

708BS 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 along with a detection port for use in monitoring potential emissions leakage.

Features:

- Features standard bonnet port for use in lubricating the packing for added protection against leakage, or for use as a detection port for monitoring potential fugitive emissions
- Triple-ply bellows provides added strength and enhanced performance

SPECIFICATIONS

Sizes: 1/4", 1/2", 3/4" (DN8, DN15, DN20)

End Connections

- Threaded – NPT, BSPT, BSPP
- Socket weld – 1/2" & 3/4" only (DN15 & DN20)
- Integral tube ends (max Cv of 0.2)
- Flanged

Actuator (Positioner required with all actuators)

- 1/4" & 1/2" (DN8 & 15) – standard: 14M (14in²) multi-spring; optional: 35M (35in²) multi-spring
- 3/4" (DN20) – standard: 14M; optional 35M

Body/Bonnet Materials

- Carbon Steel
- Stainless Steel
- Hastelloy C
- Hastelloy B
- Alloy 20
- Monel
- Titanium



MK708BS SERIES BELLOWS STEM SEAL SPECIFICATIONS (CON'T)
Trim Material

- Standard trim – Cv's 0.05 (0,04 Kv's) & above: 17-4 plug, 316SS stem and seat; Cv's below 0.05 (0,04 Kv's): Nitronic 60 stem, plug and stem
- Optional trim – 17-4 plug, 416SS seat; Stellite plug and seat; 316SS stem, plug and seat

Bellows Material

- Standard – 316L, Triple-ply
- Optional – Hastelloy C

Actuator Material: Aluminum

Diaphragm Material

- 14M Actuator: Nylon/Nitrile
- Optional 35M Actuator: Buna-N fabric reinforced

Stem Packing Material

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

Gasket Material: matched to packing material

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

Shutoff

- Standard – Cv's 0.05 and greater: ANSI Class IV; Cv's 0.02 and lower: ANSI Class VI
- Optional – Cv's 0.05 and greater: ANSI Class VI (with PEEK seats)

Ranges: 3-15 (0,2-1,0); 6-30 (0,4-2,1); 3-9 (0,2-0,6) psi (bar)
positioner required on all ranges

Mark 15 TMP standard. Consult factory for smp configuration

Valve Action

- Direct (ATC)
- Reverse (ATO)

Flow Characteristics: linear (all Cv's), equal percentage (Cv > 0.05/0,43 Kv only); or quick opening (Cv > 0.05/0,43 Kv only)

Cv (Kv) Selection

4.0** (3,4)	2.0* (1,7)	1.25* (1,1)	1.0 (0,9)	0.5 (0,43)
0.2 (0,17)	0.1 (0,09)	0.05 (0,04)	0.02 (0,017)	0.01 (0,009)
0.005 (0,00043)	0.002 (0,0017)	0.001 (0,0009)	0.0005 (0,00043)	0.0002 (0,00017)
0.0001 (0,00009)	0.00005 (0,000043)	0.00002 (0,000017)	0.00001 (0,000009)	

