

# Masoneilan™ 10000 Series Double Ported Globe Valve



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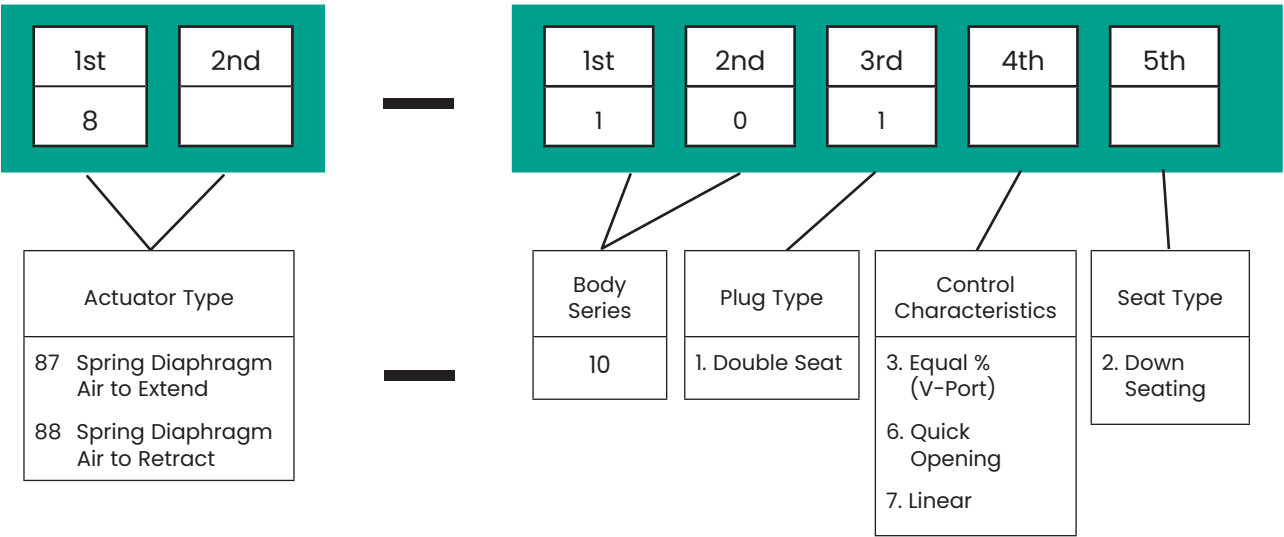
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## General Data

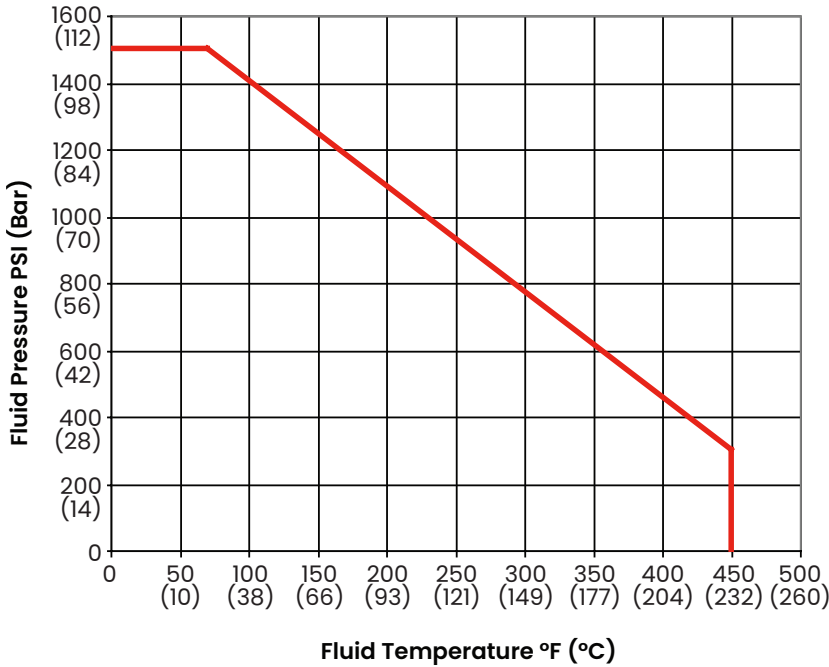
- Flow Direction**
  - All trim: Flow through both ports
- Body**
  - Type: Double seat globe
- Body Bonnet and Lower Flange**
  - Type: Bolted
- Bonnet and Lower Flange**
  - Materials: Carbon steel, Stainless steel, Chrome-molybdenum steel
- Trim**
  - Plug type: Double seat, V-port or contoured
  - Seat ring: Threaded
  - Guide: Heavy top and bottom guiding
  - Capacity: Full area, Reduced capacity (0.4 factor)
  - $C_v$  ratio: 50:1
  - Flow characteristics: Equal percentage, Quick opening, Linear
- Actuator**
  - Type: Spring diaphragm
  - Handwheel: Optional

# Temperature Range/Seat Leakage

| Valve Size¹ |           | Body Rating                             | Body and Bonnet Material | Temperature Range |                     |                    |                    | Seat Leakage<br>IEC 60534-4<br>and ASME/FCI<br>70.2 Class |
|-------------|-----------|-----------------------------------------|--------------------------|-------------------|---------------------|--------------------|--------------------|-----------------------------------------------------------|
|             |           |                                         |                          | Standard bonnet   |                     | Extension Bonnet   |                    |                                                           |
| inch        | mm        |                                         |                          | min.              | max.                | min.               | max.               |                                                           |
| 0.75 to 16  | 20 to 400 | ASME Class 150 to 600<br>(PN 20 to 100) | Carbon Steel             | -20°F<br>(-29°C)  | +450°F¹<br>(+232°C) | -20°F<br>(-29°C)   | +800°F<br>(+427°C) | II                                                        |
|             |           |                                         | Stainless Steel          | -20°F<br>(-29°C)  | +450°F¹<br>(+232°C) | -148°F<br>(-100°C) | +800°F<br>(+427°C) |                                                           |
|             |           |                                         | Chrome-Moly              | 32°F<br>(0°C)     | +450°F¹<br>(+232°C) | 32°F<br>(0°C)      | +800°F<br>(+427°C) |                                                           |
|             |           |                                         | NACE                     | -20°F<br>(-29°C)  | +450°F<br>(+232°C)  |                    |                    |                                                           |

1. Maximum temperature shown is with PTFE packing and Low-E Packing. Extended max. operating temperature of 800°F (427°C) allowable with Graphite packing.  
2. Low-E Packing for low emissions applications is limited to maximum pressure and temperature as shown in chart below.

Pressure and Temperature Rating of Low-E Packing



# Ratings/Connections

☒ RF Flanged

△ RT Joint

■ Butt Weld

☒ Socket Weld

● Threaded

| Valve Size |     | ASME Class |         |         |
|------------|-----|------------|---------|---------|
| Inch       | mm  | 150        | 300     | 600     |
| .75        | 20  | ☒ △ ☒      | ☒ △ ☒   | ☒ △ ☒   |
| 1          | 25  | ☒ △ ☒ ●    | ☒ △ ☒ ● | ☒ △ ☒ ● |
| 1.5        | 40  | ☒ △ ☒ ●    | ☒ △ ☒ ● | ☒ △ ☒ ● |
| 2          | 50  | ☒ △ ☒ ●    | ☒ △ ☒ ● | ☒ △ ☒ ● |
| 3          | 80  | ☒ △ ●      | ☒ △ ●   | ☒ △ ●   |
| 4          | 100 | ☒ △        | ☒ △     | ☒ △     |
| 6          | 150 | ☒ △        | ☒ △     | ☒ △     |
| 8          | 200 | ☒ △        | ☒ △     | ☒ △     |
| 10         | 250 | ☒ △        | ☒ △     | ☒ △     |
| 12         | 300 | ☒ △        | ☒ △     | ☒ △     |
| 14         | 350 | ☒ △        | ☒ △     | ☒ △     |
| 16         | 400 | ☒ △        | ☒ △     | ☒ △     |

Note: Consult factory for availability of additional sizes and end connections.

