

8000 Series Bellows Stem Seal

Fractional Flow Control Valves

CRN Registration Number Available

FRACTIONAL FLOW CONTROL VALVES

Bellows stem seals eliminate fugitive emissions by surrounding the valve stem with a pressure-tight barrier, isolating the stem from the process fluid and preventing leakage to the atmosphere. For an extra measure of protection, the bellows stem seal option provides a back-up seal of Teflon, braided or Graphite/Grafoil packing.

Features:

- Full compliance with the most stringent requirements of the Clean Air Act
- Secondary packing chamber with a bellows leak monitoring port for additional security
- Two-piece stem allows stem adjustment without breaking the bellows bonnet extension seal
- Barstock, not cast, construction to avoid potential porosity issues

SPECIFICATIONS

Sizes: 1/2", 3/4", 1", 1-1/4" (DN15, DN20, DN25, DN32)

End Connections

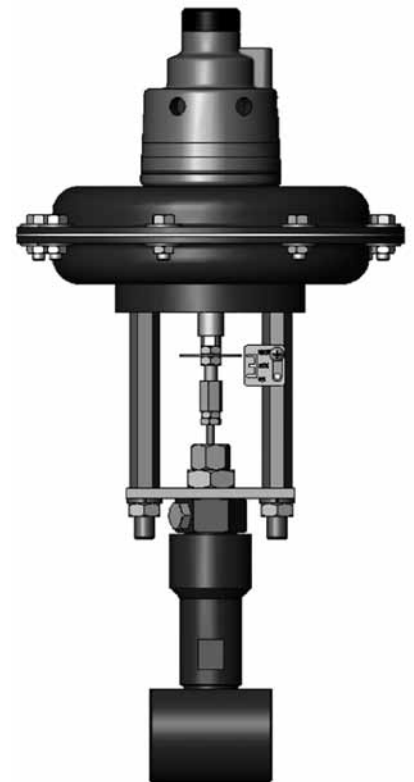
- Threaded – NPT, BSPT, SAE
- Raised-face flanges (300#, 600#, 900#), DIN, JIS
- Ring-type joint flanges (150#, 300#, 600#)
- Socket weld – (schedule 40, 80, or 160)
- Special connections upon request

Actuator (*Positioner required with all actuators*)

- Standard – 35M (35 in²) multi-spring
- Optional – 55M (55 in²). See Maximum Allowable Δ P Ratings Chart

Body Style

- 2-way globe
- 2-way angle



MK8000 SERIES BELLOWS STEM SEAL SPECIFICATIONS (CON'T)

Body Material

- Carbon Steel
- Stainless Steel
- Brass
- Hastelloy C
- Hastelloy B
- Alloy 20
- Other materials upon request

Trim Material

- 316SST
- Monel
- Hastelloy C
- Hastelloy B
- Alloy 20
- 17-4 ph Stainless Steel
- Stellite
- 316SS/Stellite

Bellows Material

- Standard – 316T
- Optional – Hastelloy C

Actuator Material: steel, epoxy coated

Back-Up Stem Packing Material

- Standard – spring-loaded TFE/Chevron
- Optional – braided or graphite/graphite with positioner

Bonnet/Body Gasket: Grafoil

Bellows Performance: 1500 psi (103 bar) maximum at 100°F (38°C); 1200 cycles for 316L & 1600 cycles for Hastelloy C at 1500 psi (103 bar)

Cv (Kv) Selection

| Valve Size | Standard Cv (Kv) |
|-------------|--|
| 1/2"/DN15 | 0.05; 0.1; 0.2; 0.5; 1.0; 1.8 (0,04; 0,09; 0,17; 0,43; 0,86; 1,6) |
| 3/4"/DN20 | 1.0; 2.0; 3.0 (0,86; 1,7; 2,6) |
| 1"/DN25 | 2.0; 4.0; 4.3 (1,7; 3,4; 3,7) |
| 1-1/4"/DN32 | 4.0; 6.5; 7.1 (3,4; 5,6; 6,2) |

