

# CS 60 Series

## Self-Operated Pressure Regulators



### CS 60 FEATURES

The CS60 Sliding Gate Pressure Regulator is used to regulate the downstream pressure to a predetermined setpoint. The spring in the CS 60 holds the sliding gate seats in their normally open position to allow the process media to pass through the seats.

The downstream pressure is sensed beneath the diaphragm. As the downstream pressure exceeds the setpoint, pressure is exerted on the diaphragm which raises the stem to modulate the disc (the moveable component on the sliding gate seat set) toward the closed position. As the seats close, downstream pressure will be reduced to the required setpoint. A decrease in pressure relaxes the spring and diaphragm to move the seats toward the open position.

*This brochure includes the following Series:*

- **CS60:** a line of self-operating pressure regulators designed with the Cadillac Valve's sliding gate seats
- **CS61:** The CS61 features a larger diaphragm than a standard CS60 to provide even greater sensitivity and minimal offset from a required setpoint
- **CS60QC:** The CS60QC features a "Quick Change" dome for simple range spring replacements. Ideal for facilities with multiple pressure reducing applications - stock one valve with several spare springs to cover a wide range of needs
- **CS60H:** The CS60H features a handwheel that replaces the adjusting screw for easy changes to the setpoint
- **CS60HP:** Working pressure fully rated to ANSI Class 600 pressures, the HP options permits setpoints as high as 450 psi
- **CS60GP:** The CS60GP option requires grain processing modification for starch cookers and other viscous services
- **CS601/602:** The CS601 and CS602 meet higher capacity requirements than standard regulators

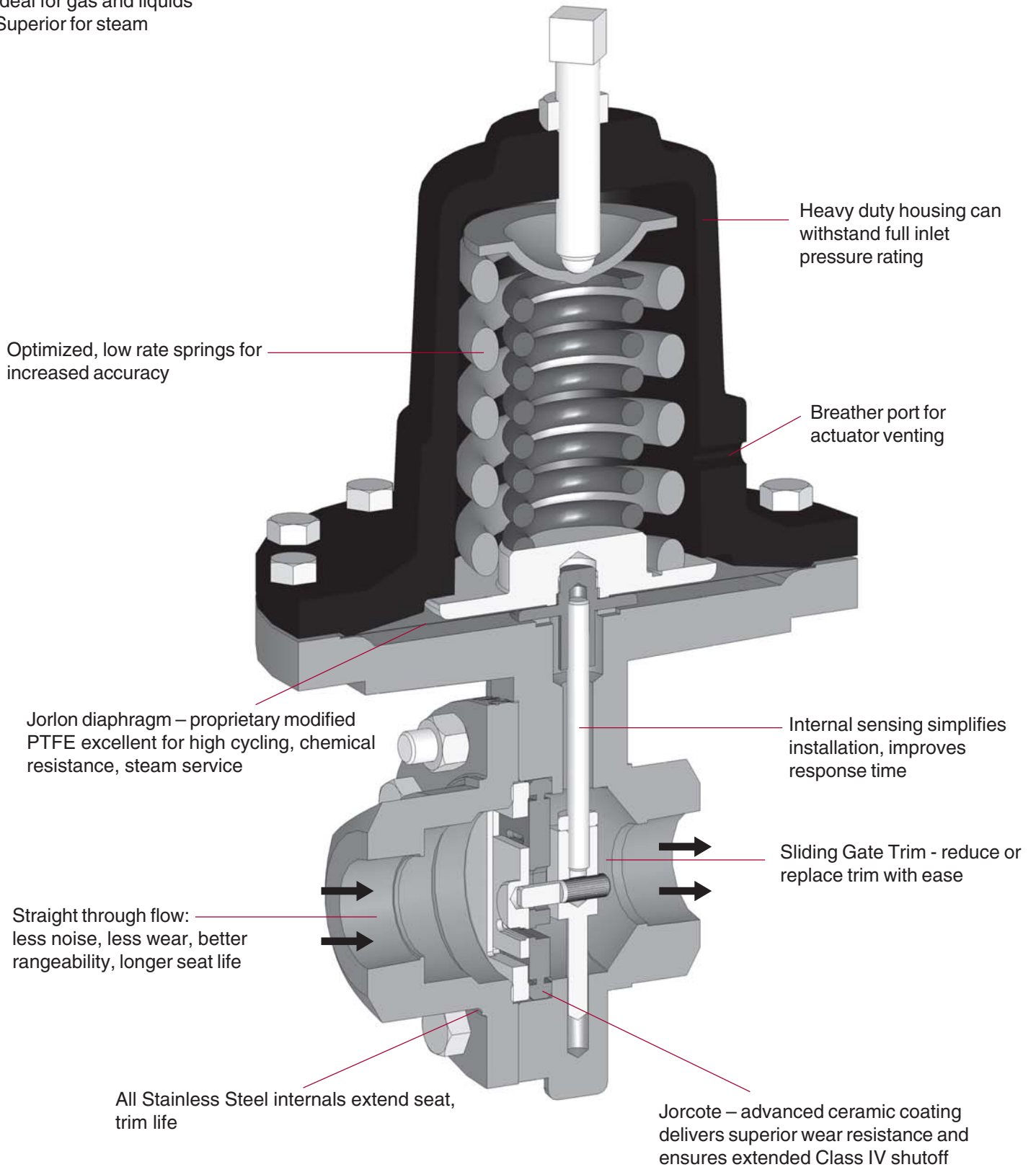
- **Sliding Gate Trim** — unique seat design for unsurpassed trim life and accuracy.
- **Jorcote Seat Coating** — ceramic composite for liquids, gases and especially steam. Very low friction with outstanding wear resistance. Steam tested to 1,000,000 cycles and still maintained Class IV leakage.
- **Jorlon Diaphragm** — extremely durable, virtually universally applicable up to 450°F, standard 316 SST diaphragm applicable up to 650°F. Tested without failure to over 1,000,000 full stroke cycles. Ideal for steam, gases and liquids.
- **Straight-through Flow** — The flow is straight through the valve seats and body. Direction of the disc travel is perpendicular to the flow, not opposed to the direction of the flow. Thus, the flow does not unbalance the seats. The CS60 can use a wider range of its stroke to give accurate control; less offset.
- **Quiet Operation** — typically 5-10 dB less than conventional globe style regulators. The disc and plate are always in contact, which eliminates chattering. Straight-through flow minimizes turbulence. Multiple orifices in the plate and disc divide the flow stream into smaller flow components.
- **Minimum Maintenance** — The CS60 sliding gate seats require no special tools for disassembly. The seats are pre-lapped at the factory and are self-lapping while in operation ensuring a continual tight shutoff.

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**CS 60 Series**

Ideal for gas and liquids  
Superior for steam



**SPECIFICATIONS — CS60/60QC/61/60HP**

**Sizes:** (note: 1/4" & 3/8" sizes use 1/2" body with reducers)

- CS 60: 1/4" through 4" (DN8 through DN100)
- CS 60QC: 1/4" through 2" (DN8 through DN50)
- CS 61: 1/4" through 3/4" (DN8 through DN20)
- CS 60HP: 1/4" through 4" (DN8 through DN100)

**End Connections**

- Threaded — FNPT, BSPT, BSPP (1/2" - 2" only, DN15-DN50)
- ANSI Flanges (150#, 300#)
- DIN Flanges (PN10/16, PN25/40)

**Spring Housing**

- CI or DI — 1/4" through 2" (DN8 through DN50)
- DI/Steel — 2-1/2" through 4" (DN65 through DN100)

**Body Materials**

- Ductile Iron
- Bronze (1/2" - 2", DN15 through DN50)
- Carbon Steel (A216 WCB)
- Stainless Steel (A351/CF8M)

**Trim Materials:**

- 303SST — Standard on Ductile Iron, Bronze, Carbon Steel valves
- 316SST — Standard on Stainless Steel valves
- Monel, Hastelloy and other Alloys available

**Reduced Pressure Control Ranges:** Select a range to match your setpoint. For optimal performance, your setpoint should fall in the upper portion of the selected range.

| Model     | Size (DN)                     | Spring Ranges               |                            |             |              |
|-----------|-------------------------------|-----------------------------|----------------------------|-------------|--------------|
|           |                               | PSI                         | BAR                        |             |              |
| 60 & 60QC | 1/4" - 3/4"<br>(DN8 - DN20)   | 2 - 23                      | 0.14 - 1.59                |             |              |
|           |                               | 10 - 38                     | 0.69 - 2.62                |             |              |
|           |                               | 20 - 55                     | 1.38 - 3.79                |             |              |
|           |                               | 30 - 85                     | 2.07 - 5.86                |             |              |
|           |                               | 35 - 160                    | 2.41 - 11.03               |             |              |
|           |                               | 95 - 220                    | 6.55 - 15.17               |             |              |
|           | 1" - 2"<br>(DN25 - DN50)      | 1 - 5                       | 0.07 - 0.34                |             |              |
|           |                               | 3 - 8                       | 0.21 - 0.55                |             |              |
|           |                               | 5 - 20                      | 0.34 - 1.38                |             |              |
|           |                               | 10 - 30                     | 0.69 - 2.07                |             |              |
|           |                               | 20 - 45                     | 1.38 - 3.10                |             |              |
|           |                               | 30 - 95                     | 2.07 - 6.55                |             |              |
|           | 2-1/2" - 4"<br>(DN65 - DN100) | 60 - 160                    | 4.14 - 11.03               |             |              |
|           |                               | 7 - 18                      | 0.48 - 1.24                |             |              |
|           |                               | 10 - 25                     | 0.69 - 1.72                |             |              |
|           |                               | 15 - 35                     | 1.03 - 2.41                |             |              |
|           |                               | 60HP                        | 1/2" - 2"<br>(DN15 - DN40) | 75 - 190    | 5.17 - 13.10 |
|           |                               |                             |                            | 100 - 320   | 6.89 - 22.06 |
| 150 - 450 | 10.34 - 31.02                 |                             |                            |             |              |
| 61        | 2-1/2" - 4"<br>(DN65 - DN100) | 30 - 75                     | 3.07 - 5.17                |             |              |
|           |                               | 65 - 110                    | 4.48 - 7.58                |             |              |
|           |                               | 1/4" - 3/4"<br>(DN8 - DN20) | 1 - 5                      | 0.07 - 0.34 |              |
| 2 - 12    | 0.14 - 0.83                   |                             |                            |             |              |
| 2 - 25    | 0.14 - 1.72                   |                             |                            |             |              |
| 10 - 35   | 0.69 - 2.41                   |                             |                            |             |              |
| 20 - 55   | 1.38 - 3.79                   |                             |                            |             |              |
| 20 - 80   | 1.38 - 5.52                   |                             |                            |             |              |
| 40 - 115  | 2.76 - 7.93                   |                             |                            |             |              |
| 25 - 160  | 1.72 - 11.03                  |                             |                            |             |              |
| 30 - 180  | 2.07 - 12.41                  |                             |                            |             |              |

