AN ISO 9001 : 2008 COMPANY

Hi-TECH *GLOBE VALVES*

Get the edge in process control

Hi-TECH

Butterfly Valves India Pvt. Ltd.

Hi-TECH Manufacturing Programme

DESIGN STANDARD & WALL THICKNESS	Valve Type	End Conn.	ASME Class	2	2½	3	4	5	6	8	10	12
BS 1873	Globe Valves Bolted Bonnet Plug/Ball Type	Flanged	150	●	●	●	●		●	●	●	●
			300	●	●	●	●		●	●	●	●
			600	●		●	●		●	●	●	●
			1500	●		●	●					
	Disc	Buttweld ends	150	●		●	●		●	●	●	●
			300	●		●	●		●	●	●	●
			600	●		●	●		●	●	●	●
			1500	●		●	●					

Common Test/Inspection methods

Test / Inspection	Method	Acceptance Criteria
Visual Inspection		MSS SP55
Chemical Analysis	ASTM E350	Relevant ASTM
Mechanical Properties	ASTM A370	Relevant ASTM
Radiographic Inspection	ASME B16.34	ASME B16.34
Magnetic Particle Inspection	ASTM E709	ASME B16.34
Liquid Penetrant Inspection	ASTM E165	ASME B16.34
Ultrasonic Inspection	ASTM A388	ASME B16.34
Positive Material Identification (PMI)	Vaccum emission spectrometer	Customer specification
Pressure Testing	API 600/API 598/BS 6755 part I	API 600/API 598/BS 6755 part I
Dimensional Inspection		Valve Standard

Hi TECH valves undergo a range of destructive and non-destructive tests according to the requirement of the Standard, service conditions and specific customer requirements.

* Performed on all valves.
The pressure containing parts of all valves are marked with the foundry identification and heat numbers.

Test Pressures for standard Carbon Steel Valves

Every individual valve manufactured at Hi-TECH is inspected and pressure-tested to API 598 / BS 6755 Part I requirements, for which test certificates are provided.

ASME Class	Hydrostatic Test Pressure in kg/cm² (psig)			Pneumatic low pressure closure test pressure in kg/cm² (psig)
	Shell	Back Seat	Closure	
150	32 (450)	22 (315)	22 (315)	7 (100)
300	79 (1125)	57 (815)	57 (815)	7 (100)
600	156 (2225)	115 (1630)	115 (1630)	7 (100)
1500	392 (5575)	287 (4080)	287 (4080)	7 (100)
2500	652 (9275)	477 (6790)	477 (6790)	7 (100)

Compliance Standards

Parameter	Compliance
API 600 Globe Valve	BS 1873*
ASME B16.34 Globe Valves	ASME B16.34
Pressure-Temperature rating	ASME B16.34
Face-to-face / End-to-end dimension	ASME B16.10
End Flange dimensions	ASME B16.5**
Butt-weld End dimensions	ASME B16.25
Valve Inspection & Testing	API 600, API 598, BS 6755 Part I

The valves also comply with applicable BS specifications.

* Shell wall thickness as per API 600/B16.34

** For valves larger than 24" (600mm), the flange drilling shall be as per ASME B16.47 Series A (MSS SP 44) or series B (API 605).

RTJ flanges are offered as optional for Class 600 and above.

