

Type 9000 GCF

Model 9000 With Optional Flanges RESEARCH®/Series 9000 Control Valves

Technical Brief

DESCRIPTION

The Model 9000 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. Flange faces have concentric serrations to provide superior gasket sealing. The unit is rated for either ANSI Class 150 or 300, whichever flange is added.

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 or the general catalog for limits of standard and optional innervalue materials.

MATERIALS OF CONSTRUCTION

Body-Bonnet:

- Standard- 316SST [CF8M]
- Flanges/Nipples- 316SST [A182]

Optional- Alloy C [CW12MW] B/B/Flanges

Innervalue:

- 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 450F with TFE
- Short extension for up to 700F with TFE
- Cryogenic [3 sizes] for down to -450F
- Double packing with or without purge port

Actuator: Pneumatic multi-spring

Consult general brochure for details.



Shown with size 35 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

OPTIONS

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

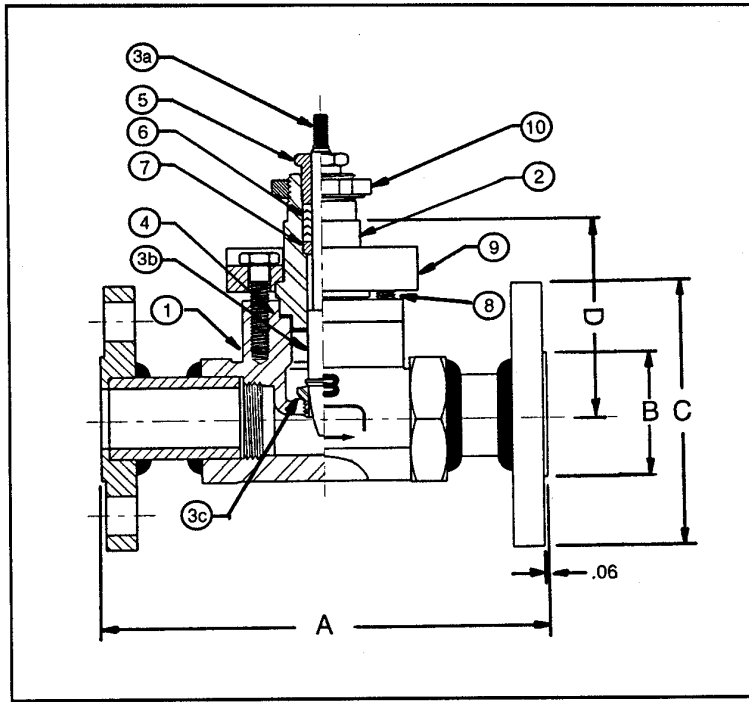
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DESCRIPTION OF ITEMS

1. Valve body
2. Bonnet
- 3a. Innervalue stem
- 3b. Innervalue guide/plug
- 3c. Seat [when applicable]
4. Gasket
5. Packing gland
6. Packing set
7. Lower packing adapter
8. Bonnet flange hex screws
9. Bonnet flange
10. Yoke lock nut

Pressure/Temp Rating

Temp F	CL 150	CL 300	Temp C
100	275	720	38
200	240	620	93
300	215	560	149
400[1]	195	515	204
500[2]	170	480	260
600	140	450	196
700	110	430	371
800	80	415	427
900	50	395	482
1000	20	365	538

DIMENSIONS

Valve/Flange Size & Class	A Length	B R.F.Ø	C Flg.Ø	D Height
1" x 150	7.25"	2.0"	4.25"	3.2"
1" x 300	7.75"	2.0"	4.88"	3.2"
1-1/2" x 150	8.75"	2.88"	5.0"	3.47"
1-1/2" x 300	9.25"	2.88"	6.13"	3.47"
2" x 150	10.0"	3.62"	6.0"	3.6"
2" x 300	10.5"	3.62"	6.5"	3.6"

[1] Max. temp for PTFE with standard bonnet is 450F
 [2] Above 500F, use SST strain hardened studs.

Innervalue Information

Valve Size	Cv [Linear]	Cv [%]	Orifice Dia. [in.]	Area in ²	F L ^[2]	Seat Configuration	Max. Oper. ΔP [psi] [3]	Max. ΔP Shut-off [1]
2"	25	20	1.500	1.77	.85	Integral	150	300*
2"	21	17	1.125	1.00	.86	Replaceable	275	550*
2"	15	14	0.812	0.52	.88	Replaceable	540	720*
2"	7	6.5	0.625	0.31	.90	Replaceable	600	720
1.5"	15.5	13	1.250	1.23	.85	Integral	225	450*
1.5"	11	10	0.812	0.52	.87	Replaceable	540	720*
1.5"	7	6.5	0.625	0.31	.90	Replaceable	600	720
1.5"	4	4	0.625	0.31	.92	Replaceable	600	720
1"	8.3	7.0	0.812	0.52	.85	Integral	540	720*
1"	5.3	4.5	0.500	0.20	.87	Replaceable	660	720
1"	2	2	0.500	0.20	.89	Replaceable	660	720
1"	1	1	0.500	0.20	.91	Replaceable	660	720
1"	0.5	0.5	0.156	0.02	.93	Replaceable	720	720
1"	0.2	0.2	0.156	0.02	.94	Replaceable	720	720
1"	0.1	0.1	0.156	0.02	.95	Replaceable	720	720
1"	0.05	0.05	0.156	0.02	.96	Replaceable	720	720
1"	0.02	N/A	0.156	0.02	.97	Replaceable	720	720

RANGEABILITY:
 Linear = 50:1, Percentage = 60:1

CAUTION: Listed ΔP 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] per ISA 75.02-1988 at maximum innervalue opening.
3. Shut-off pressures marked with an asterisk [*] require six [6] actuator springs to obtain required preload. Pressures listed under Max. oper. ΔP or Max. shut-off ΔP relate to 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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 for specific regions and contacts.

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