**Seat Materials:**

- Jorcote on SST — Standard
- Jorcote/Jordanic on SST — For Severe Service
- Other materials available — Consult Factory

**Diaphragm Materials:**

- Stainless Steel — Standard on 1/4" - 2" (DN8-DN50)
- Jorlon — 1/2" - 4" (DN15-DN100) ideal for steam up to 400 psi
- Buna-N — Standard on 2-1/2" - 4" (DN65-DN100)
- Viton — Optional

**Service:** Steam, water, oil, gas, air and chemicals

**Shutoff:** ANSI Class IV

**Options:**

- **Double Bolting:** increases the pressure rating of the valve and ensures a tight seal between the spring housing and the body for services with high inlet pressures
- **High Pressure Spring Housing:** the HP option is an elongated spring housing that features a large spring for high pressure setpoints (up to 450 psi/31bar)
- **Handwheel:** the H option is a handwheel that is mounted on the adjusting screw to allow for easy setpoint changes
- **Exotic Alloys:** where service conditions dictate the use of specialty materials, the CS 60 Series can be produced with bodies, trim and seats in Monel, Alloy 20, Hastelloy B, Hastelloy C, Titanium and others
- **GP Option:** grain processing modification for starch cookers and other viscous services. Available on Stainless Steel valves in 1/4" - 2" sizes only (DN8 - DN50)
- **Cryogenic Service:** CR option is a special spring housing for use if valve is in cryogenic service

**CV Values & Maximum Differential Pressures**

| Cv (Kv)     | Size (DN)                  | Seat Material | Maximum ΔP PSI (bar) |
|-------------|----------------------------|---------------|----------------------|
| 0.84 (0.74) | 1/4" & 3/8"<br>(DN8 & 12)  | SST           | 125 (8.62)           |
| 1.6 (1.38)  |                            | Jorcote       | 400 (27.58)          |
| 2.5 (2.15)  | 1/2" & 3/4"<br>(DN15 & 20) | SST           | 125 (8.62)           |
| 4.4 (3.78)  |                            | Jorcote       | 400 (27.58)          |
| 6.4 (5.50)  | 1" & 1-1/4"<br>(DN25 & 32) | SST           | 125 (8.62)           |
| 9.5 (8.17)  |                            | Jorcote       | 400 (27.58)          |
| 15 (12.9)   | 1-1/2"<br>(DN40)           | SST           | 75 (5.17)            |
|             |                            | Jorcote       | 325 (22.41)          |
| 25 (21.5)   | 2"<br>(DN50)               | SST           | 75 (5.17)            |
| 30 (25.8)   |                            | Jorcote       | 325 (22.41)          |
| 55 (47.3)   | 2-1/2" (DN65)              | Jorcote       | 150 (10.34)          |
| 115 (98.9)  | 3" (DN80)                  | Jorcote       | 150 (10.34)          |
| 200 (172)   | 4" (DN100)                 | Jorcote       | 150 (10.34)          |

**Low Flow Cv's:** reduced Cv's (Kv's) are available. Cv (Kv) ratings of smaller sized valve can be supplied in a larger valve size

|               |               |               |                                |             |
|---------------|---------------|---------------|--------------------------------|-------------|
| 0.42 (0.36)   | 0.21 (0.18)   | 0.08 (0.07)   | 0.04 (0.03)                    | 0.02 (0.02) |
| 0.008 (0.007) | 0.004 (0.003) | 0.002 (0.002) | 0.0008 (0.0007) (N/A in 316SS) |             |

CS60 SELF-OPERATING PRESSURE REGULATORS

**Cv VERSUS OFFSET DATA**

| Size<br>NPS | Installed<br>Cv | Set<br>Pressure | Model 60 & 60QC   |                    |                    |                    |                    |        |
|-------------|-----------------|-----------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------|
|             |                 |                 | Cv @ 5%<br>Offset | Cv @ 10%<br>Offset | Cv @ 15%<br>Offset | CV @ 20%<br>Offset | Cv @ 30%<br>Offset |        |
| 1/4" - 3/4" | 1.6             | 25              | 0.21              | 0.34               | 0.49               | 0.65               | 1.02               |        |
|             |                 | 35              | 0.24              | 0.38               | 0.53               | 0.69               | 1.06               |        |
|             |                 | 55              | 0.31              | 0.46               | 0.63               | 0.82               | 1.25               |        |
|             |                 | 160             | 0.79              | 1.11               | 1.50               | 1.60               | 1.60               |        |
|             |                 | 220             | 1.00              | 1.60               | 1.60               | 1.60               | 1.60               |        |
|             | 2.5             | 20              | 0.33              | 0.49               | 0.76               | 0.96               | 1.54               |        |
|             |                 | 35              | 0.38              | 0.55               | 0.83               | 1.03               | 1.60               |        |
|             |                 | 55              | 0.48              | 0.68               | 0.99               | 1.23               | 1.82               |        |
|             |                 | 160             | 1.23              | 1.68               | 2.27               | 2.50               | 2.50               |        |
|             |                 | 220             | 1.58              | 2.12               | 2.50               | 2.50               | 2.50               |        |
|             | 4.4             | 20              | 0.58              | 0.94               | 1.34               | 1.78               | 2.81               |        |
|             |                 | 35              | 0.67              | 1.05               | 1.45               | 1.90               | 2.91               |        |
|             |                 | 55              | 0.84              | 1.28               | 1.74               | 2.25               | 3.43               |        |
|             |                 | 160             | 2.16              | 3.04               | 4.00               | 4.40               | 4.40               |        |
|             |                 | 220             | 2.79              | 3.81               | 4.40               | 4.40               | 4.40               |        |
| 1" - 1-1/4" | 6.4             | 5               | 0.72              | 0.99               | 1.29               | 1.62               | 2.41               |        |
|             |                 | 8               | 0.77              | 1.09               | 1.44               | 1.83               | 2.75               |        |
|             |                 | 30              | 0.92              | 1.36               | 1.83               | 2.34               | 3.48               |        |
|             |                 | 45              | 0.99              | 1.48               | 2.00               | 2.56               | 3.80               |        |
|             |                 | 95              | 1.36              | 2.14               | 2.96               | 3.83               | 5.74               |        |
|             |                 | 160             | 1.92              | 3.14               | 4.41               | 5.74               | 6.40               |        |
|             | 9.5             | 5               | 1.06              | 1.46               | 1.91               | 2.41               | 3.58               |        |
|             |                 | 8               | 1.15              | 1.62               | 2.14               | 2.72               | 4.08               |        |
|             |                 | 30              | 1.37              | 2.02               | 2.72               | 3.47               | 5.12               |        |
|             |                 | 45              | 1.47              | 2.20               | 2.98               | 3.80               | 5.64               |        |
|             |                 | 95              | 2.01              | 3.17               | 4.40               | 5.69               | 8.52               |        |
|             |                 | 160             | 2.85              | 4.66               | 6.54               | 8.53               | 9.50               |        |
|             | 1-1/2"          | 15              | 5                 | 1.55               | 2.11               | 2.72               | 3.40               | 5.02   |
|             |                 |                 | 8                 | 1.67               | 2.32               | 3.03               | 3.82               | 5.69   |
|             |                 |                 | 30                | 1.97               | 2.86               | 3.82               | 4.85               | 7.17   |
| 45          |                 |                 | 2.10              | 3.10               | 4.16               | 5.30               | 7.81               |        |
| 95          |                 |                 | 2.84              | 4.42               | 6.10               | 7.87               | 11.71              |        |
| 160         |                 |                 | 3.98              | 6.44               | 9.02               | 11.73              | 15.00              |        |
| 2"          | 25              | 5               | 2.86              | 3.95               | 5.15               | 6.50               | 9.70               |        |
|             |                 | 8               | 3.09              | 4.37               | 5.79               | 8.21               | 11.07              |        |
|             |                 | 30              | 3.69              | 5.46               | 7.37               | 9.42               | 14.04              |        |
|             |                 | 45              | 3.96              | 5.95               | 8.07               | 10.33              | 15.34              |        |
|             |                 | 95              | 5.45              | 8.60               | 11.94              | 15.47              | 23.20              |        |
|             |                 | 160             | 7.74              | 12.65              | 17.81              | 23.2               | 25.00              |        |
|             | 30              | 5               | 3.11              | 4.21               | 5.43               | 6.79               | 10.04              |        |
|             |                 | 8               | 3.34              | 4.64               | 6.06               | 7.65               | 11.39              |        |
|             |                 | 30              | 3.93              | 5.72               | 7.64               | 9.70               | 14.34              |        |
|             |                 | 45              | 4.20              | 6.20               | 8.33               | 10.60              | 15.62              |        |
|             |                 | 95              | 5.69              | 8.85               | 12.19              | 15.73              | 23.48              |        |
|             |                 | 160             | 7.97              | 12.89              | 18.04              | 23.45              | 30.00              |        |
|             | 2-1/4" - 4"     | 55              | 17                | 11.72              | 21.47              | 32.08              | 43.68              | 55.00  |
|             |                 |                 | 25                | 10.92              | 19.67              | 29.08              | 39.23              | 55.00  |
|             |                 |                 | 35                | 9.83               | 17.31              | 25.22              | 33.59              | 51.92  |
| 115         |                 | 18              | 21.92             | 39.47              | 58.58              | 79.48              | 115.00             |        |
|             |                 | 25              | 20.46             | 36.23              | 53.17              | 71.44              | 112.61             |        |
|             |                 | 35              | 18.50             | 31.96              | 46.20              | 61.29              | 94.30              |        |
| 200         |                 | 18              | 34.71             | 61.53              | 90.74              | 122.68             | 196.40             |        |
|             |                 | 25              | 32.47             | 56.57              | 82.47              | 110.39             | 173.29             |        |
|             |                 |                 | 35                | 29.48              | 20.05              | 71.81              | 94.85              | 145.29 |