## Flow Coefficient – Rated $C_v$

| Nominal Size    |     | Travel |       | Full Capacity $C_v^1$ | Quick Opening $C_v$ | Reduced Capacity $C_v$ |
|-----------------|-----|--------|-------|-----------------------|---------------------|------------------------|
| Inch            | mm  | Inch   | mm    |                       |                     |                        |
| .75             | 20  | 0.5    | 12.7  | 8                     | 10                  | –                      |
| 1               | 25  | 0.5    | 12.7  | 12                    | 15                  | 8 <sup>2</sup>         |
| 1.5             | 40  | 0.8    | 20.3  | 28                    | 33                  | 11                     |
| 2               | 50  | 0.8    | 20.3  | 48                    | 60                  | 19                     |
| 3               | 80  | 1.5    | 38.1  | 110                   | 140                 | 44                     |
| 4               | 100 | 1.5    | 38.1  | 195                   | 250                 | 78                     |
| 6               | 150 | 2      | 50.8  | 450                   | 540                 | 180                    |
| 8               | 200 | 2.5    | 63.5  | 750                   | 980                 | 300                    |
| 10              | 250 | 2.5    | 63.5  | 1160                  | 1550                | 460                    |
| 12              | 300 | 3.5    | 88.9  | 1620                  | 2250                | 650                    |
| 14 <sup>3</sup> | 350 | 4      | 101.6 | 2000 <sup>4</sup>     | –                   | –                      |
| 16              | 400 | 4      | 101.6 | 2560 <sup>4</sup>     | –                   | –                      |

1. Rated  $C_v$  for Quick Opening trim is 1.3 times values shown.

2. 1" size reduced capacity trim is same as .75" size full area trim.

3. Consult factory for details on 14" size.

4. 14" and 16" sizes are only available with Equal Percentage trim.

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

Contoured Trim  
ASME Class 150 to 600

Flow Characteristic: LINEAR

| Percent of Travel |                  |        | 10                   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  |
|-------------------|------------------|--------|----------------------|------|------|------|------|------|------|------|------|------|
| F <sub>L</sub>    | Full Area        |        | .63                  | .64  | .65  | .70  | .77  | .85  | .90  | .90  | .89  | .88  |
|                   | Reduced Area     |        | .63                  | .64  | .65  | .70  | .75  | .80  | .82  | .82  | .81  | .80  |
| Valve Size        | Orifice Diameter | Travel | Rated C <sub>v</sub> |      |      |      |      |      |      |      |      |      |
| inch              | inch             | inch   |                      |      |      |      |      |      |      |      |      |      |
| 0.75              | .88/.80          | 0.5    | .8                   | 1.6  | 2.4  | 3.2  | 4.0  | 4.8  | 5.6  | 6.4  | 7.2  | 8    |
| 1                 | .88/.80          | 0.5    | .8                   | 1.6  | 2.4  | 3.2  | 4.0  | 4.8  | 5.6  | 6.4  | 7.2  | 8    |
|                   | 1.06/.98         | 0.5    | 1.2                  | 2.4  | 3.6  | 4.8  | 6    | 7.2  | 8.4  | 9.6  | 10.8 | 12   |
| 1.5               | 1.06/.98         | 0.8    | 1.1                  | 2.2  | 3.3  | 4.4  | 5.5  | 6.6  | 7.7  | 8.8  | 9.9  | 11   |
|                   | 1.5/1.42         | 0.8    | 2.8                  | 5.6  | 8.4  | 11.2 | 14   | 16.8 | 19.6 | 22.4 | 25.2 | 28   |
| 2                 | 1.43/1.35        | 0.8    | 1.9                  | 3.8  | 5.7  | 7.6  | 9.5  | 11.4 | 13.3 | 15.2 | 17.1 | 19   |
|                   | 2.00/1.90        | 0.8    | 4.8                  | 9.6  | 14.4 | 19.2 | 24   | 28.8 | 33.6 | 38.4 | 43.2 | 48   |
| 3                 | 1.87/1.78        | 1.5    | 4.4                  | 8.8  | 13.2 | 17.6 | 22   | 26.4 | 30.8 | 35.2 | 39.6 | 44   |
|                   | 2.62/2.53        | 1.5    | 11                   | 22   | 33   | 44   | 55   | 66   | 77   | 88   | 99   | 110  |
| 4                 | 2.37/2.28        | 1.5    | 7.8                  | 15.6 | 23.4 | 31.2 | 39   | 46.8 | 54.6 | 62.4 | 70.2 | 78   |
|                   | 3.50/3.40        | 1.5    | 19.5                 | 39   | 58.5 | 78   | 97.5 | 117  | 136  | 156  | 175  | 195  |
| 6                 | 3.50/3.40        | 2      | 18                   | 36   | 54   | 72   | 90   | 108  | 126  | 144  | 162  | 180  |
|                   | 5.25/5.15        | 2      | 45                   | 90   | 135  | 180  | 225  | 270  | 315  | 360  | 405  | 450  |
| 8                 | 4.62/4.53        | 2.5    | 30                   | 60   | 90   | 120  | 150  | 180  | 210  | 240  | 270  | 300  |
|                   | 7.00/6.87        | 2.5    | 75                   | 150  | 225  | 300  | 375  | 450  | 525  | 600  | 675  | 750  |
| 10                | 5.25/5.15        | 2.5    | 46                   | 92   | 138  | 184  | 230  | 276  | 322  | 368  | 414  | 460  |
|                   | 8.75/8.62        | 2.5    | 116                  | 232  | 348  | 464  | 580  | 696  | 812  | 928  | 1044 | 1160 |
| 12                | 6.37/6.25        | 3.5    | 65                   | 130  | 195  | 260  | 325  | 390  | 455  | 520  | 585  | 650  |
|                   | 10.50/10.34      | 3.5    | 162                  | 324  | 486  | 648  | 810  | 972  | 1134 | 1295 | 1458 | 1620 |

