

PANAM

INDUSTRIAL VALVES



Catalogue No. IV-1
June 2013

Industrial Valves

PANAM Introduces this catalogue to all its clients based at home & overseas for review and reference to their potential. **PANAM** Industrial valves are designed and manufactured to meet all the requirements for the pipe line services in open/close position according to API, ANSI, BS and other recognized standards.

PANAM Quality Assurance of industrial valves has been countered by ISO 9001:2008 as it meets all international standards & specifications. **PANAM** adheres to achieve the extreme quality product throughout the entire production procedure, with the latest technology and ample experienced and qualified manpower panam quality valves are produced to serve industries based at home and overseas.

PANAM has been manufacturing high quality valves which have been used in Oil & Gas, Petro-Chemical, Fertilizers, Mining, Power Plants & Many other Industries. PANAM manufactures complete range of industrial valves Gate, Globe, Check, Ball, Butterfly & Plugs from 1/4" to 18" sizes varying from 150 to 2500 class in Forged / Cast Carbon & Stainless Steel. **PANAM** endures to maintain efficiency and high quality to provide the best valves to industries worldwide with the most competitive prices.

Certification



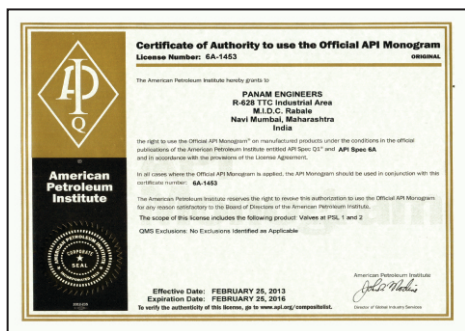
ISO 9001:2008 CERTIFICATE



ISO/TS 29001 CERTIFICATE



API SPEC Q1 CERTIFICATE



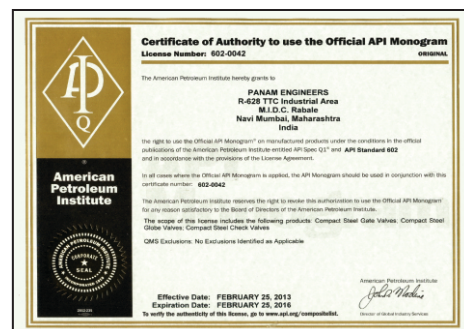
API 6A CERTIFICATE



API 6D CERTIFICATE



API 600 CERTIFICATE



API 602 CERTIFICATE

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Gate Valve

Gate valves are linear motion valves in which a flat closure element slides into the flow stream to provide shut-off. Gate valves are designed to minimize pressure drop across the valve in the fully opened position and stop the flow of fluid completely, and relatively free of contamination buildup.

Gate valves are advantageous in applications involving slurries, as their "gates" can cut right through the slurry. They are also used in applications that involve viscous liquids such as heavy oils, light grease, varnish, molasses, honey, cream and other non-flammable viscous liquids. They are available in large sizes to better handle thick flow.

PANAM Gate Valves are manufactured to API 600, and, tested to API 598.

Body and Bonnet

The body and bonnet design is calculated to achieve the most regular distribution of stress in all sides, as well as the minimum turbulence and resistance to flow. Bonnet on valves is equipped with a back seat ring.

Body , Bonnet Joint

Body-bonnet joint of gate valves are machined as follows:- On 150 class - Flat faced. On 300, class - Male and Female We can supply any kind of gasket as per our customer's requirements.

Wedge

The valve is normally supplied with a solid flexible wedge that is a tapered H cross-section. The entire wedge is fully guided. The flex wedge is cast or machined with a circumferential groove to allow the seating faces to move independently and adjust to movement of the body seats. It is used where line loads or thermal expansion of the system is likely to distort the seat face in the valve. The flex wedge is especially useful to prevent sticking where valves are closed when hot and opened when cold. This type of wedge is ideally suited for steam or other high temperature services.

Seat Ring

Seat rings are manufactured welded-in seat ring type, designed in order to prevent any turbulence and avoid damages due to the corrosion. Both are forged and rolled in one piece, for all dimensions, they are heat treated to obtain the requested surface hardness, and perfectly cleaned before assembling.

Stem

The stem connection to the wedge shall be a T-head which is integral (without welding). It is precisely machined in the packing area in order to assure a long life with a perfect seal.