Notes:

1. Installed Cv is the Failure Cv for Safety Relief Valve Sizing
2. Assumes SST diaphragm, optimal spring range for set point, and minimum flow = 5% of Cv
3.  Indicates valve reaches full Cv before offset is attained
4. Offset: also known as "droop", inaccuracy or deviation from setpoint is an inherent characteristic of self-operated regulators. Many factors affect and determine offset. Spring rate, diaphragm area and stroke length are three key factors. The short stroke of the SLIDING GATE design helps minimize droop. These tables can be used to estimate performance of the CS60 regulator.

**Cv VERSUS OFFSET DATA**

| Model 61    |              |              |                |                 |                 |                 |                 |
|-------------|--------------|--------------|----------------|-----------------|-----------------|-----------------|-----------------|
| Size NPS    | Installed Cv | Set Pressure | Cv @ 5% Offset | Cv @ 10% Offset | Cv @ 15% Offset | CV @ 20% Offset | Cv @ 30% Offset |
| 1/4" - 3/4" | 1.6          | 5            | 0.23           | 0.33            | 0.44            | 0.56            | 0.86            |
|             |              | 12           | 0.29           | 0.44            | 0.60            | 0.78            | 1.21            |
|             |              | 25           | 0.36           | 0.56            | 0.78            | 1.03            | 1.60            |
|             |              | 35           | 0.39           | 0.63            | 0.88            | 1.16            | 1.60            |
|             |              | 55           | 0.44           | 0.71            | 1.00            | 1.31            | 1.60            |
|             |              | 80           | 0.49           | 0.81            | 1.14            | 1.51            | 1.60            |
|             |              | 115          | 0.56           | 0.92            | 1.30            | 1.60            | 1.60            |
|             |              | 160          | 0.75           | 1.27            | 1.60            | 1.60            | 1.60            |
|             | 180          | 0.79         | 1.33           | 1.60            | 1.60            | 1.60            |                 |
|             | 2.5          | 5            | 0.36           | 0.51            | 0.69            | 0.88            | 1.34            |
|             |              | 12           | 0.45           | 0.68            | 0.93            | 1.22            | 1.89            |
|             |              | 25           | 0.56           | 0.87            | 1.22            | 1.61            | 2.50            |
|             |              | 35           | 0.62           | 0.98            | 1.38            | 1.82            | 2.50            |
|             |              | 55           | 0.68           | 1.10            | 1.56            | 2.05            | 2.50            |
|             |              | 80           | 0.77           | 1.26            | 1.78            | 2.34            | 2.50            |
|             |              | 115          | 0.87           | 1.44            | 2.03            | 2.50            | 2.50            |
|             |              | 160          | 1.18           | 1.98            | 2.50            | 2.50            | 2.50            |
|             | 180          | 1.24         | 2.07           | 2.50            | 2.50            | 2.50            |                 |
|             | 4.4          | 5            | 0.63           | 0.90            | 1.21            | 1.55            | 2.35            |
|             |              | 12           | 0.79           | 1.20            | 1.64            | 2.14            | 3.32            |
|             |              | 25           | 0.98           | 1.54            | 2.15            | 2.83            | 4.40            |
|             |              | 35           | 1.08           | 1.73            | 2.43            | 3.20            | 4.40            |
|             |              | 55           | 1.21           | 1.94            | 2.74            | 3.61            | 4.40            |
|             |              | 80           | 1.36           | 2.22            | 3.13            | 4.12            | 4.40            |
| 115         |              | 1.54         | 2.53           | 3.57            | 4.40            | 4.40            |                 |
| 160         |              | 2.07         | 3.48           | 4.40            | 4.40            | 4.40            |                 |
| 180         | 2.18         | 3.65         | 4.40           | 4.40            | 4.40            |                 |                 |

Notes:

1. Installed Cv is the Maximum Cv for Safety Relief Valve Sizing
2. Assumes SST diaphragm, optimal spring range for set point, and minimum flow = 5% of Cv
3.  Indicates valve reaches full Cv before offset is attained

**MAXIMUM WORKING PRESSURE, PSI**

**MAXIMUM WORKING PRESSURE, BAR**

| Temp °F    | 1/4" - 2" |           |           |          |           |           |
|------------|-----------|-----------|-----------|----------|-----------|-----------|
|            | DI Body   |           |           | BRZ Body |           |           |
|            | 150#      | 300#      | TE        | 150#     | 300#      | TE        |
| -20 to 100 | 250       | 300 [600] | 300 [600] | 225      | 300 [500] | 300 [500] |
| 200        | 235       | 300 [600] | 300 [600] | 215      | 300 [475] | 300 [475] |
| 300        | 215       | 300 [565] | 300 [600] | 195      | 300 [425] | 300 [425] |
| 400        | 200       | 300 [525] | 300 [600] | 170      | 300 [375] | 300 [375] |
| 500        | 170       | 300 [495] | 300 [600] | 150      | 300 [325] | 300 [325] |
| 600        | 140       | 300 [465] | 300 [600] | —        | —         | —         |
| 650        | 125       | 300 [450] | 300 [600] | —        | —         | —         |

| Temp °C   | DN8 - DN50 |         |         |          |         |         |
|-----------|------------|---------|---------|----------|---------|---------|
|           | DI Body    |         |         | BRZ Body |         |         |
|           | 150#       | 300#    | TE      | 150#     | 300#    | TE      |
| -29 to 38 | 17         | 21 [41] | 21 [41] | 16       | 21 [34] | 21 [34] |
| 93        | 16         | 21 [41] | 21 [41] | 15       | 21 [33] | 21 [33] |
| 149       | 15         | 21 [39] | 21 [41] | 13       | 21 [29] | 21 [29] |
| 204       | 14         | 21 [36] | 21 [41] | 12       | 21 [26] | 21 [26] |
| 260       | 12         | 21 [34] | 21 [41] | 10       | 21 [22] | 21 [22] |
| 316       | 10         | 21 [32] | 21 [41] | —        | —       | —       |
| 343       | 9          | 21 [31] | 21 [41] | —        | —       | —       |

| Temp °F    | 1/4" - 2" |           |           |         |           |           |
|------------|-----------|-----------|-----------|---------|-----------|-----------|
|            | CS Body   |           |           | SS Body |           |           |
|            | 150#      | 300#      | TE        | 150#    | 300#      | TE        |
| -20 to 100 | 285       | 300 [740] | 300 [950] | 275     | 300 [720] | 300 [950] |
| 200        | 260       | 300 [675] | 300 [950] | 240     | 300 [620] | 300 [950] |
| 300        | 230       | 300 [655] | 300 [950] | 215     | 300 [560] | 300 [950] |
| 400        | 200       | 300 [635] | 300 [950] | 195     | 300 [515] | 300 [950] |
| 500        | 170       | 300 [600] | 300 [950] | 170     | 300 [480] | 300 [950] |
| 600        | 140       | 300 [550] | 300 [950] | 140     | 300 [450] | 300 [905] |
| 650        | 125       | 300 [535] | 300 [950] | 125     | 300 [445] | 300 [890] |

| Temp °C   | DN8 - DN50 |         |         |         |         |         |
|-----------|------------|---------|---------|---------|---------|---------|
|           | CS Body    |         |         | SS Body |         |         |
|           | 150#       | 300#    | TE      | 150#    | 300#    | TE      |
| -29 to 38 | 20         | 21 [51] | 21 [66] | 19      | 21 [49] | 21 [66] |
| 93        | 18         | 21 [47] | 21 [66] | 17      | 21 [43] | 21 [66] |
| 149       | 16         | 21 [45] | 21 [66] | 15      | 21 [39] | 21 [66] |
| 204       | 14         | 21 [44] | 21 [66] | 13      | 21 [36] | 21 [66] |
| 260       | 12         | 21 [41] | 21 [66] | 12      | 21 [33] | 21 [66] |
| 316       | 10         | 21 [38] | 21 [66] | 10      | 21 [31] | 21 [62] |
| 343       | 9          | 21 [37] | 21 [66] | 9       | 21 [31] | 21 [61] |

| Temp °F    | 2-1/2" - 4" |      |         |      |         |      |
|------------|-------------|------|---------|------|---------|------|
|            | DI Body     |      | CS Body |      | SS Body |      |
|            | 150#        | 300# | 150#    | 300# | 150#    | 300# |
| -20 to 100 | 250         | 500  | 285     | 500  | 275     | 500  |
| 200        | 235         | 500  | 260     | 500  | 240     | 500  |
| 300        | 215         | 500  | 230     | 500  | 215     | 500  |
| 400        | 200         | 500  | 200     | 500  | 195     | 500  |
| 500        | 170         | 495  | 170     | 500  | 170     | 500  |
| 600        | 140         | 300  | 140     | 300  | 140     | 300  |
| 650        | 125         | 300  | 125     | 300  | 125     | 300  |

| Temp °C   | DN65- DN100 |      |         |      |         |      |
|-----------|-------------|------|---------|------|---------|------|
|           | DI Body     |      | CS Body |      | SS Body |      |
|           | 150#        | 300# | 150#    | 300# | 150#    | 300# |
| -29 to 38 | 17          | 34   | 20      | 34   | 19      | 34   |
| 93        | 16          | 34   | 18      | 34   | 17      | 34   |
| 149       | 15          | 34   | 16      | 34   | 15      | 34   |
| 204       | 4           | 34   | 14      | 34   | 13      | 34   |
| 260       | 12          | 34   | 12      | 34   | 12      | 34   |
| 316       | 10          | 21   | 10      | 21   | 10      | 21   |
| 343       | 9           | 21   | 9       | 21   | 9       | 21   |