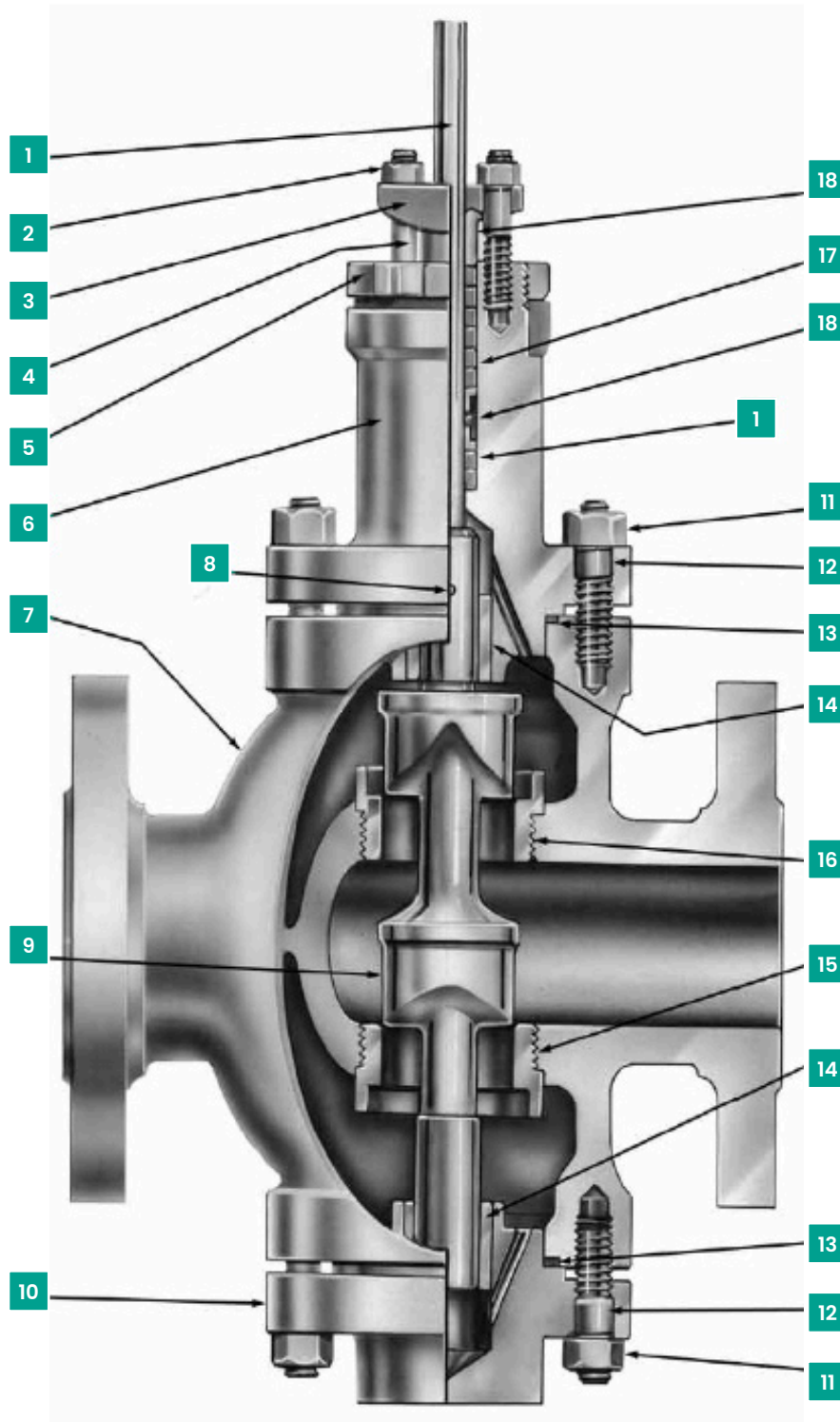
# C<sub>v</sub> and F<sub>L</sub> Versus Travel

V-Port Trim  
ASME Class 150 to 600

Flow Characteristic: EQUAL PERCENTAGE

| Percent of Travel |                  |        | 10                   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  |
|-------------------|------------------|--------|----------------------|------|------|------|------|------|------|------|------|------|
| F <sub>L</sub>    | Full Area        |        | .96                  | .96  | .96  | .96  | .95  | .94  | .94  | .93  | .91  | .90  |
|                   | Reduced Area     |        | .96                  | .96  | .95  | .94  | .93  | .92  | .91  | .90  | .89  | .88  |
| Valve Size        | Orifice Diameter | Travel | Rated C <sub>v</sub> |      |      |      |      |      |      |      |      |      |
| inch              | inch             | inch   |                      |      |      |      |      |      |      |      |      |      |
| 0.75              | .88/.80          | 0.5    | .24                  | .48  | .64  | .88  | 1.2  | 1.8  | 2.3  | 3.6  | 5.2  | 8    |
| 1                 | .88/.80          | 0.5    | .24                  | .48  | .64  | .88  | 1.2  | 1.8  | 2.3  | 3.6  | 5.2  | 8    |
|                   | 1.06/.98         | 0.5    | .36                  | .72  | .96  | 1.3  | 1.8  | 2.6  | 3.5  | 5.4  | 7.8  | 12   |
| 1.5               | 1.06/.98         | 0.8    | .33                  | .66  | .88  | 1.2  | 1.6  | 2.4  | 3.2  | 4.9  | 7.1  | 11   |
|                   | 1.5/1.42         | 0.8    | .84                  | 1.7  | 2.2  | 3.1  | 4.2  | 6.2  | 8.1  | 12.6 | 18.2 | 28   |
| 2                 | 1.43/1.35        | 0.8    | 0.6                  | 1.1  | 1.5  | 2    | 2.8  | 4.2  | 5.5  | 8.5  | 12.3 | 19   |
|                   | 2.00/1.90        | 0.8    | 1.4                  | 2.8  | 3.8  | 5.3  | 7.2  | 10.5 | 13.9 | 21.6 | 31.2 | 48   |
| 3                 | 1.87/1.78        | 1.5    | 1.3                  | 2.6  | 3.5  | 4.8  | 6.6  | 9.7  | 12.8 | 19.8 | 28.6 | 44   |
|                   | 2.62/2.53        | 1.5    | 3.3                  | 6.6  | 8.8  | 12.1 | 16.5 | 24.2 | 31.9 | 49.5 | 71.5 | 110  |
| 4                 | 2.37/2.28        | 1.5    | 2.3                  | 4.7  | 6.2  | 8.6  | 11.7 | 17.2 | 22.6 | 35.1 | 50.7 | 78   |
|                   | 3.50/3.40        | 1.5    | 5.8                  | 11.7 | 15.6 | 21.4 | 29.2 | 42.9 | 56.5 | 87.7 | 126  | 195  |
| 6                 | 3.50/3.40        | 2      | 5                    | 11   | 14   | 20   | 27   | 40   | 52   | 81   | 117  | 180  |
|                   | 5.25/5.15        | 2      | 14                   | 27   | 36   | 50   | 68   | 99   | 130  | 202  | 292  | 450  |
| 8                 | 4.62/4.53        | 2.5    | 9                    | 18   | 24   | 33   | 45   | 66   | 87   | 135  | 195  | 300  |
|                   | 7.00/6.87        | 2.5    | 23                   | 45   | 60   | 83   | 112  | 165  | 217  | 337  | 487  | 750  |
| 10                | 5.25/5.15        | 2.5    | 14                   | 28   | 37   | 51   | 69   | 101  | 133  | 207  | 299  | 460  |
|                   | 8.75/8.62        | 2.5    | 35                   | 70   | 93   | 127  | 174  | 255  | 336  | 522  | 754  | 1160 |
| 12                | 6.37/6.25        | 3.5    | 20                   | 39   | 52   | 72   | 98   | 143  | 189  | 293  | 423  | 650  |
|                   | 10.50/10.34      | 3.5    | 49                   | 97   | 130  | 178  | 243  | 356  | 469  | 729  | 1053 | 1620 |
| 16                | 14.00/13.86      | 4      | 77                   | 153  | 207  | 281  | 384  | 563  | 742  | 1152 | 1664 | 2560 |

