

Masoneilan[®] 41005 Series Control Valves

Specification Data

CH41005

01/07

**Complete Line of Heavy Duty,
Balanced, Cage Guided, Globe
Valves with Lo-dB[®] and
Anti-Cavitation Capabilities**

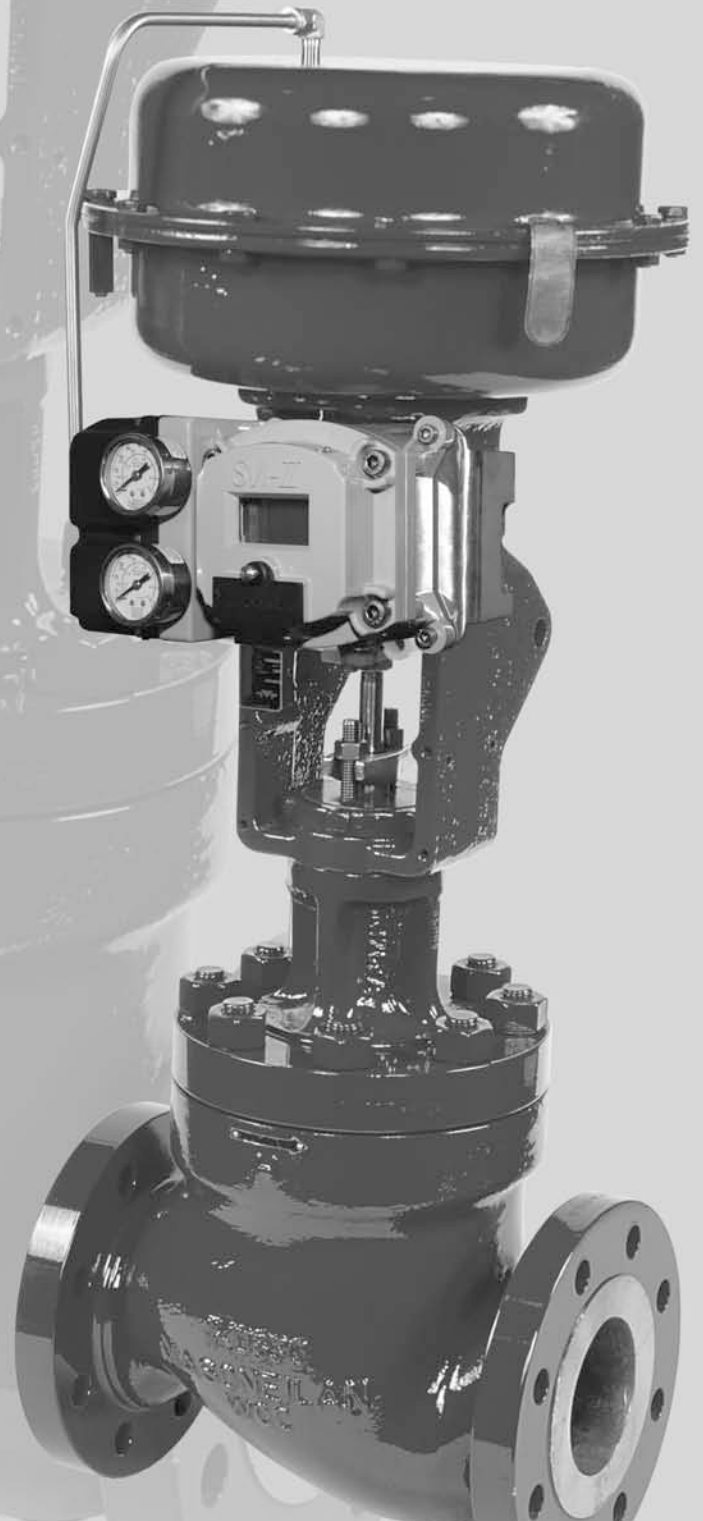


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Features

High Performance Design

Masoneilan's 41005 Series heavy-duty globe control valves are engineered to handle the most demanding process conditions and exceeds the capabilities of comparable designs. The balanced cage-guided construction of the 41005 Series provides some key advantages versus typical unbalanced and/or contoured plug type designs:

- Higher Flow Capacities
- Higher Pressure Drop Capabilities
- Reduced Actuator Size and Thrust Requirements
- Improved Stability with Larger Guide Areas
- Increased Low Noise and Anti-Cavitation Trim Options

Wide Application Range

Masoneilan's 41005 Series control valves provide high flow capacities combined with low pressure recoveries as reflected by the high F_L factors. This product line also provides efficient and dependable performance over a wide range of pressures and temperatures typical in critical service applications.

Maximum Reliability

Specification and selection of the best solution for any application is simplified with the standard design options and materials available in the 41005 Series. Standard product construction and material combinations are based on over 40 years of successful field experience in various process industries.

Various Seal Options

The 41005 Series is available with a variety of seal designs and materials to meet a wide combination of temperature and shut-off requirements.

Versatile Trim Solutions

Various noise attenuation, anti-cavitation, and tight shut-off solutions are available within the standard 41005 product envelope. This includes the following trim options:

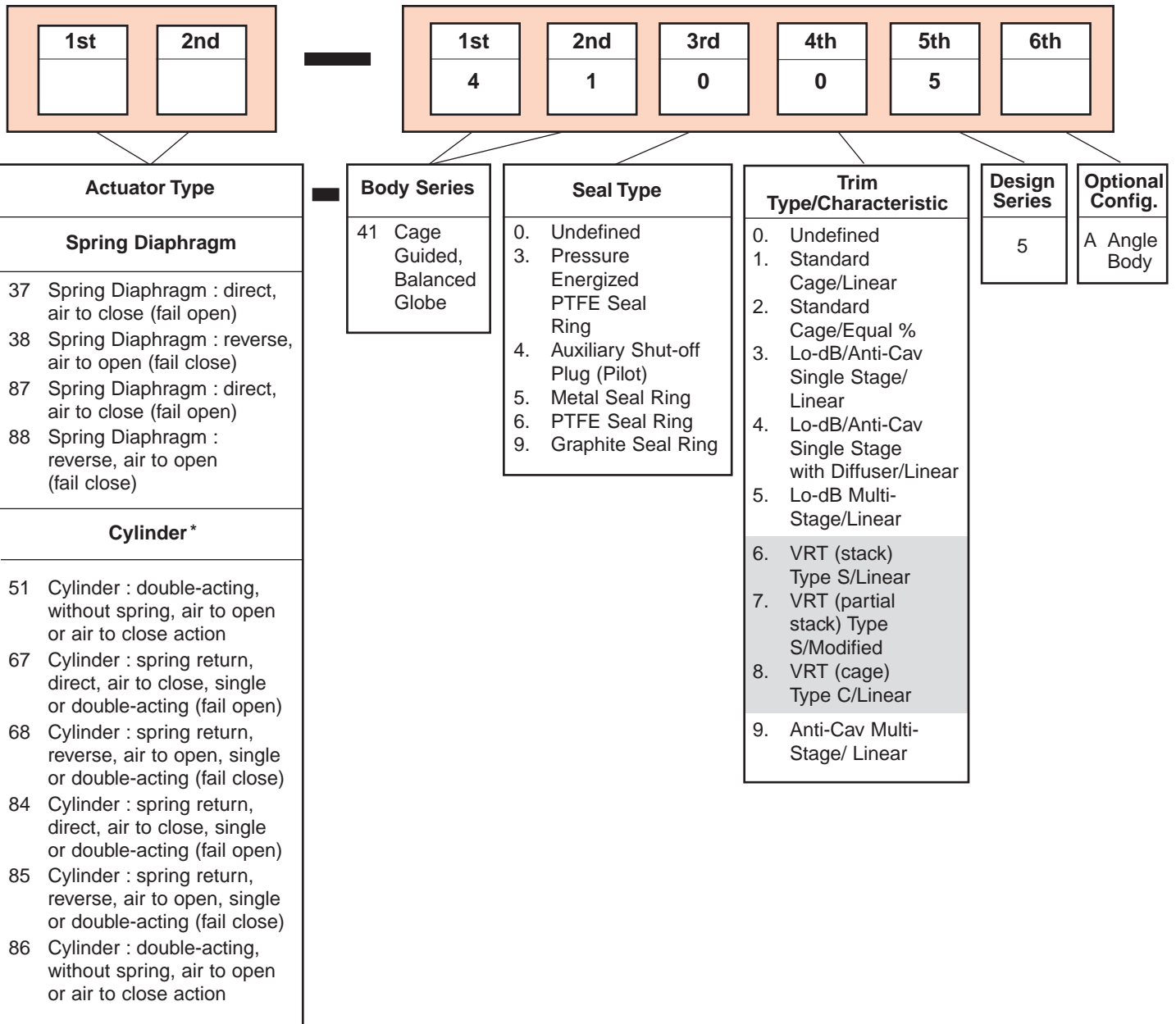
- **Single Stage Trim** – Provides excellent low noise performance on either gas or steam applications. Also provides an effective anti-cavitation solution for liquid services.
- **Multi-Stage Trim** – Provides highly effective low noise and anti-cavitation solutions for high-pressure ratio applications.
- **Pilot Balanced Trim** – Provides unmatched tight shut-off performance for high temperature applications.
- **Internal Diffuser** – Provides additional low noise and anti-cavitation benefits in flow-to-close (FTC) applications.
- **Engineered Solutions** – Special trim designs can also be provided for applications not covered by the standard trim noted above.

NACE Compliance

The 41005 Series is available for sour service applications. Standard materials and processes are in accordance with the requirements of NACE specification MR0103. Applications requiring compliance to MR0175-2003 or ISO15156 must be reviewed by Masoneilan.

Trade names noted throughout are for reference only. Masoneilan reserves the right to supply trade named material or its equivalent.

Numbering System



* Consult factory for selection of appropriate cylinder actuator type.

Engineered trim options are also available for high temperature and high pressure drop applications. Please consult factory for details.

General Data

Standard Valve (41305, 41405, 41505, 41605 and 41905)

- **Body**
 - type: high-capacity globe or angle
 - flow direction: see Flow Direction Table
 - C_v ratio: 100:1 standard capacity trim
50:1 Lo-dB and reduced capacity trim
- **Bonnet**
 - type: stud bolted extension
- **Trim**
 - cage: cylindrical ported or Lo-dB
 - plug: pressure balanced cage guided with various seal ring options;
pressure balanced cage guided, with spring loaded internal auxiliary tight shut-off plug
- **Standard Flow Characteristics**
 - standard trim: linear, equal percentage
 - Lo-dB trim: linear
 - Lo-dB trim with diffuser: linear
 - anti-cavitation trim: linear

Lo-dB® Multi-Stage Valve (41355, 41555, 41655, 41955)

- **Flow Direction:** see Flow Direction Table
- **Fluid:** gas or steam
- C_v ratio: 50:1

(cont.)

Lo-dB® Multi-Stage Valve (41355, 41555, 41655, 41955)

- **Trim**
 - cage: multi-stage
 - plug: pressure balanced cage guided with various seal ring options
- **Standard Flow Characteristic**
 - standard trim: linear

Anti-Cavitation Multi-Stage Valve (41395, 41495, 41595, 41995)

- **Flow Direction:** see Flow Direction Table
- **Fluid:** liquid
- C_v ratio: 50:1
- **Trim**
 - cage: multi-stage
 - plug: pressure balanced cage guided with various seal ring options
- **Standard Flow Characteristic**
 - standard trim: linear

Actuator

- type: spring diaphragm
spring-return cylinder
double-acting cylinder
- handwheel: optional

Pressure Drop

Refer to PH3000 for 41005 Series Pressure Drop Tables

Ratings/Connections

Threaded • Socket Weld ■ Butt Weld □ RF & RTJ

| Valve Size | | ANSI Class 150 to 1500 and equivalent PN | ANSI Class 2500 and equivalent PN |
|-------------|-----------------|---|--------------------------------------|
| inch | mm | | |
| 2 | 50 | ■ • □ ○ | ■ • □ |
| 3 to 8 | 80 to 200 | ■ □ | ■ □ |
| 10 to 16 | 250 to 400 | ■ □ | |
| 3x2 | 80x50 | ■ □ | ■ □ |
| 4x2 | 100x50 | ■ □ | ■ □ |
| 4x3 | 100x80 | ■ □ | |
| 6x3 | 150x80 | ■ □ | |
| 6x4 | 150x100 | ■ □ | |
| 8x4 | 200x100 | ■ □ | |
| 8x6 | 200x150 | ■ □ | |
| 10x6 | 250x150 | ■ □ | |
| 10x8 | 250x200 | ■ □ | |
| 12x8 | 300x200 | ■ □ | |
| 16x12 | 400x300 | ■ □ | |
| 14,18,20,24 | 350,450,500,600 | | |

Notes: 1. Angle Body Version is available in valve sizes 2" - 6" with ANSI ratings from Class 150 to Class 1500 and standard raised face end connections.

2. Ex. 3x2 size = valve with 3" body x standard 2" trim.

3. Consult Masoneilan for AFNOR and DIN connections.

= ANSI Class 2500 Ratings and 14", 18", 20" and 24" sizes are available. Please consult factory for details.

