

Hi-TECH *SWING CHECK VALVE*

Get the edge in process control



Hi-TECH

Butterfly Valves India Pvt. Ltd.

Hi-TECH Manufacturing Programme

		Valve Type	End Conn.	ASME Class	2	2½	3	4	5	6	8	10	12	14	16	18	20	24		
DESIGN STANDARD & WALL THICKNESS	BS 1868	Check Valves Bolted Cover Swing type Disc	Flanged	150	•	•	•	•		•	•	•	•	•	•	•	•	•		
				300	•	•	•	•		•	•	•	•	•	•					
				600	•		•	•		•	•	•	•							
				1500	•		•	•		•	•	•	•							
		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)	Vacuum 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/cm ² (psig)			Pneumatic low pressure closure test pressure in kg/cm ² (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)

Low Pressure Test for Swing Check Valves

In addition to the high pressure closure test, Swing Check Valves are subjected to low pressure hydrostatic closure test at a pressure of 25% of the high pressure closure test. The duration of the test is the same as that of the high pressure closure test.

Compliance Standards

Parameter	Compliance
API 600 Check Valve	BS 1868*
ASME B16.34 Check 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.

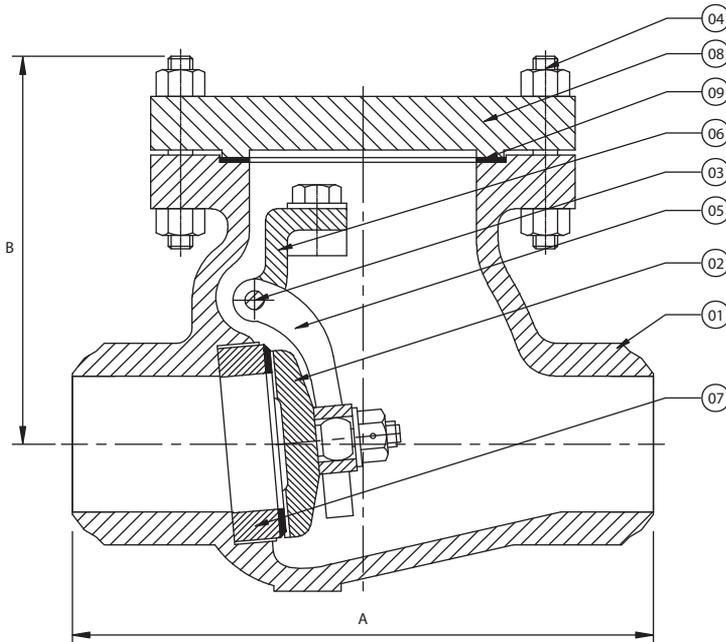
Body / Bonnet Materials

Hi-TECH Cast Steel Check 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)

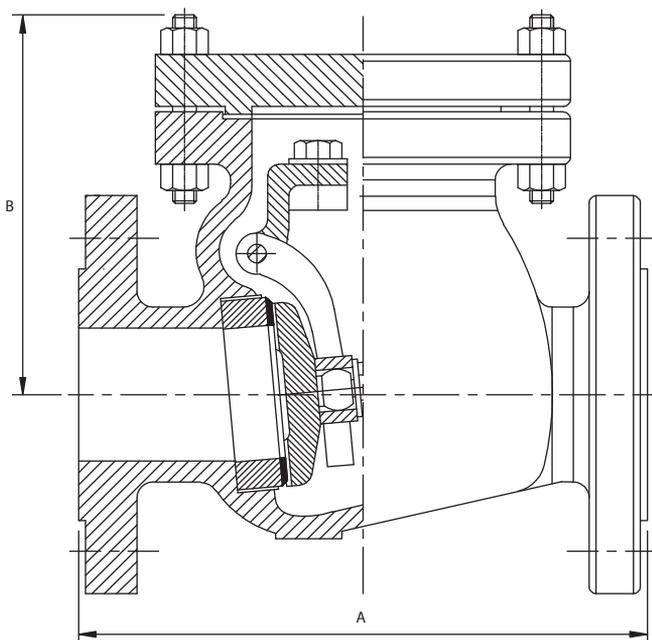
Other materials such as ASTM A351 Gr. CF3, ASTM A351 Gr. CF3M and Duplex SS are also offered.

Swing Check Valves - ASME Classes 150,300 & 600



Standard Materials of Construction

Sl. No.	Description	Material Specification
01	Body	ASTM A 351 GR. CF8M
02	Disc	ASTM A 351 GR. CF8M
03	Hinge Pin	AISI 410
04	Stud & Nut	ASTM A 194 GR. 8
05	Hinge	AISI 410
06	Bracket	C.S.
07	Seat Ring	ASTM A 351 GR. CF8M
08	Cover	ASTM A 351 GR. CF8M
09	Gasket	Spiral Wound SS 304