Packing

The packing size is designed so as to ensure maximum tightness along the stem. Standard packing is NON-ASBESTOS type. We can supply any kind of packing as per our customer's requirements.

Yoke Sleeve

The yoke sleeve design enables it to be disassembled without having to dismount the bonnet and the stem. It is provided with a ball bearing for 150-300 class valves from 14", for 600 class from 6", for 900-1500 class from 2"

Gland

The gland is made in two pieces; a packing gland in contact with the packing connected through a spherical joint to the gland flange. The particular design of both pieces assures a correct pressure on the packing without scratching the stem through friction or corrosion.

Bolts and Nuts

Bolts are manufactured in accordance with API 600 specifications from four different materials viz. A307GradeB, A193GradeB7/B16, A194Grade2H/4, Carbon steel. Nuts strictly conform with ANSI B1.1.

End Connections

- 1) Flange ends (RF/FF) that conform to ANSI B16.5 and face to face dimensions that conform to ANSI B16.10, with a raised face serrated finish or, on request with any other type of finish.
- 2) Butt-welding ends (B.W) with end to end dimensions that conform to ANSI B16.10 customer must specify the type of schedule required, or class of pipe, or diameter and bore.
- 3) Ring-joint flanged ends (R.T.J) that conforms to ANSI B16.5, with end to end dimensions to ANSI B16.10. Other special end connections are supplied to customer special requirements.

Applicable Codes & Standards

API 600 API 6D BS 1414 JPI API 603 ASME B16.34 BS 6364 DIN

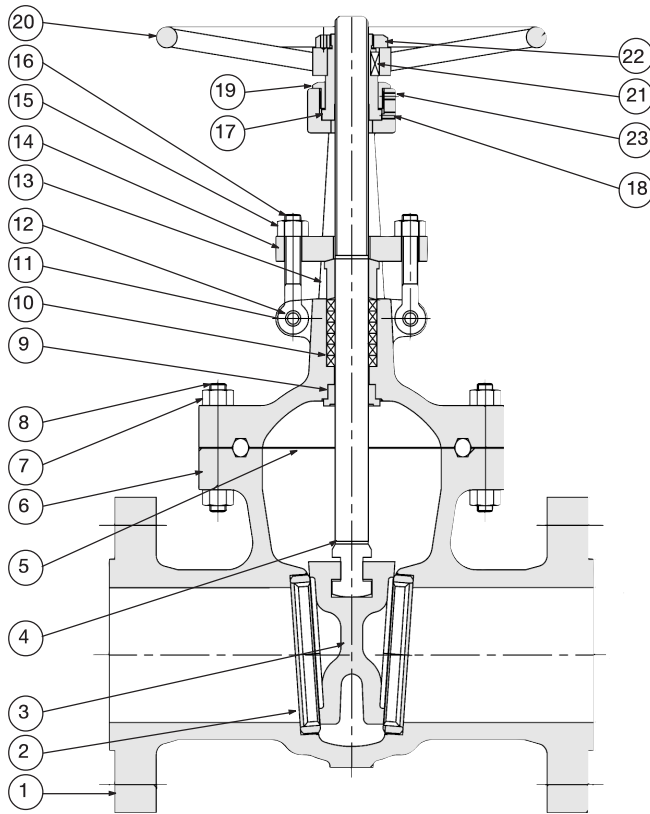
Manufacturing Ranges

CLASS	150	300	600 ~ 1500	2500
CARBON & LOW ALLOY	2" ~ 36"	2" ~ 24"	2" ~ 24"	2" ~ 24"
STAINLESS	1/2" ~ 28"	1/2" ~ 24"	1-1/2" ~ 24"	1-1/2" ~ 24"

PANAM can also supply all customers with the special materials and larger sizes upon customer's requirements. For example,

Stainless Steel : A351 - CN7M, A351 - CF8C, Duplex, etc.

Non Ferrous : Bronze, Hasteloy - B, Hasteloy - C, Monel.

