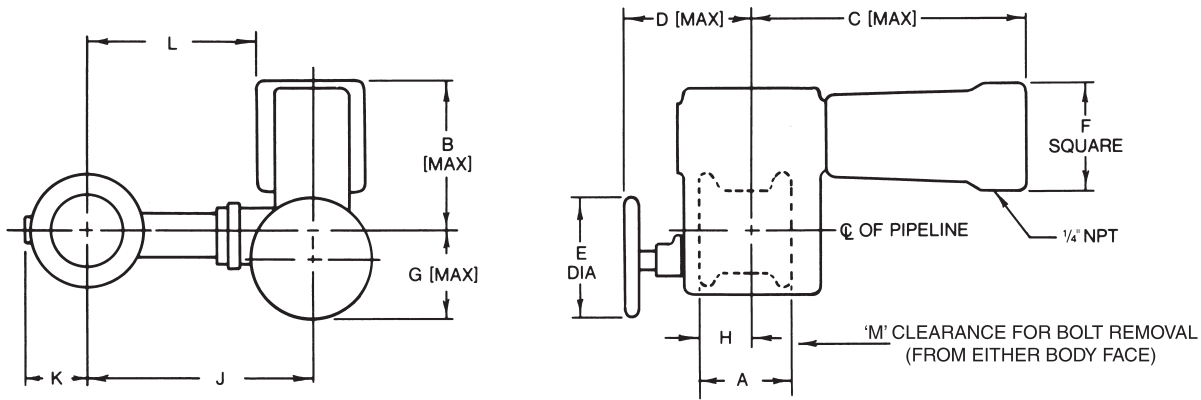
## Hastelloy C Construction 1 in. to 4 in.

| Ref. No. | Temperature Range                 | -320°F                      | -58°F                  | +400°F | +500°F |
|----------|-----------------------------------|-----------------------------|------------------------|--------|--------|
|          |                                   | -196°C                      | -50°C                  | +205°C | +260°C |
|          | Description                       | Materials                   |                        |        |        |
| 1        | Body                              | ASTM A494 Gr CX-2 MW        |                        |        |        |
| 2        | Seat Ring                         | HASTELLOY C22               |                        |        |        |
|          |                                   | HASTELLOY C22 + PTFE        |                        |        |        |
| 3        | Seat Ring Retainer                | HASTELLOY C22               |                        |        |        |
| 4        | Plug                              | HASTELLOY C22               |                        |        |        |
| 5        | Shaft                             | HASTELLOY C22               |                        |        |        |
| 6        | Spacer                            | HASTELLOY C22               |                        |        |        |
| 7        | Upper Guide <sup>1</sup>          | STELLITE No. 6              |                        |        |        |
|          | Upper Guide <sup>1</sup>          | ALLOY 25                    |                        |        |        |
|          | Upper Guide <sup>1</sup>          | ULTIMET                     |                        |        |        |
|          | Upper Guide + O-Ring <sup>1</sup> |                             | STELLITE No. 6 + VITON |        |        |
| 8        | Lower Guide <sup>1</sup>          | STELLITE No. 6              |                        |        |        |
|          | Lower Guide <sup>1</sup>          | ALLOY 25                    |                        |        |        |
|          | Upper Guide <sup>1</sup>          | ULTIMET                     |                        |        |        |
|          | Lower Guide + O-Ring <sup>1</sup> |                             | STELLITE No. 6 + VITON |        |        |
| 9        | Safety Pin                        | HASTELLOY C22               |                        |        |        |
| 11       | Packing Follower                  | HASTELLOY C22               |                        |        |        |
|          | O-Ring                            | VITON                       |                        |        |        |
| 12       | Packing                           | CARBON CORE BRAIDED PTFE    |                        |        |        |
| 13       | Packing Flange                    | ASTM A182 Gr F304           |                        |        |        |
| 14       | Packing Flange Stud               | 304 St. St. ASTM A193 Gr B8 |                        |        |        |
| 15       | Packing Flange Stud Nut           | 304 St. St. ASTM A194 Gr 8  |                        |        |        |
| 16       | Packing Box Ring                  | HASTELLOY C22               |                        |        |        |
| 19       | Body Stud                         | 304 St. St. ASTM A193 Gr B8 |                        |        |        |
| 20       | Body Stud Nuts                    | 304 St. St. ASTM A194 Gr 8  |                        |        |        |
| 25       | DVD Low Noise Plate               | HASTELLOY C22               |                        |        |        |

**Note:** Standard materials and processes are in accordance with the requirements of NACE specification MR0103. Applications requiring compliance to MR0175-2003 or ISO 15156 must be reviewed by BHGE.