# Materials of Construction



# Materials of Construction

## Standard Carbon Steel Version

| Ref. No. | Temperature Rating      | -20°F                                                  |                                           | 650°F | 800°F                              |
|----------|-------------------------|--------------------------------------------------------|-------------------------------------------|-------|------------------------------------|
|          | Description             | Materials                                              |                                           |       |                                    |
| 1        | Plug Stem               | 316 St. St. ASTM 479 TY 316                            |                                           |       |                                    |
| 2        | Packing Flange Nut      | St. St. ASTM A194 GR 8                                 |                                           |       |                                    |
| 3        | Packing Flange          | Zinc Dichromate Carbon Steel ASTM A105                 |                                           |       |                                    |
| 4        | Packing Flange Stud     | 304 St. St. ASTM A193 GR B8                            |                                           |       |                                    |
| 5        | Drive Nut               | Carbon Steel SAE 1117 or ASTM A216 GR WCC              |                                           |       |                                    |
| 6        | Valve Bonnet            | Carbon Steel ASTM A216 Grade WCC or ASTM A105          |                                           |       |                                    |
| 7        | Valve Body              | Carbon Steel ASTM A216 Grade WCC                       |                                           |       |                                    |
| 8        | Plug Pin                | 316 St. St. ASTM 479 TY 316                            |                                           |       |                                    |
| 9        | Plug                    | 316 St. St. ASTM 479 TY 316                            | 316 St. St. with Hardfaced Seat and Guide |       |                                    |
|          |                         | 316 St.St.with Hardfaced Seat                          |                                           |       |                                    |
| 10       | Lower Flange            | Carbon Steel ASTM A216 Grade WCC or ASTM A105          |                                           |       |                                    |
| 11       | Body Stud Nut           | Carbon Steel ASTM A194 GR 2H                           |                                           |       |                                    |
| 12       | Body Stud               | Alloy Steel ASTM A193 GR B7                            |                                           |       |                                    |
| 13       | Body Gasket             | 316L St. St. w/Flexible Graphite Filler (Spiral Wound) |                                           |       |                                    |
| 14       | Guide Bushing           | 440C St. St. ASTM A276 TY 440C                         |                                           |       | Stellite or Equivalent 6 UNS 30006 |
| 15       | Lower Seat Ring         | 316 St. St. ASTM 479 TY 316                            |                                           |       | 316 St. St. with Hardfaced Seat    |
|          |                         | 316 St.St. with Hardfaced Seat                         |                                           |       |                                    |
| 16       | Upper Seat Ring         | 316 St. St. ASTM 479 TY 316                            |                                           |       | 316 St. St. with Hardfaced Seat    |
|          |                         | 316 St.St. with Hardfaced Seat                         |                                           |       |                                    |
| 18       | Lantern Ring (Optional) | Austenitic 300 Series Stainless Steel                  |                                           |       |                                    |
| 19       | Packing Follower        | Austenitic 300 Series Stainless Steel                  |                                           |       |                                    |
| Ref. No. | Temperature Range       | -29°C                                                  | 343°C                                     |       | 427°C                              |

# Materials of Construction

## Standard Stainless Version

| Ref. No. | Temperature Rating            | -148°F                                                           | -20°F                                                            | 650°F | 800°F                                     |
|----------|-------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|-------|-------------------------------------------|
|          | Description                   | Materials                                                        |                                                                  |       |                                           |
| 1        | Plug Stem                     | 316 St. St. ASTM 479 TY 316                                      |                                                                  |       |                                           |
| 2        | Packing Flange Nut            | St. St. ASTM A194 GR 8                                           |                                                                  |       |                                           |
| 3        | Packing Flange                | Zinc Dichromate Carbon Steel ASTM A105                           |                                                                  |       |                                           |
| 4        | Packing Flange Stud           | 304 St. St. ASTM A193 GR B8                                      |                                                                  |       |                                           |
| 5        | Drive Nut                     | Carbon Steel SAE 1117 or ASTM A216 GR WCC                        |                                                                  |       |                                           |
| 6        | Valve Bonnet Plain Version    |                                                                  | 316 Stainless Steel ASTM A351 Grade CF8M or ASTM A182 Grade F316 |       |                                           |
| 6        | Valve Bonnet Extended Version | 316 Stainless Steel ASTM A351 Grade CF8M or ASTM A182 Grade F316 |                                                                  |       |                                           |
| 7        | Valve Body                    | 316 Stainless Steel ASTM A351 Grade CF8M                         |                                                                  |       |                                           |
| 8        | Plug Pin                      | 316 St. St. ASTM 479 TY 316                                      |                                                                  |       |                                           |
| 9        | Plug                          | 316 St. St. ASTM 479 TY 316                                      |                                                                  |       | 316 St. St. with Hardfaced Seat and Guide |
|          |                               | 316 St.St. with Hardfaced Seat                                   |                                                                  |       |                                           |
| 10       | Lower Flange                  | 316 Stainless Steel ASTM A351 Grade CF8M or ASTM A182 Grade F316 |                                                                  |       |                                           |
| 11       | Body Stud Nut                 |                                                                  | Carbon Steel ASTM A194 GR 2H<br>Zinc Dichromate Plating          |       | C. S. ASTM A194 GR 2H<br>(No Zinc)        |
|          |                               | ASTM A194 Gr. 8 <sup>1</sup>                                     |                                                                  |       |                                           |
| 12       | Body Stud                     |                                                                  | Alloy Steel ASTM A193 GR B7<br>Zinc Dichromate Plating           |       | Alloy Steel ASTM A193 GR B7 <sup>3</sup>  |
|          |                               | ASTM A193 Gr. B8 <sup>1 &amp; 3</sup>                            |                                                                  |       |                                           |
| 13       | Body Gasket                   | 316L St. St. w/Flexible Graphite Filler (Spiral Wound)           |                                                                  |       |                                           |
| 14       | Guide Bushing                 | Stellite or Equivalent 6 <sup>2</sup>                            |                                                                  |       |                                           |
| 15       | Lower Seat Ring               | 316 St. St. ASTM 479 TY 316                                      |                                                                  |       | 316 St. St. with Hardfaced Seat           |
|          |                               | 316 St.St. with Hardfaced Seat                                   |                                                                  |       |                                           |
| 16       | Upper Seat Ring               | 316 St. St. ASTM 479 TY 316                                      |                                                                  |       | 316 St. St. with Hardfaced Seat           |
|          |                               | 316 St.St. with Hardfaced Seat                                   |                                                                  |       |                                           |
| 18       | Lantern Ring (Optional)       | Austenitic 300 Series Stainless Steel                            |                                                                  |       |                                           |
| 19       | Packing Follower              | Austenitic 300 Series Stainless Steel                            |                                                                  |       |                                           |
| Ref. No. | Temperature Range             | -100°C                                                           | -29°C                                                            | 343°C | 427°C                                     |

1. Use of non-plated bolting must be reviewed by the factory for proper application.

2. For operating temperatures above 650°F (343°C), the Solid Stellite or Equivalent bushings are tack welded to the bonnet and lower flange to account for thermal expansion.

3. ASTM A453 Gr. 660 may be required to meet low temperature or corrosion resistance requirements.

# Materials of Construction

## Standard Chrome-Moly Version

| Ref. No. | Temperature Rating      | 32°F                                                   | 650°F                                     | 800°F |
|----------|-------------------------|--------------------------------------------------------|-------------------------------------------|-------|
|          | Description             | Materials                                              |                                           |       |
| 1        | Plug Stem               | 316 St. St. ASTM 479 TY 316                            |                                           |       |
| 2        | Packing Flange Nut      | St. St. ASTM A194 GR 8                                 |                                           |       |
| 3        | Packing Flange          | Zinc Dichromate Carbon Steel ASTM A105                 |                                           |       |
| 4        | Packing Flange Stud     | 304 St. St. ASTM A193 GR B8                            |                                           |       |
| 5        | Drive Nut               | Carbon Steel SAE 1117 or ASTM A216 GR WCC              |                                           |       |
| 6        | Valve Bonnet            | Chrome-Molybdenum Steel ASTM A217 Grade WC9            |                                           |       |
| 7        | Valve Body              | Chrome-Molybdenum Steel ASTM A217 Grade WC9            |                                           |       |
| 8        | Plug Pin                | 316 St. St. ASTM 479 TY 316                            |                                           |       |
| 9        | Plug                    | 316 St. St. ASTM 479 TY 316                            | 316 St. St. with Hardfaced Seat and Guide |       |
|          |                         | 316 St.St.with Hardfaced Seat                          |                                           |       |
| 10       | Lower Flange            | Chrome-Molybdenum Steel ASTM A217 Grade WC9            |                                           |       |
| 11       | Body Stud Nut           | Carbon Steel ASTM A194 GR 2H                           |                                           |       |
| 12       | Body Stud               | Alloy Steel ASTM A193 GR B7                            |                                           |       |
| 13       | Body Gasket             | 316L St. St. w/Flexible Graphite Filler (Spiral Wound) |                                           |       |
| 14       | Guide Bushing           | 440C St. St. ASTM A276 TY 440C                         | Stellite or Equivalent 6 UNS 30006        |       |
| 15       | Lower Seat Ring         | 316 St. St. ASTM 479 TY 316                            | 316 St. St. with Hardfaced Seat           |       |
|          |                         | 316 St.St. with Hardfaced Seat                         |                                           |       |
| 16       | Upper Seat Ring         | 316 St. St. ASTM 479 TY 316                            | 316 St. St. with Hardfaced Seat           |       |
|          |                         | 316 St.St. with Hardfaced Seat                         |                                           |       |
| 18       | Lantern Ring (Optional) | Austenitic 300 Series Stainless Steel                  |                                           |       |
| 19       | Packing Follower        | Austenitic 300 Series Stainless Steel                  |                                           |       |
| Ref. No. | Temperature Range       | 0°C                                                    | 343°C                                     | 427°C |