Maximum Allowable ΔP Ratings

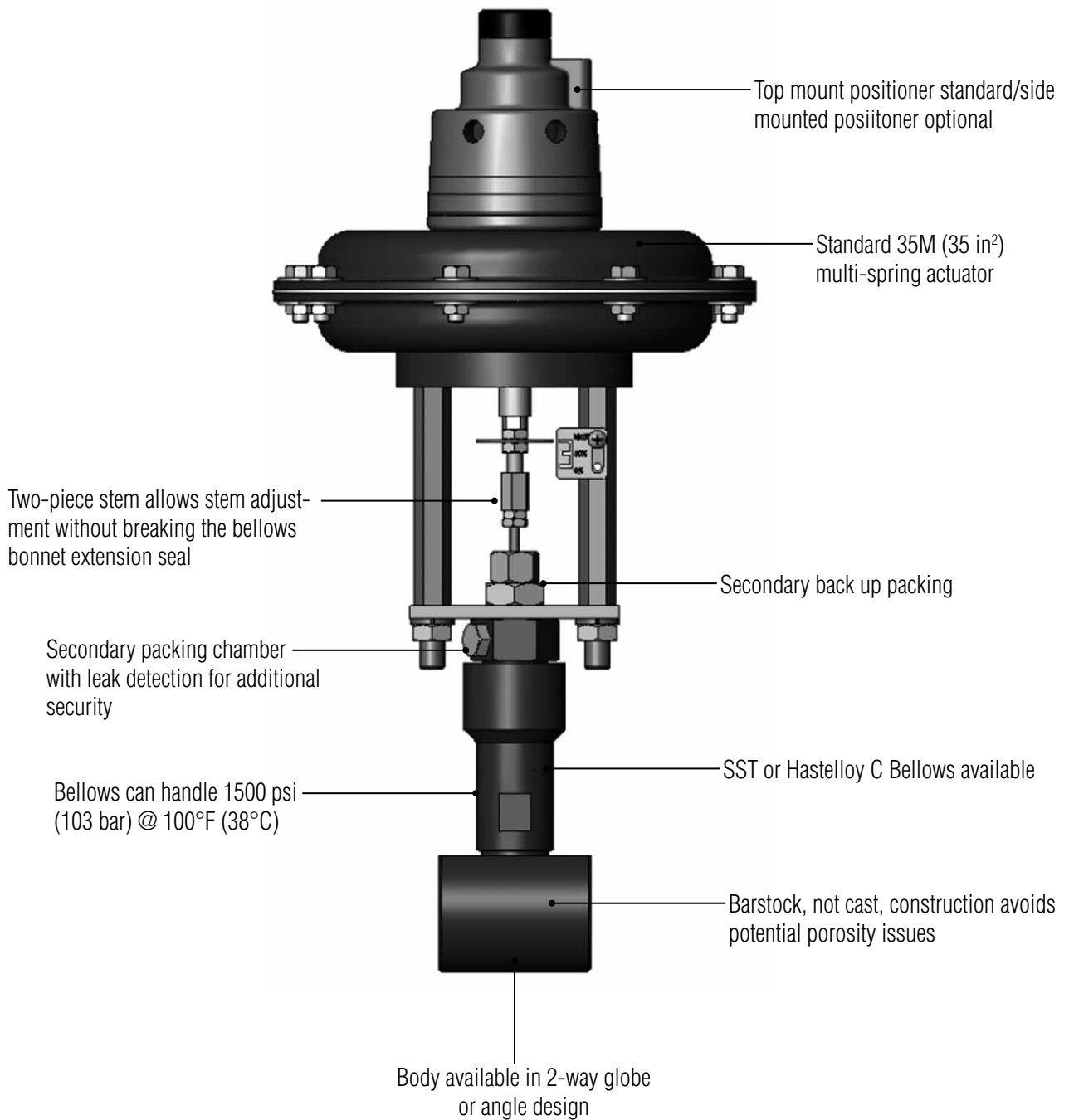
| Cv | ATO with positioner at 40 psi | | | ATC with positioner at 40 psi | | |
|----------|-------------------------------|------|------|-------------------------------|------|------|
| | 35M | 55M | 85M | 35M | 55M | 85M |
| 0.05-0.2 | 1500 | N/A | N/A | 1500 | N/A | N/A |
| 0.5-1.0 | 1500 | N/A | N/A | 1500 | N/A | N/A |
| 1.25-2.0 | 1500 | N/A | N/A | 1500 | N/A | N/A |
| 3.0-4.0 | 1300 | N/A | N/A | 1500 | N/A | N/A |
| 4.3-6.5 | 800 | 1100 | 1500 | 1500 | 1500 | 1500 |
| 7.1 | 550 | 750 | 1150 | 1500 | 1500 | 1500 |

Note: listed ΔP's based on downstream pressure (P2) of zero.