Seal Type versus Temperature Range/Seat Leakage

| Valve Model | Seal Type | Valve Size | | Temperature Range ⁽¹⁾ | | Seat Leakage per IEC 534-4 and ANSI / FCI 70.2 Class |
|--------------|---|------------|-----------|----------------------------------|--------------------------------|--|
| | | inches | mm | Minimum | Maximum | |
| 41305 | Pressure Energized PTFE Seal Ring | 2 - 16 | 50 - 400 | -148°F (-100°C) | +450°F (+232°C) | IV (standard) V (optional) |
| 41405 | Auxiliary Pilot Plug with Metal Seal Ring | 2 - 4 | 50 - 100 | -320°F (-196°C) | +850°F (+454°C) ⁽²⁾ | IV (standard) V (optional) |
| | | 6 - 16 | 150 - 400 | -320°F (-196°C) | +1050°F (+566°C) | |
| 41505 | Metal Seal Ring | 2 - 4 | 50 - 100 | -320°F (-196°C) | +850°F (+454°C) ⁽²⁾ | II |
| | | 6 - 16 | 150 - 400 | -320°F (-196°C) | +1050°F (+566°C) | III |
| 41605 | PTFE Seal Ring | 2 - 16 | 50 - 400 | -20°F (-29°C) | +300°F (+149°C) | IV |
| 41905 | Graphite Seal Ring | 2 - 4 | 50 - 100 | -320°F (-196°C) | +850°F (+454°C) | III |
| | | 6 - 16 | 150 - 400 | -320°F (-196°C) | +850°F (+454°C) | IV |

Notes: 1. See Materials of Construction Tables for other temperature limitations
 2. Maximum temperature limit for the 2" (50mm) size is +1050°F (+566°C).

Flow Direction

| Model Number | 41305 | 41405 ⁽¹⁾ | 41505 | 41605 | 41905 |
|---|--|---|---------------------------|---------------------------|---------------------------|
| Seal Type | Pressure Energized PTFE Seal Ring | Auxiliary Pilot Plug with Metal Seal Ring | Metal Seal Ring | PTFE Seal Ring | Graphite Seal Ring |
| Standard Trim 41015/41025 | 41315/41325 FTO or FTC ⁽²⁾ | 41415/41425 FTC | 41515/41525 FTO or FTC | 41615/41625 FTO or FTC | 41915/41925 FTO or FTC |
| Lo-dB Single Stage 41035 | 41335 FTO | 41435 FTC | 41535 FTO | 41635 FTO | 41935 FTO |
| Anti-Cavitation Single Stage 41035 | 41335 FTC | 41435 FTC | 41535 FTC | 41635 FTC | 41935 FTC |
| Lo-dB & Anti-Cavitation Single Stage with Internal Diffuser ⁽³⁾ 41045 | 41345 FTC | 41445 FTC | 41545 FTC | 41645 FTC | 41945 FTC |
| Lo-dB Multi-Stage 41055 | 41355 FTO | N/A | 41555 FTO | 41655 FTO | 41955 FTO |
| Anti-Cavitation Multi-Stage 41095 | 41395 FTC | 41495 FTC | 41595 FTC | 41695 FTC | 41995 FTC |

Notes: 1. Flow direction for Pilot Plug Seal configuration is always FTC.
 2. Seal ring must be installed in correct orientation relative to high pressure direction.
 3. Flow direction with Internal Diffuser is always FTC.

C_v and F_L versus Travel

Standard Trim Models 41315, 41415, 41515, 41615 and 41915

Flow Characteristic : **LINEAR**

| Percent of Travel | | | | | | | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | |
|-------------------|---------|------------------------------|------------------|-------|--------------------|---------------------|----------------------|------|------|------|------|------|------|------|------|------|------|
| F _L | | | | | | | 0.94 | 0.94 | 0.93 | 0.93 | 0.92 | 0.92 | 0.91 | 0.91 | 0.90 | 0.90 | 0.90 |
| Valve Size | | ANSI Class and equivalent PN | Orifice Diameter | | Travel | | Rated C _v | | | | | | | | | | |
| inches | mm | | inches | mm | inches | mm | | | | | | | | | | | |
| 2 | 50 | 900 - 1500 | 1.84 | 46.7 | 0.8 | 20.3 | 1.4 | 2.7 | 4.2 | 6 | 8 | 10 | 12.5 | 14 | 15.5 | 16 | |
| | | | | | | | 2 | 4.9 | 8.3 | 13 | 19 | 25 | 30 | 35 | 38 | 40 | |
| 2 | 50 | 150 - 600 | 2.50 | 63.5 | 1.5 | 38.1 | 2.7 | 5.1 | 7.9 | 11 | 15 | 19 | 23 | 26 | 29 | 30 | |
| 3x2 | 80x50 | 150-1500 | | | | | 4 | 9 | 15 | 24 | 35 | 47 | 57 | 65 | 71 | 75 | |
| 4x2 | 100x50 | | | | | | | | | | | | | | | | |
| 3 | 80 | 150 - 1500 | 3.50 | 88.9 | 2.0 | 50.8 | 5 | 10 | 16 | 22 | 30 | 38 | 46 | 52 | 58 | 60 | |
| 4x3 | 100x80 | | | | | | 8 | 19 | 31 | 50 | 73 | 96 | 118 | 135 | 147 | 155 | |
| 6x3 | 150x80 | | | | | | | | | | | | | | | | |
| 4 | 100 | 150 - 1500 | 4.38 | 111.3 | 2.0 | 50.8 | 9 | 16 | 25 | 35 | 48 | 60 | 72 | 83 | 91 | 95 | |
| 6x4 | 150x100 | | | | | | 12 | 29 | 48 | 77 | 113 | 149 | 182 | 209 | 228 | 240 | |
| 8x4 | 200x100 | | | | | | | | | | | | | | | | |
| 6 | 150 | 150 - 1500 | 5.12 | 130.0 | 0.8 ⁽¹⁾ | 20.3 ⁽¹⁾ | 7 | 15 | 28 | 41 | 58 | 74 | 94 | 117 | 144 | 165 | |
| 8x6 | 200x150 | | | | 2.0 | 50.8 | 20 | 52 | 92 | 148 | 204 | 260 | 308 | 348 | 376 | 400 | |
| 10x6 | 250x150 | | | | | | | | | | | | | | | | |
| 8 | 200 | 150 - 1500 | 6.50 | 165.1 | 1.5 | 38.1 | 17 | 37 | 71 | 104 | 145 | 187 | 237 | 295 | 361 | 415 | |
| 10x8 | 250x200 | | | | 2.5 | 63.5 | 32 | 83 | 147 | 237 | 326 | 416 | 493 | 557 | 602 | 640 | |
| 12x8 | 300x200 | | | | | | | | | | | | | | | | |
| 10 | 250 | 150 - 1500 | 8.00 | 203.2 | 1.5 | 38.1 | 20 | 46 | 87 | 128 | 179 | 230 | 291 | 362 | 444 | 510 | |
| | | | | | 3.0 | 76.2 | 50 | 130 | 230 | 370 | 510 | 650 | 770 | 870 | 940 | 1000 | |
| 12 | 300 | 150 - 1500 | 9.75 | 247.7 | 2.0 | 50.8 | 31 | 69 | 131 | 193 | 270 | 347 | 439 | 547 | 670 | 770 | |
| 16x12 | 400x300 | | | | 3.75 | 95.25 | 70 | 182 | 322 | 518 | 714 | 910 | 1078 | 1218 | 1316 | 1400 | |
| 16 | 400 | 150 - 1500 | 13.00 | 330.2 | 2.5 | 63.5 | 51 | 128 | 211 | 320 | 448 | 576 | 730 | 922 | 1114 | 1280 | |
| | | | | | 4.0 | 101.6 | 104 | 268 | 464 | 744 | 1024 | 1304 | 1544 | 1720 | 1880 | 2000 | |
| | | | | | 5.0 | 127 | 130 | 335 | 580 | 930 | 1280 | 1630 | 1930 | 2150 | 2350 | 2500 | |

Notes: 1. Travel of 1.5 inches (38.1mm) for 41405.
2. Ex. 3x2 size = valve with 3" body with standard 2" trim.

C_v and F_L versus Travel

Standard Trim
Models 41325, 41425, 41525, 41625 and 41925

Flow Characteristic : **EQUAL PERCENTAGE**

| Percent of Travel | | | | | | | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | |
|-------------------|---------|------------------------------------|------------------|-------|--------|-------|----------------------|------|------|------|------|------|------|------|------|-------------|------|
| F _L | | | | | | | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.93 | 0.92 | 0.92 | 0.92 | 0.90 |
| Valve Size | | ANSI Class and Equivalent PN | Orifice Diameter | | Travel | | Rated C _v | | | | | | | | | | |
| inches | mm | | inches | mm | inches | mm | | | | | | | | | | | |
| 2 | 50 | 900 - 1500 | 1.84 | 46.7 | 0.8 | 20.3 | 0.2 | 0.4 | 0.8 | 1.3 | 2.1 | 3.8 | 6.7 | 10.0 | 12.4 | 14 | |
| | | | | | | | 0.5 | 1.1 | 2 | 3.2 | 5.2 | 9.5 | 16.7 | 25.0 | 31.1 | 35 | |
| 2 | 50 | 150 - 600 | 2.50 | 63.5 | 1.5 | 38.1 | 0.3 | 0.8 | 1.5 | 2.3 | 3.8 | 7.1 | 12.4 | 18.5 | 23.1 | 26 | |
| 3x2 | 80x50 | 150 - 1500 | | | | | 0.8 | 2.0 | 3.7 | 5.9 | 9.6 | 17.7 | 30.9 | 46.3 | 57.8 | 65 | |
| 4x2 | 100x50 | | | | | | | | | | | | | | | | |
| 3 | 80 | 150 - 1500 | 3.50 | 88.9 | 2.0 | 50.8 | 0.7 | 1.7 | 3.2 | 5 | 8.3 | 15.2 | 26.6 | 39.9 | 49.8 | 56 | |
| | | | | | | | 1.8 | 4 | 8 | 13 | 21 | 38 | 67 | 100 | 124 | 140 | |
| 4x3 | 100x80 | | | | | | | | | | | | | | | | |
| 6x3 | 150x80 | | | | | | | | | | | | | | | | |
| 4 | 100 | 150 - 1500 | 4.38 | 111.3 | 2.0 | 50.8 | 1 | 3 | 5 | 8 | 13 | 24 | 43 | 64 | 80 | 90 | |
| | | | | | | | 3 | 7 | 13 | 20 | 33 | 61 | 107 | 160 | 200 | 225 | |
| 6x4 | 150x100 | | | | | | | | | | | | | | | | |
| 8x4 | 200x100 | | | | | | | | | | | | | | | | |
| 6 | 150 | 150 - 1500 | 5.12 | 130.0 | 2.0 | 50.8 | 4 | 8 | 15 | 24 | 35 | 54 | 80 | 108 | 130 | 144 | |
| | | | | | | | 9 | 21 | 39 | 60 | 87 | 135 | 200 | 269 | 326 | 360 | |
| 8x6 | 200x150 | | | | | | | | | | | | | | | | |
| 10x6 | 250x150 | | | | | | | | | | | | | | | | |
| 8 | 200 | 150 - 1500 | 6.50 | 165.1 | 2.5 | 63.5 | 6 | 14 | 25 | 39 | 56 | 86 | 128 | 172 | 208 | 230 | |
| | | | | | | | 14 | 34 | 62 | 97 | 140 | 215 | 320 | 430 | 521 | 575 | |
| 10x8 | 250x200 | | | | | | | | | | | | | | | | |
| 12x8 | 300x200 | | | | | | | | | | | | | | | | |
| 10 | 250 | 150 - 1500 | 8.00 | 203.2 | 3.0 | 76.2 | 9 | 21 | 39 | 60 | 87 | 135 | 200 | 269 | 326 | 360 | |
| | | | | | | | 23 | 53 | 97 | 151 | 219 | 337 | 500 | 672 | 815 | 900 | |
| 12 | 300 | | | | | | | | | | | | | | | | |
| 16x12 | 400x300 | 150 - 1500 | 9.75 | 247.7 | 3.75 | 95.25 | 13 | 30 | 54 | 84 | 122 | 187 | 278 | 374 | 453 | 500 | |
| | | | | | | | 32 | 75 | 136 | 212 | 306 | 471 | 700 | 941 | 1142 | 1260 | |
| 16 | 400 | 150 - 1500 | 13.00 | 330.2 | 5.0 | 127 | 22 | 53 | 97 | 151 | 219 | 337 | 500 | 672 | 815 | 900 | |
| | | | | | | | 56 | 133 | 243 | 378 | 547 | 842 | 1251 | 1681 | 2038 | 2250 | |

Note: 1. Ex. 3x2 size = valve with 3" body with standard 2" trim.