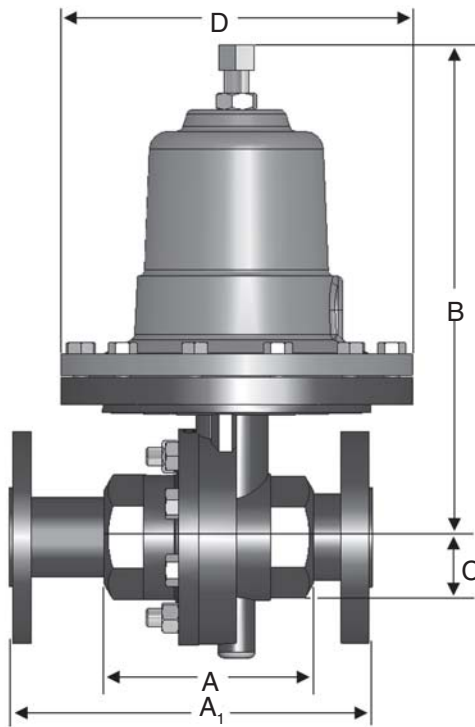
| Temp °F | 60 HP Series (1/2" - 2") |                    |
|---------|--------------------------|--------------------|
|         | CS Body                  | SS Body            |
|         | 600# Flange or NPT       | 600# Flange or NPT |
| 100     | 1480                     | 1440               |
| 200     | 1355                     | 1240               |
| 300     | 1315                     | 1120               |
| 400     | 1270                     | 1030               |
| 500     | 1208                     | 955                |
| 600     | 1095                     | 905                |
| 650     | 1075                     | 890                |

| Temp °C | 60 HP Series (DN15-50) |                    |
|---------|------------------------|--------------------|
|         | CS Body                | SS Body            |
|         | 600# Flange or NPT     | 600# Flange or NPT |
| 38      | 102                    | 99                 |
| 93      | 93                     | 85                 |
| 149     | 91                     | 77                 |
| 204     | 88                     | 71                 |
| 260     | 83                     | 66                 |
| 316     | 75                     | 62                 |
| 343     | 74                     | 61                 |

Notes:

- 1 Double bolting option is required to reach pressures indicated in Brackets [ ].
- 2 If weld flanges are supplied, use ratings in "TE" column or flange rating, whichever is less (i.e. ANSI 600/900 flanges or PN64/100 flanges).
- 3 Consult factory for availability of ANSI/DIN/JIS flanges not indicated above.

**DIMENSIONS — CS60/CS60QC**



■ CS 60/CS60QC\*: Threaded & FSW Ends

| Size   | Material | A     | B      | B~QC   | C     | D     | Weight (lbs) |
|--------|----------|-------|--------|--------|-------|-------|--------------|
| 1/2"   | DI/BRZ   | 3.62" | 8.50"  | 10.25" | 1.69" | 5.12" | 10           |
|        | CS/SS    | 3.62" | 8.50"  | 10.25" | 1.69" | 5.12" | 12           |
| 3/4"   | DI/BRZ   | 3.62" | 8.50"  | 10.25" | 1.69" | 5.12" | 10           |
|        | CS/SS    | 3.62" | 8.50"  | 10.25" | 1.69" | 5.12" | 12           |
| 1"     | DI/BRZ   | 4.12" | 10.00" | 11.37" | 2.62" | 7.09" | 21           |
|        | CS/SS    | 4.18" | 10.75" | 12.00" | 2.62" | 7.09" | 25           |
| 1-1/4" | DI/BRZ   | 4.12" | 10.00" | 11.37" | 2.62" | 7.09" | 21           |
| 1-1/2" | DI/BRZ   | 4.50" | 10.25" | 11.37" | 2.31" | 7.09" | 23           |
|        | CS/SS    | 4.81" | 11.00" | 12.25" | 2.25" | 7.09" | 31           |
| 2"     | DI/BRZ   | 4.50" | 10.25" | 11.37" | 2.75" | 7.09" | 26           |
|        | CS/SS    | 5.50" | 11.00" | 12.25" | 2.75" | 7.09" | 35           |

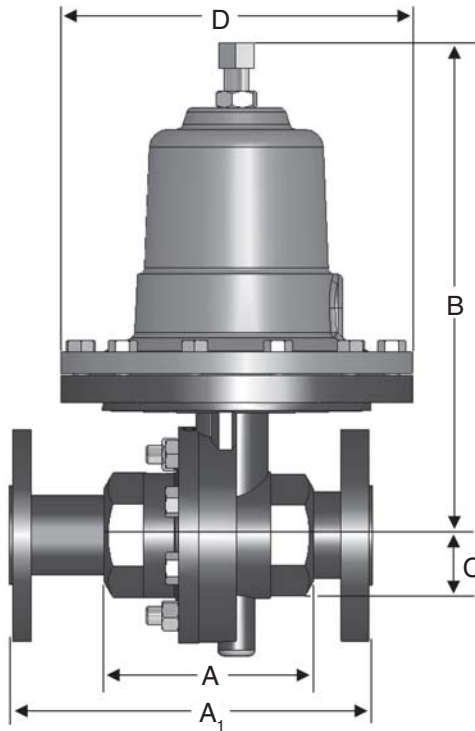
\*For CS60QC, use Column B~QC

■ CS 60/CS60QC: Threaded & FSW Ends, Metric

| Size | Material | A   | B   | C  | D   | Weight (kg) |
|------|----------|-----|-----|----|-----|-------------|
| DN15 | DI/BRZ   | 92  | 216 | 43 | 130 | 4,4         |
|      | CS/SS    | 92  | 216 | 43 | 130 | 5,4         |
| DN20 | DI/BRZ   | 92  | 216 | 43 | 130 | 4,5         |
|      | CS/SS    | 92  | 216 | 43 | 130 | 5,4         |
| DN25 | DI/BRZ   | 105 | 254 | 67 | 180 | 9,5         |
|      | CS/SS    | 106 | 273 | 67 | 180 | 11,3        |
| DN32 | DI/BRZ   | 105 | 254 | 67 | 180 | 9,5         |
| DN40 | DI/BRZ   | 114 | 260 | 59 | 180 | 10,4        |
|      | CS/SS    | 122 | 279 | 57 | 180 | 14,0        |
| DN50 | DI/BRZ   | 114 | 260 | 70 | 180 | 11,8        |
|      | CS/SS    | 140 | 279 | 70 | 180 | 15,9        |

\*For CS60QC, use Column B~QC

**DIMENSIONS — CS60**



■ CS 60: Flanged Ends, ANSI

| Size              | ANSI Flange | Dimensions (in)    |                   |        |       |              |      | Weight (lbs) |       |
|-------------------|-------------|--------------------|-------------------|--------|-------|--------------|------|--------------|-------|
|                   |             | A1                 |                   | B      |       | C            | D    | DI/BRZ       | CS/SS |
|                   |             | DI/BRZ             | CS/SS             | DI/BRZ | CS/SS | ALL          | ALL  |              |       |
| 1/2"              | 150#        | 7.25               | 7.25              | 8.50   | 8.50  | 1.69         | 5.12 | 13           | 15    |
|                   | 300#        | 7.50               | 7.50              | 8.50   | 8.50  | 1.69         | 5.12 | 14           | 16    |
| 3/4"              | 150#        | 7.25               | 7.25              | 8.50   | 8.50  | 1.69         | 5.12 | 14           | 16    |
|                   | 300#        | 7.62               | 7.62              | 8.50   | 8.50  | 1.69         | 5.12 | 16           | 17    |
| 1"                | 150#        | 7.25               | 7.25              | 10.00  | 10.75 | 2.62         | 7.09 | 26           | 34    |
|                   | 300#        | 8.75 <sup>1</sup>  | 7.75 <sup>2</sup> | 10.00  | 10.75 | 2.62         | 7.09 | 28           | 37    |
| 1-1/4"            | 150#        | 7.87               | —                 | 10.00  | —     | 2.62         | 7.09 | 28           | —     |
|                   | 300#        | 8.37               | —                 | 10.00  | —     | 2.62         | 7.09 | 31           | —     |
| 1-1/2"            | 150#        | 8.75               | 8.75              | 10.25  | 11.22 | 2.31         | 7.09 | 42           | 46    |
|                   | 300#        | 10.25 <sup>1</sup> | 9.25 <sup>2</sup> | 10.25  | 11.22 | 2.31         | 7.09 | 45           | 52    |
| 2"                | 150#        | 10.00              | 10.00             | 10.25  | 11.42 | 2.75         | 7.09 | 46           | 50    |
|                   | 300#        | 10.50              | 10.50             | 10.25  | 11.42 | 2.75         | 7.09 | 49           | 55    |
| Flanged End CS/SS |             |                    |                   |        |       |              |      |              |       |
| Larger sizes      |             | A                  | B                 | C      | D     | Weight (lbs) |      |              |       |
| 2-1/2"            | 125-150#    | 10.88              | 18.75             | 6.95   | 12.75 | 165          |      |              |       |
|                   | 250-300#    | 11.50              | 18.75             | 6.95   | 12.75 | 165          |      |              |       |
| 3"                | 125-150#    | 11.75              | 18.75             | 6.95   | 12.75 | 185          |      |              |       |
|                   | 250-300#    | 12.50              | 18.75             | 6.95   | 12.75 | 185          |      |              |       |
| 4"                | 125-150#    | 13.88              | 19.95             | 8.00   | 12.75 | 215          |      |              |       |
|                   | 250-300#    | 14.50              | 19.95             | 8.00   | 12.75 | 215          |      |              |       |

