

Valve Assembly

Model CBX, 1/2" and 1" Extended Body Cold Box Assembly

DESCRIPTION

The Model CBX control valve is designed specifically for cryogenic cold box applications. The unique design allows ready access to the seat ring after the body has been sealed in the cold box. A special seat extraction tool simplifies trim changing operations. Although the standard body extension is 14", lengths up to 60" are available on special order. The use of a standard threaded bonnet allows the user a choice of bonnet styles, from TFE chevron ring packing to bellows seals. An optional casing flange or weldable sleeve facilitates field mounting.

APPLICATIONS

The CBX valve is especially suited to modulating control of liquids and vapors in the cryogenic temperature range (to -450° F). Although designed for cold service, the unit can also be used at elevated temperatures, such as sealed ovens.

MATERIALS

Body-Bonnet

Body	CF3M (316L stainless steel)
Body extension	316L stainless steel pipe and 316 stainless steel barstock
Bonnet	316 stainless steel barstock

Innervalve

Standard	316 stainless steel
Optional	Stellite, TFE or Kel-F soft seat

Packing

Standard	TFE chevron rings
Optional	Graphite or bellows seal

Actuator

Standard	Aluminum (epoxy coated)
Optional	316 stainless steel
Hardware	300 series stainless steel

Diaphragm

Standard	Buna on Nylon
Optional	Viton on Nomex

Actuator Choices

Standard	Air-to-open, Fail Close Air-to-close, Fail Open
Signal Ranges	3...15#, 6...30#, (3...9# or 9...15# with positioner)
Accessories	top or side mounted positioner, gauges, regulator, solenoid, I/P converters, limit switches

NOTE: The EVA-1 electric actuator can also be used for low pressure applications if air is not available.



STANDARD FEATURES

- Replaceable innervalve
- 316 stainless steel construction
- Wide range of innervalves and characteristics
- Guided innervalve
- Class IV seat leakage

OPTIONAL FEATURES

- Casing flange
- Weldable mounting sleeve
- Stellite innervalve material
- Soft seated innervalves
- Bellows bonnet
- Wide variety of end fittings: standard NPT or socket weld, butt weld nipples or flanges.

SPECIFICATIONS

1/2" Size Value
Pressure vs Temperature Rating

Temp °F	Pressure in psi	Temp °C	Pressure in bar
100	2300	38	158.5
200	2200	93	151.6
300	2000	149	137.8
400	1670	204	115.0
500	1550	260	106.8
600	1400	196	96.4
700	1300	371	89.6
800	1275	427	87.8
850	1250	454	86.1

NOTE: Unit is rated at maximum pressure at cryogenic temperatures from -450...100 °F.

1" Size Value
Pressure vs Temperature Rating

Temp °F	Pressure in psi	Temp °C	Pressure in bar
100	1500	38	103.3
200	1500	93	103.3
300	1400	149	96.4
400	250	204	17.2
500	250	260	17.2
600	250	196	17.2
700	250	371	17.2

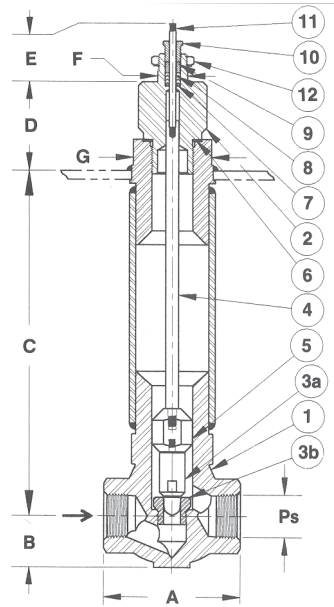
NOTE: Unit is rated at maximum pressure at cryogenic temperatures range -450...100 °F.

INNERVALVE CHART

Valve Size	Trim Size	Cv Coef.	Nominal Rangeability		Orifice Port Dia.	Port Area (sq. in.)
			Linear	Equal %		
1"	6.0	6.0	50:1	60:1	0.625"	0.307
	5.0	5.0	50:1	60:1	0.625"	0.307
	4.5	4.5	50:1	60:1	0.500"	0.197
	4.0	4.0	50:1	60:1	0.4375"	0.1504
	3.5	3.5	50:1	60:1	0.4375"	0.1504
1/2", 1"	A	2.5	40:1	50:1	0.375"	0.1105
	B	2.0	40:1	50:1	0.375"	0.1105
	C	1.25	40:1	50:1	0.281"	0.0621
	D	0.8	40:1	50:1	0.250"	0.0491
	E	0.5	40:1	50:1	0.250"	0.0491
	F	0.32	30:1	40:1	0.156"	0.0191
	G	0.2	30:1	40:1	0.156"	0.0191
	H	0.13	30:1	40:1	0.156"	0.0191
	I	0.08	30:1	40:1	0.156"	0.0191
	J	0.05	30:1	40:1	0.156"	0.0191
	K	0.03	25:1	N/A	0.086"	0.0058
	L	0.02	25:1	N/A	0.086"	0.0058
	M	0.01	25:1	N/A	0.086"	0.0058
	N	0.006	25:1	N/A	0.086"	0.0058
	O	0.003	25:1	N/A	0.086"	0.0058

NOTE: Trim sizes "K" through "O" are optional reduced trims.

DIMENSIONS



1. Body
 2. Bonnet
 3. (A & B) Innerset
 4. Stem (lower)*
 5. Holder (innerset)
 6. Gasket (body-bonnet)
 7. Adapter (packing)
 8. Packing (TFE chevron ring)
 9. Follower (packing)
 10. Gland (packing)
 11. Stem (upper)*
 12. Locknut
- *Should be purchased together

Dimension	1/2" Unit	1" Unit
A	2.75"	4.0"
B	1"	1.5"
C (1)	14"	14"
D (2)	2.25"	2.5"
E	1.688"	1.688"
F	0.875"	0.875"
G	1.44"	2.25"
Ps	1/2" NPT	1" NPT

(1) Ref dimension to top of casing flange
(2) Based on standard bonnet.

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