<sup>1</sup> Material selection must be based on fluid properties and compatibility.

# Dimensions and Weights



## Dimensions (inches)

| Valve Size |     | A             |                         |                      |                      |                      | B    | C    | D    | E    | F   | G   | H             |             |         |                      |                      | J     | K    | L    | M                    |                      |                      |                      |
|------------|-----|---------------|-------------------------|----------------------|----------------------|----------------------|------|------|------|------|-----|-----|---------------|-------------|---------|----------------------|----------------------|-------|------|------|----------------------|----------------------|----------------------|----------------------|
| In.        | DN  | Threaded ends | Flanged and Flange-less | GR Flanged Class 150 | GR Flanged Class 300 | GR Flanged Class 600 |      |      |      |      |     |     | Threaded ends | Flange-less | Flanged | GR Flanged Class 150 | GR Flanged Class 300 |       |      |      | GR Flanged Class 600 | ANSI Class 150 PN 10 | ANSI Class 300 PN 16 | ANSI Class 600 PN 40 |
| 1          | 25  | 4.00          | 4.00                    | 7.24                 | 7.76                 | 8.27                 | 6.6  | 11.9 | 10.1 | 6.3  | 5.5 | 4.3 | 2.64          | 2.64        | 2.01    | 5.24                 | 5.49                 | 6.10  | 8.0  | 1.5  | 5.3                  | 6.5                  | 9.0                  | 9.0                  |
| 1/2        | 40  | 5.39          | 4.50                    | 8.74                 | 9.25                 | 9.88                 | 6.6  | 11.9 | 10.1 | 6.3  | 5.5 | 4.3 | 3.31          | 2.44        | 2.31    | 6.71                 | 6.99                 | 7.62  | 9.1  | 2.0  | 6.4                  | 6.5                  | 10.0                 | 10.0                 |
| 2          | 50  | 5.75          | 4.88                    | 10.00                | 10.51                | 11.26                | 6.6  | 11.9 | 10.1 | 6.3  | 5.5 | 4.3 | 3.31          | 2.44        | 2.46    | 7.80                 | 8.05                 | 8.80  | 9.3  | 2.6  | 6.6                  | 10.5                 | 10.5                 | 10.5                 |
| 3          | 80  |               | 6.50                    | 11.73                | 12.52                | 13.27                | 9.8  | 17.2 | 10.6 | 6.3  | 6.9 | 5.8 |               | 3.82        | 3.39    | 8.97                 | 9.36                 | 10.11 | 12.9 | 3.3  | 9.4                  | 11.8                 | 13.5                 | 14.0                 |
| 4          | 100 |               | 7.62                    | 13.86                | 14.49                | 15.51                | 9.8  | 17.2 | 10.3 | 6.3  | 6.9 | 4.8 |               | 4.17        | 4.17    | 6.93                 | 7.24                 | 7.76  | 13.7 | 4.3  | 10.3                 | 13.0                 | 14.0                 | 16.5                 |
| 6          | 150 |               | 9.00                    | 17.76                | 18.62                | 20.00                | 12.3 | 20.8 | 12.1 | 10.0 | 8.6 | 7.9 |               | 5.00        | 5.00    | 8.88                 | 9.31                 | 10.00 | 16.9 | 5.8  | 12.6                 | 15.5                 | 16.0                 | 18.5                 |
| 8          | 200 |               | 9.56                    |                      |                      |                      | 12.3 | 20.8 | 12.1 | 10.0 | 8.6 | 7.9 |               | 5.83        | 5.44    |                      |                      |       | 18.4 | 8.0  | 14.1                 | 15.5                 | 18.5                 | 21.0                 |
| 10         | 250 |               | 11.69                   |                      |                      |                      | 12.3 | 20.8 | 12.1 | 10.0 | 8.6 | 7.9 |               | 6.57        | 6.57    |                      |                      |       | 22.4 | 9.8  | 18.1                 | 20.0                 | 20.5                 | 24.5                 |
| 12         | 300 |               | 13.31                   |                      |                      |                      | 12.3 | 20.8 | 12.1 | 10.0 | 8.6 | 7.9 |               | 7.24        | 7.24    |                      |                      |       | 23.8 | 10.8 | 19.5                 | 20.0                 | 22.5                 | 25.5                 |