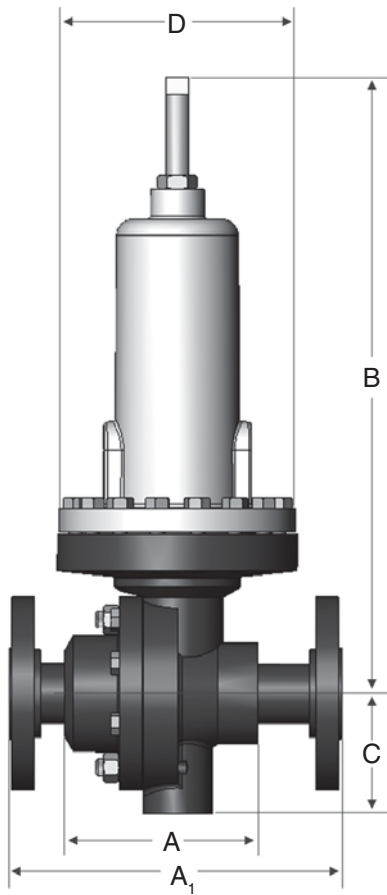
1 Not ANSI standard  
2 IFE only

■ CS 60: Flanged Ends, Metric

| Size DN           | ANSI Flange | Dimensions (in) |       |        |       |              |     | Weight (kgs) |       |
|-------------------|-------------|-----------------|-------|--------|-------|--------------|-----|--------------|-------|
|                   |             | A1              |       | B      |       | C            | D   | DI/BRZ       | CS/SS |
|                   |             | DI/BRZ          | CS/SS | DI/BRZ | CS/SS | ALL          | ALL |              |       |
| 15                | 10/16       | 184             | 130   | 216    | 240   | 43           | 130 | 5,9          | 6,8   |
|                   | 25/40       | 184             | 130   | 216    | 240   | 43           | 130 | 6,4          | 7,3   |
| 20                | 10/16       | 184             | 150   | 216    | 240   | 43           | 130 | 6,4          | 7,3   |
|                   | 25/40       | 184             | 150   | 216    | 240   | 43           | 130 | 7,3          | 7,7   |
| 25                | 10/16       | 222             | 160   | 273    | 262   | 67           | 180 | 11,8         | 15,4  |
|                   | 25/40       | 222             | 160   | 273    | 262   | 67           | 180 | 12,7         | 16,8  |
| 32                | 10/16       | 222             | —     | 273    | —     | 67           | 180 | 12,7         | —     |
|                   | 25/40       | 222             | —     | 273    | —     | 67           | 180 | 14,1         | —     |
| 40                | 10/16       | 222             | 200   | 279    | 285   | 59           | 180 | 19,1         | 20,9  |
|                   | 25/40       | 222             | 200   | 279    | 285   | 59           | 180 | 20,4         | 23,6  |
| 50                | 10/16       | 254             | 230   | 279    | 290   | 70           | 180 | 20,9         | 22,7  |
|                   | 25/40       | 254             | 230   | 279    | 290   | 70           | 180 | 22,2         | 24,9  |
| Flanged End CS/SS |             |                 |       |        |       |              |     |              |       |
| Larger sizes      |             | A               | B     | C      | D     | Weight (kgs) |     |              |       |
| 65                | 10-16       | 283             | 476   | 177    | 324   | 75           |     |              |       |
|                   | 25-40       | 283             | 476   | 177    | 324   | 75           |     |              |       |
| 80                | 10-16       | 312             | 476   | 177    | 324   | 84           |     |              |       |
|                   | 25-40       | 312             | 476   | 177    | 324   | 84           |     |              |       |
| 100               | 10-16       | 350             | 507   | 203    | 324   | 98           |     |              |       |
|                   | 25-40       | 350             | 507   | 203    | 324   | 98           |     |              |       |

Smaller sizes A1 not IFE & not per DIN3202  
Larger sizes A not per DIN3202

**DIMENSIONS — CS60HP**



**CS 60HP: Flanged End**

| Size   | Flange | A1     |        | B *    | C     | D     | Weight (lbs) |
|--------|--------|--------|--------|--------|-------|-------|--------------|
|        |        | DI/BRZ | CS/SS  | All    | All   | All   | All          |
| 1/2"   | 150#   | 7.25"  | 7.25"  | 12.25" | 1.69" | 5.20" | 21 •         |
|        | 300#   | 7.50"  | 7.50"  | 12.25" | 1.69" | 5.20" |              |
|        | *600#  | 8.00"  | 8.00"  | 12.25" | 1.69" | 5.20" |              |
| 3/4"   | 150#   | 7.25"  | 7.25"  | 12.25" | 1.69" | 5.20" | 22 •         |
|        | 300#   | 7.62"  | 7.62"  | 12.25" | 1.69" | 5.20" |              |
|        | *600#  | 8.12"  | 8.12"  | 12.25" | 1.69" | 5.20" |              |
| 1"     | 150#   | 7.25"  | 7.25"  | 12.75" | 2.62" | 5.20" | 37           |
|        | 300#   | 7.75"  | 7.75"  | 12.75" | 2.62" | 5.20" |              |
|        | *600#  | 8.25"  | 8.25"  | 12.75" | 2.62" | 5.20" |              |
| 1-1/4" | 150#   | 7.87"  | —      | 12.75" | 2.62" | 5.20" | 37           |
|        | 300#   | 8.37"  |        | 12.75" | 2.62" | 5.20" |              |
| 1-1/2" | 150#   | 8.75"  | 8.75"  | 13.25" | 2.31" | 5.20" | 45           |
|        | 300#   | 9.25"  | 9.25"  | 13.25" | 2.31" | 5.20" |              |
|        | *600#  | 9.87"  | 9.87"  | 13.25" | 2.31" | 5.20" |              |
| 2"     | 150#   | 10.00" | 10.00" | 13.50" | 2.75" | 5.20" | 49           |
|        | 300#   | 10.50" | 10.50" | 13.50" | 2.75" | 5.20" |              |
|        | *600#  | 11.25" | 11.25" | 13.50" | 2.75" | 5.20" |              |

- 600# are not IFE
- For IFE, add 1" (25,4mm) to all "B" dimensions

**CS 60HP: Threaded & FSW Ends**

| Size        | Material | A     | B      | C     | D     | Weight ( lbs ) |
|-------------|----------|-------|--------|-------|-------|----------------|
| 1/2" & 3/4" | DI/BRZ   | 3.62" | 12.25" | 1.75" | 5.12" | 15             |
|             | CS/SS    | 3.62" | 12.25" | 1.75" | 5.12" | 17             |
| 1"          | DI/BRZ   | 4.12" | 12.50" | 2.12" | 5.20" | 21             |
|             | CS/SS    | 4.18" | 12.75" | 2.12" | 5.20" | 25             |
| 1-1/4"      | DI/BRZ   | 4.12" | 12.50" | 2.12" | 5.20" | 21             |
| 1-1/2"      | DI/BRZ   | 4.50" | 12.75" | 2.31" | 5.20" | 23             |
|             | CS/SS    | 4.81" | 13.25" | 2.50" | 5.20" | 31             |
| 2"          | DI/BRZ   | 4.50" | 12.75" | 2.50" | 5.20" | 26             |
|             | CS/SS    | 5.50" | 13.50" | 2.50" | 5.20" | 35             |

**CS 60HP: Threaded & FSW Ends, Metric**

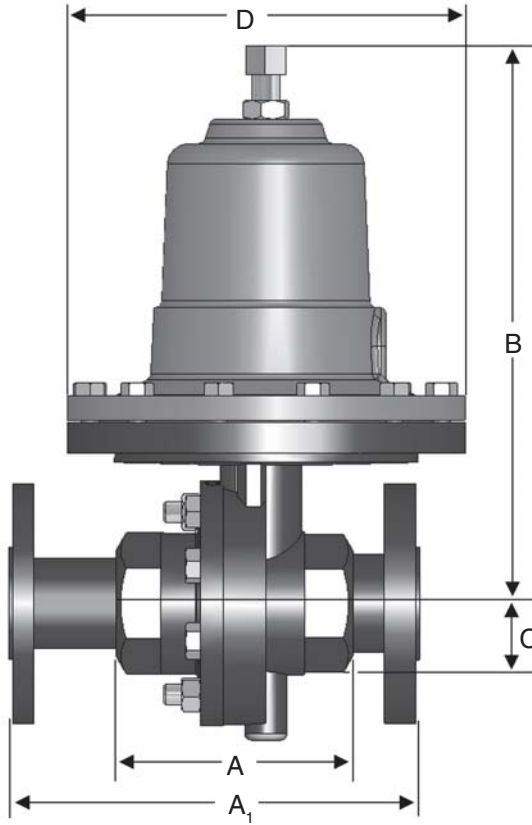
| Size      | Material | A     | B     | C    | D     | Weight (kg) |
|-----------|----------|-------|-------|------|-------|-------------|
| DN15 & 20 | DI/BRZ   | 92,0  | 311,2 | 44,5 | 130,0 | 6,8         |
|           | CS/SS    | 92,0  | 311,2 | 44,5 | 130,0 | 7,7         |
| DN25      | DI/BRZ   | 104,7 | 317,5 | 53,9 | 132,1 | 9,5         |
|           | CS/SS    | 106,2 | 323,9 | 53,9 | 132,1 | 11,3        |
| DN32      | DI/BRZ   | 104,7 | 317,5 | 53,9 | 132,1 | 9,5         |
| DN40      | DI/BRZ   | 114,3 | 323,9 | 58,7 | 132,1 | 10,4        |
|           | CS/SS    | 122,2 | 336,6 | 63,5 | 132,1 | 14,1        |
| DN50      | DI/BRZ   | 114,3 | 323,9 | 63,5 | 132,1 | 11,8        |
|           | CS/SS    | 139,7 | 342,9 | 63,5 | 132,1 | 15,9        |

