

# Small Control Valve

## U.S. Type 808 (Includes Sub-BEL)

### DESCRIPTION

The U.S. Type 808 bellows sealed globe control valve is especially suited to applications where the possibility of packing leakage cannot be tolerated. The bellows forms a flexible static seal that is virtually leak-free, as long as the integrity of the bellows remains intact. The unit contains a set of backup packing that, in many cases, will allow the valve to continue in service until repairs can be made, should the bellows fail. The bellows is available in two pressure ranges:

- The low pressure bellows fits 1/4 in. (6.4 mm), 1/2 in. (12.7 mm), 3/4 in. (19.1 mm) or 1 in. (25.4 mm) valves and is available in four materials.
- The high pressure bellows fits 1/2 in. (12.7 mm) through 1 in. (25.4 mm) valves and is rated at 1500 psi for throttling applications.

**NOTE:** Consult the factory when using this bellows.

### APPLICATIONS

The Type 808 valve is widely used in industrial applications, research, and process plants on liquids, gases or steam. The statically sealed bonnet makes it especially suited to applications where expensive concentrates are controlled and cannot be allowed to leak. Other applications arise when fugitive emissions must be prevented or when sensitive flow streams must be isolated from the ambient atmosphere. This type seal performs well in high vacuum service where standard packing is not desired.

### MATERIALS

Body and Bonnet	
Standard	316 SST, carbon steel (WCB)
Optional	Alloy 20, Alloy C-276, Alloy B2 or ASTM equivalent, Ni-Cu Alloy 400
Bellows	
Low Pressure	DIN 1.4571 (316Ti SST), DIN 2.4360 (Ni-Cu Alloy 400) DIN 2.4819 (Alloy C-276) Ni Alloy 625 or 750
High Pressure	DIN 1.4571(316Ti SST)
Innervalue	
Standard	316 SST
Optional	Alloy 20, Alloy C-276, Alloy B2 or ASTM equivalent, Ni-Cu Alloy 400, Stellite SST
Packing	TFE CV rings, Graphite
Actuator	
Standard	Aluminum
Optional	316 SST on 1/2 in. (12.7 mm), 3/4 in. (19.1 mm) and 1 in. (25.4 mm)

### ACTUATOR CHOICES

<b>Standard</b>	Air-to-open, Type 754 & 766 Air-to-close, Type 755 & 759
<b>Standard Signals</b>	3-15#, 6-30#
<b>Optional Signals</b>	With positioner, 3-9#, 9-15#
<b>Accessories</b>	Filter regulator, gauges, I/P, limit switches, handwheel on standard unit, solenoids



*Shown with Type 754 Actuator*

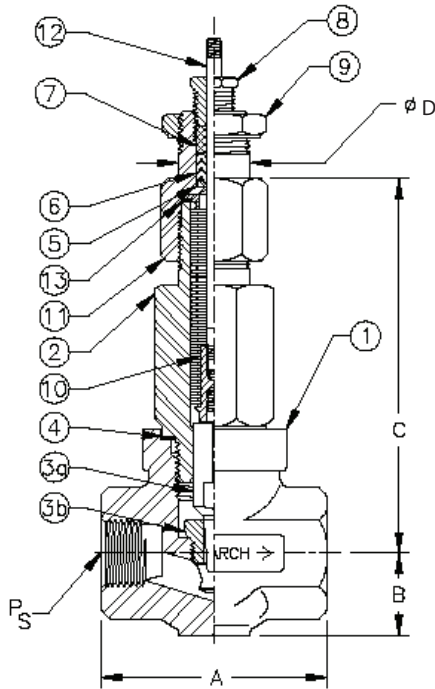
### STANDARD FEATURES

- 1/4 in. (6.4 mm), 1/2 in. (12.7 mm), 3/4 in. (19.1 mm) and 1 in. (25.4 mm) models
- Interchangeable trim sets
- Bellows packing
- Trim characteristics: Linear, equal percent, quick open or double taper
- TFE CV ring backup packing
- TFE bellows gasket

### OPTIONAL FEATURES

- Butt and socket weld ends, BSPP, tube connection and others
- Bonnet extensions for temperature extremes
- Angle pattern bodies
- Reduced Emissions Kalrez® (REK), graphite, spring-loaded chevron, and others
- Exotic alloys for complete valves or trims
- Stellite trims & soft seats (PTFE & Kel-F)
- TiN coating of innervalue stem and seat
- Purge or lead ports

**DIMENSIONS**



1. Valve Body
2. Bonnet-Bellows
3. Inner Valve (trim) matched set  
3A: Plug Assembly  
3B: Seat
4. Body-Bonnet gasket
5. Packing Adaptor
6. Packing
7. Packing Adaptor
8. Packing-Gland
9. Yoke Locknut
10. Bellows
11. Bonnet Cap
12. Bellow Stem
13. Bellows Gasket

PS	1/4 in. (6.4 mm)	1/2 in. (12.7 mm)	3/4 in. (19.1 mm)	1 in. (25.4 mm)
A	2.12 in. (54 mm)	2.75 in. (70 mm)	3.37 in. (86 mm)	4.00 in. (102 mm)
B	0.68 in. (17 mm)	1 in. (25 mm)	1.18 in. (30 mm)	1.5 in. (38 mm)
C	4.15 in. (105 mm)	4.56 in. (116 mm)	4.76 in. (121 mm)	4.88 in. (124 mm)
D	0.625 in. (16 mm)	0.875 in. (22 mm)	0.875 in. (22 mm)	0.875 in. (22 mm)
Stroke	0.437 in. (11 mm)	0.562 in. (14 mm)	0.562 in. (14 mm)	0.562 in. (14 mm)