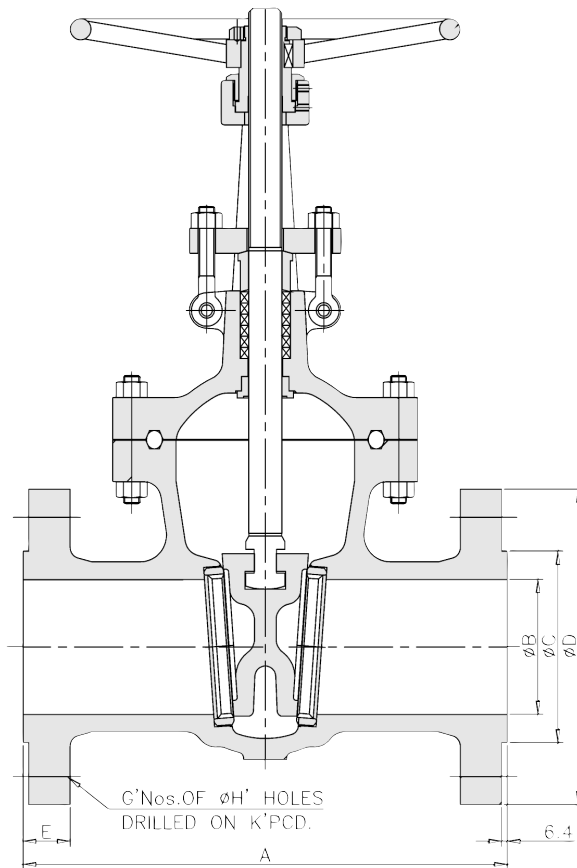


DESIGN FEATURES:-

- 1) MANUFACTURING STANDARD – BS 1414, API-600, API-6D, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS 5146, API 598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Material of Construction

Sr No.	Part	Qty.	Material	Specification
1	Body	1	Cast Carbon Steel	ASTM-A-216 Gr. WCB
2	Seat Ring	2	Carbon Steel Faced with 13% Cr. Steel	
3	Wedge	1	ASTM-A-216 Gr. WCB Faced with 13% Cr. Steel	
4	Spindle	1	Stainless Steel	AISI-410
5	Gasket	1	Corrugated Soft IRON/CAF	
6	Bonnet	1	Cast Carbon Steel	ASTM-A-216 Gr. WCB
7	Bonnet Stud Nut	REQ.	Carbon Steel	ASTM-A-194 Gr.2H
8	Bonnet Stud	AS	Alloy Steel	ASTM-A-193 Gr.B7
9	Bonnet Bush	1	Stainless Steel	AISI-410
10	Gland Packing	Min.6	Graphoil/Braided Asbestos	
11	Cross Bolt Nut	2	Carbon Steel	I.S.1367
12	Cross Bolt	2	Carbon Steel	I.S.1367
13	Gland Bush	1	Stainless Steel	AISI-410
14	Gland Flange	1	Carbon Steel	I.S.2062
15	Eye Bolt Nut	2	Carbon Steel	I.S.1367
16	Eye Bolt	2	Carbon Steel	I.S.1367
17	Yoke Sleeve	1	S.G. Iron / NI Resist / AL. Bronze	
18	Grease Nipple	1	Carbon Steel	I.S.1367
19	Yoke Bush	1	Carbon Steel	I.S.1570
20	Hand Wheel	1	Fabricated Steel	I.S.2062
21	Hand Wheel Key	1	Carbon Steel	I.S.2045
22	Hand Wheel Nut	1	Fabricated Steel	I.S.1560
23	Grub Screw	1	Carbon Steel	I.S.1367



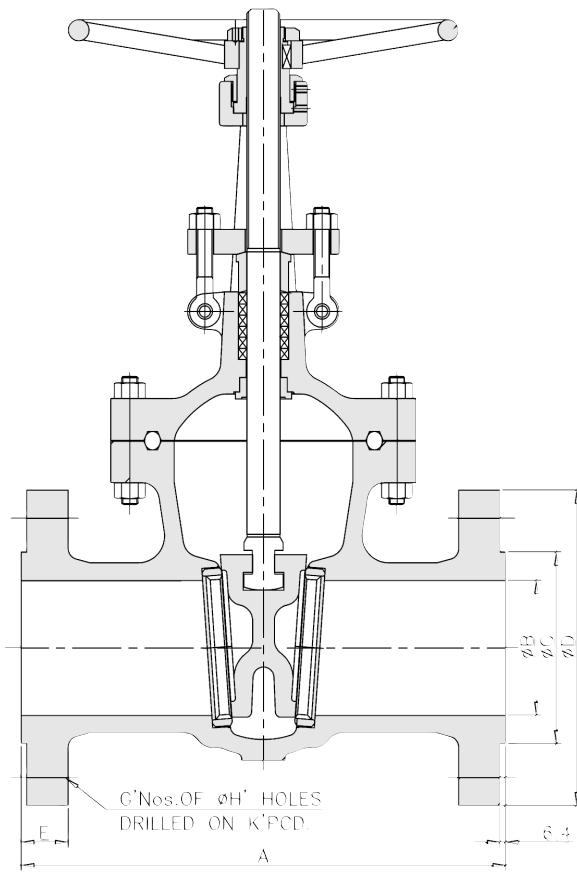
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- 6) AVAILABLE WITH EXTENSION STEM