**CS 60HP: Flanged End, Metric<sup>3</sup>**

| Size DN | Flange PN | A1                  |       | B <sup>2</sup> | C    | D     | Weight (kg) |
|---------|-----------|---------------------|-------|----------------|------|-------|-------------|
|         |           | DI/BRZ <sup>1</sup> | CS/SS | All            | All  | All   | All         |
| 15      | 10/16     | 184,2               | 130,0 | 311,2          | 42,9 | 132,1 | 9,5         |
|         | 25/40     | 184,2               | 130,0 | 311,2          | 42,9 | 132,1 |             |
| 20      | 10/16     | 184,2               | 150,0 | 311,2          | 42,9 | 132,1 | 10,0        |
|         | 25/40     | 184,2               | 150,0 | 311,2          | 42,9 | 132,1 |             |
| 25      | 10/16     | 184,2               | 160,0 | 323,9          | 66,6 | 132,1 | 16,8        |
|         | 25/40     | 184,2               | 160,0 | 323,9          | 66,6 | 132,1 |             |
| 32      | 10/16     | 199,9               | —     | 323,9          | 66,6 | 132,1 | 16,8        |
|         | 25/40     | 199,9               |       | 323,9          | 66,6 | 132,1 |             |
| 40      | 10/16     | 222,3               | 200,0 | 336,6          | 58,7 | 132,1 | 20,4        |
|         | 25/40     | 222,3               | 200,0 | 336,6          | 58,7 | 132,1 |             |
| 50      | 10/16     | 254,0               | 230,0 | 342,9          | 69,9 | 132,1 | 22,2        |
|         | 25/40     | 254,0               | 230,0 | 342,9          | 69,9 | 132,1 |             |

- 1 Not IFE and not per DIN3202
- 2 For IFE, Add 25,4mm
- 3 For DIN flanges above PN40, please consult factory

**DIMENSIONS — CS61**



■ CS 61: Threaded & FSW Ends

| Size        | Material | A    | B     | C    | D    | Weight (lbs) |
|-------------|----------|------|-------|------|------|--------------|
| 1/2" & 3/4" | DI/BRZ   | 3.62 | 10.25 | 2.25 | 7.12 | 12           |
|             | CS/SS    | 3.62 | 10.25 | 2.25 | 7.12 | 13           |

■ CS 61: Flanged Ends

| Size       | ANSI Flange | A1     |       | B      |       | C    | D    | Weight (lbs) |       |
|------------|-------------|--------|-------|--------|-------|------|------|--------------|-------|
|            |             | DI/BRZ | CS/SS | DI/BRZ | CS/SS | All  | All  | DI/BRZ       | CS/SS |
| 1/2 & 3/4" | 150#        | 9.62   | 9.62  | 10.25  | 10.25 | 2.25 | 7.12 | 26           | 26    |
|            | 300#        | 10.25  | 10.25 | 10.25  | 10.25 | 2.25 | 7.12 | 29           | 29    |

■ CS 61: Threaded & FSW Ends, Metric

| Size      | Material | A    | B     | C    | D     | Weight (kg) |
|-----------|----------|------|-------|------|-------|-------------|
| DN15 & 20 | DI/BRZ   | 92,0 | 260,4 | 57,2 | 180,9 | 5,4         |
|           | CS/SS    | 92,0 | 260,4 | 57,2 | 180,9 | 5,9         |

■ CS 61: Flanged Ends, Metric

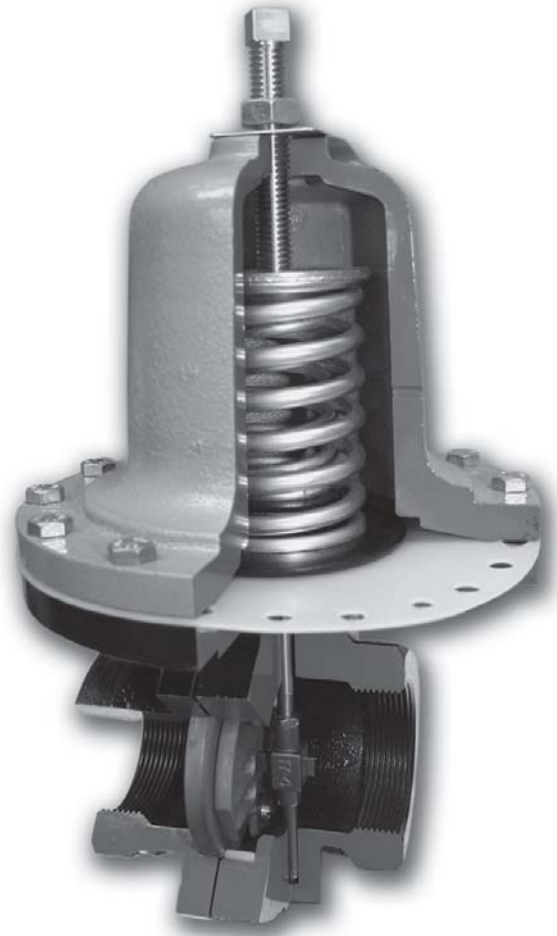
| Size DN | Flange PN | A1 <sup>1</sup> |       | B      |       | C    | D     | Weight (kg) |       |
|---------|-----------|-----------------|-------|--------|-------|------|-------|-------------|-------|
|         |           | DI/BRZ          | CS/SS | DI/BRZ | CS/SS | All  | All   | DI/BRZ      | CS/SS |
| 15 & 20 | 10/16     | 244,4           | 244,4 | 260,4  | 260,4 | 57,2 | 180,9 | 11,8        | 11,8  |
|         | 25/40     | 260,4           | 260,4 | 260,4  | 260,4 | 57,2 | 180,9 | 13,2        | 13,2  |

Note: 1/4" & 3/8" utilize 1/2" body with reducer bushings

<sup>1</sup> Not per DIN3202

### ***The Jorlon Diaphragm - Revolutionary Diaphragm Sets New Standard***

- Easily retrofitted - Jorlon can be easily retrofitted in the field with no additional parts. For regulators purchased after the fall of 1991, only the diaphragm needs to be changed to retrofit either SST or elastomer diaphragms.
- Chemical Compatibility — Jorlon is PTFE based, so it is compatible with most media except fluorinated gases and halogenated fluorocarbons. Whether the application is steam, process gases or fluids, Jorlon should be your first choice.
- High Pressure Limits — The CS60HP has been pressure tested well in excess of the maximum allowable pressures of the valve. For the smaller CS60s 2" (DN50) and below, it is fully rated to ANSI 300 Class pressure of 720 psi (50 bar) @ 100°F (38°C). While the material itself is vital in achieving these higher pressures, the design of the Sliding Gate regulator (CS60) is crucial in permitting this. The outstanding performance is a combination of the material itself and the unique design of the sliding gate regulator.
- Improved Droop Performance — A metal diaphragm is much more rigid than an elastomer diaphragm. As such, metal diaphragms have decreased sensitivity thereby diminishing performance and accuracy in a self operated regulator. Jorlon will improve droop performance when used instead of a SST diaphragm as its properties are more similar to those of elastomer materials.
- Less Expensive — Jorlon is less expensive than many other diaphragm materials, further increasing its customer value.
- High Steam Pressure Capability — Extensive steam testing of Jorlon in the CS 60 pressure regulators qualifies this material for high pressure steam service. For CS 60s sizes 2" (DN50) and below, you may install Jorlon in saturated steam service up to 405 psi (28 bar) @ 450°F (232°C). For steam service in larger CS 60s, Jorlon qualifies up to 125 psi (8,6 bar) saturated steam.
- Fast Delivery — Rely on our 36 hour delivery with Jorlon as the diaphragm material.
- Extremely Long Life — Under 300 psi air, Jorlon surpasses 1,000,000 full stroke cycles without failure. The harshest test was on 450°F saturated steam, where Jorlon exceeded the cycle count for stainless steel by over 150 times - the test was stopped and the Jorlon diaphragm had yet to fail.
- Lower Cost of Ownership — Less droop provides more accuracy, improving efficiency and productivity. Extremely long life results in more production up-time, fewer spare parts expenses and less repair labor.