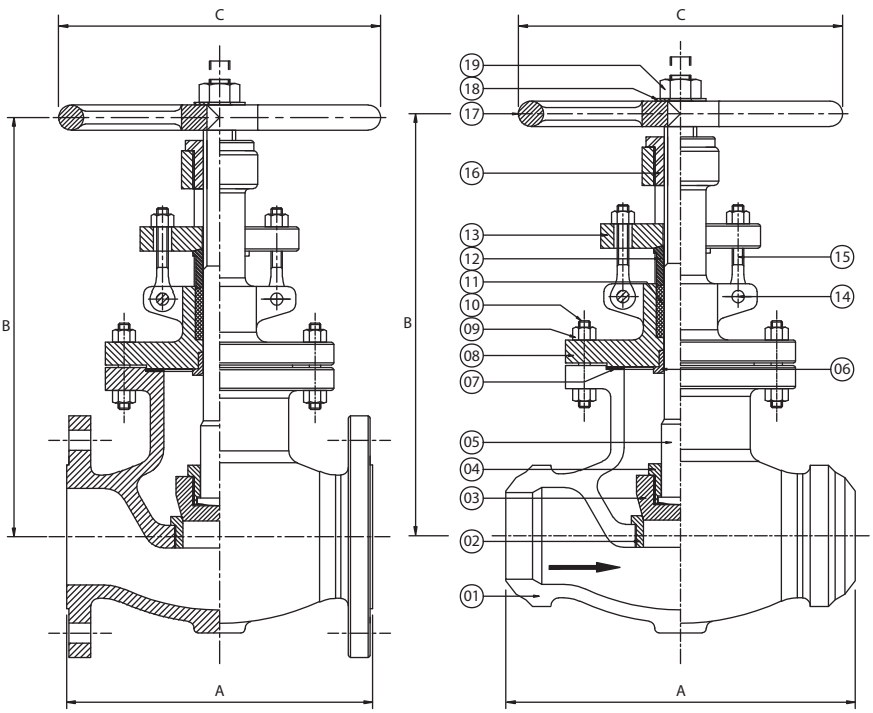
Body / Bonnet Materials

Hi-TECH Cast Steel Globe Valves are offered in a variety of body and bonnet materials to suit different requirements. These Materials include Carbon Steel (standard), Alloy Steels and Stainless Steels. For other materials of construction, refer to AIL

Material Classification	ASTM Specification	Working temperature*
Carbon Steel	ASTM A216 Gr. WCB	-29°C to 427°C (-20°F to 800°F)
1¼ Cr - ½ Mo	ASTM A217 Gr. WC6	-29°C to 593°C (-20°F to 1100°F)
2¼ Cr - 1 Mo	ASTM A217 Gr. WC9	-29°C to 593°C (-20°F to 1100°F)
5 Cr - ½ Mo	ASTM A217 Gr. C5	-29°C to 649°C (-20°F to 1200°F)
9 Cr - 1 Mo	ASTM A217 Gr. C12	-29°C to 649°C (-20°F to 1200°F)
9 Cr - 1 Mo - ¼ V	ASTM A217 Gr. C12A	-29°C to 649°C (-20°F to 1200°F)
Low-temperature Steel	ASTM A352 Gr. LCB/LCC	-46°C to 343°C (-50°F to 650°F)
Austenitic Stainless Steel 18-8 (Type 304)	ASTM A351 Gr. CF8	-196°C to 649°C (-320°F to 1200°F)
Austenitic Stainless Steel 16Cr - 12Ni - 2Mo (Type 316)	ASTM A351 Gr. CF8M	-196°C to 649°C (-320°F to 1200°F)

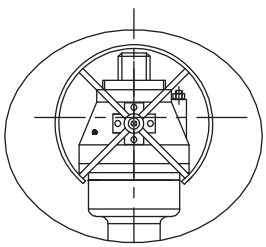
Other materials such as ASTM A351 Gr. CF3, ASTM A351 Gr. CF3M and Duplex SS are also offered.

Globe Valves - ASME Classes 150,300 & 600

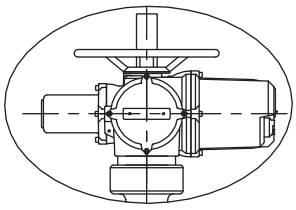


Standard Materials of Construction

Sl. No.	Description	Material Specification
01	Body	CI / ASTM A 216 GR. WCB
02	Seat Ring	ASTM A 105 + HF
03	Plug	ASTM A 216 GR. WCB + 13% Cr.
04	Spindle Nut	ASTM A 216 GR. 410
05	Spindle	ASTM A 182 F6
06	Bonnet Bush	ASTM A 276 GR. 410
07	Gasket	SS 304 Spiral Wound + Flexible Graphite
08	Bonnet	CI / ASTM A 216 GR. WCB
09	Bonnet Stud	ASTM A 193 GR. B7
10	Bonnet Stud Nut	ASTM A 194 GR. 2H
11	Gland Packing	Flexible Graphite
12	Gland	ASTM A 276 GR. 410
13	Gland Flange	ASTM A 276 GR. WCB
14	Eye Bolt Pin & Nut	AISI 1045 / 2H
15	Eye Bolt & Nut	ASTM A 193 B7 / 194 2H
16	Yoke Nut	SG Iron
17	Hand Wheel	Mellable Iron / Cast Iron
18	Washer	AISI 1045
19	Hand Wheel Nut	AISI 1045