## Packing Options - Carbon Steel, Stainless Steel and Chrome-Moly Constructions

| Ref. No. | Temperature Rating |                  | -20°F                                           | 450°F | 800°F |
|----------|--------------------|------------------|-------------------------------------------------|-------|-------|
|          | Description        |                  | Materials                                       |       |       |
| 17       | Packing            | Standard Bonnet  | PTFE Packing                                    |       |       |
|          |                    |                  | Low-E Packing                                   |       |       |
|          |                    |                  | Expanded Graphite Filler + Graphite wiper rings |       |       |
|          | Packing            | Extension Bonnet | PTFE Packing                                    |       |       |
|          |                    |                  | Low-E Packing                                   |       |       |
| Ref. No. | Temperature Range  |                  | -29°C                                           | 232°C | 427°C |

# Materials of Construction

## NACE Materials Construction

| Ref. No. | Temperature Range   | -20°F                                                          | 450°F |
|----------|---------------------|----------------------------------------------------------------|-------|
|          | Description         | Standard and Optional Materials¹                               |       |
| 1        | Plug Stem           | 316 St. St. ASTM A479 TY 316 (HRC 22 Max.)                     |       |
|          |                     | ASTM A638 Gr 660²                                              |       |
| 2        | Packing Flange Nut  | 304 St. St. ASTM A194 Gr 8³ (non exposed)                      |       |
|          |                     | Alloy Steel ASTM A194 Gr 8A⁴ (exposed)                         |       |
| 3        | Packing Flange      | Zinc Dichromate Carbon Steel ASTM A105                         |       |
| 4        | Packing Flange Stud | 304 St. St. ASTM A193 GR B8 (exposed and non exposed)          |       |
| 5        | Drive Nut           | Carbon Steel ASTM A105 or SAE 1010-1025⁴                       |       |
| 6        | Valve Bonnet        | Carbon Steel ASTM A216 Grade WCC (HRC 22 Max.)                 |       |
|          |                     | Carbon Steel ASTM A105 (HRC 22 Max.)                           |       |
|          |                     | 316 St. St. ASTM A351 Gr CF8M (HRC 22 Max.)                    |       |
| 7        | Valve Body          | Carbon Steel ASTM A216 Grade WCC (HRC 22 Max.)                 |       |
|          |                     | 316 St. St. ASTM A351 Gr CF8M (HRC 22 Max.)                    |       |
| 8        | Plug Pin            | 316 St. St. ASTM A479 TY 316 (HRC 22 Max.)                     |       |
| 9        | Plug                | 316 St. St. ASTM A479 TY 316 (HRC 22 Max.)                     |       |
|          |                     | 316 St. St. ASTM A479 TY 316 with Hardfaced Seat (HRC 22 Max.) |       |
| 10       | Lower Flange        | Carbon Steel ASTM A216 Grade WCC (HRC 22 Max.)                 |       |
|          |                     | Carbon Steel ASTM A105 (HRC 22 Max.)                           |       |
|          |                     | 316 St. St. ASTM A351 Gr CF8M (HRC 22 Max.)                    |       |
| 11       | Body Stud Nut       | ASTM A194 GR 2H³ (non exposed)                                 |       |
|          |                     | ASTM A194 Gr 2HM⁴ (exposed)                                    |       |
|          |                     | ASTM A194 GR 2H Zinc Plating³&⁵ (non exposed)                  |       |
|          |                     | ASTM A194 Gr 2HM Zinc Plating⁴&⁵ (exposed)                     |       |
| 12       | Body Stud           | ASTM A193 GR B7³ (non exposed)                                 |       |
|          |                     | ASTM A193 Gr B7M⁴ (exposed)                                    |       |
|          |                     | ASTM A193 GR B7 Zinc Plated³&⁵ (non exposed)                   |       |
|          |                     | ASTM A193 Gr B7M Zinc Plated⁴&⁵ (exposed)                      |       |
| 13       | Body Gasket         | 316L St. St. w/Flexible Graphite Filler (Spiral Wound)         |       |
| 14       | Guide Bushing       | Stellite or Equivalent 6 UNS 30006                             |       |
| Ref. No. | Temperature Range   | -29°C                                                          | 232°C |

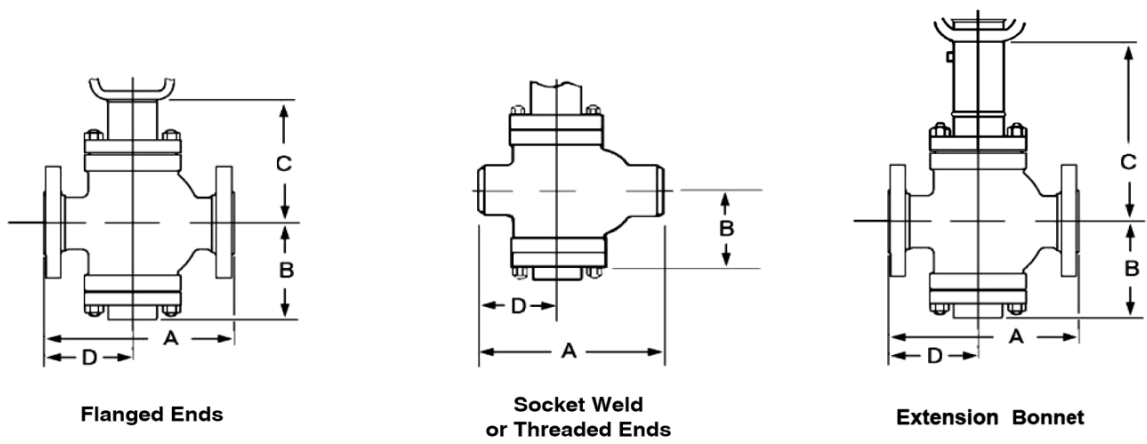
# Materials of Construction

## NACE Materials Construction

| Ref. No. | Temperature Range       | -20°F                                                          | 450°F |
|----------|-------------------------|----------------------------------------------------------------|-------|
|          | Description             | Standard and Optional Materials <sup>1</sup>                   |       |
| 15       | Lower Seat Ring         | 316 St. St. ASTM A479 TY 316 (HRC 22 Max.)                     |       |
|          |                         | 316 St. St. ASTM A479 TY 316 with Hardfaced Seat (HRC 22 Max.) |       |
| 16       | Upper Seat Ring         | 316 St. St. ASTM A479 TY 316 (HRC 22 Max.)                     |       |
|          |                         | 316 St. St. ASTM A479 TY 316 with Hardfaced Seat (HRC 22 Max.) |       |
| 17       | Packing                 | PTFE Packing                                                   |       |
| 18       | Lantern Ring (Optional) | 304 St. St. ASTM A479 TY 304                                   |       |
| 19       | Packing Follower        | 304 St. St. ASTM A479 TY 304                                   |       |
| Ref. No. | Temperature Range       | -29°C                                                          | 232°C |

1. Materials and processes in accordance with the requirements of NACE specification MR0103, 2003. Applications requiring compliance to MR0175, 2003 Rev. or ISO 15156 would require engineering review.
2. ASTM A638 Gr 660 will be substituted in applications when required due to the differential pressure.
3. Materials designated for these parts conform to NACE Class III (unexposed) bolting requirements.
4. Materials designated for these parts conform to NACE Class I or Class II (exposed) bolting requirement.
5. Zinc plating is mandatory for St. Steel construction only.