**ORDERING SCHEMATIC**

|          |          |          |          |          |          |          |          |          |           |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>8</b> | <b>9</b> | <b>10</b> |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|

| <b>1</b> | <b>Model</b> |                 |
|----------|--------------|-----------------|
|          | 60           | Standard        |
|          | 60HP         | High Pressure   |
|          | 60QC         | Quick Change    |
|          | 61           | Large Diaphragm |

| <b>2</b> | <b>Size</b>   |                         |       |
|----------|---------------|-------------------------|-------|
|          | <b>Inches</b> | <b>DN</b>               |       |
|          | 025           | 1/4"                    | DN8   |
|          | 038           | 3/8"                    | DN10  |
|          | 050           | 1/2"                    | DN15  |
|          | 075           | 3/4"                    | DN20  |
|          | 100           | 1"                      | DN25  |
|          | 125           | 1-1/4"                  | DN32  |
|          | 150           | 1-1/2"                  | DN40  |
|          | 200           | 2"                      | DN50  |
|          | 250           | 2-1/2" (MK60/60HP only) | DN65  |
|          | 300           | 3" (MK60/60HP only)     | DN80  |
|          | 400           | 4" (MK60/60HP only)     | DN100 |

MK61 available in 1/4" through 3/4" only

| <b>3</b> | <b>Body Material</b> |                         |
|----------|----------------------|-------------------------|
|          | DI                   | Ductile Iron            |
|          | BR                   | Bronze (1/4" - 2")      |
|          | CS                   | Carbon Steel            |
|          | S6                   | Stainless Steel         |
|          | CI                   | Cast Iron (2-1/2" - 4") |

| <b>4</b>                | <b>End Connections</b>   |                                |
|-------------------------|--------------------------|--------------------------------|
|                         | <b>1-4" - 2" MK60/61</b> |                                |
|                         | PT                       | NPT                            |
|                         | BT                       | BSPT                           |
|                         | BP                       | BSPP                           |
|                         | SW                       | FSW                            |
|                         | I5                       | 150# IFE                       |
|                         | F5                       | 150# FE (Except IFE)           |
|                         | I3                       | 300# IFE                       |
|                         | F3                       | 300# FE (Except IFE)           |
| <b>2-1/2" - 4" MK60</b> |                          |                                |
|                         | I1                       | 125# IFE                       |
|                         | I5                       | 150# IFE                       |
|                         | I2                       | 250# IFE                       |
|                         | I3                       | 300# IFE                       |
|                         | I7                       | PN 10 DIN IFE (CS/S6) DN15-150 |
|                         | I6                       | PN 16 DIN IFE (CS/S6) DN15-150 |
|                         | I8                       | PN 25 DIN IFE (CS/S6) DN15-150 |
|                         | I4                       | PN 40 DIN IFE (CS/S6) DN15-150 |

| <b>5</b> | <b>Trim</b> |                      |
|----------|-------------|----------------------|
|          | S3          | 303SS                |
|          | S6          | 316SS                |
|          | I3          | 303SSF/IFE (1" - 2") |
|          | I6          | 316SSF/IFE (1" - 2") |

| <b>6</b> | <b>Seat Material</b> |                    |
|----------|----------------------|--------------------|
|          | A                    | 303SST (1/4" - 2") |
|          | B                    | 316SST (1/4" - 2") |
|          | V                    | 303SS/Jorcote      |
|          | W                    | 316SS/Jorcote      |
|          | X                    | 303SS/JOR/JIC      |
|          | Y                    | 316SS/JOR/JIC      |

| <b>7</b> | <b>Cv (Kv)</b> |             |                    |              |
|----------|----------------|-------------|--------------------|--------------|
|          | 1              | 0.21 (0,28) | 9                  | 15 (12,93)   |
|          | 2              | 0.42 (0,36) | A                  | 25 (21,55)   |
|          | 3              | 0.84 (0,72) | B                  | 30 (25,86)   |
|          | 4              | 1.6 (1,38)  | D*                 | 55 (47,41)   |
|          | 5              | 2.5 (2,16)  | F*                 | 85 (73,28)   |
|          | 6              | 4.4 (3,79)  | G*                 | 115 (99,14)  |
|          | 7              | 6.4 (5,52)  | I*                 | 200 (172,41) |
|          | 8              | 9.5 (8,19)  | * 2-1/2" - 4" only |              |

| <b>8</b> | <b>60 Spring Range PSI (BAR)</b> |                 |         |                 |             |                |
|----------|----------------------------------|-----------------|---------|-----------------|-------------|----------------|
|          | 1/4" - 3/4"                      |                 | 1" - 2" |                 | 2-1/2" - 4" |                |
|          | 16                               | 2-23 (0,14-1,6) | 05      | 1-5 (0,07-0,34) | 29          | 7-18 (0,48-1)  |
|          | 37                               | 10-38 (0,69-3)  | 20      | 3-8 (0,21-5,5)  | 32          | 10-25 (0,69-2) |
|          | 56                               | 20-55 (1-4)     | 28      | 5-20 (0,34-1)   | 42          | 15-35 (1-2)    |
|          | 81                               | 35-160 (2-11)   | 34      | 10-30 (0,69-2)  |             |                |
|          | A6                               | 95-220 (7-15)   | 53      | 20-45 (1-3)     |             |                |
|          | D8                               | 30-85 (2-6)     | 75      | 30-95 (2-7)     |             |                |
|          |                                  |                 | 97      | 60-160 (4-11)   |             |                |

| <b>8</b> | <b>60HP Spring Range PSI (BAR)</b> |                 |             |              |
|----------|------------------------------------|-----------------|-------------|--------------|
|          | 1/2" - 2"                          |                 | 2-1/2" - 4" |              |
|          | A1                                 | 75-190 (5-13)   | 71          | 30-75 (3-5)  |
|          | A7                                 | 100-320 (7-220) | 98          | 65-110 (4-8) |
|          | A9                                 | 150-450 (10-31) |             |              |

| <b>8</b> | <b>61 Spring Range PSI (BAR)</b> |                  |    |               |
|----------|----------------------------------|------------------|----|---------------|
|          | 05                               | 1-5 (0,07-0,34)  | 56 | 20-55 (1-4)   |
|          | 10                               | 2-12 (0,14-0,83) | 63 | 20-80 (1-6)   |
|          | 17                               | 2-25 (0,14-2)    | 87 | 40-115 (3-8)  |
|          | 36                               | 10-35 (0,69-2)   | 70 | 25-160 (2-11) |
|          |                                  |                  | 80 | 30-180 (2-12) |

| <b>9</b> | <b>Diaphragm</b> |                                 |
|----------|------------------|---------------------------------|
|          | S6               | 316 SST (1/4" - 2" only)        |
|          | VI               | Viton                           |
|          | BN               | Buna-N (standard above 2"/DN50) |
|          | JL               | Jorlon                          |

| <b>10</b> | <b>Actuator</b> |                                      |
|-----------|-----------------|--------------------------------------|
|           | MD              | for Metal Diaphragm (1/4" - 2" only) |
|           | ED              | for Elastomer Diaphragm              |

# CS 601/602 Series

## High Flow Pressure Regulators

The CS 601 and 602 meet higher capacity requirements than standard regulators. The High Flow CS 601 has Cv's as high as 50 (43Kv) and the Super High FCS 602 has Cv's up to 70 (60,2 Kv). Each valve is standard with CSSC's Sliding Gate Seats, which helps to reduce the droop commonly associated with high flow regulators.

CSSC's unique self-operated sliding gate pressure regulator offers:

- Shorter stroke than a globe or plug-style valve
  - Faster response
  - Less offset
  - Smaller and lighter weight than globe-style valves
  - Longer diaphragm life
- Straight through -flow
  - Less turbulence, erosion and noise
  - Improved rangeability
  - Longer seat life
- Ease of maintenance
  - Interchangeable seats and Cv's
  - Fewer spare parts
  - Self-cleaning seats
  - No gaskets or o-rings



### Diaphragm Materials

- Stainless Steel — standard
- Buna-N — optional
- Jorlon — optional
- Viton — optional

**Service:** Steam, water, oil, gas, air and chemicals

**Shutoff:** ANSI Class IV

**Reduced Pressure Control Ranges:** Select a range to match your setpoint. For optimal performance, your setpoint should fall in the upper portion of the selected range.

## SPECIFICATIONS

**Sizes:** 1-1/2" & 2" (DN40 & DN50)

### End Connections

- Threaded (NPT, BSPT, BSPP)
- ANSI Flanges (150#, 300#)
- DIN Flanges (PN10/16, PN25/40)

### Body Materials

- Ductile Iron
- Bronze
- Carbon Steel (A216 WCB)
- Stainless Steel (A351/CF8M)

### Trim Materials

- 303SST — Standard on Ductile Iron, Bronze, Carbon Steel valves
- 316SST — Standard on Stainless Steel Valves
- Monel, Hastelloy and other Alloys available

### Seat Materials

- Jorcote on SST — Standard
- Jorcote/Jordanic on SST — For Severe Service

| Model     | Size (DN)                    | Spring Ranges |              |
|-----------|------------------------------|---------------|--------------|
|           |                              | PSI           | BAR          |
| 601 & 602 | 1-1/2" - 2"<br>(DN40 - DN50) | 20 - 45       | 1,72 - 3,10  |
|           |                              | 30 - 95       | 2,07 - 6,55  |
|           |                              | 60 - 160      | 4,14 - 11,03 |

### Cv Values & Maximum Differential Pressures

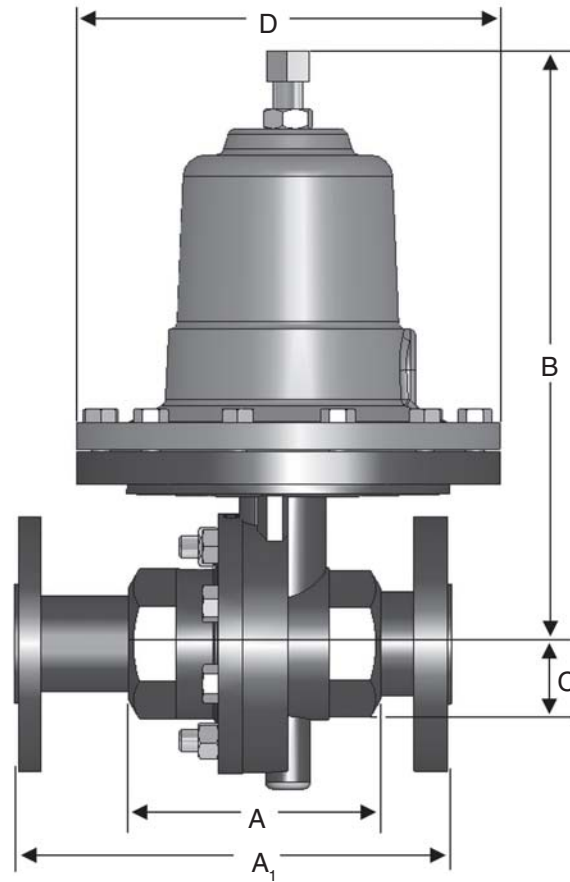
#### •CS 601

| Cv (Kv)   | Size (DN)                    | Seat Material | Maximum ΔP PSI (Bar) |
|-----------|------------------------------|---------------|----------------------|
| 25 (21,5) | 1-1/2" & 2"<br>(DN40 & DN50) | Jorcote       | 150 (10,34)          |
| 30 (25,8) | 1-1/2" & 2"<br>(DN40 & DN50) | Jorcote       | 150 (10,34)          |
| 35 (30,1) | 1-1/2" & 2"<br>(DN40 & DN50) | Jorcote       | 150 (10,34)          |
| 45 (38,7) | 1-1/2"<br>(DN40)             | Jorcote       | 150 (10,34)          |
| 50 (43,0) | 2"<br>(DN50)                 | Jorcote       | 150 (10,34)          |