Class-150

Size (NB)	A	B	C	D	E	G	H	K
2-1/2" (65)	191	63	104.6	177.8	19.1	4	19.1	139.7
3" (80)	203	76	127.0	190.5	19.1	4	19.1	152.4
4" (100)	229	102	157.2	228.6	23.9	8	19.1	190.5
5" (125)	254	127	185.7	254.0	23.9	8	22.2	215.9
6" (150)	267	152	215.9	279.4	25.4	8	22.2	241.3
8" (200)	292	203	269.7	342.9	28.6	8	22.2	298.5
10" (250)	330	254	323.9	406.4	30.3	12	25.4	362.0
12" (300)	355	305	381.0	482.6	31.8	12	25.4	431.8
14" (350)	381	337	412.8	533.4	35.1	12	28.6	476.3
16" (400)	406	387	469.9	596.9	36.6	16	28.6	539.8
18" (450)	432	438	533.4	635.0	39.7	16	31.8	577.9
20" (500)	457	489	584.2	698.5	43.0	20	31.8	635.0

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



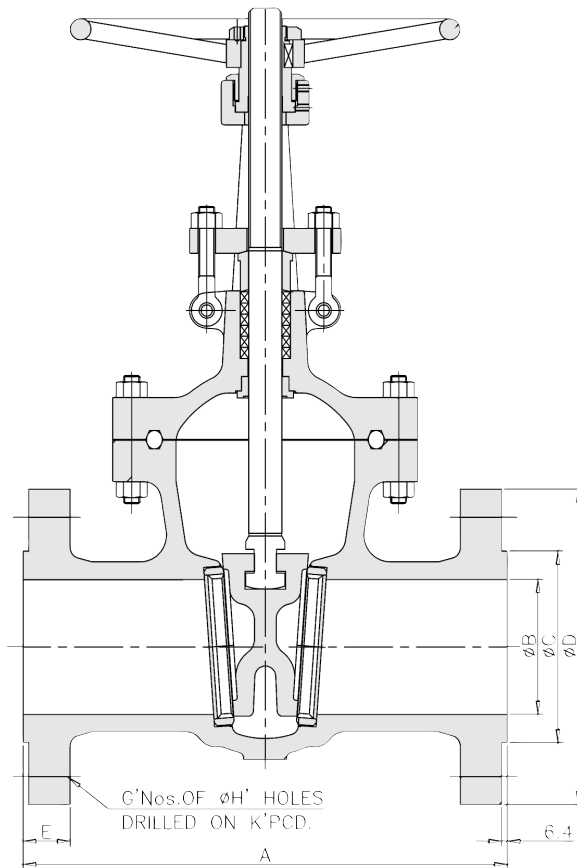
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARD – BS 1414, API-600, API-6D, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS 5146, API 598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Class-300

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	216	51	91.9	165.1	22.2	8	19.1	127.0
2-1/2" (65)	241	63	104.6	190.5	25.4	8	22.2	149.4
3" (80)	282	76	127.0	209.6	28.5	8	22.2	168.1
4" (100)	305	102	157.2	254.0	31.8	8	22.2	200.2
5" (125)	381	127	185.7	279.4	35.1	8	22.2	235.0
6" (150)	403	152	215.9	317.5	36.6	12	22.2	269.7
8" (200)	419	203	269.7	381.0	41.2	12	24.5	330.2
10" (250)	457	254	323.9	444.5	47.8	16	28.6	387.4
12" (300)	502	305	381.0	520.7	50.8	16	31.8	450.9
14" (350)	762	337	412.8	584.2	53.9	20	31.8	514.4
16" (400)	838	387	469.9	647.7	57.2	20	35.1	571.5