# Valve Dimensions

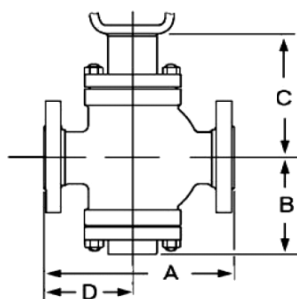


## 10000 Series Dimensions (inches)

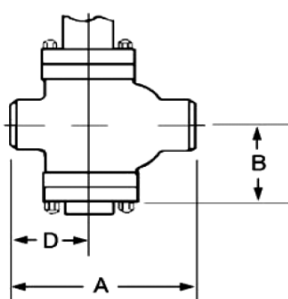
| Valve Size |     | ASME Class 150 and equivalent PN |       |       |       | ASME Class 300 and equivalent PN |       |       |       | ASME Class 600 and equivalent PN |       |       |       | ASME Class 150-600 and equivalent PN |      |
|------------|-----|----------------------------------|-------|-------|-------|----------------------------------|-------|-------|-------|----------------------------------|-------|-------|-------|--------------------------------------|------|
| inches     | mm  | RF                               |       | RTJ   |       | RF                               |       | RTJ   |       | RF                               |       | RTJ   |       | Threaded and Socket Weld             |      |
|            |     | A                                | D     | A     | D     | A                                | D     | A     | D     | A                                | D     | A     | D     | A                                    | D    |
| 0.75       | 20  | 7.24                             | 3.66  | -     | -     | 7.64                             | 3.86  | 8.11  | 4.09  | 8.11                             | 4.09  | 8.11  | 4.09  | 6.02                                 | 2.87 |
| 1          | 25  | 7.24                             | 3.66  | 7.76  | 3.90  | 7.76                             | 3.90  | 8.27  | 4.13  | 8.27                             | 4.13  | 8.27  | 4.13  | 6.02                                 | 2.87 |
| 1.5        | 40  | 8.74                             | 4.09  | 9.25  | 4.33  | 9.25                             | 4.33  | 9.76  | 4.57  | 9.88                             | 4.65  | 9.88  | 4.65  | 7.99                                 | 3.70 |
| 2          | 50  | 10.00                            | 4.61  | 10.51 | 4.88  | 10.51                            | 4.88  | 11.10 | 5.20  | 11.26                            | 5.24  | 11.38 | 5.31  | 9.25                                 | 4.13 |
| 3          | 80  | 11.73                            | 5.51  | 12.24 | 5.75  | 12.52                            | 5.87  | 13.11 | 6.18  | 13.27                            | 6.26  | 13.39 | 6.30  | -                                    | -    |
| 4          | 100 | 13.90                            | 6.57  | 14.37 | 6.81  | 14.49                            | 6.89  | 15.12 | 7.20  | 15.51                            | 7.36  | 15.63 | 7.44  | -                                    | -    |
| 6          | 150 | 17.76                            | 7.64  | 18.11 | 7.87  | 18.62                            | 8.08  | 19.25 | 8.39  | 20.00                            | 8.74  | 20.12 | 8.82  | -                                    | -    |
| 8          | 200 | 21.38                            | 8.54  | 21.89 | 8.82  | 22.40                            | 9.06  | 22.99 | 9.37  | 24.02                            | 9.88  | 24.13 | 9.92  | -                                    | -    |
| 10         | 250 | 24.61                            | 9.96  | 25.12 | 10.24 | 26.02                            | 10.67 | 26.65 | 10.98 | 27.75                            | 11.54 | 27.87 | 11.61 | -                                    | -    |
| 12         | 300 | 28.74                            | 11.30 | 29.25 | 11.57 | 30.24                            | 12.09 | 30.87 | 12.36 | 32.01                            | 12.91 | 32.13 | 12.99 | -                                    | -    |
| 16         | 400 | 35.39                            | 15.71 | 35.87 | 15.94 | 37.01                            | 16.50 | 37.64 | 16.81 | 39.02                            | 17.24 | 39.13 | 17.32 | -                                    | -    |

| Valve Size |     | ASME Class 150 – 600 and equivalent PN |                 |               |
|------------|-----|----------------------------------------|-----------------|---------------|
| inches     | mm  | 8                                      | C (Std. Bonnet) | C (EB Bonnet) |
| 0.75       | 20  | 4.49                                   | 5.67            | 9.72          |
| 1          | 25  | 4.49                                   | 5.67            | 9.72          |
| 1.5        | 40  | 5.39                                   | 6.02            | 10.67         |
| 2          | 50  | 5.98                                   | 7.20            | 11.42         |
| 3          | 80  | 7.80                                   | 9.29            | 13.11         |
| 4          | 100 | 8.11                                   | 9.49            | 13.74         |
| 6          | 150 | 11.18                                  | 12.60           | 18.03         |
| 8          | 200 | 13.39                                  | 14.69           | 20.00         |
| 10         | 250 | 14.80                                  | 16.42           | 22.60         |
| 12         | 300 | 17.80                                  | 19.80           | 25.98         |
| 16         | 400 | 22.28                                  | 26.10           | 34.61         |

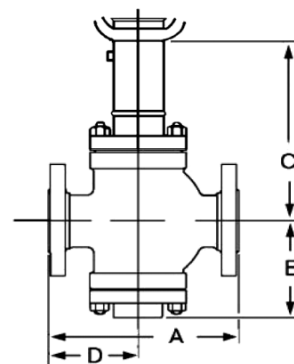
# Valve Dimensions



**Flanged Ends**



**Socket Weld  
or Threaded Ends**



**Extension Bonnet**

## 10000 Series Dimensions (mm)

| Valve Size |        | ASME Class 150<br>and equivalent PN |     |     |     | ASME Class 300<br>and equivalent PN |     |     |     | ASME Class 600<br>and equivalent PN |     |     |     | ASME Class<br>150-600 and<br>equivalent PN |     |
|------------|--------|-------------------------------------|-----|-----|-----|-------------------------------------|-----|-----|-----|-------------------------------------|-----|-----|-----|--------------------------------------------|-----|
| mm         | inches | RF                                  |     | RTJ |     | RF                                  |     | RTJ |     | RF                                  |     | RTJ |     | Threaded and<br>Socket Weld                |     |
|            |        | A                                   | D   | A   | D   | A                                   | D   | A   | D   | A                                   | D   | A   | D   | A                                          | D   |
| 20         | 0.75   | 184                                 | 93  | -   | -   | 194                                 | 98  | 206 | 104 | 206                                 | 104 | 206 | 104 | 153                                        | 73  |
| 25         | 1      | 184                                 | 93  | 197 | 99  | 197                                 | 99  | 210 | 105 | 210                                 | 105 | 210 | 105 | 153                                        | 73  |
| 40         | 1.5    | 222                                 | 104 | 235 | 110 | 235                                 | 110 | 248 | 116 | 251                                 | 118 | 251 | 118 | 203                                        | 94  |
| 50         | 2      | 254                                 | 117 | 267 | 124 | 267                                 | 124 | 282 | 132 | 286                                 | 133 | 289 | 135 | 235                                        | 105 |
| 80         | 3      | 298                                 | 140 | 311 | 146 | 318                                 | 149 | 333 | 157 | 337                                 | 159 | 340 | 160 | -                                          | -   |
| 100        | 4      | 353                                 | 167 | 365 | 173 | 368                                 | 175 | 384 | 183 | 394                                 | 187 | 397 | 189 | -                                          | -   |
| 150        | 6      | 451                                 | 194 | 460 | 200 | 473                                 | 205 | 489 | 213 | 508                                 | 222 | 511 | 224 | -                                          | -   |
| 200        | 8      | 543                                 | 217 | 556 | 224 | 589                                 | 230 | 584 | 238 | 610                                 | 251 | 613 | 252 | -                                          | -   |
| 250        | 10     | 625                                 | 253 | 638 | 260 | 661                                 | 271 | 677 | 279 | 705                                 | 298 | 708 | 295 | -                                          | -   |
| 300        | 12     | 730                                 | 287 | 743 | 294 | 768                                 | 307 | 784 | 314 | 813                                 | 328 | 816 | 330 | -                                          | -   |
| 400        | 16     | 899                                 | 399 | 911 | 405 | 940                                 | 419 | 956 | 427 | 991                                 | 438 | 994 | 440 | -                                          | -   |

