

DESIGN STANDARDS

Material of Construction

Parts	Material
Body	ASTM A105
Bonnet	ASTM A105
Seat Ring	Integral Seat + A105 + Stellite
Seat Guide	ASTM A276 Gr. 410 + Stellite
Bellow	SS 316 Ti
Stem	ASTM A276 Gr. 410
Gland Packing	Grafoil
Gasket	Spiral wound SS 304 with Graphite filler

Test Pressures

Test Pressure	800#
Body	210
Body with Bellow	78
Seat	155

COMPARISON WITH COMPETITOR

CRITERIA	BELLOW SEAL VALVES	PISTON VALVES
Prevention of leakage across ports	Achieved by providing stellite integral seat and stellite plug	Only soft seat in the form of piston rings which is prone to wear, tear and aging
Prevention of leakages to atmosphere	Three seals provided in series to prevent leakage to atmosphere - Metallic Bellow - Spiral wound gasket between valve body and bonnet - Gland packing	Two seals provided - - Soft seal piston rings - Gasket between valve body and bonnet - Gland packing for higher sizes only
Energy / Media Loss / Monetary Loss	Zero	High due to leakage
Product loss / Deterioration in product quality	Nil	Starvation of fluid to user equipment in case of leakage / inadequate rate of heating / longer batch timing
Downtime and maintenance	Zero downtime and maintenance	Downtime and maintenance cost is high due to frequent replacement of piston rings, stem leakage to atmosphere & leakage through ports
Cost of ownership	Low	High



Energy Environment Solutions for Sustainable Growth



Bellow Seal Valve

STEAM ENGINEERING

Why Bellow Seal Valves ?

One of the most frequent and serious problems associated with valves is gland leakage. This results in loss of medium, energy and plant downtime. Apart from the high cost of energy, gland leakages also cause serious environmental, and health hazards to plant personnel. Leakage of sensitive material can lead to a fire hazard, explosion, or damage to an equipment. Gland packed valves often need continuous maintenance.

The Bellow Seal Valves give a complete solution for such problems.



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Thermax Business Portfolio

- Heating
- Cooling
- Steam Engineering
- Air Pollution Control
- Chemicals
- Water and Wastewater Solutions
- Solar
- Power

DESIGN STANDARDS

- Forged valves as per EN ISO 15761
- Cast Steel valves as per ASME 16.34
- Bellows inspection and test as per MSS SP-117 / BS 1873
- End flange dimensions as per ASME B16.5
- Butt weld end dimensions as per ASME B16.25
- Face to face & End to end dimensions as per ASME B16.10
- Inspection & testing as per API 598

TWO SECONDARY STEM SEALS

- Graphite spiral wound gasket and graphite gland packings
- Stem packing ensure perfect sealing as an additional feature

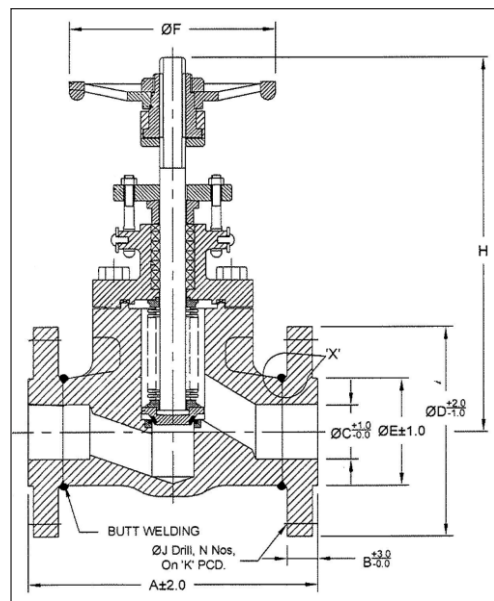
MATERIAL OF CONSTRUCTION

- Body Material Cast Steel - ASTM A216 Gr. WCB
Forged Steel - ASTM A105
- Bellows Material AISI - 316 Ti