C_v and F_L versus Travel

Single Stage Lo-dB®/Anti-Cavitation
 Models: 41335, 41435, 41535, 41635, 41935, 41X45 (with internal diffuser)

Flow Characteristic : **LINEAR**

| Percent of Travel | | | | | | | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | | | | | |
|-------------------|-----|------------------------------|------------------|-------|--------------|--------------------|----------------------|------------|-------|------|-------|------|------|------|------|------|------|------|-----|-----|-----|
| F _L | | | | | | | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | | | | |
| Valve Size | | ANSI Class and Equivalent PN | Orifice Diameter | | Travel | | Rated C _v | | | | | | | | | | | | | | |
| inches | mm | | inches | mm | inches | mm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | | |
| 2 | 50 | 900 - 1500 | 1.84 | 46.7 | 0.8 | 20.3 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | | |
| | | | | | | | 1.3 | 2.6 | 3.9 | 5.2 | 6.5 | 7.8 | 9.1 | 10.4 | 11.7 | 13 | | | | | |
| | | | | | | | 1.7 | 3.4 | 5.1 | 6.8 | 8.5 | 10.2 | 11.9 | 13.6 | 15.3 | 17 | | | | | |
| | | | | | | | 2.3 | 4.6 | 6.9 | 9.2 | 11.5 | 13.8 | 16.1 | 18.4 | 20.7 | 23 | | | | | |
| | | | | | | | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | | | | | |
| 2 | 50 | 150 - 600 | 2.50 | 63.5 | 1.5 | 38.1 | 2.5 | 5 | 7.5 | 10 | 12.5 | 15 | 17.5 | 20 | 22.5 | 25 | | | | | |
| | | | | | | | 3 | 6 | 10 | 13 | 16 | 19 | 22 | 26 | 29 | 32 | | | | | |
| | | 3x2 4x2 | | | | | 80x50 100x50 | 150 - 1500 | 4 | 9 | 13 | 17 | 22 | 26 | 30 | 34 | 39 | 43 | | | |
| | | | | | | | | | 6 | 12 | 17 | 23 | 29 | 35 | 41 | 46 | 52 | 58 | | | |
| | | | | | | | | | 7 | 14 | 22 | 29 | 36 | 43 | 50 | 58 | 65 | 72 | | | |
| 3 | 80 | 150 - 1500 | 3.50 | 88.9 | 2.0 | 50.8 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | | | | | |
| | | | | | | | 5 | 11 | 16 | 22 | 27 | 32 | 38 | 43 | 49 | 54 | | | | | |
| | | | | | | | 7 | 14 | 22 | 29 | 36 | 43 | 50 | 58 | 65 | 72 | | | | | |
| | | | | | | | 10 | 19 | 29 | 38 | 48 | 57 | 67 | 76 | 86 | 95 | | | | | |
| | | | | | | | 13 | 25 | 38 | 50 | 63 | 75 | 88 | 100 | 113 | 125 | | | | | |
| 4 | 100 | 150 - 1500 | 4.38 | 111.3 | 2.0 | 50.8 | 7 | 13 | 20 | 26 | 33 | 39 | 46 | 52 | 59 | 65 | | | | | |
| | | | | | | | 9 | 17 | 26 | 34 | 43 | 51 | 60 | 68 | 77 | 85 | | | | | |
| | | | | | | | 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99 | 110 | | | | | |
| | | | | | | | 15 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | | | | | |
| | | | | | | | 20 | 39 | 59 | 78 | 98 | 117 | 137 | 156 | 176 | 195 | | | | | |
| 6 | 150 | 150 - 1500 | 5.12 | 130.0 | 2.5 | 63.5 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | | | | | |
| | | | | | | | 13 | 26 | 39 | 52 | 65 | 78 | 91 | 104 | 117 | 130 | | | | | |
| | | | | | | | 18 | 35 | 53 | 70 | 88 | 105 | 123 | 140 | 158 | 175 | | | | | |
| | | | | | | | 23 | 46 | 69 | 92 | 115 | 138 | 161 | 184 | 207 | 230 | | | | | |
| | | | | | | | 30 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300 | | | | | |
| 8 | 200 | 150 - 1500 | 6.50 | 165.1 | 2.5 | 63.5 | 17 | 33 | 50 | 66 | 83 | 99 | 116 | 132 | 149 | 165 | | | | | |
| | | | | | | | 22 | 44 | 66 | 88 | 110 | 132 | 154 | 176 | 198 | 220 | | | | | |
| | | | | | 10x8 12x8 | 250x200 300x200 | 150 - 1500 | 6.50 | 165.1 | 2.5 | 63.5 | 29 | 58 | 87 | 116 | 145 | 174 | 203 | 232 | 261 | 290 |
| | | | | | | | | | | | | 38 | 76 | 114 | 152 | 190 | 228 | 266 | 304 | 342 | 380 |
| | | | | | | | | | | | | 3.0 | 76.2 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 |
| 10 | 250 | 150 - 1500 | 8.00 | 203.2 | 2.5 | 63.5 | 23 | 45 | 68 | 90 | 113 | 135 | 158 | 180 | 203 | 225 | | | | | |
| | | | | | | | 29 | 58 | 87 | 116 | 145 | 174 | 203 | 232 | 261 | 290 | | | | | |
| | | | | | 3.5 | 88.9 | 39 | 78 | 117 | 156 | 195 | 234 | 273 | 312 | 351 | 390 | | | | | |
| | | | | | | | 52 | 104 | 156 | 208 | 260 | 312 | 364 | 416 | 468 | 520 | | | | | |
| | | | | | | | 65 | 130 | 195 | 260 | 325 | 390 | 455 | 520 | 585 | 650 | | | | | |
| 12 | 300 | 150 - 1500 | 9.75 | 247.7 | 2.5 | 63.5 | 48 | 96 | 144 | 192 | 240 | 288 | 336 | 384 | 432 | 480 | | | | | |
| | | | | | | | 63 | 126 | 189 | 252 | 315 | 378 | 441 | 504 | 567 | 630 | | | | | |
| | | | | | 16x12 | 400x300 | 150 - 1500 | 9.75 | 247.7 | 4.0 | 101.6 | 84 | 168 | 252 | 336 | 420 | 504 | 588 | 672 | 756 | 840 |
| | | | | | | | | | | | | 5.0 | 127 | 110 | 220 | 330 | 440 | 550 | 660 | 770 | 880 |
| 16 | 400 | 150 - 1500 | 13.00 | 330.2 | 2.5 | 63.5 | 78 | 156 | 234 | 312 | 390 | 468 | 546 | 624 | 702 | 780 | | | | | |
| | | | | | | | 103 | 206 | 309 | 412 | 515 | 618 | 721 | 824 | 927 | 1030 | | | | | |
| | | | | | 4.0 | 101.6 | 136 | 272 | 408 | 544 | 680 | 816 | 952 | 1088 | 1224 | 1360 | | | | | |
| | | | | | | | 6.0 | 152.4 | 180 | 360 | 540 | 720 | 900 | 1080 | 1260 | 1440 | 1620 | 1800 | | | |

Notes: 1. Ex. 3x2 size = valve with 3" body with standard 2" trim.

2. Internal diffuser design only available for valve sizes 6" to 16" (150 to 400mm) and with capacities shaded above.

C_v and F_L versus Travel

Multi-Stage Lo-dB®
Models 41355, 41555, 41655 and 41955

Flow Characteristic : **LINEAR**

| Percent of Travel | | | | | | | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | |
|-------------------|---------|------------------------------|------------------|-------|--------|-------|----------------------|-------|------|------|------|------|------|------|------|------|------|
| F _L | | | | | | | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Valve Size | | ANSI Class and Equivalent PN | Orifice Diameter | | Travel | | Rated C _v | | | | | | | | | | |
| inches | mm | | inches | mm | inches | mm | | | | | | | | | | | |
| 2 | 50 | 900 - 1500 | 1.84 | 46.7 | 0.8 | 20.3 | 1.2 | 2.4 | 3.6 | 4.8 | 6.0 | 7.2 | 8.4 | 9.6 | 10.8 | 12 | |
| | | | | | | | 1.9 | 3.8 | 5.7 | 7.6 | 9.5 | 11.4 | 13.3 | 15.2 | 17.1 | 19 | |
| | | | | | | | 2.4 | 4.8 | 7.2 | 9.6 | 12.0 | 14.4 | 16.8 | 19.2 | 21.6 | 24 | |
| 2 | 50 | 150 - 600 | 2.50 | 63.5 | 1.5 | 38.1 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | |
| 3x2 | 80x50 | 150 - 1500 | | | | | 4 | 9 | 13 | 17 | 22 | 26 | 30 | 34 | 39 | 43 | |
| 4x2 | 100x50 | | | | | | 5 | 11 | 16 | 21 | 27 | 32 | 37 | 42 | 48 | 53 | |
| 3 | 80 | 150 - 1500 | 3.50 | 88.9 | 2.0 | 50.8 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | |
| 4x3 | 100x80 | | | | | | 8 | 15 | 23 | 30 | 38 | 45 | 53 | 60 | 68 | 75 | |
| 6x3 | 150x80 | | | | | | 10 | 19 | 29 | 38 | 48 | 57 | 67 | 76 | 86 | 95 | |
| 4 | 100 | 150 - 1500 | 4.38 | 111.3 | 2.0 | 50.8 | 7 | 14 | 22 | 29 | 36 | 43 | 50 | 58 | 65 | 72 | |
| 6x4 | 150x100 | | | | | | 11 | 21 | 32 | 42 | 53 | 63 | 74 | 84 | 95 | 105 | |
| 8x4 | 200x100 | | | | | | 13 | 26 | 39 | 52 | 65 | 78 | 91 | 104 | 117 | 130 | |
| 6 | 150 | 150 - 1500 | 5.12 | 130.0 | 2.5 | 63.5 | 10 | 19 | 29 | 38 | 48 | 58 | 67 | 77 | 86 | 96 | |
| 8x6 | 200x150 | | | | | | 15 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | |
| 10x6 | 250x150 | | | | | | 19 | 38 | 57 | 76 | 95 | 114 | 133 | 152 | 171 | 190 | |
| 8 | 200 | 150 - 1500 | 6.50 | 165.1 | 2.5 | 63.5 | 16 | 31 | 47 | 62 | 78 | 93 | 109 | 124 | 140 | 155 | |
| 10x8 | 250x200 | | | | | | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | |
| 12x8 | 300x200 | | | | 3.0 | 76.2 | 30 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300 | |
| 10 | 250 | 150 - 1500 | 8.00 | 203.2 | 2.5 | 63.5 | 23 | 46 | 69 | 92 | 115 | 138 | 161 | 184 | 207 | 230 | |
| | | | | | | | 35 | 70 | 105 | 140 | 175 | 210 | 245 | 280 | 315 | 350 | |
| | | | | | 3.5 | 88.9 | 42 | 84 | 126 | 168 | 210 | 252 | 294 | 336 | 378 | 420 | |
| 12 | 300 | 150 - 1500 | 9.75 | 247.7 | 2.5 | 63.5 | 38 | 75 | 113 | 150 | 188 | 225 | 263 | 300 | 338 | 375 | |
| | | | | | | | 4.0 | 101.6 | 60 | 120 | 180 | 240 | 300 | 360 | 420 | 480 | 540 |
| | | | | | 5.0 | 127 | 73 | 145 | 218 | 290 | 363 | 435 | 508 | 580 | 653 | 725 | |
| 16 | 400 | 150 - 1500 | 13.00 | 330.2 | 2.5 | 63.5 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | |
| | | | | | | | 4.0 | 101.6 | 80 | 160 | 240 | 320 | 400 | 480 | 560 | 640 | 720 |
| | | | | | 6.0 | 152.4 | 111 | 221 | 332 | 442 | 553 | 663 | 774 | 884 | 995 | 1105 | |

Note: 1. Ex. 3x2 size = valve with 3" body with standard 2" trim.

C_v and F_L versus Travel

**Multi-Stage Anti-Cavitation
Models 41395, 41495, 41595, 41695 and 41995**

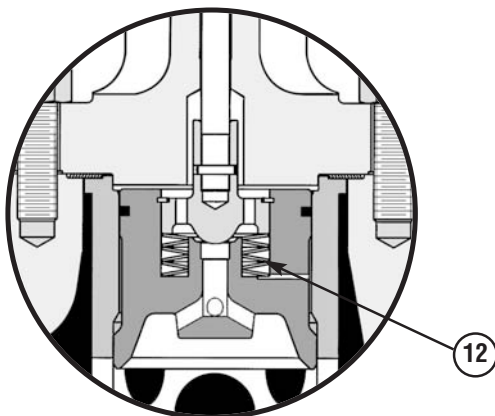
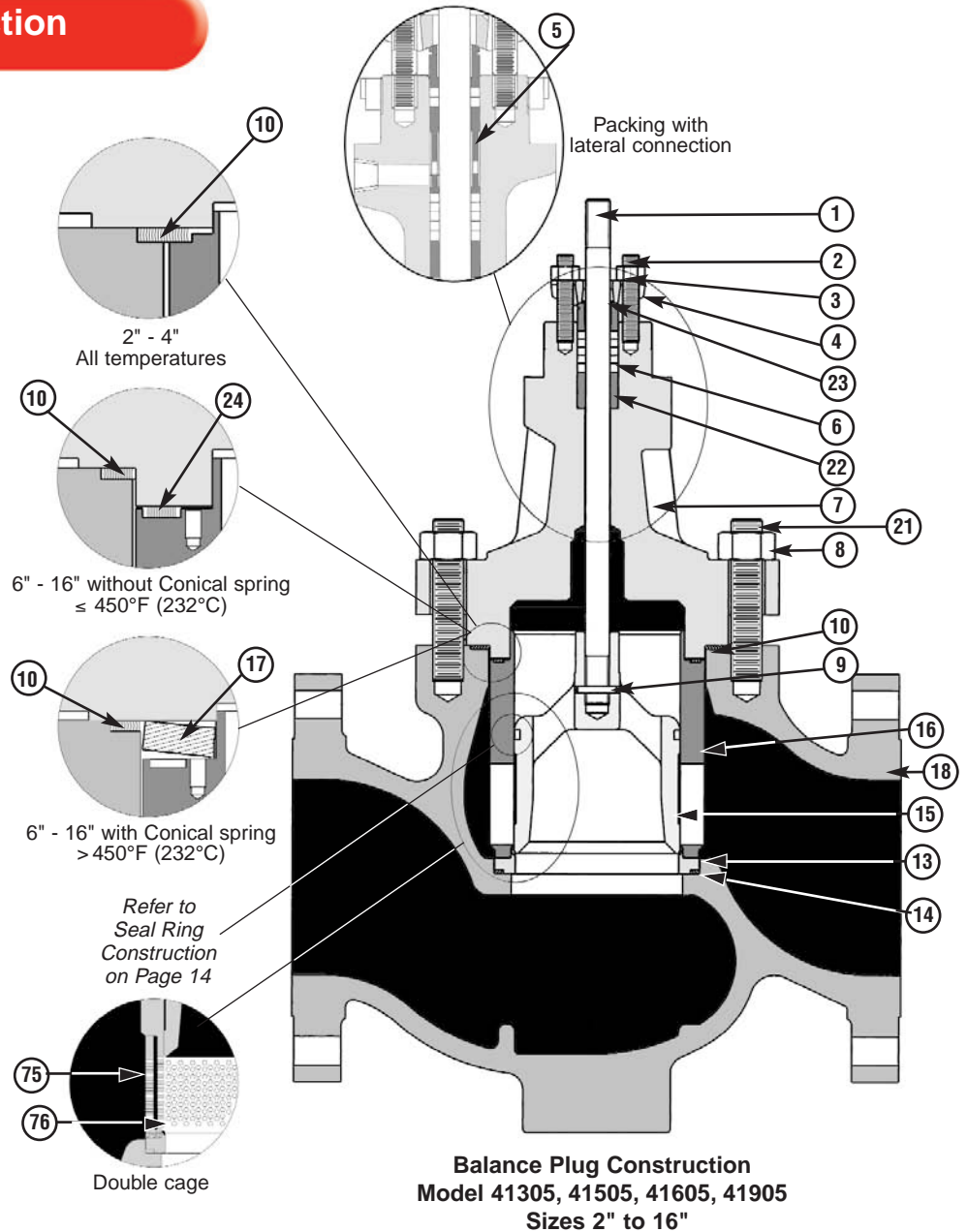
Flow Characteristic : **LINEAR**