| Valve Size |        | ASME Class 150 – 600 and equivalent PN |                 |               |
|------------|--------|----------------------------------------|-----------------|---------------|
| mm         | inches | 8                                      | C (Std. Bonnet) | C (EB Bonnet) |
| 20         | 0.75   | 114                                    | 144             | 247           |
| 25         | 1      | 114                                    | 144             | 247           |
| 40         | 1.5    | 137                                    | 153             | 271           |
| 50         | 2      | 152                                    | 183             | 290           |
| 80         | 3      | 198                                    | 236             | 333           |
| 100        | 4      | 206                                    | 241             | 349           |
| 150        | 6      | 284                                    | 320             | 458           |
| 200        | 8      | 340                                    | 373             | 508           |
| 250        | 10     | 376                                    | 417             | 574           |
| 300        | 12     | 452                                    | 503             | 660           |
| 400        | 16     | 566                                    | 663             | 879           |

# Valve Weights

## Weights in (lbs)

| Valve Size |     | ASME Class 150-600 and equivalent PN | ASME Class 150 and equivalent PN | ASME Class 300 and equivalent PN | ASME Class 600 and equivalent PN |
|------------|-----|--------------------------------------|----------------------------------|----------------------------------|----------------------------------|
| inches     | mm  | Threaded and Socket Weld             | Flanged                          |                                  |                                  |
| 0.75       | 20  | 40                                   | 79                               | 79                               | 90                               |
| 1          | 25  | 44                                   | 86                               | 86                               | 99                               |
| 1.5        | 40  | 44                                   | 106                              | 110                              | 119                              |
| 2          | 50  | 51                                   | 150                              | 159                              | 174                              |
| 3          | 80  | 110                                  | 245                              | 256                              | 269                              |
| 4          | 100 | 192                                  | 304                              | 309                              | 335                              |
| 6          | 150 | 364                                  | 514                              | 529                              | 595                              |
| 8          | 200 | 668                                  | 798                              | 825                              | 959                              |
| 10         | 250 | 1168                                 | 1349                             | 1378                             | 1497                             |
| 12         | 300 | 1455                                 | 1698                             | 1737                             | 1898                             |
| 16         | 400 | 2579                                 | 3016                             | 3086                             | 4198                             |

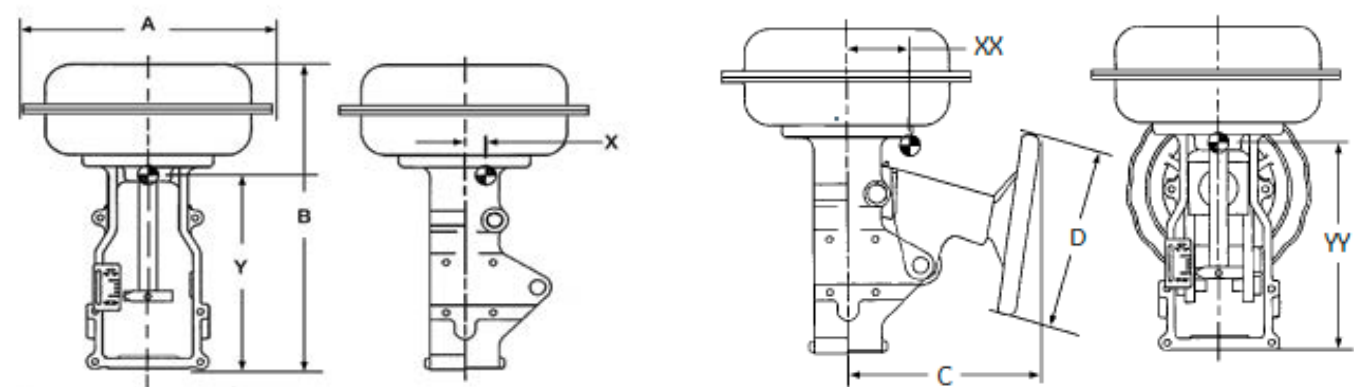
1. Consult factory for weight data on 14" size.

## Weights in (kg)

| Valve Size |        | ASME Class 150-600 and equivalent PN | ASME Class 150 and equivalent PN | ASME Class 300 and equivalent PN | ASME Class 600 and equivalent PN |
|------------|--------|--------------------------------------|----------------------------------|----------------------------------|----------------------------------|
| mm         | inches | Threaded and Socket Weld             | Flanged                          |                                  |                                  |
| 20         | 0.75   | 18                                   | 36                               | 36                               | 41                               |
| 25         | 1      | 20                                   | 39                               | 39                               | 45                               |
| 40         | 1.5    | 20                                   | 48                               | 50                               | 54                               |
| 50         | 2      | 23                                   | 68                               | 72                               | 79                               |
| 80         | 3      | 50                                   | 111                              | 116                              | 122                              |
| 100        | 4      | 87                                   | 138                              | 140                              | 152                              |
| 150        | 6      | 165                                  | 233                              | 240                              | 270                              |
| 200        | 8      | 303                                  | 362                              | 374                              | 435                              |
| 250        | 10     | 530                                  | 612                              | 625                              | 679                              |
| 300        | 12     | 660                                  | 770                              | 788                              | 861                              |
| 400        | 16     | 1170                                 | 1368                             | 1400                             | 1904                             |

1. Consult factory for weight data on 14" size.

# Actuator Dimensions and Weights (in./lbs)



Shown with optional Handwheel

## Dimensions and Weight

| Actuator Size | Actuator Dimensions (inches) |               |       |       | Weights (lbs.) |             |
|---------------|------------------------------|---------------|-------|-------|----------------|-------------|
|               | A                            | B (Model 88)  | C     | D     | Standard       | w/Handwheel |
| 6             | 11.50                        | 15.54 (17.52) | 10.00 | 9.00  | 45             | 60          |
| 10            | 14.50                        | 19.58 (21.54) | 10.90 | 12.00 | 85             | 105         |
| 16            | 18.75                        | 28.22 (30.79) | 14.00 | 18.00 | 210            | 245         |
| 23            | 21.63                        | 30.71 (33.27) | 16.00 | 18.00 | 265            | 320         |

Actuator Removal Clearance = 6 inches

## Center of Gravity (inches) Without Handwheel

| Size | X   | Y     |
|------|-----|-------|
| 6    | .19 | 9.75  |
| 10   | .0  | 12.88 |
| 16   | .13 | 18.50 |
| 23   | .06 | 21.13 |