FEATURES OF BELLOW SEAL VALVE

- Thermax is the pioneer for supplying IBR bellow seal globe valves for all sizes from 15mm to 250mm in class 150 / 300 / 800
- Metallic bellows are welded on the plug / stem and between body and bonnet.
- This ensures ZERO leakage through valve glands.
- Valves available in cast carbon steel and forged steel both.
- Bellow seal valves with are four points of sealing -
 - ⇒ Stellite coating on seat and plug
 - ⇒ SS 316 + Ti Bellows
 - ⇒ Graphite SS spiral wound gasket
 - ⇒ Graphite packing

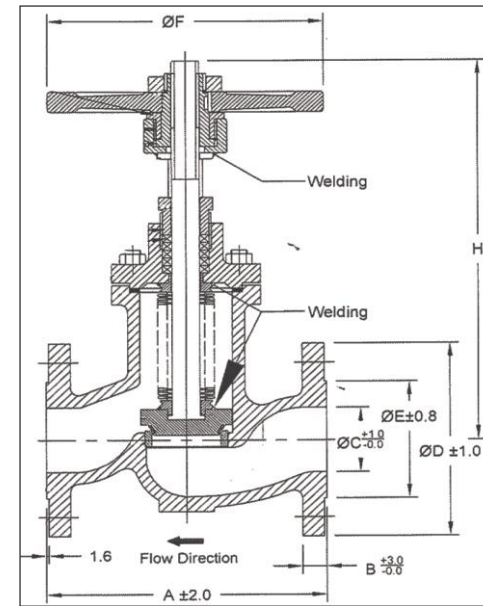
CAST BELLOW SEAL GLOBE VALVE



Dimensions and weight of Flanged Class 150#

Size	15	20	25	40	50	65	80	100	125	150	200	250
A	108	117	127	165	203	216	241	292	356	406	495	622
B	9.6	11.2	11.1	14.3	15.9	17.5	19.1	23.9	23.9	25.4	28.6	31.5
ØC	9	12	25	40	51	66	76	102	127	152	203	254
ØD	90	100	108	127	152	178	190	229	254	279	343	405
ØE	34.9	42.9	51	73	92	105	127	157	186	216	270	324
ØF	100	100	150	200	200	250	250	300	300	350	400	400
H-Open	152	165	252	305	315	396	407	448	455	478	540	690
H-Close	145	157	240	290	300	378	385	420	423	441	497	620
Wt-Kg	2.4	3.1	6.2	10	14.5	23	30	45	80	85	130	220

CAST BELLOW SEAL GLOBE VALVE



Dimensions and weight of Flanged Class 300#

Size	25	40	50	65	80	100	125	150	200	250
A	203	229	267	292	318	356	400	444	559	622
B	17.9	21.1	22.7	25.9	29	32.2	35.4	37	41.7	48.1
ØC	25	40	51	65	76	102	127	152	203	254
ØD	124	155	165	190	210	255	280	320	380	445
ØE	51	73	92	105	127	157	186	216	270	324
ØF	150	200	200	250	250	300	400	400	600	700
H-Open	252	305	254	306	344	397	476	504	574	773
H-Close	240	290	240	288	320	368	444	461	527	697
Wt-Kg	7.2	13.5	17	31	40	60	105	140	215	330

Material of Construction

Parts	Material
Body	ASTM A105
Bonnet	ASTM A105
Seat Ring	Integral Seat + Stellite
Seat Guide	ASTM A276 Gr. 410 + Stellite
Bellow	SS 316 Ti
Stem	ASTM A276 Gr. 410
Gland Packing	Grafoil
Gasket	Spiral wound SS 304 with Graphite filler

Test Pressures

Test Pressure	150#	300#
Body	31	78
Seat	22	56

FORGED BELLOW SEAL GLOBE VALVE

Sizes	15	20	25	40	50
A	85	90	103	128	140
B	9.7	12.7	12.7	12.7	15.8
OC	21.7	27.1	33.8	48.7	61.6
OD	100	100	100	160	160
E-OPEN	155	165	176	248	256
E-CLOSE	148	157	169	234	240
Wt-Kg	1.9	2.4	3.4	7.5	10.3

