

### DESCRIPTION

The U.S. Series 9000 GCF control valve is available with ANSI raised-face flanges. The flanges are socket welded to the body and flange. The flange and nipple material is the same material as the body material. Flange faces have concentric serrations to provide superior gasket sealing. The unit is rated for either ANSI Class 150 or 300, depending on the flange.

When the valve is supplied with CL150 flanges, the pressure vs. temperature rating of the valve assumes the rating of the flange or the packing, whichever is lower. Consult the factory for limits of standard and optional innervalve materials.

### MATERIALS

Body and Bonnet	
Standard	316 stainless steel [CF8M] Flanges/Nipples, 316 stainless steel [A182]
Optional	Alloy C [CW12MW] B/B/Flanges
Innervalve	
Standard	Same as body
Optional	Stellite®, PTFE-PFA Soft Seat
Packing	
Standard	PTFE chevron ring
Optional	REK®, Graphite
Body Gasket	
	Grafoil®

### DESIGN INFORMATION

#### Body

- Globe with integral full port seat
- Globe with replaceable seat (reduced trims)

#### Bonnet

- Standard for temperatures up to 450° F (232° C) with TFE
- Short extension for up to 700° F (371° C) with TFE
- Cryogenic (3 sizes) for down to -450° F (267° C)
- Double packing with or without purge port

**Actuator:** Pneumatic multi-spring



*Shown with optional stainless steel actuator*

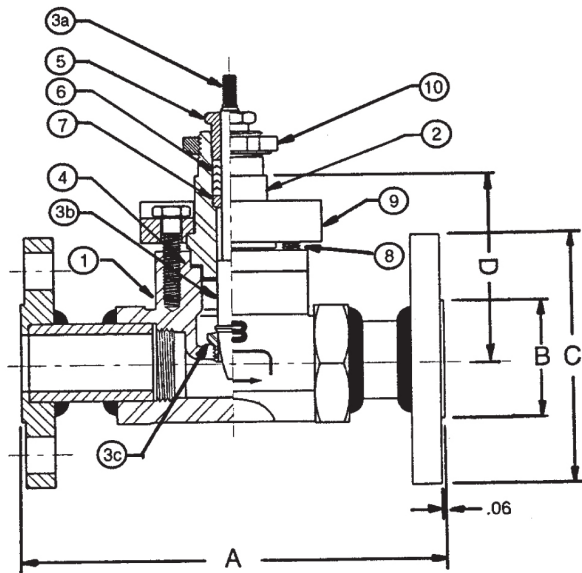
### DESIGN STANDARDS

- ANSI B16.34-1988
- Face-to-face dimensions: According to ANSI B16.10-1973
- Flange face surface: According to ANSI B16.5-1988 (concentric serrations)
- ASME Section III, Part UHA-105
- ASME Section VIII

### OPTIONAL FEATURES

- Alternative raised-face surfaces
- Alternative flange types
- DIN flanges
- Alternative face-to-face lengths to suit special piping requirements

## DIMENSIONS



## Description of Items

1. Valve Body
2. Bonnet
3. Innervalue (trim set):
  - a. Innervalue stem
  - b. Innervalue guide/plug
  - c. Seat (when applicable)
4. Gasket
5. Packing gland
6. Packing set
7. Packing adapter
8. Bonnet flange hex screws
9. Bonnet flange
10. Yoke lock nut

## Dimensions in Inches (mm)

Valve/Flange Size & Class	A Length	B R.F. $\phi$	C Flg $\phi$	D Height
1 in. (25.4 mm) x 150	7.25 in. (184 mm)	2.0 in. (51 mm)	4.25 in. (108 mm)	3.2 in. (81 mm)
3 in. (73.2 mm) x 300	7.75 in. (197 mm)	2.0 in. (51 mm)	4.88 in. (124 mm)	3.2 in. (81 mm)
1-1/2 in. (38.1 mm) x 150	8.75 in. (222 mm)	2.88 in. (73 mm)	5.0 in. (127 mm)	3.47 in. (88 mm)
1-1/2 in. (38.1 mm) x 300	9.25 in. (235 mm)	2.88 in. (73 mm)	6.13 in. (156 mm)	3.47 in. (88 mm)
2 in. (50.8 mm) x 150	10.0 in. (254 mm)	3.62 in. (92 mm)	6.0 in. (152 mm)	3.6 in. (91 mm)
2 in. (50.8 mm) x 300	10.5 in. (267 mm)	3.62 in. (92 mm)	6.5 in. (165 mm)	3.6 in. (91 mm)