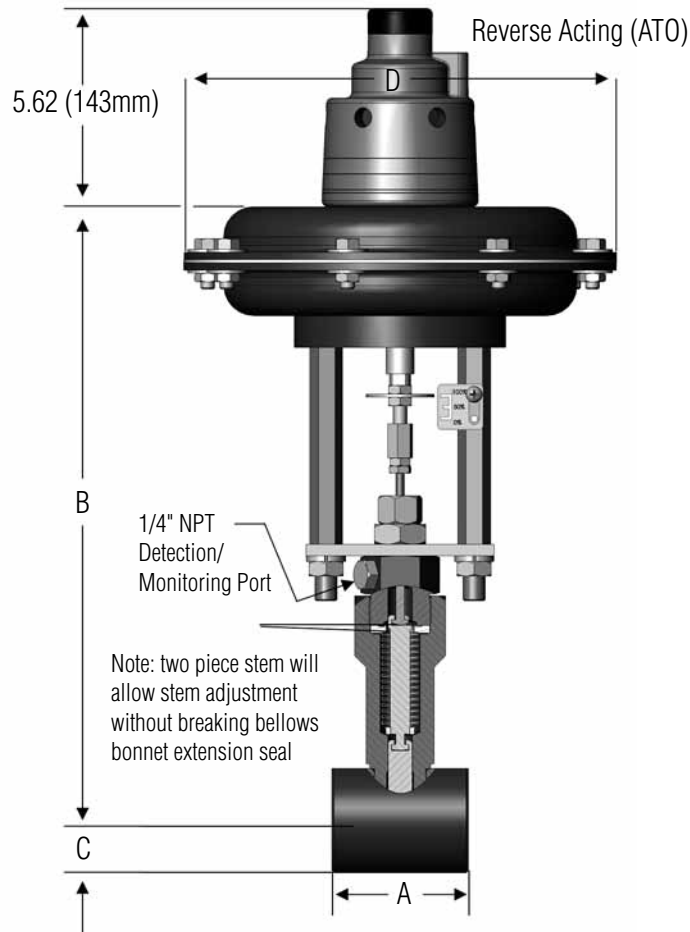
For P2>0, determine ΔP with formula:

$$\Delta P = (\text{value from chart above}) - (0.32)(P2)$$

MK8000 SERIES BELLOWS STEM SEAL FEATURES & BENEFITS



MK8000 SERIES BELLOWS STEM DIMENSIONS



• **Mark 8000BSS Series**

| VALVE SIZE | DIMENSIONS, INCHES | | | | WEIGHT LBS |
|------------|--------------------|-------|------|------|------------|
| | A | B | C | D | |
| 1/2" | 3.00 | 19.62 | 1.25 | 9.50 | 24 |
| 3/4" | 3.00 | 19.62 | 1.25 | 9.50 | 24 |
| 1" | 3.75 | 19.62 | 1.50 | 9.50 | 26 |
| 1-1/4" | 5.00 | 20.00 | 1.65 | 9.50 | 30 |

• **Mark 8000BSS Series, Metric**

| VALVE SIZE | DIMENSIONS | | | | WEIGHT KGS |
|------------|------------|-----|----|-----|------------|
| | A | B | C | D | |
| DN15 | 76 | 498 | 32 | 241 | 11 |
| DN20 | 76 | 498 | 32 | 241 | 11 |
| DN25 | 95 | 498 | 38 | 241 | 11 |
| DN32 | 127 | 508 | 42 | 241 | 14 |