| Percent of Travel | | | | | | | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | |
|---------------------------|---------------------------|------------------------------|------------------|-------|--------|------|----------------------|------|------|------|------|------|-------|------|-------|------|------|
| F _L | | | | | | | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Valve Size ⁽¹⁾ | | ANSI Class and Equivalent PN | Orifice Diameter | | Travel | | Rated C _v | | | | | | | | | | |
| inches | mm | | inches | mm | inches | mm | | | | | | | | | | | |
| 2 | 50 | 900 - 1500 | 1.521 | 38.6 | 0.8 | 20.3 | 0.9 | 1.8 | 2.7 | 3.6 | 4.5 | 5.4 | 6.3 | 7.2 | 8.1 | 9 | |
| | | | | | | | 1.3 | 2.6 | 3.9 | 5.2 | 6.5 | 7.8 | 9.1 | 10.4 | 11.7 | 13 | |
| | | | | | | | 1.5 | 3 | 4.5 | 6 | 7.5 | 9 | 10.5 | 12 | 13.5 | 15 | |
| 2 3x2 4x2 | 50 80x50 100x50 | 150 - 600 | 2.151 | 54.6 | 1.5 | 38.1 | 2.3 | 4.6 | 6.9 | 9.2 | 11.5 | 13.8 | 16.1 | 18.4 | 20.7 | 23 | |
| | | | | | | | 3.5 | 7 | 10.5 | 14 | 17.5 | 21 | 24.5 | 28 | 31.5 | 35 | |
| | | | | | | | 4.4 | 8.8 | 13.2 | 17.6 | 22 | 26.4 | 30.8 | 35.2 | 39.6 | 44 | |
| 3 4x3 6x3 | 80 100x80 150x80 | 150 - 1500 | 3.15 | 80.0 | 1.5 | 38.1 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | |
| | | | | | | | 6.5 | 13 | 19.5 | 26 | 32.5 | 39 | 45.5 | 52 | 58.5 | 65 | |
| | | | | | | | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | |
| 4x3 6x3 | 100x80 150x80 | 150 - 1500 | 3.15 | 80.0 | 2.0 | 50.8 | 9.3 | 18.6 | 27.9 | 37.2 | 46.5 | 55.8 | 65.1 | 74.4 | 83.7 | 93 | |
| | | | | | | | 6.5 | 13 | 19.5 | 26 | 32.5 | 39 | 45.5 | 52 | 58.5 | 65 | |
| | | | | | | | 10.5 | 21 | 31.5 | 42 | 52.5 | 63 | 73.5 | 84 | 94.5 | 105 | |
| 6 8x6 10x6 | 150 200x150 250x150 | 150 - 1500 | 4.777 | 121.3 | 2.5 | 63.5 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | |
| | | | | | | | 16 | 32 | 48 | 64 | 80 | 96 | 112 | 128 | 144 | 160 | |
| | | | | | | | 19.5 | 39 | 58.5 | 78 | 97.5 | 117 | 136.5 | 156 | 175.5 | 195 | |
| 8 10x8 12x8 | 200 250x200 300x200 | 150 - 1500 | 6.146 | 156.1 | 2.5 | 63.5 | 17 | 34 | 51 | 68 | 85 | 102 | 119 | 136 | 153 | 170 | |
| | | | | | | | 26 | 52 | 78 | 104 | 130 | 156 | 182 | 208 | 234 | 260 | |
| | | | | | | | 32 | 64 | 96 | 128 | 160 | 192 | 224 | 256 | 288 | 320 | |
| 10 | 250 | 150 - 1500 | 7.633 | 193.9 | 2.5 | 63.5 | 23 | 46 | 69 | 92 | 115 | 138 | 161 | 184 | 207 | 230 | |
| | | | | | | | 38 | 76 | 114 | 152 | 190 | 228 | 266 | 304 | 342 | 380 | |
| | | | | | | | 45 | 90 | 135 | 180 | 225 | 270 | 315 | 360 | 405 | 450 | |
| 12 16x12 | 300 400x300 | 150 - 1500 | 9.373 | 238.1 | 2.5 | 63.5 | 40 | 80 | 120 | 160 | 200 | 240 | 280 | 320 | 360 | 400 | |
| | | | | | | | 64 | 128 | 192 | 256 | 320 | 384 | 448 | 512 | 576 | 640 | |
| | | | | | | | 80 | 160 | 240 | 320 | 400 | 480 | 560 | 640 | 720 | 800 | |
| 16 | 400 | 150 - 1500 | 12.774 | 324.5 | 2.5 | 63.5 | 60 | 120 | 180 | 240 | 300 | 360 | 420 | 480 | 540 | 600 | |
| | | | | | | | 95 | 190 | 285 | 380 | 475 | 570 | 665 | 760 | 855 | 950 | |
| | | | | | | | 131 | 262 | 393 | 524 | 655 | 786 | 917 | 1048 | 1179 | 1310 | |

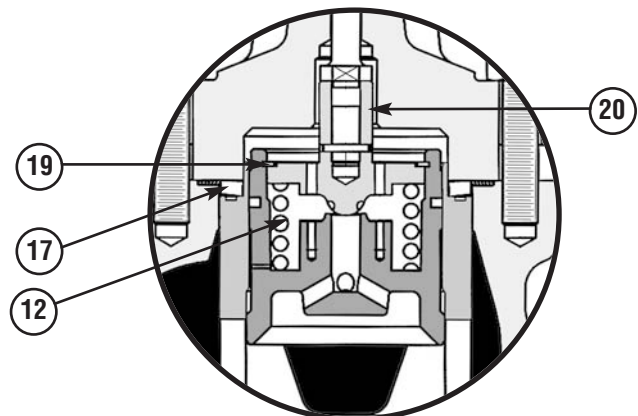
Note: 1. Valve size example: 3x2 size = valve with 3" body with standard 2" trim.

Body S/A Construction

| Ref. | Part Name |
|---|---------------------------|
| 1 | Valve Plug Stem |
| 2 | Packing Flange Stud |
| 3 | Packing Flange Nut |
| 4 | Packing Flange |
| 5 | Packing Spacer |
| ● | 6 Packing |
| 7 | Bonnet |
| 8 | Valve Body Nut |
| 9 | Plug Stem Pin |
| ● | 10 Body Gasket |
| * | 12 Pilot Spring(s) |
| 13 | Seat Ring |
| ● | 14 Seat Ring Gasket |
| 15 | Valve Plug (or Piston) |
| 16 | Cage |
| + | 17 Conical Spring |
| 18 | Valve Body |
| * | 19 Retaining Ring |
| * | 20 Auxiliary Pilot Plug |
| 21 | Valve Body Stud |
| 22 | Guide Bushing |
| 23 | Packing Follower |
| ● | 24 Cage Gasket |
| ⊗ | 31 Tec Seal |
| ○ | 35 Ni-resist® Seal Ring |
| ★ | 40 PTFE Seal Ring |
| ★ | 41 Nordel® Backup Ring |
| □ | 45 Graphite Seal Ring |
| ● | 46 Ni-resist® Backup Ring |
| 75 | Double cage |
| 76 | Pin |
| * For 41405 Series Valves Only | |
| + For 6" to 16" Valves Sizes Only above 450°F (232°C) | |
| ★ For 41605 Series Valves Only | |
| ● Recommended Spare Parts | |
| □ For 41905 Series Valves Only | |
| ○ For 41405 / 41505 Series Valves Only | |
| ⊗ For 41305 Series Valves Only | |



Pilot Balanced Construction Model 41405
Applications up to 850°F (454°C)
Sizes 2" to 4" shown



Pilot Balanced Construction Model 41405
Applications above 450°F (232°C) to 1050°F (566°C)
Sizes 6" to 16" shown

Materials of Construction

Standard Carbon Steel Version

| Ref. No | Temperature Range | Standard Materials | | | |
|---------|---|--|---|--|---------------|
| | | -20°F (-29°C) | 450°F (232°C) | 650°F (343°C) | 800°F (427°C) |
| 1 | Plug Stem | 17-4 PH St. St. ASTM A564 GR 630 | | See Optional Materials | |
| 2 | Packing Flange Stud | 304 St. St. ASTM A193 GR B8 | | | |
| 3 | Packing Flange Nut | 304 St. St. ASTM A194 GR 8 | | | |
| 4 | Packing Flange | Carbon Steel ASTM A105 Zinc Plated | | | |
| 5 | Packing Spacer | 303 St. St. ASTM A582 TY 303 | | | |
| 6 | Packing | Kevlar PTFE (Crane 285K) (ANSI Class 150-900) PTFE/Carbon and Graphite Wiper Rings (ANSI Class 1500 and 2500) | | See Optional Materials | |
| 7 | Valve Bonnet | Carbon Steel ASTM A216 Grade WCC | | | |
| 8 | Valve Body Nut | Carbon Steel ASTM A194 GR 2H | | | |
| 9 | Plug Stem Pin | 316 St. St. ASTM A479 TY 316 | | | |
| 10 | Valve Body Gasket | 316L St. St. w/Flexible Graphite Filler (Spiral Wound) | | | |
| 12 | Pilot Spring(s) (41405 Only) | 2" to 4" | Inconel X-750 AMS 5598 (Stacked Washers) | | |
| | | 6" to 16" | Inconel X-750 ASTM B637 GR 688 | | |
| 13 | Seat Ring | 410 St. St. ASTM A479 TY 410 Hardened | | See Optional Materials | |
| 14 | Seat Ring Gasket | 316L St. St. w/Flexible Graphite Filler (Spiral Wound) | | | |
| 15 | Valve Plug | 17-4 PH St. St. ASTM A747 GR CB7CU-1 Condition H1075 | | See Optional Materials | |
| 16 | Cage | Martensitic St. St. ASTM A487 GR CA6NM CL A Hard Chrome Plated | | | |
| 17 | Conical Spring (6" to 16") (See Note 1) | See Optional Materials | 17-4 PH ASTM A564 GR 630 Condition H1075 | Inconel X-718 ASTM B637 + Shot Peening | |
| 18 | Valve Body | Carbon Steel ASTM A216 Grade WCC | | | |
| 19 | Retaining Ring (41405 Only) | Inconel X-750 AMS 5598 | | | |
| 20 | Auxiliary Pilot Plug (41405 Only) | 2" to 4" | 410 St. St. ASTM A479 TY 410 Hardened | | |
| | | 6" to 16" | Martensitic St. St. ASTM A487 GR CA6NM CL A with Chrome Plated Guide and Hardfaced Seat | | |
| 21 | Valve Body Stud | Alloy Steel ASTM A193 GR B7 | | | |
| 22 | Guide Bushing | 440C St. St. ASTM A276 TY 440C | | | |
| 23 | Packing Follower | 303 St. St. ASTM A582 TY 303 | | | |
| — | Internal Diffuser (6" to 16") (See Note 2) | 316 St. St. ASTM A479 TY 316 with Hardfaced Seat | | | |
| 24 | Cage Gasket (6" to 16") (See Note 3) | 316L St. St. w/Flexible Graphite Filler (Spiral Wound) | | See Optional Materials | |
| 31 | Seal Ring | See Page 16 | | | |
| 35 | | | | | |
| 40 | | | | | |
| 41 | | | | | |
| 45 | | | | | |
| 46 | | | | | |

- Notes: 1. Conical spring only required for valve sizes 6" to 16" for applications > 450°F (232°C).
 2. Internal Diffuser includes an internal 316SS Seat Ring with hardfaced seat. This part replaces the Seat Ring (Ref. No. 13) when this option is selected. See graphic on page 16.
 3. Cage gasket only required for valve sizes 6" to 16" for applications ≤ 450°F (232°C).

Review use of optional materials and configurations for temperature ranges indicated. Standard materials listed may still be applicable depending on specific service conditions. Consult Masoneilan for appropriate material combinations.