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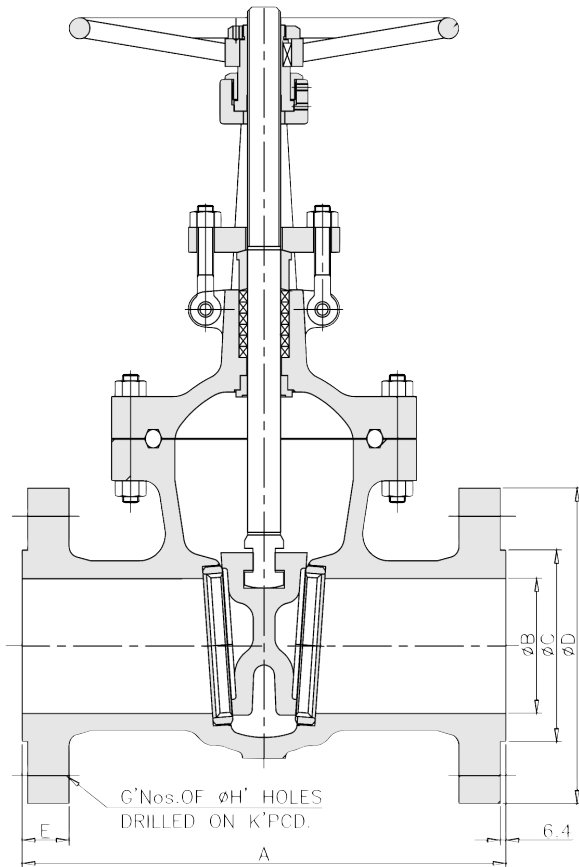
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- 1) MANUFACTURING STANDARD – BS 1414, API-600, API-6D, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS 5146, API 598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Class-600

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	292	51	91.9	165.1	31.8	8	19.1	127.0
2-1/2" (65)	330	63	104.6	190.5	34.9	8	22.2	149.4
3" (80)	356	76	127.0	209.6	38.1	8	22.2	168.1
4" (100)	432	102	157.2	273.1	44.5	8	25.4	215.9
5" (125)	508	127	185.7	330.2	50.8	8	28.6	266.7
6" (150)	559	152	215.9	355.6	54.2	12	28.6	292.1
8" (200)	660	200	269.7	419.1	62.0	12	31.8	349.3
10" (250)	787	248	323.9	508.0	69.9	16	35.1	431.8
12" (300)	838	298	381.0	558.8	73.0	20	35.1	489.0

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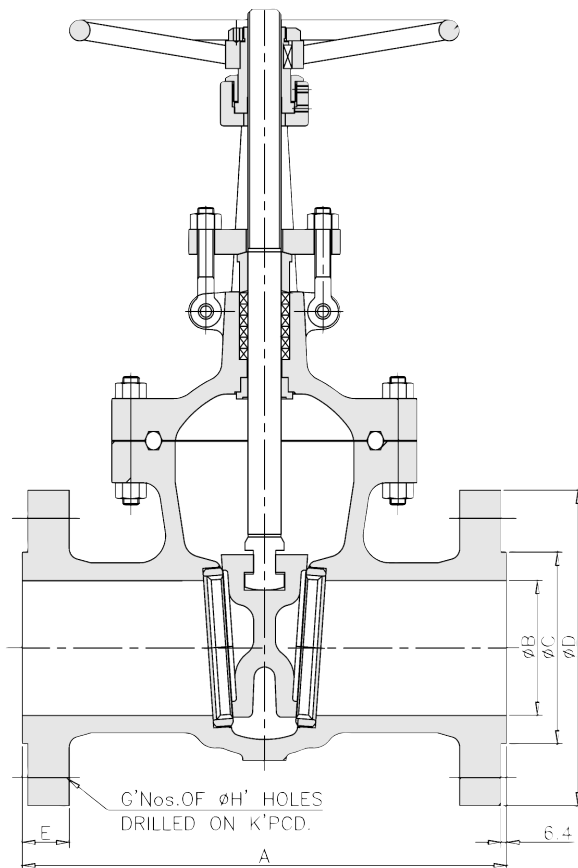
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARD – BS 1414, API-600, API-6D, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS 5146, API 598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Class-900