* Available in 1/2" & 3/4" sizes (DN15 & DN20) only

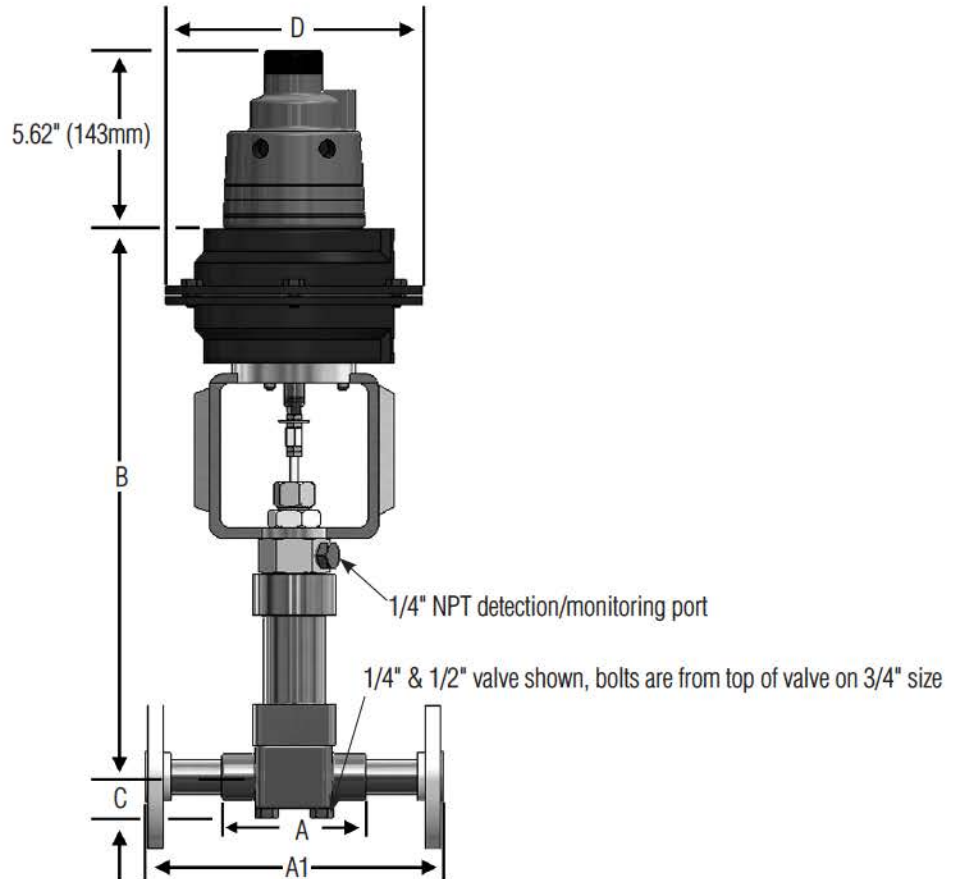
** Available in 3/4" size (DN20) only

Consult factory for lower Cv (Kv) values

Maximum Allowable ΔP Ratings

Cv (Kv)	14M Actuator		35M Actuator	
	ATO w/pos. @ 40 psi (2,8 bar)	ATCw/pos @ 40 psi (2,8 bar)	ATC w/pos. @ 40 psi (2,8 bar)	ATC w/pos. @ 40 psi (2,8 bar)
4.0 (3,4)	532 (37)	1500 (103)	880 (61)	1500 (103)
1.25-2.0 (1,1-1,7)	800 (55)	1500 (103)	1323 (91)	1500 (103)
0.32-1.0 (0,3-0,9)	1500 (103)	1500 (103)	1500 (103)	1500 (103)
0.05-0.2 (0,04- 0,17)	1500 (103)	1500 (103)	1500 (103)	1500 (103)
<0.02 (0,017)	1500 (103)	1500 (103)	1500 (103)	1500 (103)

* Consult factory if P2 is greater than 250 psig

MK708BS SERIES BELLOWS STEM SEAL DIMENSIONS

Mark 708BS Series Threaded Ends

VALVE SIZE	ACTUATOR	DIMENSIONS, INCHES				WEIGHT LBS
		A	B	C	D	
1/4"	14M	3.50	13.48	0.9	6.3	9.5
1/2"	14M	3.50	13.48	0.9	6.3	9.5
3/4"	14M	4.38	13.54	1.2	6.3	14.5
	35M	4.38	15.34	1.2	9.5	23.5

Mark 708BS Series Flanged Ends

VALVE SIZE	ANSI FLANGE	DIMENSIONS, INCHES				WEIGHT LBS
		A1	B	C	D	
1/2" (14M)	150#	7.25	13.48	0.9	6.3	11.5
	300#	7.50	13.48	0.9	6.3	13.5
3/4" (14M)	150#	7.25	13.54	1.2	6.3	18.5
	300#	7.62	13.54	1.2	6.3	19.5
3/4" (35M)	150#	7.25	15.34	1.2	9.5	27.5
	300#	7.62	15.34	1.2	9.5	28.5

Mark 708BS Series Threaded Ends, Metric

VALVE SIZE	ACTUATOR	DIMENSIONS, MM				WEIGHT KGS
		A	B	C	D	
8	14M	89	342	23	160	4,3
15	14M	89	342	23	160	4,3
20	14M	111	344	30	160	6,6
	35M	111	390	30	241	10,7

Mark 708BS Series Flanged Ends, Metric

VALVE SIZE	FLANGE PN	DIMENSIONS, MM				WEIGHT KGS
		A1	B	C	D	
1/2"	10/16	130	342	23	160	5,2
	25/40	150	342	23	160	6,1
3/4"	10/16	184	344	30	160	8,4
	25/40	194	344	30	160	8,8
3/4"	10/16	184	390	30	241	12,5
	25/40	194	390	30	241	13,0