Materials of Construction

Standard Stainless Steel Version⁽¹⁾

| Ref. No | Temperature Range | -320°F (-196°C) | -50°F (-46°C) | 450°F (232°C) | 650°F (343°C) | 1050°F (566°C) |
|---------|--|--|---------------|--|---------------|------------------------|
| No | Description | Standard Materials | | | | |
| 1 | Plug Stem | See Optional Materials | | 316 St. St. ASTM A479 TY 316 | | See Optional Materials |
| 7 18 | Valve Bonnet ⁽²⁾ Valve Body | 316 St. St. ASTM A351 GR CF8M | | | | |
| 13 | Seat Ring | 316 St. St. ASTM A479 TY 316 with Hardfaced Seat | | | | |
| 15 | Valve Plug | 316 St. St. ASTM A479 TY 316 with Hardfaced Seat | | | | |
| 16 | Cage | 316 St. St. ASTM A479 TY 316 Chrome-Plated | | | | See Optional Materials |
| 17 | Conical Spring (6" to 16") (See Note 3) | See Optional Materials | | Inconel X-718 ASTM B637 + Shot Peening | | |
| 20 | Auxiliary Pilot Plug (41405 Only) | 316 St. St. ASTM A479 TY 316 with Chrome Plated Guide and Hardfaced Seat | | | | |
| 22 | Guide Bushing | 316 St. St. ASTM A479 TY 316 with Hardfacing Stellite 6 UNS 30006 (HRC 22 Max.) | | | | |

- Notes: 1. Materials for other components are *same* as listed for Standard Carbon Steel Version.
 2. Extension bonnet required for temperatures below -100°F (-73°C).
 3. Conical spring only required for valve sizes 6" to 16" for applications > 450°F (232°C).
 4. See trim materials for Standard Carbon Steel Version for Martenistic Trim Option.

Optional Configurations and Materials

| Ref. No | Temperature Range | -320°F (-196°C) | -100°F (-73°C) | -50°F (-46°C) | -20°F (-46°C) | 650°F (343°C) | 800°F (427°C) | 1050°F (566°C) |
|---------|---|---|---|---------------|--|---------------|-------------------|----------------|
| No | Description | Optional Materials | | | | | | |
| 1 | Plug Stem | A286 Super Alloy ASTM A638 GR 660 Inconel X-750 ASTM B637 GR 688 | | | | | | |
| 6 | Packing | Kevlar PTFE (Crane 285K) | | | LE [®] Packing ⁽¹⁾ | | Flexible Graphite | |
| 7 18 | Valve Bonnet Valve Body | Chrome-Moly Steel ASTM A217 Grade WC6 or Grade WC9 Carbon Steel ASTM A 352 Grade LCC | | | | | | |
| 13 | Seat Ring | 2" to 4" | 316 St. St. ASTM A479 TY 316 with Hardfaced Seat | | | | | |
| | | 6" to 16" | Martensitic St. St. ASTM A487 GR CA6NM CL A with Hardfaced Seat | | | | | |
| 15 | Valve Plug | Martensitic St. St. ASTM A487 GR CA6NM CL A Nitrided | | | | | | |
| 16 | Cage | Martensitic St. St. ASTM A487 GR CA6NM CL A Nitrided 316 St. St. ASTM A479 TY 316 Nitrided | | | | | | |
| 20 | Auxiliary Pilot Plug (2" to 4") (41405 Only) | Martensitic St. St. ASTM A487 GR CA6NM CL B with Chrome Plated Guide and Hardfaced Seat | | | | | | |

- Notes: 1. LE Packing for low emissions applications is limited to the maximum operating pressure and temperature range shown in Figure 1.
 2. Consult Masoneilan for material combinations for temperatures below -20°F (-29°C) or above 800°F (427°C).

Review use of optional materials and configurations for temperature ranges indicated. Standard materials listed may still be applicable depending on specific service conditions. Consult Masoneilan for appropriate material combinations.

Materials of Construction

Optional Bolting Materials

| Ref. No | Temperature Range | -320°F (-196°C) to -150°F (-101°C) | -150°F (-101°C) to -20°F (-29°C) | 850°F (454°C) to 950°F (510°C) | 950°F (510°C) to 1050°F (566°C) |
|---------|--------------------------------|------------------------------------|----------------------------------|---------------------------------|---------------------------------|
| | Description | Optional Materials | | | |
| 8 | Valve Body Nut ⁽¹⁾ | 316 SS ASTM A194 Grade 8M | Alloy Steel ASTM A194 Grade 4 | Alloy Steel ASTM A194 Grade 4 | 304 SS ASTM A194 Grade 8 |
| 21 | Valve Body Stud ⁽¹⁾ | 316 SS ASTM A193 Grade B8M Class 2 | Alloy Steel ASTM A320 Grade L7 | Alloy Steel ASTM A193 Grade B16 | Super Alloy ASTM A453 Grade 660 |

Note: 1. Use following materials for 2" and 3" sizes ANSI Class 300/600 at temperatures below -20°F (-29°C).
 Studs - 304 SS ASTM A193 Grade B8 Class 2 • Nuts – 304 SS ASTM A194 Grade 8.

Pressure and Temperature Rating of LE Packing

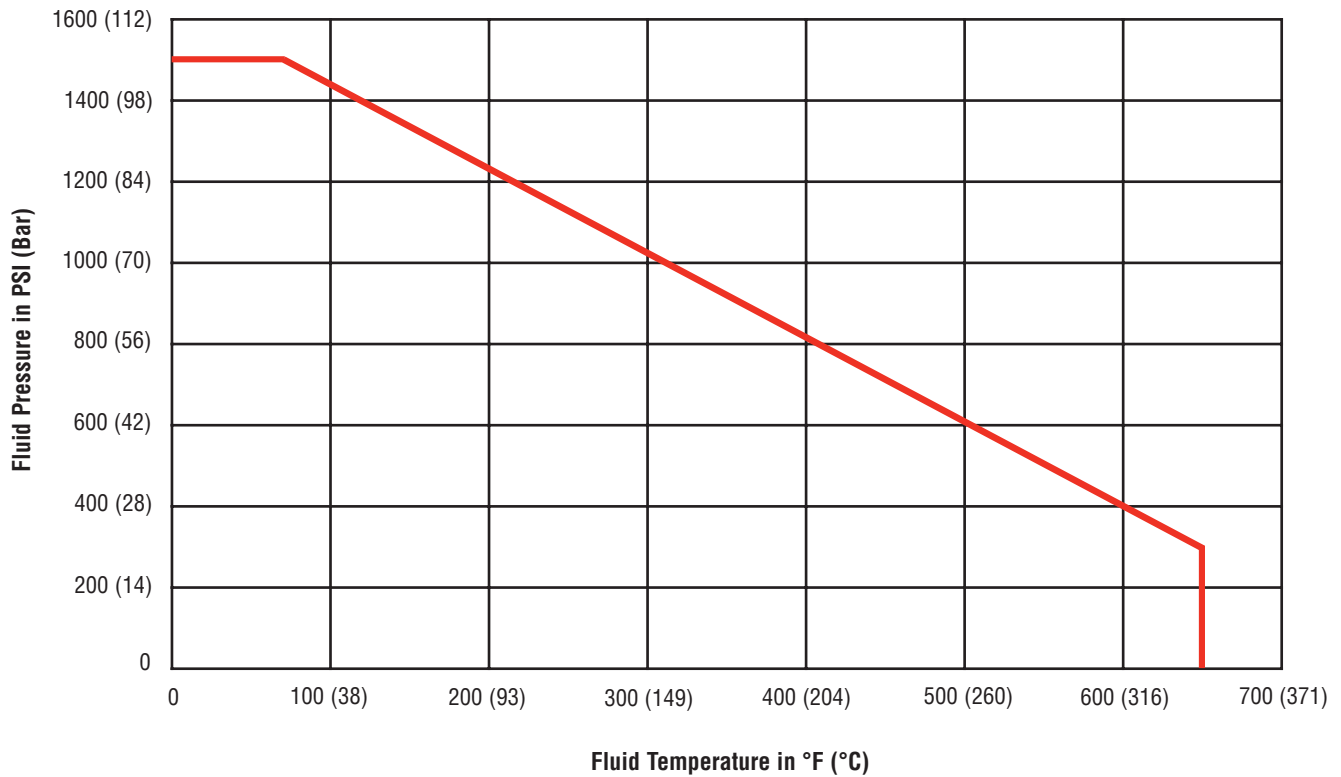


Figure 1

Materials of Construction

NACE⁽¹⁾ Configuration and Material Options Valve Sizes: 2" to 16" • Body Ratings: ANSI Class 150 to 1500

| Ref. No | Temperature Range | | -20°F (-29°C) | 650°F (343°C) |
|---------|--|--|--|---------------|
| | Description | Standard and Optional Materials | | |
| 1 | Plug Stem | 316 St. St. ASTM A479 TY 316 (HRC 22 Max.) | | |
| | | Inconel X-750 ASTM B637 GR 688 (HRC 35 Max.) | | |
| | | Super Alloy ASTM A638 GR 660 (HRC 35 Max.) | | |
| 2 | Packing Flange Stud | 304 St. St. ASTM A193 GR B8 ⁽²⁾ | | |
| | | 304 St. St. ASTM A193 Gr B8 ⁽³⁾ (HRC 22 Max.) | | |
| 3 | Packing Flange Nut | 304 St. St. ASTM A194 GR 8 ⁽²⁾ | | |
| | | 304 St. St. ASTM A194 GR 8A ⁽³⁾ (HRC 22 Max.) | | |
| 4 | Packing Flange | Corrosion Protected Carbon Steel (HRC 22 Max.) | | |
| 5 | Packing Spacer | 304 St. St. ASTM A479 TY 304 | | |
| 6 | Packing | Kevlar PTFE (Crane 285K) | | |
| 7 | 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.) | | |
| 8 | Valve Body Nut | Alloy Steel ASTM A194 GR 2H ⁽²⁾ | | |
| | | Alloy Steel ASTM A194 Gr 2HM ⁽³⁾ | | |
| 9 | Plug Stem Pin | 316 St. St. ASTM A479 TY 316 (HRC 22 Max.) | | |
| 10 | Valve Body Gasket | 316L St. St. w/Flexible Graphite Filler (Spiral Wound) | | |
| 12 | Pilot Spring(s) (41405 Only) | 2" to 4" | Inconel X-750 AMS 5598 (HRC 50 Max.) | |
| | | 6" to 16" | Inconel X-750 ASTM B637 GR 688 (HRC 50 Max.) | |
| 13 | 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.) | | |
| 14 | Seat Ring Gasket | 316L St. St. w/Flexible Graphite Filler (Spiral Wound) | | |
| 15 | Valve Plug | 316 St. St. ASTM A479 TY 316 with Hardfaced Seat (HRC 22 Max.) | | |
| | | Martensitic St. St. ASTM A487 GR CA6NM CL B (HRC 22 Max.) | | |
| 16 | Cage | 316 St. St. ASTM A479 TY 316 Hard Chrome Plated (HRC 22 Max.) | | |
| | | Martensitic St. St. ASTM A487 GR CA6NM CL B Hard Chrome Plated (HRC 23 Max.) | | |
| 17 | Conical Spring (6" to 16") | Inconel X-718 ASTM B637 + Shot Peening | | |
| 18 | Valve Body | Carbon Steel ASTM A216 Grade WCC (HRC 22 Max.) | | |
| | | 316 St. St. ASTM A351 Gr CF8M (HRC 22 Max.) | | |
| 19 | Retaining Ring (41405 Only) | Inconel X-750 AMS 5598 (HRC 50 Max.) | | |
| 20 | Auxiliary Pilot Plug (41405 Only) | 316 St. St. ASTM A479 TY 316 with Hardfaced Seat (HRC 22 Max.) | | |
| | | Martensitic St. St. ASTM A487 GR CA6NM CL B Chrome Plated Guide and Hardfaced Seat (HRC 23 Max.) | | |
| 21 | Valve Body Stud | Alloy Steel ASTM A193 GR B7 ⁽²⁾ | | |
| | | Alloy Steel ASTM A193 Gr B7M ⁽³⁾ | | |
| 22 | Guide Bushing | Stellite 6 UNS 30006 (HRC 22 Max.) | | |
| | | 316 St. St. ASTM A479 TY 316 with Hardfacing (HRC 22 Max.) | | |
| 23 | Packing Follower | 316 St. St. ASTM A479 TY 316 (HRC 22 Max.) | | |
| — | Internal Diffuser (6" to 16") (Not Shown) | 316 St. St. ASTM A479 TY 316 with Hardfaced Seat (HRC 22 Max.) | | |
| 24 | Cage Gasket (6" to 16") ⁽⁴⁾ | 316L St. St. w/Flexible Graphite Filler (Spiral Wound) | | |
| 31 | Seal Ring ⁽⁵⁾ | See Page 16 | | |
| 35 | | | | |
| 40 | | | | |
| 41 | | | | |
| 45 | | | | |
| 46 | | | | |
| — | Drive Nut (Not Shown) | Carbon Steel SAE 1117 ⁽²⁾ | | |
| | | Carbon Steel ASTM A105 or SAE 1010-1025 ⁽³⁾ | | |

Notes: 1. Standard materials and processes are in accordance with the requirements of NACE specification MR0103. Applications requiring compliance to MR0175-2003 or ISO15156 must be reviewed by Masoneilan.
2. Materials designated for these parts conform to NACE Class III bolting requirements. (Non-Exposed)
3. Materials designated for these parts conform to NACE Class I or Class II bolting requirements. (Exposed)
4. Cage gasket only required for valve sizes 6" to 16" for applications 450°F (232°C).
5. Seal ring materials for Model 41605 (PTFE Seal Ring) will be replaced with Glass-Reinforced PTFE External Seal Ring (Ref. No. 40) and Viton Internal Seal Ring (Ref. No. 41).
6. Maximum temperature for Models 41305 and 41605 limited to 450°F (232°C).