## Weight (lbs. and Kg.)

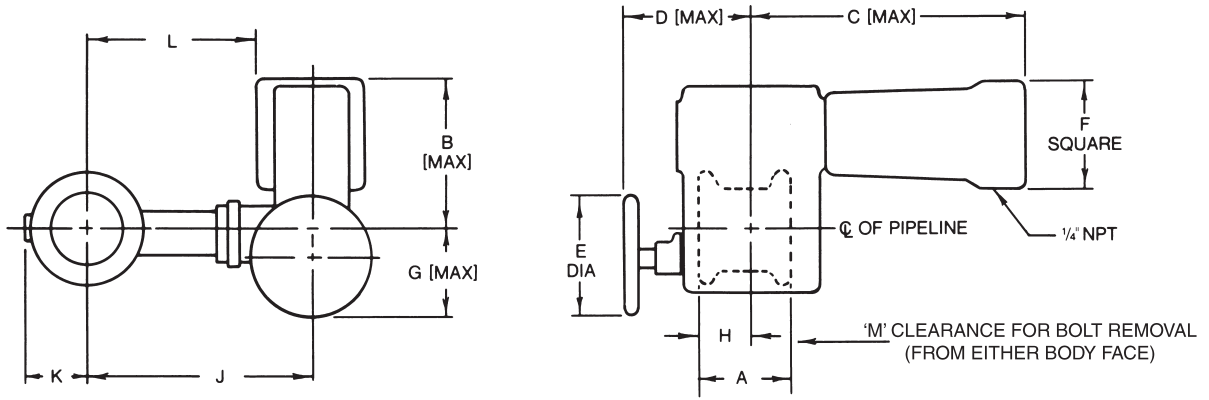
| Valve Size |     | Actuator size | Flangeless |      | Flanged Class 150 |      | Flanged Class 300 |      | Flanged Class 600 |      | GR Flanged Class 150 |      | GR Flanged Class 300 |      | GR Flanged Class 600 |      |
|------------|-----|---------------|------------|------|-------------------|------|-------------------|------|-------------------|------|----------------------|------|----------------------|------|----------------------|------|
| In.        | DN  |               | Kg         | lbs. | Kg                | lbs. | Kg                | lbs. | Kg                | lbs. | Kg                   | lbs. | Kg                   | lbs. | Kg                   | lbs. |
| 1          | 25  | 4.5           | 17         | 38   | 18                | 40   | 20                | 44   | 20                | 44   | 19                   | 42   | 21                   | 46   | 22                   | 49   |
| 1-1/2      | 40  | 4.5           | 19         | 42   | 22                | 48   | 24                | 53   | 25                | 55   | 23                   | 51   | 26                   | 57   | 28                   | 62   |
| 2          | 50  | 4.5           | 20         | 44   | 24                | 53   | 27                | 60   | 28                | 62   | 27                   | 60   | 30                   | 66   | 34                   | 75   |
| 3          | 8   | 6             | 46         | 101  | 52                | 115  | 57                | 126  | 59                | 130  | 58                   | 128  | 63                   | 139  | 69                   | 152  |
| 4          | 100 | 6             | 54         | 119  | 65                | 143  | 73                | 161  | 83                | 183  | 74                   | 163  | 83                   | 183  | 99                   | 218  |
| 6          | 150 | 7             | 103        | 227  | 115               | 254  | 131               | 289  | 156               | 344  | 133                  | 293  | 151                  | 333  | 184                  | 406  |
|            |     | 9             | 131        | 289  | 143               | 315  | 159               | 351  | 184               | 414  | 161                  | 355  | 179                  | 395  | 213                  | 414  |
| 8          | 200 | 7             | 122        | 269  | 140               | 309  | 161               | 355  | 197               | 434  |                      |      |                      |      |                      |      |
|            |     | 9             | 150        | 331  | 168               | 370  | 189               | 417  | 225               | 195  |                      |      |                      |      |                      |      |
| 10         | 250 | 7             | 178        | 392  | 203               | 448  | 236               | 520  |                   |      |                      |      |                      |      |                      |      |
|            |     | 9             | 206        | 454  | 231               | 509  | 264               | 582  |                   |      |                      |      |                      |      |                      |      |
| 12         | 300 | 7             | 222        | 489  | 260               | 573  | 307               | 676  |                   |      |                      |      |                      |      |                      |      |
|            |     | 9             | 250        | 551  | 288               | 635  | 335               | 738  |                   |      |                      |      |                      |      |                      |      |