MK708BS SERIES BELLOWS STEM SEAL DIMENSIONS

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

MODEL	
708BS	Bellows Seal w/ Top Mount Positioner
708BSSP*	Bellows Seal w/ Side Mount Positioner

* 708BSSP can only have a 6-30 range

SIZE	
025	1/4" (DN8)
050	1/2" (DN15)
075	3/4" (DN20)

BODY MATERIAL	
CS*	WCB Carbon Steel
CB*	A105 Carbon Steel Barstock
S6*	CF8M Stainless Steel
SB*	316/ 316L Stainless Steel Barstock
HC*	Hastelloy C
MN*	Monel
A2*	Alloy 20

1 & 2 END CONNECTIONS	
PT	NPT
SW	FSW
F5	150# FE
F3	300# FE
TN	Integral Tube Nuts
ZZ	Non-standard

3 & 4 TRIM	
B6	316SS/Teflon Packing
BC	Hastelloy C/Teflon Packing
G6	316SS/Graphite
ZZ	Non-standard

5 & 6 PLUG SEAT			
	Material of Stem/Plug/Seat		Cv
A	Standard - Linear Hard	A	0.00001
B	Standard =% Hard	B	0.00002
C	Standard Q.O. Hard	C	0.00005
D	Standard Linear Soft (PEEK)	D	0.0001
E	Standard =% Soft (PEEK)	E	0.0002
F	Standard Q.O. Soft (PEEK)	F	0.0005
M	316/Stellite/Stell-Lin. Hard	G	0.001
N	316/Stellite/Stell =% Hard	H	0.002
P	316/Stellite/Stell Q.O. Hard	I	0.005
		J	0.01
		K	0.02
		L	0.05
		M	0.1
		N	0.2
		P	0.5
		Q	1.0
		R	2.0
		S	4.0
		T	3.0
ZZ	Non-standard		

7, 8, 9, 10 ACTUATOR			
	Range	Diaphragm	Actuator
A4T4	3-15 DIR	Nylon/Nitrile	14M
B4T4	3-15 REV		
C4T4	3-9 DIR		
D4T4	3-9 REV		
E4T4	9-15 DIR		
F4T4	9-15 REV		
G4T4	6-30 DIR		
H4T4	6-30 REV	Buna-N	35M
A3B3	3-15 DIR		
B3B3	3-15 REV		
C3B3	3-9 DIR		
D3B3	3-9 REV		
E3B3	9-15 DIR		
F3B3	9-15 REV		
G3B3	6-30 DIR	Non-Standard	
H3B3	6-30 REV		
ZZ	Non-Standard		

11 & 12 ACTUATOR FEATURE			
	Action		Actuator
D	Direct	4	14M
R	Reverse	3	35M
S	SMP		

MK708BS SERIES BELLOWS STEM SEAL DIMENSIONS

13 & 14	ACCESSORIES
00	None
A5	Air Regulator on 35M
A7	Air Regulator on 14M
TG	TFE Gasket
G2	Two Gages on TMP
SH	304SS Strain Hardened
S2	3-way Solenoid Energize to Open
X2	Exp. Proof 3-way Solenoid Energize to Open
S3	3-way Solenoid Energize to Close
X3	Exp. Proof 3-way Solenoid Energize to Close
XC	Oxygen Clean
ZZ	Non-standard

15	ACTION
D	Air-to-close
R	Air-to-open

16	I/P
0	None
4	I/P 14M Act. 4-20Ma/3-15 psi
3	I/P 35M Act. 4-20Ma/3-15 psi
9	I/P 14M Act. 4-20Ma/6-30 psi
Z	Non-standard

17	SIDE MOUNT POSITIONER
0	None
1	Positioner Ready (no positioner)
A	SMP - P/P Dir/Rev 3-15
B	SMP - P/P Dir/Rev 3-9
C	SMP - P/P Dir/Rev 9-15
D	SMP - I/P Dir/Rev 4-20
E	SMP - I/P Dir/Rev 4-12
F	SMP - I/P Dir/Rev 12-20
G	MK16IQ-S Dir/Rev (w/ HART)
H	MK16IQ-B Dir/Rev
J	MK16IQ-FF Dir/Rev (Foundation Fieldbus)