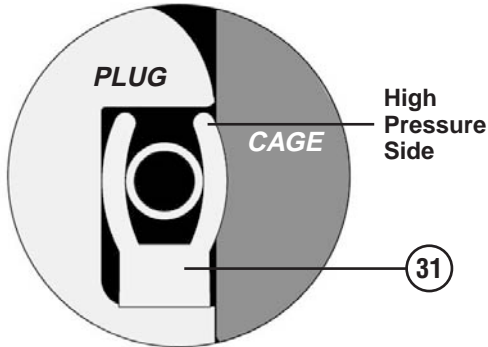
Seal Ring Construction

Model 41305

Seal Type: Pressure Energized Polymeric

Leakage: Class IV Standard
(Class V Optional)

Temperature: -148°F (-100°C) to +450°F (+232°C)

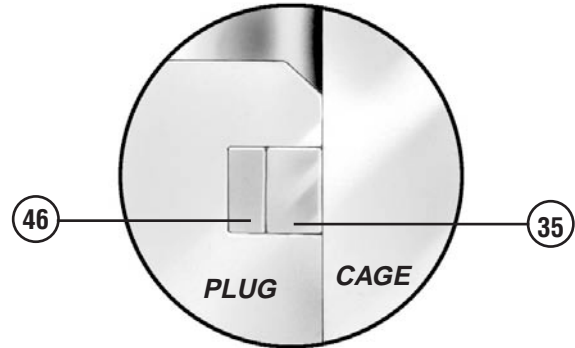


Seal Shown in FTO Orientation

Models 41405 and 41505

Seal Type: Metal

Leakage: From Class II to Class V (with pilot)
Temperature: -320°F (-196°C) to +1050°F (+566°C)

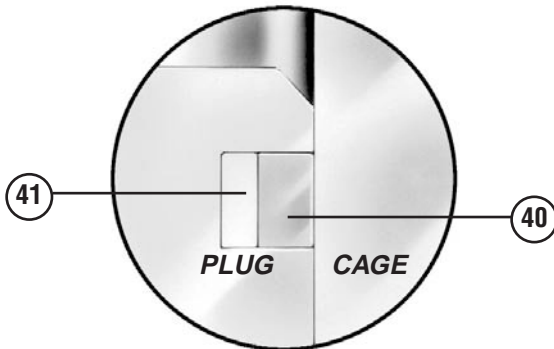


Model 41605

Seal Type: TFE and Resilient Inner

Leakage: Class IV Standard

Temperature: -20°F (-29°C) to +300°F (+149°C)

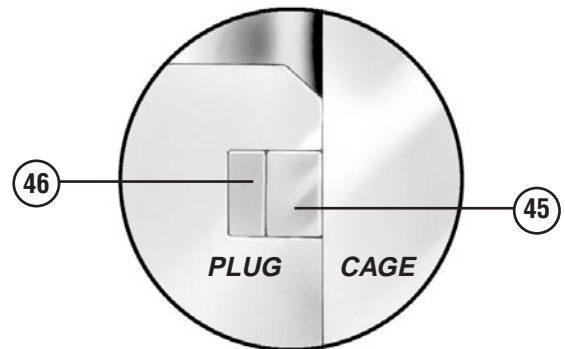


Model 41905

Seal Type: Graphite and Metal Inner

Leakage: Class III and Class IV Standard

Temperature: -320°F (-196°C) to +850°F (+454°C)

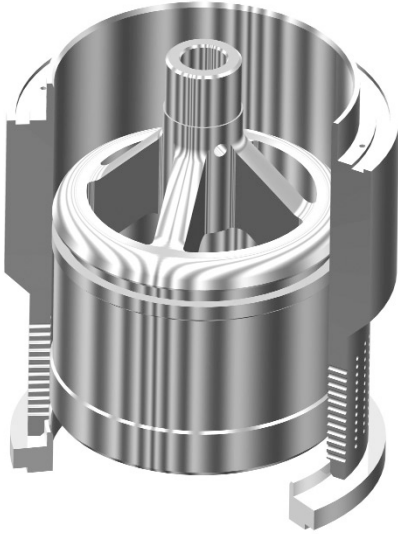


Seal Ring Construction

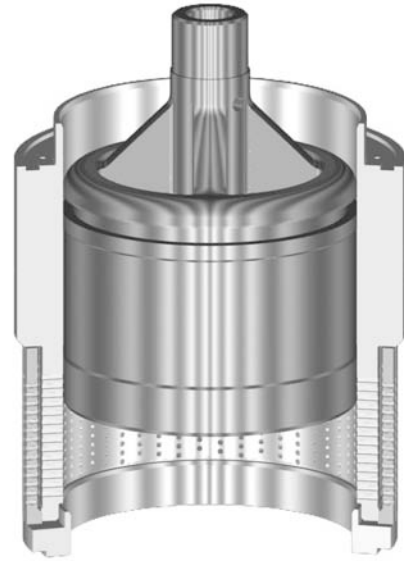
| Temperature Range | -320°F (-196°C) | -148°F (-100°C) | -20°F (-29°C) | +300°F (+149°C) | +450°F (+232°C) | +650°F (+343°C) | +850°F (+454°C) | +1050°F (+566°C) | |
|-------------------|--|--------------------|------------------|--------------------|--------------------|--------------------|--------------------|---------------------|--|
| Ref. No. | Description | | | | | | | | |
| 31 | Seal Ring | | | | | | | | |
| 35 | External Seal Ring | | | | | | | | |
| 40 | External Seal Ring | | | | | | | | |
| 41 | Internal Seal Ring | | | | | | | | |
| 45 | External Seal Ring | | | | | | | | |
| 46 | Internal Seal Ring | | | | | | | | |
| | | Materials | | | | | | | |
| 31 | PTFE + 25% Graphite and ELGILOY Spring | | | | | | | | |
| 35 | Ni-Resist ASTM A439 Type D3 | | | | Nitrided CA6NM | | | | |
| 40 | Bronze PTFE | | | | | | | | |
| 40 | Glass Reinforced PTFE ⁽¹⁾ | | | | | | | | |
| 41 | Nordel | | | | | | | | |
| 41 | Viton ⁽¹⁾⁽²⁾ | | | | | | | | |
| 45 | Graphite | | | | | | | | |
| 46 | Ni-Resist ASTM A439 Type D3 | | | | | | | | |

Note: 1. Optional materials for NACE Service. Viton not recommended for water or steam service.
2. Viton is recommended for oil and hydrocarbon service.

Trim Types



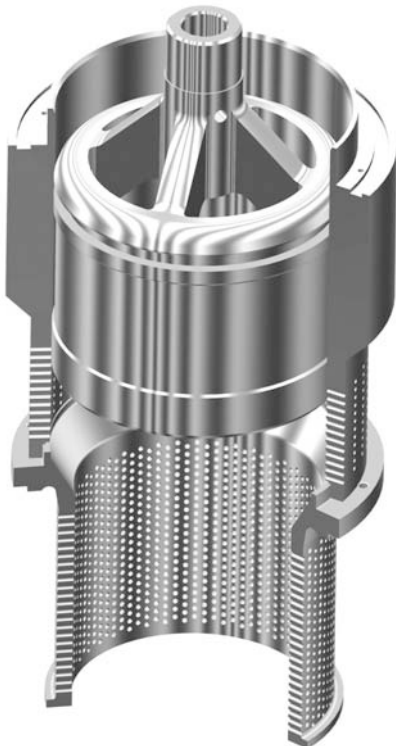
Models 41335 - 41535 - 41635 - 41935
Single Stage
Low Noise Trim FTO
Anti-Cavitation Trim FTC



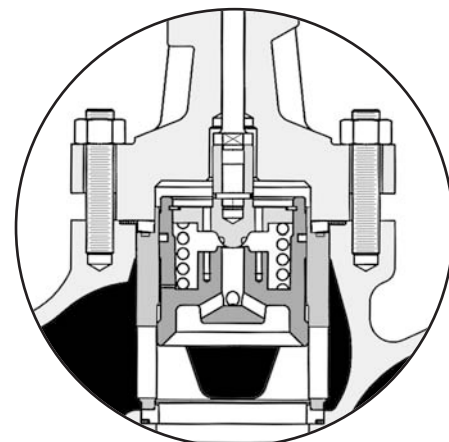
Models 41355 - 41555 - 41655 - 41955
Multi-Stage
Low Noise Trim FTO



Models 41395 - 41495 - 41595 - 41995
Multi-Stage
Anti-Cavitation Trim FTC

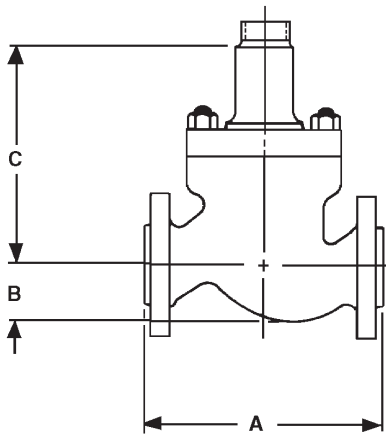


Model 41045
Single Stage with Internal Diffuser
(Sizes 6" - 16")

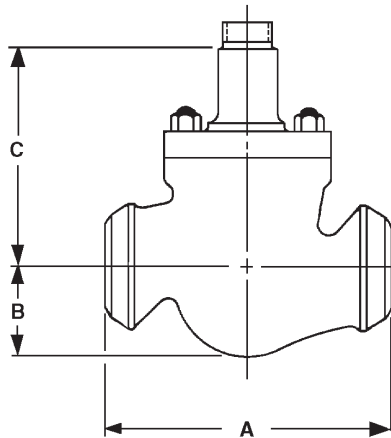


Model 41405
Pilot Balanced Construction FTC

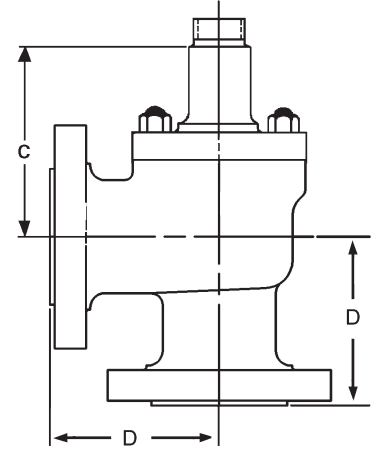
Dimensions (inches)



Flanged



**Butt, Socket Weld
or Screwed Ends**



Angle

Body S/A (inches)

| Pressure Class | | A | | | | | | | | | | |
|----------------|---------|-------------------------------------|-------|-------------------------------------|-------|-------|-------------------------------------|-------|-------|-------------------------------------|-------|-------|
| | | ANSI Class 150 and equivalent PN | | ANSI Class 300 and equivalent PN | | | ANSI Class 600 and equivalent PN | | | ANSI Class 900 and equivalent PN | | |
| Valve Size | | RF | RTJ | BW & SW | RF | RTJ | BW & SW | RF | RTJ | BW & SW | RF | RTJ |
| inches | mm | | | | | | | | | | | |
| 2 | 50 | 10.00 | 10.50 | 11.26 | 10.50 | 11.12 | 11.26 | 11.24 | 11.38 | 14.76 | 14.74 | 14.88 |
| 3 | 80 | 11.75 | 12.25 | 13.27 | 12.50 | 13.12 | 13.27 | 13.25 | 13.37 | 18.11 | 17.38 | 17.48 |
| 3x2 | 80x50 | " | " | " | " | " | " | " | " | (1) | (1) | (1) |
| 4 | 100 | 13.86 | 14.33 | 15.51 | 14.50 | 15.12 | 15.51 | 15.50 | 15.62 | 20.87 | 20.12 | 20.24 |
| 4x2 | 100x50 | " | " | " | " | " | " | " | " | (1) | (1) | (1) |
| 4x3 | 100x80 | " | " | " | " | " | " | " | " | 20.87 | 20.12 | 20.24 |
| 6 | 150 | 17.75 | 18.27 | 20.00 | 18.64 | 19.25 | 20.00 | 20.00 | 20.12 | 30.24 | 28.12 | 28.24 |
| 6x3 | 150x80 | " | " | " | " | " | " | " | " | " | " | " |
| 6x4 | 150x100 | " | " | " | " | " | " | " | " | " | " | " |
| 8 | 200 | 21.38 | 21.87 | 24.02 | 22.38 | 22.99 | 24.02 | 24.00 | 24.13 | 32.76 | 36.00 | 36.12 |
| 8x4 | 200x100 | " | " | " | " | " | " | " | " | " | " | " |
| 8x6 | 200x150 | " | " | " | " | " | " | " | " | " | " | " |
| 10 | 250 | 26.50 | 27.00 | 29.61 | 27.88 | 28.50 | 29.61 | 29.62 | 29.72 | 39.02 | 43.00 | 43.12 |
| 10x6 | 250x150 | " | " | " | " | " | " | " | " | " | " | " |
| 10x8 | 250x200 | " | " | " | " | " | " | " | " | " | " | " |
| 12 | 300 | 29.02 | 29.53 | 32.24 | 30.51 | 31.14 | 32.24 | 32.25 | 32.36 | 44.49 | 44.49 | 44.61 |
| 12x8 | 300x200 | " | " | " | " | " | " | " | " | " | " | " |
| 16 | 400 | 40.00 | 40.51 | 43.62 | 41.61 | 42.25 | 43.62 | 43.62 | 43.74 | 55.98 | 54.72 | 55.08 |
| 16x12 | 400x300 | " | " | " | " | " | (1) | " | " | (1) | (1) | (1) |

Notes: 1. Consult Masoneilan
2. Ex. 3x2 size = valve with 3" body x standard 2" trim.