MK8000 SERIES BELLOWS STEM SEAL ORDERING SCHEMATIC

| Model No. | Size | Body Mat'l | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|-----------|------|------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|
| | | | | | | | | | | | | | | | | | | | | |

| MODEL | |
|---------|------------------------------|
| 8000G | Two-Way GLobe Valve |
| 8000GTP | with Top Mounted Positioner |
| 8000GSP | with Side Mounted Positioner |
| 8000GMV | with Motor Actuator |
| 8000T | Three-Way Globe Valve |
| 8000TTP | with Top Mounted Positioner |
| 8000TSP | with Side Mounted Positioner |

| SIZE | |
|------|---------------|
| 050 | 1/2" (DN15) |
| 075 | 3/4" (DN20) |
| 100 | 1" (DN25) |
| 125 | 1-1/4" (DN32) |

| BODY MATERIAL | |
|---------------|--------------|
| CB | Carbon Steel |
| SB | 316SS |
| BR | Brass |
| MN | Monel |
| HC | Hastelloy C |
| A2 | Alloy 20 |
| KN | Kynar |
| PV | PVC |
| ZZ | Non-Standard |

| 1 & 2 | | END CONNECTIONS | |
|-------|--|-----------------|--------------|
| PT | | | FNPT |
| BT | | | BSPT |
| BP | | | BSPP |
| SW | | | FSW |
| R5 | | | 150# RF |
| J5 | | | 150# RTJ |
| R3 | | | 300# RF |
| J3 | | | 300# RTJ |
| R6 | | | 600# RF |
| J6 | | | 600# RTJ |
| R9 | | | 900# RF |
| J9 | | | 900# RTJ |
| R1 | | | 1500# RF |
| J1 | | | 1500# RTJ |
| R2 | | | 2500# RF |
| J2 | | | 2500# RTJ |
| B4 | | | BWE Sch 40 |
| B8 | | | BWE Sch 80 |
| B6 | | | BWE Sch 160 |
| ZZ | | | Non-standard |

| 3 & 4 | | BONNET/PACKING | |
|--------------|--|----------------|------------------------------------|
| METAL BODIES | | | |
| BT | | | Multi-ply Bellows/TFE |
| BH* | | | Multi-ply Bellows/High Temperature |
| ZZ | | | No-standard |

* Positioner required for high temperature packing

MK8000 SERIES BELLOWS STEM SEAL ORDERING SCHEMATIC

| 5 PLUG & SEAT | |
|-------------------------|---|
| Stem/Plug/Seat Material | |
| 8000G/GTP/GSP/GMV | |
| Metal Bodies | |
| A | Standard – Linear Hard |
| B | Standard – =% Hard |
| C | Standard – Q.O. Hard |
| D | Standard – Linear Soft (RPTFE) |
| E | Standard – =% Soft (RPTFE) |
| F | Standard – Q.O. Soft (RPTFE) |
| G | 316/Stellite/Stell – Linear Hard |
| H | 316/Stellite/Stell – =% Hard |
| I | 316/Stellite/Stell – Q.O. Hard |
| M | Alloy 20/AL20/AL20 – Linear Hard |
| N | Alloy 20/AL20/AL20 – % Hard |
| P | Alloy 20/AL20/AL20 – Q.O. Hard |
| Q | Alloy 20/AL20/AL20 – Linear Soft (RPTFE) |
| R | Alloy 20/AL20/AL20 – % Soft (RPTFE) |
| S | Alloy 20/AL20/AL20 – Q.O. Soft (RPTFE) |
| T | Monel/Mon/Mon – Linear Hard |
| U | Monel/Mon/Mon – =% Hard |
| V | Monel/Mon/Mon – Q.O. Hard |
| W | Monel/Mon/Mon – Linear Soft (RPTFE) |
| X | Monel/Mon/Mon – =% Soft (RPTFE) |
| Y | Monel/Mon/Mon – Q.O. Soft (RPTFE) |
| 1 | Hastelloy C/H-C/H-C – Linear Hard |
| 2 | Hastelloy C/H-C/H-C – =% Hard |
| 3 | Hastelloy C/H-C/H-C – Q.O. Hard |
| 4 | Hastelloy C/H-C/H-C – Linear Soft (RPTFE) |
| 5 | Hastelloy C/H-C/H-C – =% Soft (RPTFE) |
| 6 | Hastelloy C/H-C/H-C – Q.O. Soft (RPTFE) |
| Z | Non-standard |