## Specific Dimensions (inches) for the No. 9 Actuator

| Valve size |     | B     | C     | D     | E     | F     | G    | L     |
|------------|-----|-------|-------|-------|-------|-------|------|-------|
| In.        | DN  |       |       |       |       |       |      |       |
| 6          | 150 | 14.69 | 26.54 | 12.05 | 15.75 | 11.97 | 8.39 | 11.02 |
| 8          | 200 | 14.80 | 26.54 | 12.05 | 15.75 | 11.97 | 8.50 | 12.52 |
| 10         | 250 | 14.92 | 26.54 | 12.05 | 15.75 | 11.97 | 8.62 | 16.61 |
| 12         | 300 | 15.04 | 26.54 | 12.05 | 15.75 | 11.97 | 8.74 | 17.99 |



# Dimensions and Weights



## Dimensions (millimeters)

| Valve Size |     | A             |                        |                      |                      |                      |               | B   | C   | D   | E   | F   | G  | H          |         |                      |                      |                      |                      | J   | K   | L   | M                    |                      |  |
|------------|-----|---------------|------------------------|----------------------|----------------------|----------------------|---------------|-----|-----|-----|-----|-----|----|------------|---------|----------------------|----------------------|----------------------|----------------------|-----|-----|-----|----------------------|----------------------|--|
| In.        | DN  | Threaded ends | Flanged and Flangeless | GR Flanged Class 150 | GR Flanged Class 300 | GR Flanged Class 600 | Threaded ends |     |     |     |     |     |    | Flangeless | Flanged | GR Flanged Class 150 | GR Flanged Class 300 | GR Flanged Class 600 | ANSI Class 150 PN 10 |     |     |     | ANSI Class 300 PN 16 | ANSI Class 600 PN 40 |  |
| 1          | 25  | 102           | 102                    | 184                  | 197                  | 210                  | 168           | 302 | 256 | 140 | 140 | 109 | 67 | 67         | 51      | 133                  | 140                  | 155                  | 204                  | 38  | 134 | 205 | 229                  | 229                  |  |
| 1/2        | 40  | 137           | 114                    | 222                  | 235                  | 251                  | 168           | 302 | 256 | 140 | 140 | 109 | 84 | 62         | 59      | 171                  | 178                  | 194                  | 232                  | 51  | 162 | 205 | 254                  | 254                  |  |
| 2          | 50  | 146           | 124                    | 254                  | 267                  | 286                  | 168           | 302 | 256 | 140 | 140 | 109 | 84 | 62         | 63      | 198                  | 205                  | 224                  | 237                  | 65  | 167 | 267 | 267                  | 267                  |  |
| 3          | 80  |               | 165                    | 298                  | 318                  | 337                  | 249           | 436 | 269 | 175 | 175 | 122 |    | 97         | 86      | 228                  | 238                  | 257                  | 327                  | 84  | 239 | 300 | 343                  | 343                  |  |
| 4          | 100 |               | 194                    | 352                  | 368                  | 394                  | 249           | 436 | 269 | 175 | 175 | 122 |    | 106        | 106     | 176                  | 184                  | 197                  | 349                  | 108 | 262 | 330 | 343                  | 406                  |  |
| 6          | 150 |               | 229                    | 451                  | 473                  | 508                  | 313           | 527 | 307 | 219 | 219 | 200 |    | 127        | 127     | 226                  | 237                  | 254                  | 429                  | 146 | 320 | 394 | 470                  | 470                  |  |
| 8          | 200 |               | 243                    |                      |                      |                      | 313           | 527 | 307 | 219 | 219 | 200 |    | 148        | 138     |                      |                      |                      | 467                  | 203 | 358 | 394 | 470                  | 533                  |  |
| 10         | 250 |               | 297                    |                      |                      |                      | 313           | 527 | 307 | 219 | 219 | 200 |    | 167        | 167     |                      |                      |                      | 569                  | 250 | 460 | 460 | 530                  | 595                  |  |
| 12         | 300 |               | 338                    |                      |                      |                      | 313           | 527 | 307 | 219 | 219 | 200 |    | 184        | 184     |                      |                      |                      | 604                  | 275 | 495 | 505 | 575                  | 648                  |  |

## Specific Dimensions (millimeters) for the No. 9 Actuator

| Valve size |     | B   | C   | D   | E   | F   | G   | L   |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|
| in.        | DN  |     |     |     |     |     |     |     |
| 6          | 150 | 373 | 674 | 306 | 400 | 304 | 213 | 280 |
| 8          | 200 | 376 | 674 | 306 | 400 | 304 | 216 | 318 |
| 10         | 250 | 379 | 674 | 306 | 400 | 304 | 219 | 422 |
| 12         | 300 | 382 | 674 | 306 | 400 | 304 | 222 | 457 |





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