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	368	48	9.9	215.9	44.5	8	25.4	165.1
2-1/2" (65)	419	60	104.6	244.3	47.6	8	28.6	190.5
3" (80)	381	73	127.0	241.3	44.5	8	25.4	190.5
4" (100)	457	98	157.2	292.1	50.8	8	31.8	235.0
5" (125)	559	124	185.7	349.3	57.1	8	35.0	279.4
6" (150)	559	152	215.9	355.6	54.2	12	28.6	292.1
8" (200)	660	200	269.7	419.1	62.0	12	31.8	349.3
10" (250)	787	248	323.9	508.0	69.9	16	35.1	431.8
12" (300)	838	298	381.0	558.8	73.0	20	35.1	489.0

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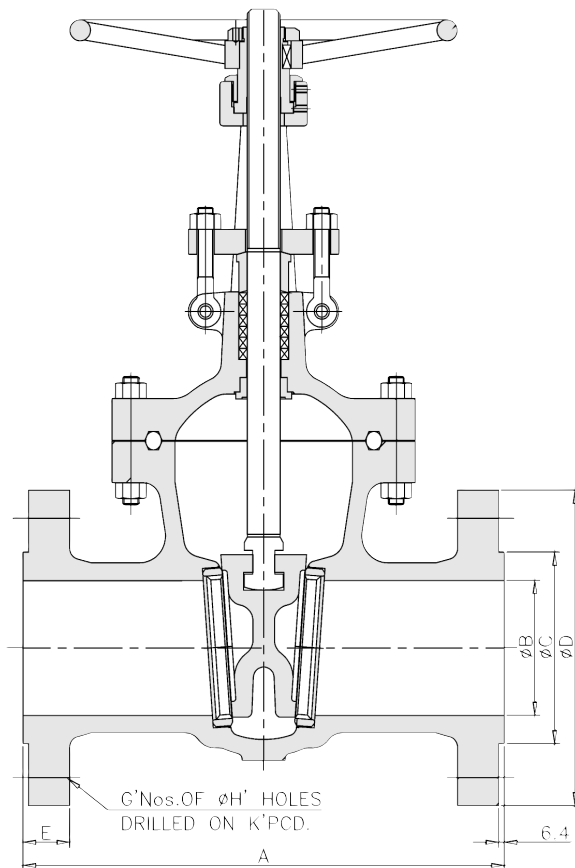
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- 1) MANUFACTURING STANDARD – BS 1414, API-600, API-6D, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS 5146, API 598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Class-1500

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	368	48	91.9	215.9	44.5	8	25.4	165.1
2-1/2" (65)	419	57	104.6	244.3	47.6	8	28.6	190.5
3" (80)	470	70	127.0	266.7	53.9	8	31.8	203.2
4" (100)	546	92	157.2	311.2	60.3	8	34.9	241.3
5" (125)	673	120	185.7	374.7	79.3	8	41.3	292.1
6" (150)	705	137	215.9	393.7	89.0	12	38.1	317.5
8" (200)	832	178	269.7	482.6	98.3	12	44.5	393.7
10" (250)	991	222	323.9	584.2	114.5	12	50.8	482.6
12" (300)	1130	264	381.0	673.1	130.3	16	54.0	571.5

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DESIGN FEATURES:-

- 1) MANUFACTURING STANDARD – BS 1414, API-600, API-6D, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS 5146, API 598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Class-2500

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	451	38	91.9	235.0	57.2	8	28.6	171.5
2-1/2" (65)	508	48	104.6	266.7	63.5	8	31.8	196.9
3" (80)	578	57	127.0	304.8	73.0	8	34.9	228.6
4" (100)	673	73	175.2	355.6	82.6	8	41.6	273.0
5" (125)	794	92	185.7	419.1	98.4	8	47.6	323.9
6" (150)	914	111	215.9	482.6	114.3	8	54.0	368.3
8" (200)	1022	146	269.7	552.5	133.4	12	54.0	438.1
10" (250)	1270	184	323.9	673.1	171.5	12	66.7	539.8
12" (300)	1422	219	381.0	762.0	190.5	16	73.0	619.4

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Globe Valve

Globe valves are linear motion valves with rounded bodies. They are widely used in industry to regulate fluid flow in both on/off and throttling service. Globe valves offer precise throttling and control and have high-pressure limits.