| 6 CV (KV) | |
|-----------|--------------|
| A | 0.05 (0,043) |
| B | 0.1 (0,086) |
| C | 0.2 (0,17) |
| D | 0.5 (0,43) |
| E | 1.0 (0,86) |
| F | 2.0 (1,72) |
| G | 4.0 (3,44) |
| H | 6.5 (5,63) |
| M | 1.5 (1,3) |
| N | 1.8 (1,6) |
| P | 3.0 (2,6) |
| Q | 3.5 (3,01) |
| R | 4.3 (3,7) |
| S | 7.1 (6,1) |

| 7 & 8 ACTUATOR | | | |
|----------------------|--------------|------|--------------|
| TYPE | | SIZE | |
| ALL VALVES EXCEPT SP | | | |
| D | Air-to-Close | 3 | 35M |
| R | Air-to-Open | 5 | 55M |
| FOR SP | | 8 | 85M |
| S | W/SMP | | |
| Z | Non-standard | | |
| 8000GMV | | | |
| N | On-Off | 2 | NEMA 12 |
| M | Ma/Voltage | 4 | NEMA 4 & X-P |
| ZZ | Non-standard | | |

| 9 & 10 RANGE | | | |
|--------------|--------------|----------|-----|
| RANGE | | ACTUATOR | |
| A | 3-15 DIR | 3 | 35M |
| B | 3-15 REV | 5 | 55M |
| G | 6-30 DIR | 8 | 85M |
| H | 6-30 REV | | |
| Z | Non-standard | | |
| 8000GMV | | | |
| NF | On-Off | | |
| 42 | 4-20 mA | | |
| 41 | 4-12 mA | | |
| 12 | 12-20 mA | | |
| V5 | 0-5V | | |
| V1 | 0-10V | | |
| ZZ | Non-standard | | |

| 11 & 12 LIMIT SWITCHES (2LS) | | | |
|------------------------------|--------------|-------------|------------------|
| ACTUATOR | | ACTION/TYPE | |
| 3 | 35M | D | Direct/Standard |
| 5 | 55M | X | Direct/X-P |
| 8 | 85M | R | Reverse/Standard |
| | | P | Reverse/X-P |
| 00 | None | | |
| ZZ | Non-standard | | |

SPECIFICATIONS

MK8000 SERIES BELLOWS STEM SEAL ORDERING SCHEMATIC

| 13 & 14 | SOLENOID & HARDWARE |
|---------|----------------------|
| 00 | None |
| SD | Standard Solenoid |
| WT | Water-Tight Solenoid |
| XP | X-Proof Solenoid |
| H3 | Handwheel 35M Dir |
| H5 | Handwheel 55M Dir |
| H8 | Handwheel 85M Dir |
| R3 | Handwheel 35M Rev |
| R5 | Handwheel 55MK Rev |
| R8 | Handwheel 85M Rev |
| ZZ | Non-standard |

| 15 | ACCESSORIES |
|----|--------------------------------------|
| 0 | None |
| A | Air Regulator |
| B | I/P 35M Act. 4-20Ma/3-15 psi |
| C | I/P 55M Act. 4-20Ma/3-15 psi |
| D | I/P 85M Act. 4-20Ma/3-15 psi |
| E | I/P 35M/55M/85M Act. 4-20Ma/6-30 psi |
| 1 | 1 Gauge for Tmp. |
| 2 | 2 Gauge for Tmp. |
| 3 | 3 Gauge for Tmp. |
| X | Oxygen Clean |
| Z | Non-standard |

| 16 | ACTION |
|----|---------------|
| D | Direct A-T-C |
| R | Reverse A-T-O |

| 17 | SMP |
|----|----------------------------|
| 0 | None |
| A | SMP Direct/Reverse 3-15 |
| D | SMP-IP Direct/Reverse 4-20 |
| G | SMP 16IQ Direct/Reverse |
| Z | Non-standard |

| 18 | PED COMPLIANCE |
|----|----------------|
| 0 | Not Required |
| F | CE Category 1 |
| Z | Non-standard |