Dimensions (inches)

Body S/A (inches)

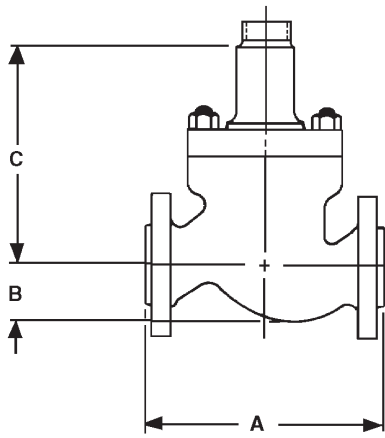
| Pressure Class | | A | | | B max | C max |
|----------------|---------|-----------------------------------|-------|-------|-------------|-------------|
| | | ANSI Class 1500 and equivalent PN | | | | |
| Valve Size | | BW & SW | RF | RTJ | All Classes | All Classes |
| inches | mm | | | | | |
| 2 | 50 | 14.76 | 14.74 | 14.88 | 3.70 | 9.84 |
| 3 | 80 | 18.11 | 18.13 | 18.23 | 5.63 | 11.81 |
| 3x2 | 80x50 | (1) | (1) | (1) | 4.57 | 9.88 |
| 4 | 100 | 20.87 | 20.88 | 21.00 | 6.26 | 12.99 |
| 4x2 | 100x50 | (1) | (1) | (1) | 6.06 | 10.28 |
| 4x3 | 100x80 | 20.87 | 20.88 | 21.00 | 6.26 | 12.68 |
| 6 | 150 | 30.24 | 30.24 | 30.47 | 8.54 | 15.35 |
| 6x3 | 150x80 | " | " | " | 7.48 | 12.68 |
| 6x4 | 150x100 | " | " | " | 7.48 | 13.46 |
| 8 | 200 | 32.76 | 38.25 | 38.62 | 8.07 | 20.51 |
| 8x4 | 200x100 | " | " | " | 8.74 | 14.41 |
| 8x6 | 200x150 | " | " | " | 8.74 | 17.05 |
| 10 | 250 | 39.02 | 46.00 | 46.38 | 9.61 | 22.44 |
| 10x6 | 250x150 | " | " | " | 9.13 | 18.46 |
| 10x8 | 250x200 | " | " | " | 9.13 | 18.46 |
| 12 | 300 | 44.49 | 47.95 | 48.58 | 14.17 | 24.65 |
| 12x8 | 300x200 | (1) | (1) | (1) | 9.84 | 20.51 |
| 16 | 400 | 55.98 | 59.37 | 60.24 | 19.09 | 31.69 |
| 16x12 | 400x300 | (1) | (1) | (1) | 17.72 | 25.59 |

Notes: 1. Consult Masoneilan
2. Ex. 3x2 size = valve with 3" body x standard 2" trim.

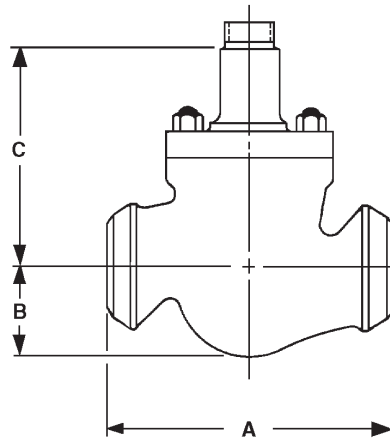
Angle Body S/A (inches)

| Pressure Class | | D | | | | | | | | | |
|----------------|-----|----------------------------------|------|----------------------------------|------|----------------------------------|-------|----------------------------------|-------|-----------------------------------|-------|
| | | ANSI Class 150 and equivalent PN | | ANSI Class 300 and equivalent PN | | ANSI Class 600 and equivalent PN | | ANSI Class 900 and equivalent PN | | ANSI Class 1500 and equivalent PN | |
| Valve Size | | RF | RTJ | RF | RTJ | RF | RTJ | RF | RTJ | RF | RTJ |
| inches | mm | | | | | | | | | | |
| 2 | 50 | 5.15 | 5.38 | 5.27 | 5.58 | 5.78 | 5.84 | 7.27 | 7.35 | 7.27 | 7.35 |
| 3 | 80 | 5.92 | 6.17 | 6.29 | 6.61 | 7.04 | 7.12 | 8.89 | 8.97 | 9.28 | 9.36 |
| 4 | 100 | 7.71 | 7.94 | 8.04 | 8.34 | 8.53 | 8.61 | 10.38 | 10.46 | 10.78 | 10.86 |
| 6 | 150 | 8.34 | 8.59 | 8.77 | 9.09 | 11.02 | 11.07 | 12.04 | 12.10 | 13.89 | 14.01 |

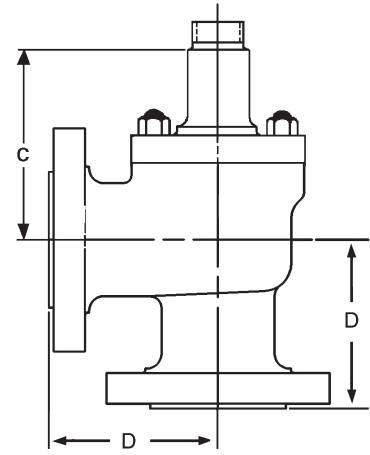
Dimensions (mm)



Flanged



**Butt, Socket Weld
or Screwed Ends**



Angle

Body S/A (mm)

| Pressure Class | | A | | | | | | | | | | |
|----------------|---------|-------------------------------------|------|-------------------------------------|------|------|-------------------------------------|------|------|-------------------------------------|------|------|
| | | ANSI Class 150 and equivalent PN | | ANSI Class 300 and equivalent PN | | | ANSI Class 600 and equivalent PN | | | ANSI Class 900 and equivalent PN | | |
| Valve Size | | RF | RTJ | BW & SW | RF | RTJ | BW & SW | RF | RTJ | BW & SW | RF | RTJ |
| inches | mm | | | | | | | | | | | |
| 2 | 50 | 254 | 267 | 286 | 267 | 282 | 286 | 285 | 289 | 375 | 374 | 378 |
| 3 | 80 | 298 | 311 | 337 | 318 | 333 | 337 | 337 | 340 | 460 | 441 | 444 |
| 3x2 | 80x50 | " | " | " | " | " | " | " | " | (1) | (1) | (1) |
| 4 | 100 | 362 | 364 | 394 | 368 | 384 | 394 | 394 | 397 | 530 | 511 | 514 |
| 4x2 | 100x50 | " | " | " | " | " | " | " | " | (1) | (1) | (1) |
| 4x3 | 100x80 | " | " | " | " | " | " | " | " | 530 | 511 | 514 |
| 6 | 150 | 451 | 464 | 473 | 489 | 500 | 508 | 508 | 511 | 768 | 714 | 717 |
| 6x3 | 150x80 | " | " | " | " | " | " | " | " | " | " | " |
| 6x4 | 150x100 | " | " | " | " | " | " | " | " | " | " | " |
| 8 | 200 | 543 | 555 | 610 | 568 | 584 | 610 | 610 | 613 | 832 | 914 | 917 |
| 8x4 | 200x100 | " | " | " | " | " | " | " | " | " | " | " |
| 8x6 | 200x150 | " | " | " | " | " | " | " | " | " | " | " |
| 10 | 250 | 673 | 686 | 752 | 708 | 724 | 752 | 752 | 755 | 991 | 1092 | 1095 |
| 10x6 | 250x150 | " | " | " | " | " | " | " | " | " | " | " |
| 10x8 | 250x200 | " | " | " | " | " | " | " | " | " | " | " |
| 12 | 300 | 737 | 750 | 819 | 775 | 791 | 812 | 819 | 822 | 1130 | 1130 | 1133 |
| 12x8 | 300x200 | " | " | " | " | " | " | " | " | " | " | " |
| 16 | 400 | 1016 | 1029 | 1108 | 1057 | 1073 | 1108 | 1108 | 1111 | 1422 | 1390 | 1399 |
| 16x12 | 400x300 | " | " | " | " | " | (1) | " | " | (1) | (1) | (1) |

Notes: 1. Consult Masoneilan

2. Ex. 80x50 size = valve with 80mm body x standard 50mm trim.

Dimensions (mm)

Body S/A (mm)

| Pressure Class | | A | | | B max | C max |
|----------------|---------|-----------------------------------|------|------|-------------|-------------|
| | | ANSI Class 1500 and equivalent PN | | | | |
| Valve Size | | BW & SW | RF | RTJ | All Classes | All Classes |
| inches | mm | | | | | |
| 2 | 50 | 375 | 374 | 378 | 94 | 250 |
| 3 | 80 | 460 | 461 | 463 | 143 | 300 |
| 3x2 | 80x50 | (1) | (1) | (1) | 116 | 251 |
| 4 | 100 | 530 | 530 | 533 | 159 | 330 |
| 4x2 | 100x50 | (1) | (1) | (1) | 154 | 261 |
| 4x3 | 100x80 | 530 | 530 | 533 | 159 | 322 |
| 6 | 150 | 768 | 768 | 774 | 217 | 390 |
| 6x3 | 150x80 | " | " | " | 190 | 322 |
| 6x4 | 150x100 | " | " | " | 190 | 342 |
| 8 | 200 | 832 | 972 | 981 | 205 | 521 |
| 8x4 | 200x100 | " | " | " | 222 | 366 |
| 8x6 | 200x150 | " | " | " | 222 | 433 |
| 10 | 250 | 991 | 1168 | 1178 | 244 | 570 |
| 10x6 | 250x150 | " | " | " | 232 | 469 |
| 10x8 | 250x200 | " | " | " | 232 | 469 |
| 12 | 300 | 1130 | 1218 | 1234 | 360 | 626 |
| 12x8 | 300x200 | (1) | (1) | (1) | 250 | 521 |
| 16 | 400 | 1422 | 1508 | 1530 | 485 | 805 |
| 16x12 | 400x300 | (1) | (1) | (1) | 450 | 650 |

Notes: 1. Consult Masoneilan

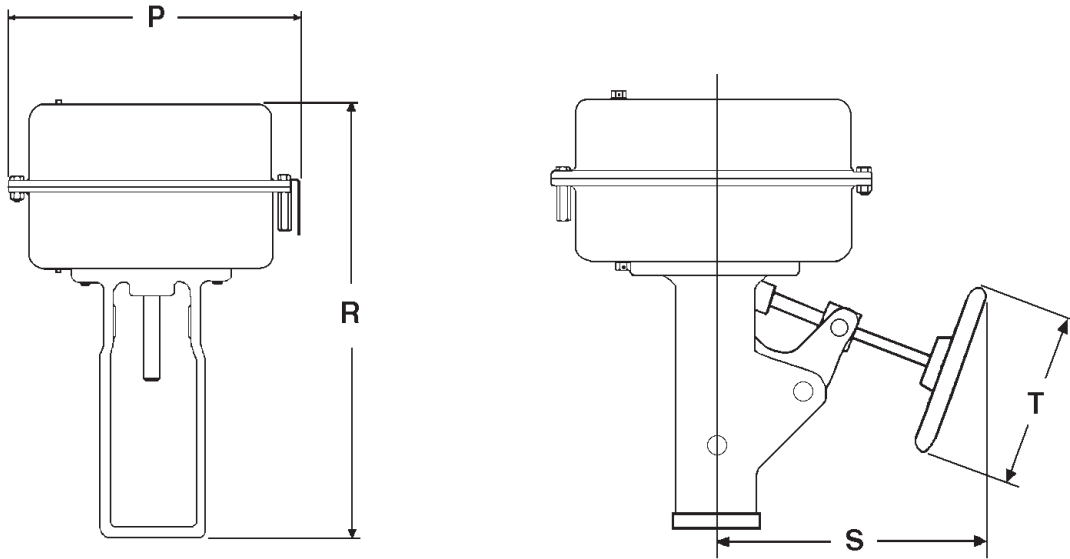
2. Ex. 80x50 size = valve with 80mm body x standard 50mm trim.