PANAM globe valves are manufactured as per API 600, in outside screw and yoke designs with full way type disc and tested to API 598. They are available in straight & angle pattern.

Body and Bonnet

Body is spherical form, of large radius, allows for the stresses, turbulence and resistance to flow to be kept to a minimum. Bonnets on all valves are equipped with a back seat ring.

Body and Bonnet Joint

Body-Bonnet joint of globe valves are machined as follows;

On 150 class: Male and Female

On 300 and 600 class: Male and female

On 900 and 1500 class: Ring type joint.

We can supply any kind of gasket as per our customer's requirements.

Disc

The valve is normally supplied with the plug type disc which is retained to the stem by a disc nut.

Seat Rings

The valve is normally supplied with the bottom seated type, on 8" and larger valve disc is the bottom guide type seat rings.

Stem

Panam globe valves have heated treated stems, which are of one piece construction so as to ensure adequate mechanical properties and surface hardness. Accurate machining & lapping provides minimum friction at the time of opening & closing. Precisely machined backseat ensures a perfect seal when the valve is open.

Yoke Bush

The yoke nut on globe valves is threaded and mounted on the bonnet, where it is secured with a tack welding. It is designed to withstand the stem thrust force due to the internal pressure.

Packing

The packing is designed so as to ensure maximum tightness along the stem. Standard packing is NON-ASBESTOS type. We can supply any kind of packing as per our customer's requirements.

Gland

The gland is made of two pieces. Corners of the gland are rounded smoothly to prevent scratching of the stem through friction or corrosion.

Bolts and Nuts

Bolts are manufactured in accordance with API 600 specifications from four different materials viz. A307GradeB, A193GradeB7/B16, A194Grade2H/4, Carbon steel. Nuts strictly conform with ANSI B1.1.

End Connections

- 1) Flange ends (RF.FF) that conform to ANSI B16.5 and face to face dimensions that conform to ANSI B16.10, with a raised face serrated finish or, on request with any other type of finish.
- 2) Butt-welding ends (B.W) with end to end dimensions that conform to ANSI B16.10 customer must specify the type of schedule required, or class of pipe, or diameter and bore.
- 3) Ring-joint flanged ends (R.T.J) that conforms to ANSI B16.5, with end to end dimensions to ANSI B16.10. Other special end connections are supplied to customer special requirements.

Applicable Codes & Standards

API 600 BS 1873 JPI ASME B16.34 BS 6364 DIN

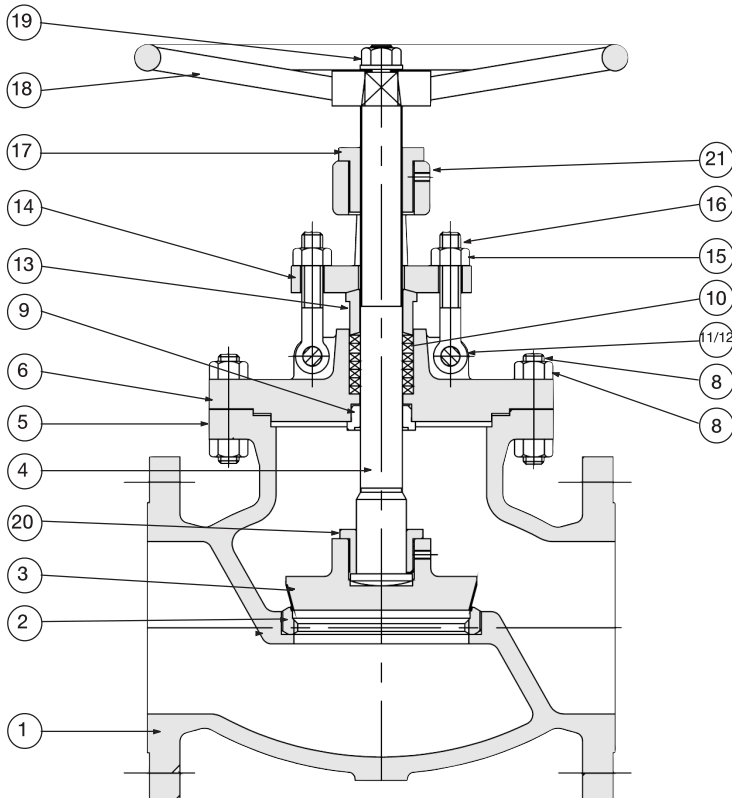
Manufacturing Ranges

CLASS	150	300	600 ~ 1500	2500
CARBON & LOW ALLOY	2" ~ 24"	2" ~ 16"	2" ~ 12"	2" ~ 12"
STAINLESS	1/2" ~ 24"	1/2" ~ 16"	1-1/2" ~ 12"	1-1/2" ~ 12"