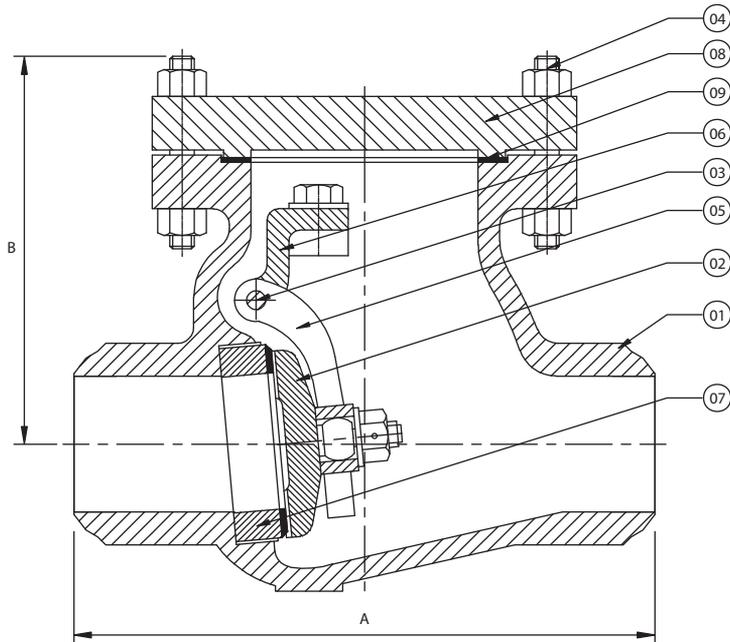


Dimensions (in mm, unless specified)

Valve Size	Class 150			Class 300			Class 600		
	A		B	A		B	A		B
	Fl.	B/W		Fl.	B/W		Fl.	B/W	
50 (2")	203	203	165	267	267	165	292	292	178
65 (2½")	216	216	175	-	-	-	-	-	-
80 (3")	241	241	181	317	317	190	356	356	203
100 (4")	292	292	213	356	356	229	432	432	229
150 (6")	356	356	273	444	444	279	559	559	365
200 (8")	495	495	335	533	533	343	661	661	442
250 (10")	622	622	406	622	622	368	787	787	450
300 (12")	698	698	483	711	711	412	838	838	590
350 (14")	788	788	515	839	839	559	-	-	-
400 (16")	864	864	455	864	864	636	-	-	-
450 (18")	978	978	-	-	-	-	-	-	-
500 (20")	978	978	-	-	-	-	-	-	-
600 (24")	1295	1295	-	-	-	-	-	-	-

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

Swing Check Valves - ASME Class 1500



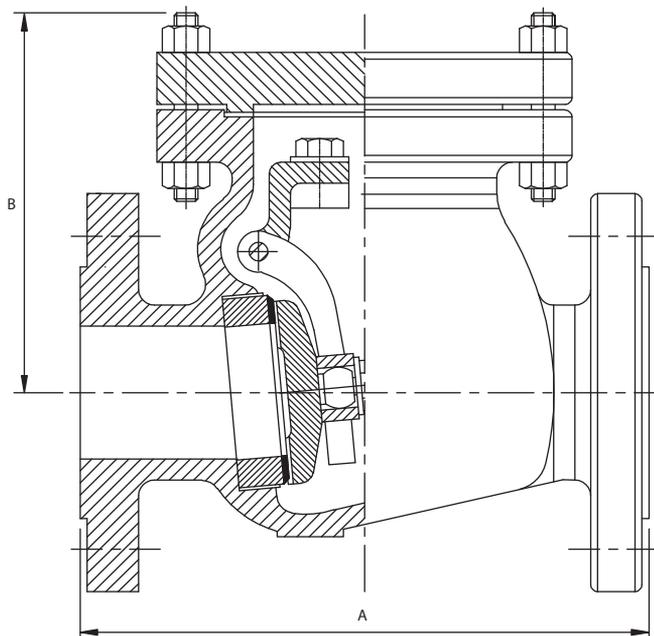
Standard Materials of Construction

Sl. No.	Description	Material Specification
01	Body	ASTM A 351 GR. CF8M
02	Disc	ASTM A 351 GR. CF8M
03	Hinge Pin	AISI 410
04	Stud & Nut	ASTM A 194 GR. 8
05	Hinge	AISI 410
06	Bracket	C.S.
07	Seat Ring	ASTM A 351 GR. CF8M
08	Cover	ASTM A 351 GR. CF8M
09	Gasket	Spiral Wound SS 304

Dimensions (in mm, unless specified)

Valve Size	Class 1500		
	A		B
	Fl.	B/W	
50 (2")	368	368	250
65 (2½")	-	-	-
80 (3")	470	470	285
100 (4")	546	546	340
150 (6")	705	705	400
200 (8")	832	832	465
250 (10")	991	991	570
300 (12")	1130	1130	680

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. Bosses are provided for optional drains.

Body-Cover Joint

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

Cover Nut

Gasket

Cover

Hinge Arm Hinge Pin

Body

Seat Ring

Washer Disc Nut Split Pin

Disc

Nameplate

Pressure Class

150, 300, 600, 900 & over

Joint Design

Male-and-Female Ring Type Joint

Pressure Class 600 also available in Ring Type Joint. Hi-TECH can supply any style of gasket required by customer.

Hinge Assembly

The hinge arm pivots on the hinge pin which is located near the disc's center of gravity. Body penetration for the hinge pin is sealed with a soft steel gasket and flanged plug. The hinge arm is designed to withstand the shock load of quick closing to insure a longer life and continued shut-off. The hinge arm also has an integral disc stop that provides a positive stop in the open position.

Disc

Each disc's seating surface is precision ground and mated to the seat ring for insurance of a positive shut off. The disc is secured to the hinge arm with the disc nut and pinned to prevent disengagement during service. We can provide either integral or overlaid seat facings at customer's request.

Seat Ring

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.

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.

Hi-TECH can supply any bolting as requested by the customer.

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.

Accessories / Optional Designs

Counterweight features are available as an accessory. Piston, tilting disc or API-6D designs are also available to meet the customers requirements. Drains and bypasses are available as specified by the customer.



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