Angle Body S/A (mm)

| Pressure Class | | D | | | | | | | | | |
|----------------|-----|----------------------------------|-----|----------------------------------|-----|----------------------------------|-----|----------------------------------|-----|-----------------------------------|-----|
| | | ANSI Class 150 and equivalent PN | | ANSI Class 300 and equivalent PN | | ANSI Class 600 and equivalent PN | | ANSI Class 900 and equivalent PN | | ANSI Class 1500 and equivalent PN | |
| Valve Size | | RF | RTJ | RF | RTJ | RF | RTJ | RF | RTJ | RF | RTJ |
| inches | mm | | | | | | | | | | |
| 2 | 50 | 131 | 137 | 134 | 142 | 147 | 148 | 185 | 187 | 185 | 187 |
| 3 | 80 | 150 | 157 | 160 | 168 | 179 | 181 | 226 | 228 | 236 | 238 |
| 4 | 100 | 196 | 202 | 204 | 212 | 217 | 219 | 264 | 266 | 274 | 276 |
| 6 | 150 | 212 | 218 | 223 | 231 | 280 | 281 | 306 | 307 | 353 | 356 |

Actuator Dimensions

Model 87/88 Multi-Spring Diaphragm Actuator



Shown with optional handwheel

Model 87/88 Actuator (inches)

| Actuator Size | P | R | S | T |
|---------------|-------|-------|-------|-------|
| 6 | 11.50 | 15.54 | 10.00 | 9.00 |
| 10 | 14.50 | 19.58 | 10.90 | 12.00 |
| 16 | 18.75 | 28.22 | 14.00 | 18.00 |
| 23 | 21.63 | 30.71 | 16.00 | 18.00 |

Actuator removal clearance = 6 inches

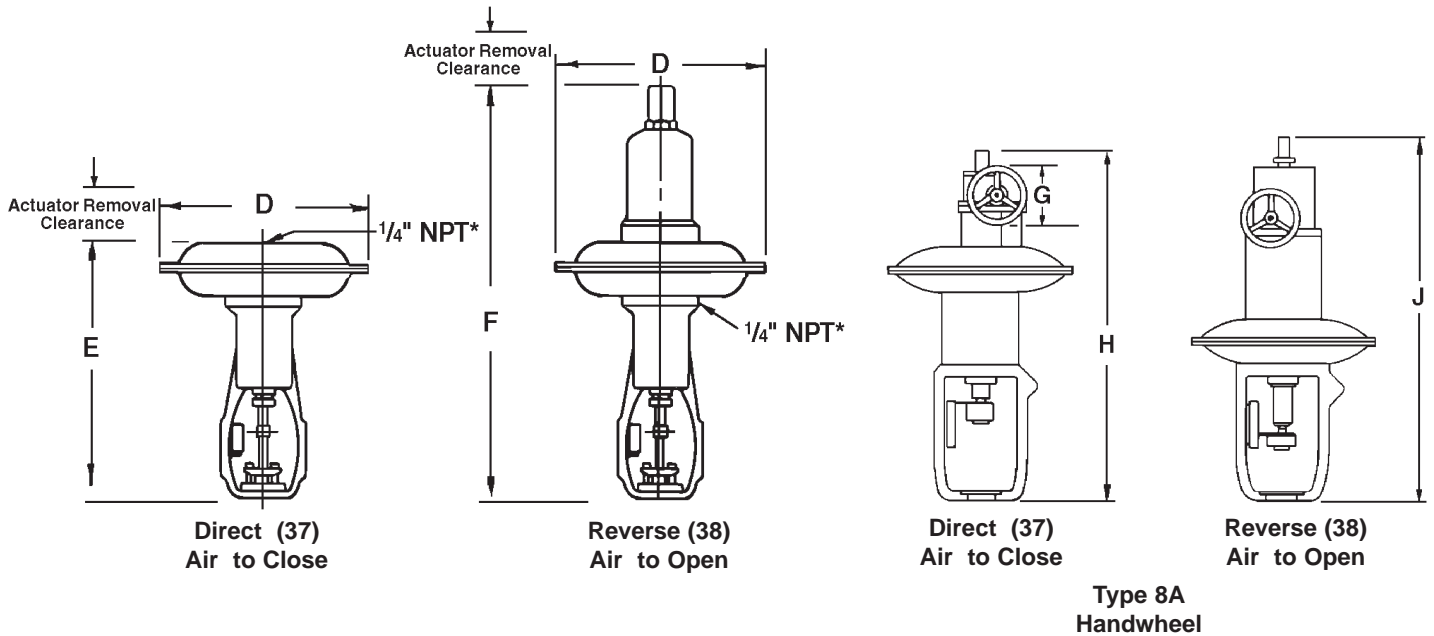
Model 87/88 Actuator (mm)

| Actuator Size | P | R | S | T |
|---------------|-----|-----|-----|-----|
| 6 | 292 | 395 | 254 | 229 |
| 10 | 368 | 497 | 277 | 305 |
| 16 | 476 | 717 | 356 | 457 |
| 23 | 549 | 780 | 406 | 457 |

Actuator removal clearance = 150 mm

Actuator Dimensions

Model 37/38 Spring Diaphragm Actuator



Model 37/38 Actuator (inches)

| Size | Actuator | | | | Side-Mounted Handwheel | | | |
|------|----------------------------|-------|--------|--------|------------------------|----|--------|--------|
| | Actuator Removal Clearance | D | E Dir. | F Rev. | Type | G | H Dir. | J Rev. |
| 18 | 5.6 | 20.75 | 33.4 | 53 max | 8A | 8 | 56 max | 66 max |
| 24 | 5.0 | 27.5 | 34.7 | 59 max | 8A | 12 | | |

* 1/2" NPT for No. 24 Actuator

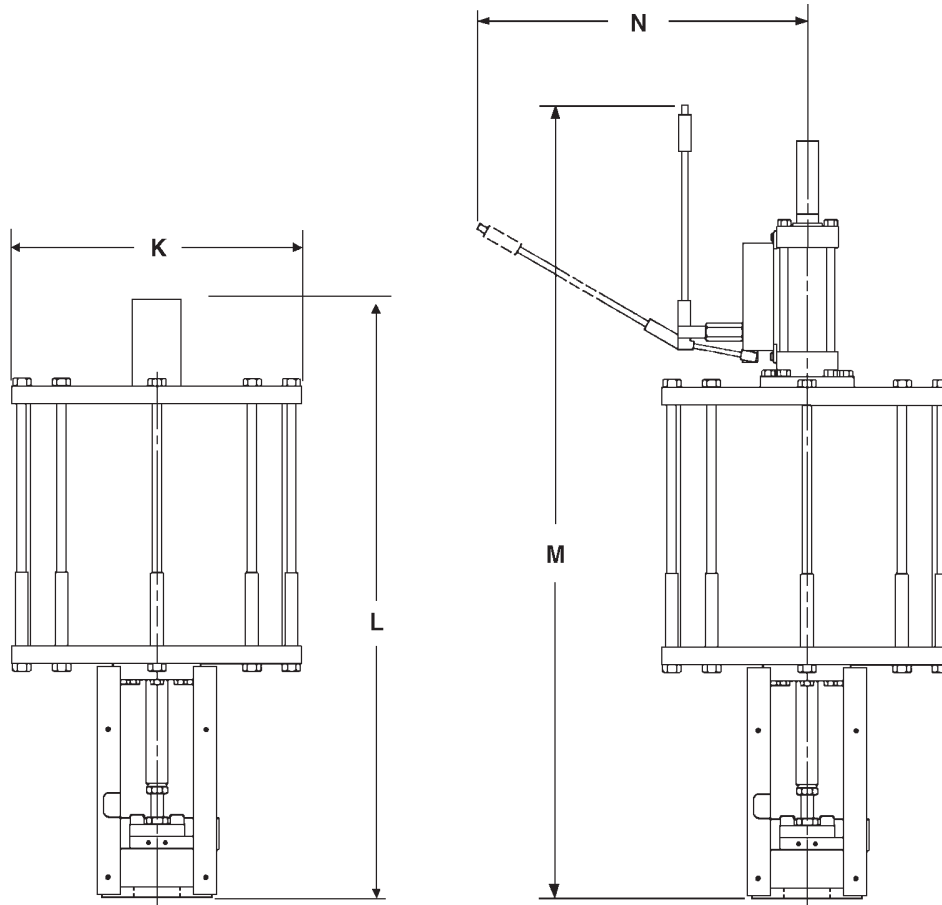
Model 37/38 Actuator (mm)

| Size | Actuator | | | | Side-Mounted Handwheel | | | |
|------|----------------------------|-----|--------|----------|------------------------|-----|----------|----------|
| | Actuator Removal Clearance | D | E Dir. | F Rev. | Type | G | H Dir. | J Rev. |
| 18 | 142 | 527 | 849 | 1353 max | 8A | 203 | 1425 max | 1667 max |
| 24 | 127 | 699 | 881 | 1505 max | 8A | 305 | | |

* 1/2" NPT for No. 24 Actuator

Actuator Dimensions

Model 84/85/86 Cylinder Actuator



Model 84/85/86 Actuator (inches)

| Actuator Size | K | L | M | N |
|---------------|-------|-------|-------|-------|
| 154 | 14.80 | 47.80 | 62.10 | 26.70 |
| 314 | 23.90 | 49.80 | 64.50 | 27.00 |

Actuator removal clearance = 6 inches
 Actuator removal clearance with handjack = 7.2 inches

Model 84/85/86 Actuator (mm)

| Actuator Size | K | L | M | N |
|---------------|-----|------|------|-----|
| 154 | 376 | 1214 | 1577 | 678 |
| 314 | 607 | 1265 | 1638 | 686 |

Actuator removal clearance = 150 mm
 Actuator removal clearance with handjack = 180 mm

Weights

Body S/A Weights (lbs)

| Valve Size | | Flanged Connection | | | | Threaded / Welded Connection | | |
|------------|-----|---------------------------------------|----------------------------------|----------------------------------|-----------------------------------|----------------------------------|----------------------------------|-----------------------------------|
| | | ANSI Class 150, 300 and equivalent PN | ANSI Class 600 and equivalent PN | ANSI Class 900 and equivalent PN | ANSI Class 1500 and equivalent PN | ANSI Class 600 and equivalent PN | ANSI Class 900 and equivalent PN | ANSI Class 1500 and equivalent PN |
| inches | mm | | | | | | | |
| 2 | 50 | 88 | 88 | 110 | 110 | 88 | 88 | 88 |
| 3 | 80 | 176 | 198 | 265 | 287 | 154 | 221 | 221 |
| 4 | 100 | 221 | 265 | 463 | 485 | 198 | 375 | 397 |
| 6 | 150 | 419 | 507 | 882 | 1036 | 397 | 750 | 816 |
| 8 | 200 | 772 | 926 | 1389 | 1698 | 772 | 1147 | 1323 |
| 10 | 250 | 1257 | 1367 | 2227 | 2646 | 1125 | 1852 | 2007 |
| 12 | 300 | 1632 | 2117 | 2933 | 4278 | 1808 | 2448 | 3330 |
| 16 | 400 | 3462 | 3837 | - | - | 3330 | - | - |

Body S/A Weights (kg)

| Valve Size | | Flanged Connection | | | | Threaded / Welded Connection | | |
|------------|-----|---------------------------------------|----------------------------------|----------------------------------|-----------------------------------|----------------------------------|----------------------------------|-----------------------------------|
| | | ANSI Class 150, 300 and equivalent PN | ANSI Class 600 and equivalent PN | ANSI Class 900 and equivalent PN | ANSI Class 1500 and equivalent PN | ANSI Class 600 and equivalent PN | ANSI Class 900 and equivalent PN | ANSI Class 1500 and equivalent PN |
| inches | mm | | | | | | | |
| 2 | 50 | 40 | 40 | 50 | 50 | 40 | 40 | 40 |
| 3 | 80 | 80 | 90 | 120 | 130 | 70 | 100 | 100 |
| 4 | 100 | 100 | 120 | 210 | 220 | 90 | 170 | 180 |
| 6 | 150 | 190 | 230 | 400 | 470 | 180 | 340 | 370 |
| 8 | 200 | 350 | 420 | 630 | 770 | 350 | 520 | 600 |
| 10 | 250 | 570 | 620 | 1010 | 1200 | 510 | 840 | 910 |
| 12 | 300 | 740 | 960 | 1330 | 1940 | 820 | 1110 | 1510 |
| 16 | 400 | 1570 | 1740 | - | - | 1510 | - | - |

Model 87/88 Spring Diaphragm Actuator (lbs)

| Size | Standard | With Handwheel |
|------|----------|----------------|
| 6 | 45 | 60 |
| 10 | 85 | 105 |
| 16 | 210 | 245 |
| 23 | 265 | 340 |

Model 87/88 Spring Diaphragm Actuator (kg)

| Size | Standard | With Handwheel |
|------|----------|----------------|
| 6 | 20 | 27 |
| 10 | 38 | 48 |
| 16 | 95 | 111 |
| 23 | 120 | 154 |

Weights

Model 37/38 Spring Diaphragm Actuator (lbs)

| Size | Standard | | With Handwheel | |
|------|----------|---------|----------------|---------|
| | Direct | Reverse | Direct | Reverse |
| 18 | 190 | 450 max | 234 | 494 |
| 24 | 375 | 540 max | 419 | 584 |

Model 37/38 Spring Diaphragm Actuator (kg)

| Size | Standard | | With Handwheel | |
|------|----------|---------|----------------|---------|
| | Direct | Reverse | Direct | Reverse |
| 18 | 86 | 204 max | 106 | 224 |
| 24 | 170 | 245 max | 190 | 265 |

Model 84/85/86 Cylinder Actuator (lbs)

| Actuator Size | Base Weight | Small Spring | Large Spring | Medium Spring | Handjack |
|---------------|-------------|--------------|--------------|---------------|----------|
| 154 | 266 | 60 | 82 | – | 100 |
| 314 | 709 | 60 | 142 | 84 | 100 |

Model 84/85/86 Cylinder Actuator (kg)

| Actuator Size | Base Weight | Small Spring | Large Spring | Medium Spring | Handjack |
|---------------|-------------|--------------|--------------|---------------|----------|
| 154 | 120 | 27 | 37 | – | 45 |
| 314 | 321 | 27 | 64 | 38 | 45 |

Options

Options

| |
|---|
| Extension Bonnets |
| Environmental Capabilities (LE Packing) |
| Lubricator & Isolation Valve |
| Other Flange Facings |
| Limit Stops |
| Body Drain Plug |
| Reducer and Nipple Connections |
| NACE Compliance |
| Custom Trim Materials |
| U.O.P. Trim Materials |
| Other Materials |
| Soft Seat (IEC 534-4 and ANSI Class VI) |
| Non-Destructive Examination |
| Oxygen Cleaning |
| Electric Actuators |

**For Accessories and additional Options,
consult Masoneilan.**

Sales Office Locations

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Fax: +49-69-4970802

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