

# 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 in<sup>2</sup>) multi-spring
- Optional – 55M (55 in<sup>2</sup>). See Maximum Allowable  $\Delta P$  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; 3.5; 4.0; 4.3 (1,7; 3,0; 3,4; 3,7)
1-1/4"/DN32	2.0; 3.5; 4.0; 6.5; 7.1 (1,7; 3,0; 3,4; 5,6; 6,2)

**Maximum Allowable ΔP Ratings**

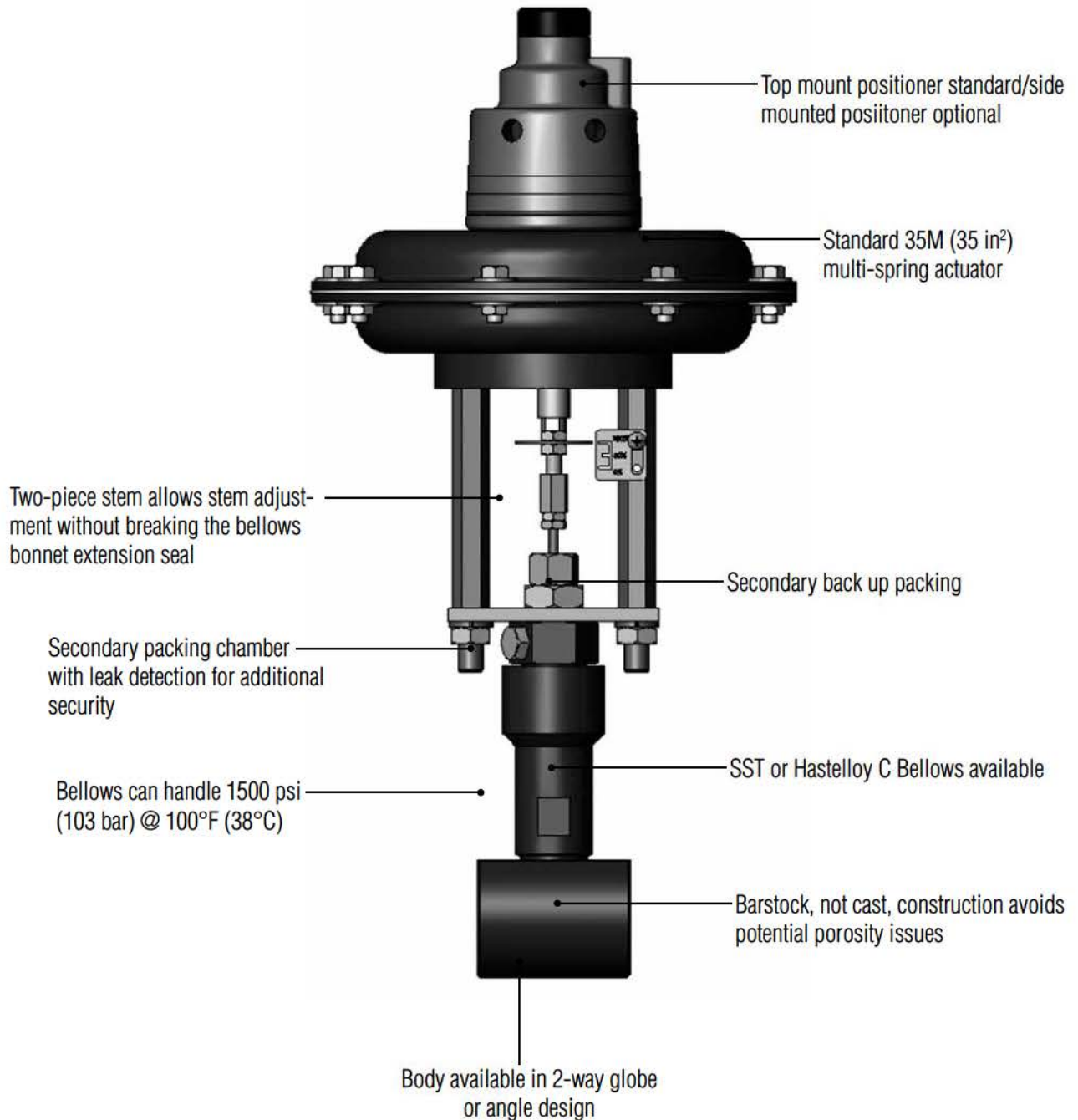
Cv	ATO with positioner at 40 psi			ATC with positioner at 40 psi		
	35M	55M	85M	35M	55M	85M
0.05-0.2	1500	N/A	N/A	1500	N/A	N/A
0.5-1.0	1500	N/A	N/A	1500	N/A	N/A
1.25-2.0	1500	N/A	N/A	1500	N/A	N/A
3.0-4.0	1300	N/A	N/A	1500	N/A	N/A
4.3-6.5	800	1100	1500	1500	1500	1500
7.1	550	750	1150	1500	1500	1500

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

For P2>0, determine ΔP with formula:

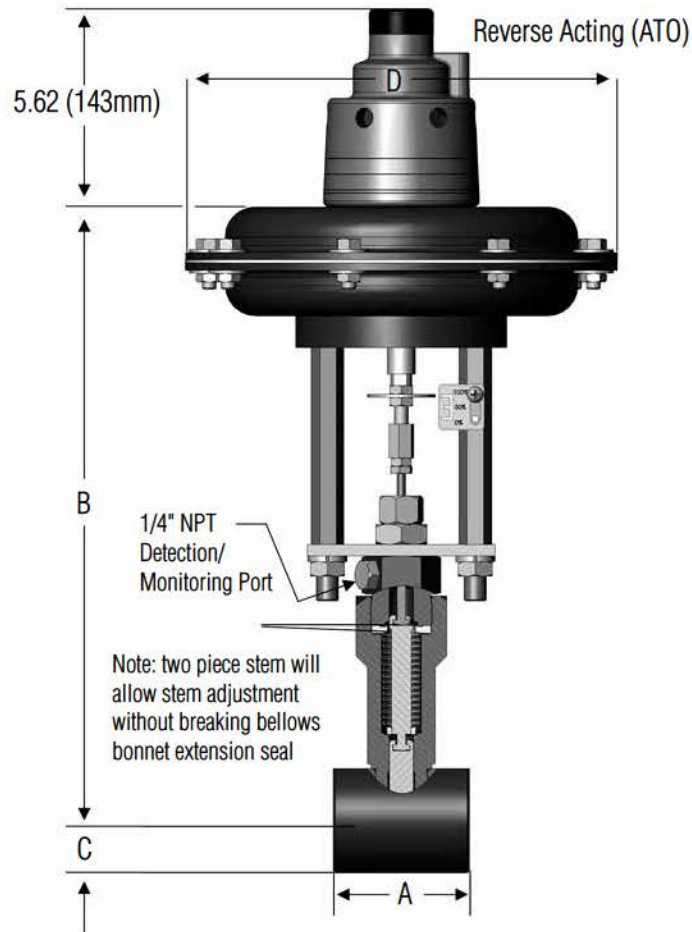
$$\Delta P = (\text{value from chart above}) - (0.32)(P2)$$

**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

# SPECIFICATIONS



## 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		Non-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)
I	9.0 (7,74)
J	16.0 (13,8)
K	25 (21,5)
M	1.5 (1,3)
N	1.8 (1,6)
P	3.0 (2,6)
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		

# SPECIFICATIONS

MK8000BS/0815

## MK8000 SERIES BELLOWS STEM SEAL ORDERING SCHEMATIC

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		

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-S Direct/Reverse		
H	SMP 16IQ-B Direct/Reverse		
Z	Non-standard		

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