#### •CS 602

| Cv (Kv)   | Size (DN)        | Seat Material | Maximum ΔP PSI (bar) |
|-----------|------------------|---------------|----------------------|
| 65 (55,9) | 1-1/2"<br>(DN40) | Jorcote       | 150 (10,34)          |
| 70 (60,2) | 2"<br>(DN50)     | Jorcote       | 150 (10,34)          |

**DIMENSIONS — CS601/602**



■ CS 601/602: Threaded & FSW Ends

| Size        | Material | A    | B     | C    | D    | Weight (lbs) |
|-------------|----------|------|-------|------|------|--------------|
| 1-1/2" - 2" | DI/BRZ   | 4.50 | 10.25 | 2.75 | 7.09 | 26           |
|             | CS/SS    | 5.50 | 11.00 | 2.75 | 7.09 | 35           |

■ CS 601/602: Flanged Ends

| Size   | ANSI Flange | A1     |       | B      |       | C    | D    | Weight (lbs) |       |
|--------|-------------|--------|-------|--------|-------|------|------|--------------|-------|
|        |             | DI/BRZ | CS/SS | DI/BRZ | CS/SS | All  | All  | DI/BRZ       | CS/SS |
| 1-1/2" | 150#        | 10.00  | 10.00 | 10.25  | 11.22 | 2.31 | 7.09 | 42           | 46    |
|        | 300#        | 10.25  | 10.25 | 10.25  | 11.22 | 2.31 | 7.09 | 45           | 52    |
| 2"     | 150#        | 10.00  | 10.00 | 10.25  | 11.42 | 2.75 | 7.09 | 46           | 50    |
|        | 300#        | 10.50  | 10.50 | 10.25  | 11.42 | 2.75 | 7.09 | 49           | 55    |

Not IFE  
Not ANSI Standard

■ CS 601/602: Threaded & FSW Ends, Metric

| Size  | Material | A   | B   | C  | D   | Weight (kg) |
|-------|----------|-----|-----|----|-----|-------------|
| DN40- | DI/BRZ   | 114 | 260 | 70 | 180 | 11.8        |
| DN50  | CS/SS    | 140 | 279 | 70 | 180 | 15.9        |

■ CS 601/602: Flanged Ends, Metric

| Size | Flange PN | A1     |       | B      |       | C    | D   | Weight (kg) |       |
|------|-----------|--------|-------|--------|-------|------|-----|-------------|-------|
|      |           | DI/BRZ | CS/SS | DI/BRZ | CS/SS | All  | All | DI/BRZ      | CS/SS |
| DN40 | 10/16     | 254    | 254   | 279    | 285   | 58,7 | 180 | 19,1        | 20,9  |
|      | 25/40     | 260    | 260   | 279    | 285   | 58,7 | 180 | 20,4        | 23,6  |
| DN50 | 10/16     | 254    | 230   | 279    | 290   | 69,9 | 180 | 20,9        | 22,7  |
|      | 25/40     | 267    | 230   | 279    | 290   | 69,9 | 180 | 22,2        | 24,9  |

Not IFE  
Not per DIN3202

**ORDERING SCHEMATIC**

|          |   |          |   |          |   |          |          |          |          |          |          |           |           |           |
|----------|---|----------|---|----------|---|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|
| <b>1</b> | — | <b>2</b> | — | <b>3</b> | / | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>8</b> | <b>9</b> | <b>10</b> | <b>11</b> | <b>12</b> |
|----------|---|----------|---|----------|---|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|

| <b>1</b> | <b>Model</b> |                 |
|----------|--------------|-----------------|
|          | 601          | High Flow       |
|          | 602          | Super High Flow |

| <b>6</b> | <b>Seat Material</b> |               |
|----------|----------------------|---------------|
|          | V                    | 303SS/Jorcote |
|          | W                    | 316SS/Jorcote |
|          | X                    | 303SS/JOR/JIC |
|          | Y                    | 316SS/JOR/JIC |

| <b>2</b> | <b>Size</b> |               |           |
|----------|-------------|---------------|-----------|
|          |             | <b>Inches</b> | <b>DN</b> |
|          | 150         | 1-1/2"        | DN40      |
|          | 200         | 2"            | DN50      |

| <b>7</b> | <b>CV (Kv)</b> |         |
|----------|----------------|---------|
|          | A              | 25 (22) |
|          | B              | 30 (26) |
|          | V              | 35 (30) |
|          | W              | 45 (39) |
|          | C              | 50 (43) |
|          | Y              | 65 (56) |
|          | E              | 70 (60) |

| <b>3</b> | <b>Body Material</b> |                 |
|----------|----------------------|-----------------|
|          | DI                   | Ductile Iron    |
|          | BR                   | Bronze          |
|          | CS                   | Carbon Steel    |
|          | S6                   | Stainless Steel |

| <b>8</b> | <b>Range</b> |                     |
|----------|--------------|---------------------|
|          | 53           | 20-45 (1,38-3,01)   |
|          | 75           | 30-95 (2,07-6,55)   |
|          | 97           | 60-160 (4,14-11,03) |

| <b>4</b> | <b>End Connections</b> |                      |
|----------|------------------------|----------------------|
|          | PT                     | NPT                  |
|          | BT                     | BSPT                 |
|          | I5                     | 150# IFE CS or SST*  |
|          | F5                     | 150# FE DI or BR     |
|          | I7                     | PN10 IFE, CS or SST* |
|          | F7                     | PN10 FE DI or BR     |
|          | I6                     | PN16 IFE, CS or SST* |
|          | F6                     | PN16 FE DI or BR     |
|          | BP                     | BSPP                 |
|          | SW                     | FSW                  |
|          | I3                     | 300# IFE, CS or SST* |
|          | F3                     | 300# FE DI or BR     |
|          | I8                     | PN25 IFE, CS or SST* |
|          | F8                     | PN25 FE DI or BR     |
|          | I4                     | PN40 IFE, CS or SST* |
|          | F4                     | PN40 FE DI or BR     |

| <b>9</b> | <b>Diaphragm</b> |         |
|----------|------------------|---------|
|          | S6               | 316 SST |
|          | VI               | Viton   |
|          | BN               | Buna-N  |
|          | JL               | Jorlon  |

| <b>10</b> | <b>Actuator</b> |                         |
|-----------|-----------------|-------------------------|
|           | MD              | for Metal Diaphragm     |
|           | ED              | for Elastomer Diaphragm |

\* IFE for 2" only

| <b>5</b> | <b>Trim</b> |            |
|----------|-------------|------------|
|          | S3          | 303SS      |
|          | S6          | 316SS      |
|          | I3          | 303SSF/IFE |
|          | I6          | 316SSF/IFE |

| <b>11</b> | <b>Double Bolting</b> |              |
|-----------|-----------------------|--------------|
|           | P1                    | None         |
|           | ZZ                    | Non-Standard |

| <b>12</b> | <b>Accessories</b> |                        |
|-----------|--------------------|------------------------|
|           | 0                  | None                   |
|           | 6                  | 316 SS Bolting         |
|           | 7                  | Hi-temperature bolting |
|           | Z                  | Non-standard           |

**Central Station Steam offers a full range of pressure regulators in addition to the CS 60 Self-Operated Pressure Regulator.**

**CS 62 Internally Piloted Pressure Regulators**

The CS 62 is a specialty valve designed for critical application regulation in locations where space is limited. Small and lightweight in design, the CS 62 valve provides the accuracy of a piloted valve with the size, weight and appearance of a single, self-operated valve.



**CS 63/64 Differential Pressure Regulators**

The CS 63 is designed to maintain a constant differential between the pressure on the discharge side of the regulator and the signal pressure loaded on the diaphragm. The CS 64 provides the same flow capacity as the CS 63 but with less offset in controlled pressure due to a larger diaphragm.



**CS 65 Vacuum Regulators**

The CS 65 vacuum regulators control very accurately and shutoff tightly to maintain the proper vacuum setting. They are used to maintain vacuums at predetermined settings and to regulate vacuums on evaporators, cookers, grinding fixtures, milking machines, altitude chambers and other vacuum systems.



**CS 66 Air-Loaded Pressure Regulators**

The CS 66 is a highly accurate and economical air loaded pressure regulator that provides regulation from a local station or from a remote station. The operation of the CS 66 requires no control spring or pilot. Instead, a static air signal is applied to the top of the diaphragm to determine the setpoint.



**CS 67 Pilot-Operated Pressure Regulators**

The CS 67 is for critical pressure reducing applications and provides greater accuracy and lower offset than can be achieved with a self-operated regulator. Because of its versatility in control, and its accuracy, the CS 67 can be used in a wide variety of applications including: controlling the pressure of gaseous oxygen to furnaces at steel mills, controlling pressure of sealing oil on turbines, and pressure control on steam mains and distribution lines.



**CS 68G Pressure Regulator**

The CS 68G is a globe-style pressure reducing regulating valve that offers high capacity, accurate regulation, and easy servicing, making it the ideal choice for your industrial-grade pressure reducing applications.



**CS 68HP High Pressure Regulating Valve**

The CS 68HP is designed primarily for high pressure steam service as commonly found in power plants, refineries, pulp & paper mills, and other high pressure process applications.