## Center of Gravity (inches) With Handwheel

| Size | XX   | YY    |
|------|------|-------|
| 6    | 1.25 | 9.13  |
| 10   | 0.88 | 12.00 |
| 16   | 1.38 | 16.75 |
| 23   | 1.38 | 19.00 |

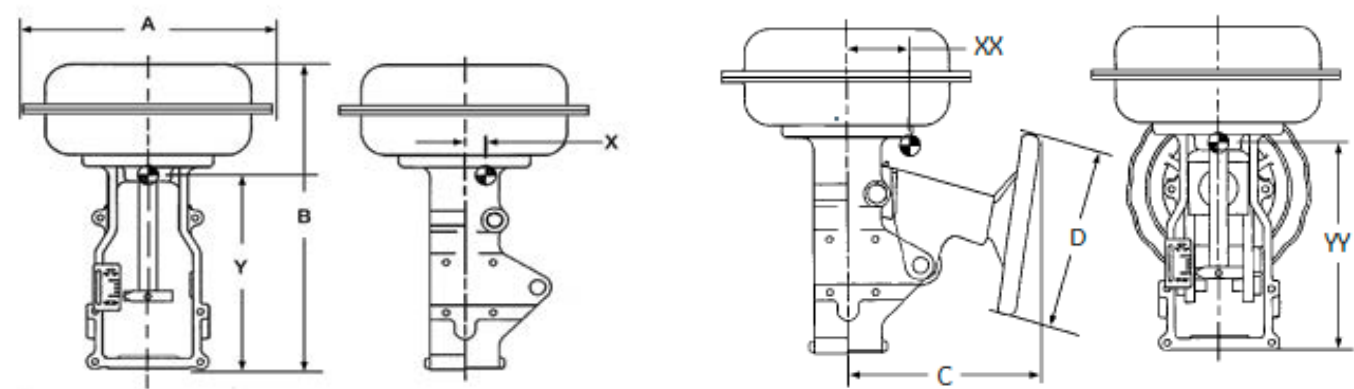
## Limit Stops (inches) Up Stop

| Size | Model | Overall Height B |
|------|-------|------------------|
| 6    | 87    | 19.45            |
| 10   |       | 25.43            |
| 16   |       | 36.42            |
| 23   |       | 38.84            |
| 6    | 88    | 19.16            |
| 10   |       | 25.06            |
| 16   |       | 35.48            |
| 23   |       | 38.65            |

## Down Stop

| Size | Model | Overall Height B |
|------|-------|------------------|
| 6    | 87    | 19.80            |
| 10   |       | 25.98            |
| 16   |       | 37.20            |
| 23   |       | 39.90            |
| 6    | 88    | 19.74            |
| 10   |       | 25.85            |
| 16   |       | 37.46            |
| 23   |       | 40.33            |

# Actuator Dimensions and Weights (mm/kg)



Shown with optional Handwheel

## Dimensions and Weight

| Actuator Size | Actuator Dimensions (mm) |              |     |     | Weights (kg) |             |
|---------------|--------------------------|--------------|-----|-----|--------------|-------------|
|               | A                        | B (Model 88) | C   | D   | Standard     | w/Handwheel |
| 6             | 302                      | 395 (445)    | 254 | 229 | 20           | 27          |
| 10            | 373                      | 497 (547)    | 277 | 305 | 39           | 48          |
| 16            | 476                      | 717 (782)    | 356 | 457 | 95           | 111         |
| 23            | 549                      | 780 (845)    | 406 | 457 | 120          | 145         |

Actuator Removal Clearance = 152mm

## Center of Gravity (mm) Without Handwheel

| Size | X | Y   |
|------|---|-----|
| 6    | 5 | 248 |
| 10   | 0 | 327 |
| 16   | 3 | 470 |
| 23   | 2 | 537 |

## Center of Gravity (mm) With Handwheel

| Size | XX | YY  |
|------|----|-----|
| 6    | 32 | 232 |
| 10   | 22 | 305 |
| 16   | 35 | 425 |
| 23   | 35 | 483 |

## Limit Stops (mm) Up Stop

| Size | Model | Overall Height B |
|------|-------|------------------|
| 6    | 87    | 494              |
| 10   |       | 646              |
| 16   |       | 925              |
| 23   |       | 987              |
| 6    | 88    | 487              |
| 10   |       | 636              |
| 16   |       | 901              |
| 23   |       | 982              |

## Down Stop

| Size | Model | Overall Height B |
|------|-------|------------------|
| 6    | 87    | 503              |
| 10   |       | 660              |
| 16   |       | 945              |
| 23   |       | 1014             |
| 6    | 88    | 501              |
| 10   |       | 657              |
| 16   |       | 952              |
| 23   |       | 1024             |

## Notes

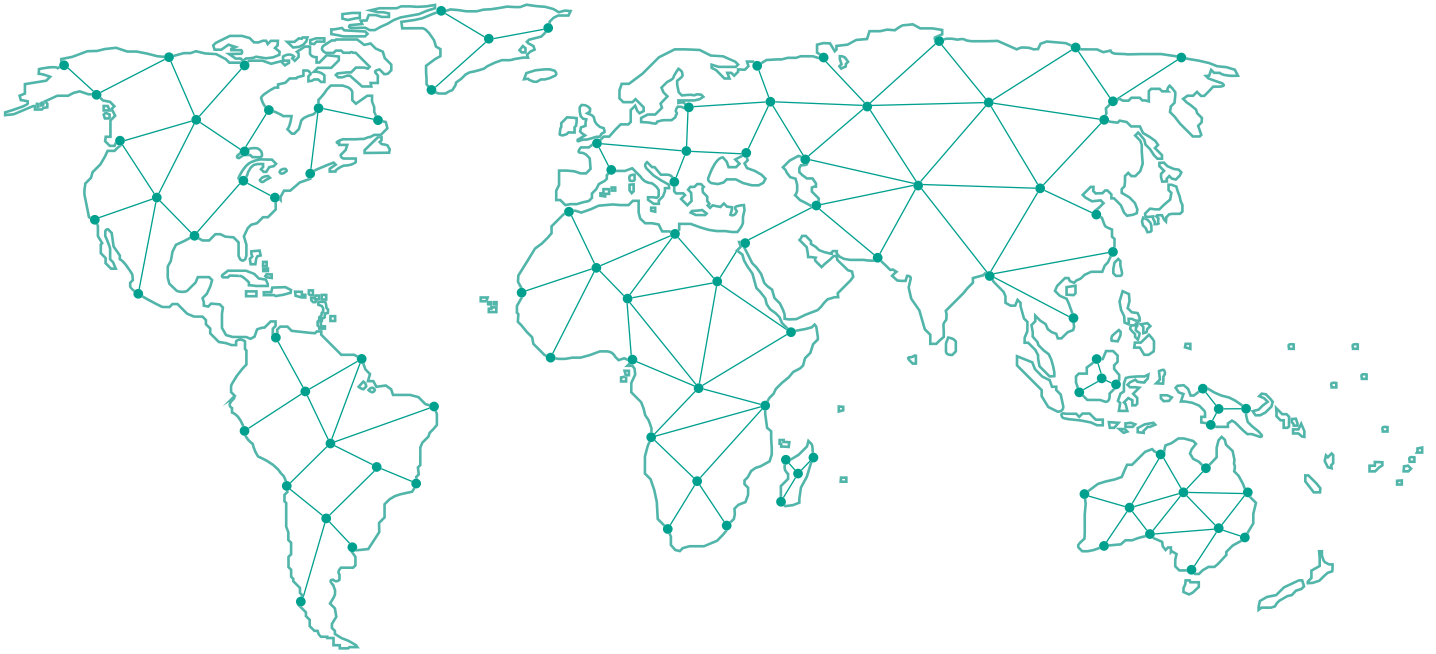
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## Notes

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