GEAR OPERATING ARRANGEMENT



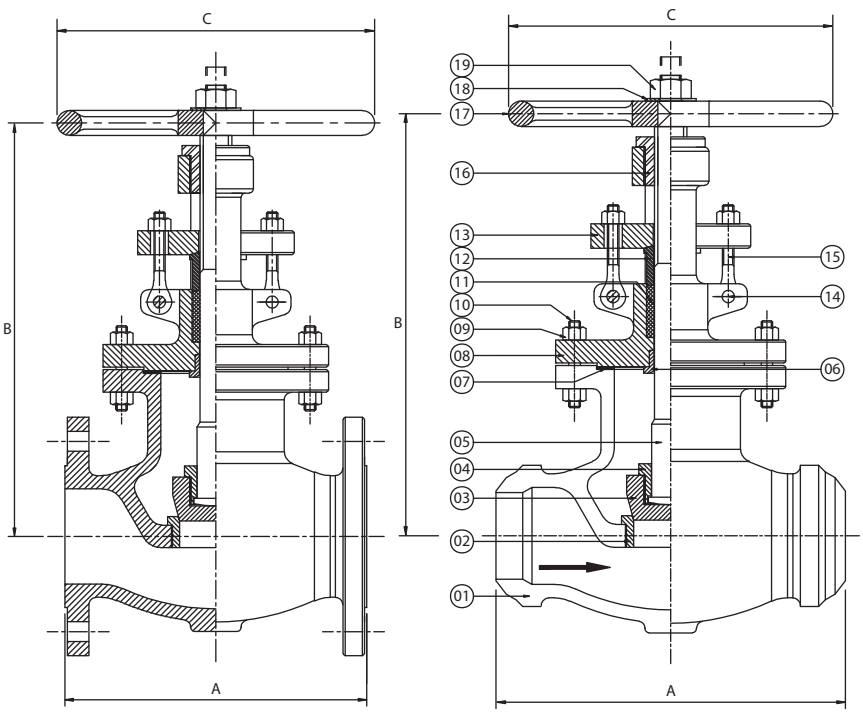
ELECTRIC ACTUATOR OPERATING ARRANGEMENT

Dimensions (in mm, unless specified)

Sr. No.	Valve Size	Class 150				Class 300				Class 600			
		A		B	C	A		B	C	A		B	C
		Fl.	B/W			Fl.	B/W			Fl.	B/W		
1	50 (2")	203	203	335	203	267	267	355	203	292	292	400	254
2	65 (2½")	216	-	355	203	292	-	410	203	-	-	-	-
3	80 (3")	242	242	421	254	317	317	457	254	356	356	560	356
4	100 (4")	292	292	477	254	356	356	556	356	432	432	693	406
5	150 (6")	406	406	575	356	445	445	668	457	559	559	837	610
6	200 (8")	495	495	680	457	559	559	830	610	661	661	947	610
7	250 (10")	623	623	895	356	623	623	1206	610	787	787	1285	762
8	300 (12")	699	699	1215	610	711	711	1160	762	838	838	1560	762

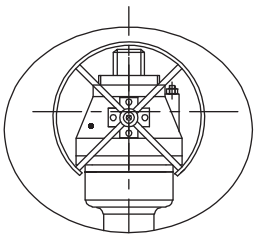
Fl. - Flanged ; B/W - Butt-weld.

Globe Valves - ASME Class 1500

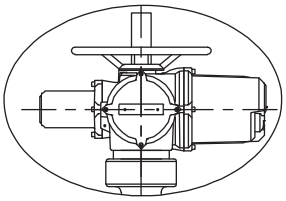


Standard Materials of Construction

Sl. No.	Description	Material Specification
01	Body	CI / ASTM A 216 GR. WCB
02	Seat Ring	ASTM A 105 + HF
03	Plug	ASTM A 216 GR. WCB + 13% Cr.
04	Spindle Nut	ASTM A 216 GR. 410
05	Spindle	ASTM A 182 F6
06	Bonnet Bush	ASTM A 276 GR. 410
07	Gasket	SS 304 Spiral Wound + Flexible Graphite
08	Bonnet	CI / ASTM A 216 GR. WCB
09	Bonnet Stud	ASTM A 193 GR. B7
10	Bonnet Stud Nut	ASTM A 194 GR. 2H
11	Gland Packing	Flexible Graphite
12	Gland	ASTM A 276 GR. 410
13	Gland Flange	ASTM A 276 GR. WCB
14	Eye Bolt Pin & Nut	AISI 1045 / 2H
15	Eye Bolt & Nut	ASTM A 193 B7 / 194 2H
16	Yoke Nut	SG Iron
17	Hand Wheel	Mellable Iron / Cast Iron
18	Washer	AISI 1045
19	Hand Wheel Nut	AISI 1045



GEAR OPERATING ARRANGEMENT



ELECTRIC ACTUATOR OPERATING ARRANGEMENT

Dimensions (in mm, unless specified)

Valve Size	Class 1500			
	A		B	C
	Fl.	B/W		
50 (2")	368	368	590	305
80 (3")	470	470	720	305
100 (4")	546	546	850	356
150 (6")	-	-	-	-

Fl. - Flanged ; B/W - Butt-weld.