Pressure vs. Temperature Rating

Temp ° F (°C)	CL 150 psig (bar)	CL 300 psig (bar)
100 (38)	275 (19)	720 (50)
200 (93)	240 (16.6)	620 (43)
300 (149)	215 (15)	560 (39)
400 (204) <sup>1</sup>	195 (13)	515 (36)
500 (260) <sup>2</sup>	170 (12)	480 (33)
600 (316)	140 (9.7)	450 (31)
700 (371)	110 (8)	430 (30)
800 (427)	80 (5)	415 (29)
900 (482)	50 (3)	395 (27)
1000 (538)	20 (1.4)	365 (25)

<sup>1</sup> Max. temp for PTFE with standard bonnet is 450° F (232° C).

<sup>2</sup> Above 500° F (260° C), use stainless steel strain hardened studs.

## INNERVALVE CHART

Valve Size	Cv (Linear)	Cv (=%)	Orifice Dia in. (mm)	Area in. <sup>2</sup> (mm <sup>2</sup> )	F <sub>L</sub> <sup>2</sup>	Seat Configuration	Max. Oper $\Delta P$ <sup>3</sup> psi (bar)	Max $\Delta P$ Shutoff <sup>1</sup> psi (bar)
2 in. (50.8 mm)	25	20	1.500 (38.1)	1.77 (1141.9)	0.85	Integral	150 (10)	300 (21)*
	21	17	1.125 (28.6)	1.00 (645.2)	0.86	Replaceable	275 (19)	550 (38)*
	15	14	0.812 (20.6)	0.52 (335.5)	0.88	Replaceable	540 (37)	720 (50)*
1.5 in. (38.1 mm)	7	6.5	0.625 (15.9)	0.31 (200.0)	0.90	Replaceable	600 (41)	720 (50)*
	15.5	13	1.250 (31.8)	1.23 (793.5)	0.85	Integral	225 (16)	450 (31)*
	11	10	0.812 (20.6)	0.52 (335.5)	0.87	Replaceable	540 (37)	720 (50)*
	7	6.5	0.625 (15.9)	0.31 (200.0)	0.90	Replaceable	600 (41)	720 (50)
1 in. (25.4 mm)	4	4	0.625 (15.9)	0.31 (200.0)	0.92	Replaceable	600 (41)	720 (50)
	8.3	7.0	0.812 (20.6)	0.52 (335.5)	0.85	Integral	540 (37)	720 (50)*
	5.3	4.5	0.500 (12.7)	0.20 (129.0)	0.87	Replaceable	660 (46)	720 (50)
	2	2	0.500 (12.7)	0.20 (129.0)	0.89	Replaceable	660 (46)	720 (50)
	1	1	0.500 (12.7)	0.20 (129.0)	0.91	Replaceable	660 (46)	720 (50)
	0.5	0.5	0.156 (4.0)	0.02 (12.9)	0.93	Replaceable	720 (50)	720 (50)
	0.2	0.2	0.156 (4.0)	0.02 (12.9)	0.94	Replaceable	720 (50)	720 (50)
	0.1	0.1	0.156 (4.0)	0.02 (12.9)	0.95	Replaceable	720 (50)	720 (50)
	0.05	0.05	0.156 (4.0)	0.02 (12.9)	0.96	Replaceable	720 (50)	720 (50)
0.02	—	0.156 (4.0)	0.02 (12.9)	0.97	Replaceable	720 (50)	720 (50)	

### Rangeability:

Linear = 50:1, Percentage = 60:1

Listed  $\Delta P$  pressures are applicable to CL300.

### Notes:

1. Pressure drop limits for soft seated trims are 50% of those listed.
2. Body recovery coefficient (F<sub>L</sub>) per ISA 75.02-1988 at maximum innervalue opening.
3. Shutoff pressures marked with an asterisk (\*) require six actuator springs to obtain the required preload. Pressures listed under Max. Oper  $\Delta P$  or Max. Shutoff  $\Delta P$  relate to the actuator preload requirements and innervalue guide limits. Since fluid and application criteria have a bearing on innervalue performance, some applications may require hardened trim and/or extra preload. In certain applications, the pressures listed may wear or erode the innervalue material.

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