**PRESSURE/TEMPERATURE RATING**

Temp ° F (° C)	Low Pressure DIN 1.4571 psig (barg)	DIN 2.4360 psig (barg)	DIN 2.4819 psig (barg)	Ni Alloy 625 or 750 psig (barg)	High Pressure DIN 1.4571 psig (barg)
70 (21)	580 (40)	325 (22)	580 (40)	325 (22)	1500 (103)
200 (93)	525 (36)	290 (20)	550 (38)	280 (19)	1500 (103)
300 (149)	475 (32)	280 (19)	530 (36)	240 (16)	1500 (103)
400 (204)	445 (31)	270 (18)	520 (35)	210 (14)	1500 (103)
500 (260)	410 (28)	255 (17)	505 (35)	165 (11)	1500 (103)
600 (316)	385 (26)	240 (16)	480 (33)	125 (8)	1500 (103)
700 (371)	370 (25)	220 (15)	450 (31)	90 (6)	1500 (103)
800 (427)	345 (23)	—	420 (28)	50 (3)	1495 (103)

**NOTE:** The pressure ratings above are for valves constructed of 316, Alloy 20, Alloy C, Alloy B, and carbon steel. Consult factory about other materials.  
The High Pressure DIN 1.451 bellows can be used up to 2500 psi in special applications. Consult factory for more information.

**INNERVALVE CHART**

Valve Size	Trim Size	Nominal Cv	Theoretical Turbulent Cv	Orifice Dia. in. (mm)	Orifice Area in.² (mm²)	Nominal Rangeability	
						Linear	Equal %
1 in. (25.4 mm)	6.0	6.0	6.0	0.6250 (15.9)	0.3068 (197.9)	50:1	60:1
	5.0	5.0	5.0	0.6250 (15.9)	0.3068 (197.9)	50:1	60:1
	4.5	4.5	4.5	0.5000 (12.7)	0.1963 (129.6)	50:1	60:1
3/4 in. (19.1 mm), 1 in. (25.4 mm)	4.0	4.0	4.0	0.4375 (11.1)	0.1503 (96.9)	50:1	60:1
	3.5	3.5	3.5	0.4375 (11.1)	0.1503 (96.9)	50:1	60:1
1/2 in. (12.7 mm), 3/4 in. (19.1 mm), 1 in. (25.4 mm)	A	2.5	2.5	0.3750 (9.5)	0.1104 (71.2)	40:1	50:1
	B	2.0	2.0	0.3750 (9.5)	0.1104 (71.2)	40:1	50:1
	C	1.25	1.25	0.2810 (7.1)	0.0620 (40.0)	40:1	50:1
	D	0.8	0.8	0.2500 (6.4)	0.0491 (31.7)	40:1	50:1
	E	0.5	0.5	0.2500 (6.4)	0.0491 (31.7)	40:1	50:1
1/4 in. (6.4 mm), 1/2 in. (12.7 mm), 3/4 in. (19.1 mm), 1 in. (25.4 mm)	F	0.32	0.32	0.1560 (3.9)	0.0191 (12.3)	30:1	40:1
	G	0.2	0.2	0.1560 (3.9)	0.0191 (12.3)	30:1	40:1
	H	0.13	0.13	0.1560 (3.9)	0.0191 (12.3)	30:1	40:1
	I	0.08	0.08	0.1560 (3.9)	0.0191 (12.3)	30:1	40:1
	J	0.05	0.05	0.1560 (3.9)	0.0191 (12.3)	30:1	40:1
	K	0.03	4.8E-02	0.0860 (2.2)	0.0058 (3.7)	25:1	—
	L	0.02	3.4E-02	0.0860 (2.2)	0.0058 (3.7)	25:1	—
	M	0.01	1.6E-02	0.0860 (2.2)	0.0058 (3.7)	25:1	—
	N	0.006	1.0E-02	0.0860 (2.2)	0.0058 (3.7)	25:1	—
	O	0.003	5.3E-03	0.0860 (2.2)	0.0058 (3.7)	25:1	—
	1/4 in. (6.4 mm), 1/2 in. (12.7 mm)	P-1	0.002	3.6E-03	0.0625 (1.6)	0.0031 (2.0)	15:1
P-2		0.0013	2.5E-03	0.0625 (1.6)	0.0031 (2.0)	15:1	—
P-3		0.001	2.0E-03	0.0625 (1.6)	0.0031 (2.0)	15:1	—
P-4		0.0006	1.4E-03	0.0625 (1.6)	0.0031 (2.0)	15:1	—
P-5		0.0004	1.0E-03	0.0625 (1.6)	0.0031 (2.0)	15:1	—
P-6		0.00027	8.3E-04	0.0625 (1.6)	0.0031 (2.0)	15:1	—
P-7		0.00018	6.8E-04	0.0625 (1.6)	0.0031 (2.0)	15:1	—
P-8		0.00012	5.6E-04	0.0625 (1.6)	0.0031 (2.0)	15:1	—
P-9		0.00008	4.6E-04	0.0625 (1.6)	0.0031 (2.0)	15:1	—
1/4 in. (6.4 mm)	P-10						
	P-11						
	P-12						
	P-13						
	P-14						
	P-15						
	P-16						
	P-17						
P-18							

Consult the factory for these innervalve sizes.

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