Features & Benefits

The body is full ported and spherical in form. The design utilizes large radiuses which allow for the stresses, flow resistance and turbulence to be kept to a minimum. Valve bonnets are equipped with a backseat bushing.

Body-cover Joint

Standard body-cover joints of our globe valves are machined as follows:

Pressure Class

150, 300, 600 900* & over

Joint Design

Male-and-Female Ring Type Joint

*Pressure Class 600 also available in Ring Joint Type

Hi-TECH can supply any style of gasket required by the customer.

Disc

The valve is normally supplied with the conical plug type disc. The disc rotates freely on the stem and incorporates a differential angle from that on the seat ring. This design provides the maximum assurance of shut off, is less likely to stick in the body seat, and is considered the simplest design for field repair.

The disc is held onto the stem utilizing the disc nut and a split-ring disc retainer on 2"–4" in pressure classes 150 and 300. Larger sizes as well as pressure classes 600 and higher utilize the disc nut and a button head design which is integral with the stem. Bottom guided discs are available.

Seat Rings

Seat rings are designed to greatly reduce and/or prevent any turbulence and avoid damages due to corrosion. The seat rings are forged or rolled in one piece and then seal welded and overlaid, if required. After welding and all required heat treating, the seat ring faces are machined, thoroughly cleaned and inspected before leaving for assembly.

Stem

As Hi-TECH's standard, all stems are rotating and rising; however, a non-rotating design is available when specified by the customer. The accuracy in the dimensions and finishes assure a long life with a perfect tightness in the packing area, resulting in lower fugitive emissions. All of our stems are designed with integral backseat features which provide an ultimate seal during packing changes.

Stuffing Box

The depth of the stuffing box allows for a sufficient amount of packing, which makes the stem seal. Hi-TECH's standard packing arrangement and stuffing box design meets <100 ppm fugitive emission requirements.

If specified in the purchase order, lantern rings and/or grease injectors can be furnished.

Stem Packing

The stem packing is designed and arranged to ensure a maximum seal along the stem during operation or while at position, thus allowing for a greater reduction in fugitive emissions. Our packings are of non-asbestos types.

Hi-TECH can supply any style of packing required by the customer.

Packing Gland

The packing gland design is a two-piece self-aligning type. The packing gland has a spherical head that rides within the spherical joint of the gland flange. The packing gland has a shoulder, which restricts the complete entry into the stuffing box bore. This particular design assures a straight compression of the packing as the gland eyebolts are being equally adjusted, without injuring the stem.

Stem Nut

The stem nuts on Hi-TECH's standard rising stem globe valves are threaded into the top of the yoke where they are secured with a tack weld.

Operation

Handwheels are designed with a comfortable grip for easy operation. As our standard, hammer-blow type handwheels are provided as listed in the next column:

Hi-Tech Make Globe Valves Confirming to API 600 & BS 1873

Pressure Class

150, 300-600, 900 and over

Joint Design

8"and larger 6"and larger 4"and larger

Our valves are also available with gearing, motor actuators or cylinder actuators for the more demanding services.

Bolts and Nuts

For normal service conditions, ASTM A194 Class 2H and ASTM A193 Grade B7 nuts and stud bolts are furnished. If specified for high temperature service conditions, ASTM A194 Class 4 and ASTM A193 Grade B16 nuts and stud bolts are furnished. Standard bolting furnished for our stainless steel valves consists of ASTM A194 Class 8 and ASTM A193 Grade B8 nuts and stud bolts.

End Connections

Our standard production covers valves with:

Flange ends with Raised Face (RF), Flat Face (FF) or Ring Type Joint (RTJ) that conform to B16.5.

Butt-welding ends (BW) that conform to B16.25.

All face-to-face/end-to-end dimensions conform to B16.10.

Other special end connections are supplied according to customer's requirements.

Hi-TECH BUTTERFLY VALVES INDIA PVT. LTD.

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