PANAM can also supply all customers with the special materials and larger sizes upon customer's requirements. For example,

Stainless Steel : A351 - CN7M, A351 - CF8C, Duplex, etc.

Non Ferrous : Bronze, Hasteloy - B, Hasteloy - C, Monel.

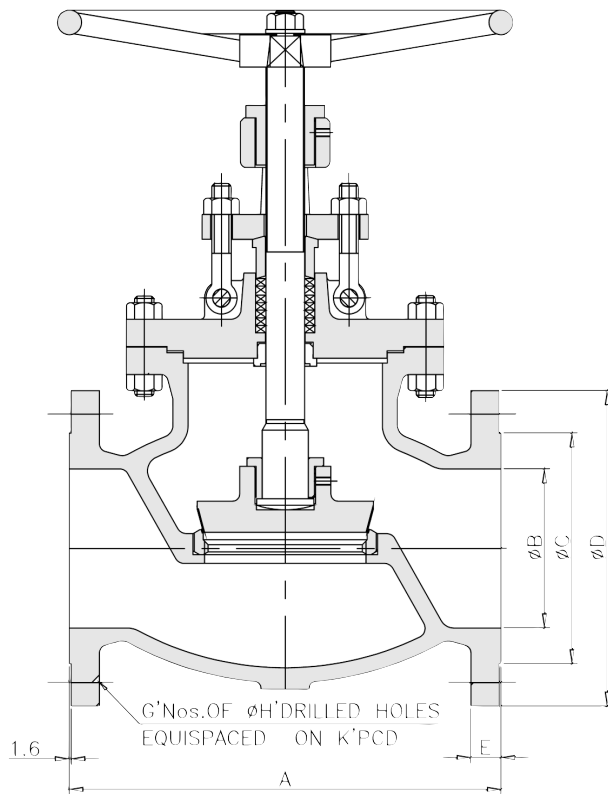


DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1873, API-600, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Material of Construction

Sr No.	Part	Qty.	Material	Specification
1	Body	1	Cast Carbon Steel	ASTM-A-216 Gr. WCB
2	Seat Ring	1	Carbon Steel Faced with 13% Cr. Steel	
3	Disc	1	Carbon Steel Faced with 13% Cr. Steel	
4	Spindle	1	Stainless Steel	S.S. AISI 410
5	Gasket	1	Spiral Wound S.S.AISI Filled With Asbestos	
6	Bonnet	1	Cast Carbon Steel	ASTM-A-216 Gr. WCB
7	Bonnet Stud Nut	REQD.	Carbon Steel	ASTM-A-194 Gr. 2H
8	Bonnet Stud	AS	Alloy Steel	ASTM-A-193 Gr. B7
9	Bonnet Bush	1	Stainless Steel	S.S. AISI 410
10	Gland Packing	Min.6	Graphoil/ Braided Asbestos	
11	Cross Bolt Nut	2	Carbon Steel	I.S.1367
12	Cross Bolt	2	Carbon Steel	I.S.1367
13	Gland Bush	1	Stainless Steel	S.S. AISI 410
14	Gland Flange	1	Carbon Steel	I.S.2062
15	Eye Bolt Nut	2	Carbon Steel	I.S.1367
16	Eye Bolt	2	Carbon Steel	I.S.1367
17	Yoke Nut	1	Ni Resist Nodular C.I./S.G.Iron/Al. Bronze	
18	Handle Wheel	1	Fabricated Steel	I.S.2062
19	Handle Wheel Nut	1	Carbon Steel	I.S.1367
20	Disc Nut	1	Stainless Steel	S.S. AISI 410
21	Grub Screw	1	Carbon Steel	I.S.1367



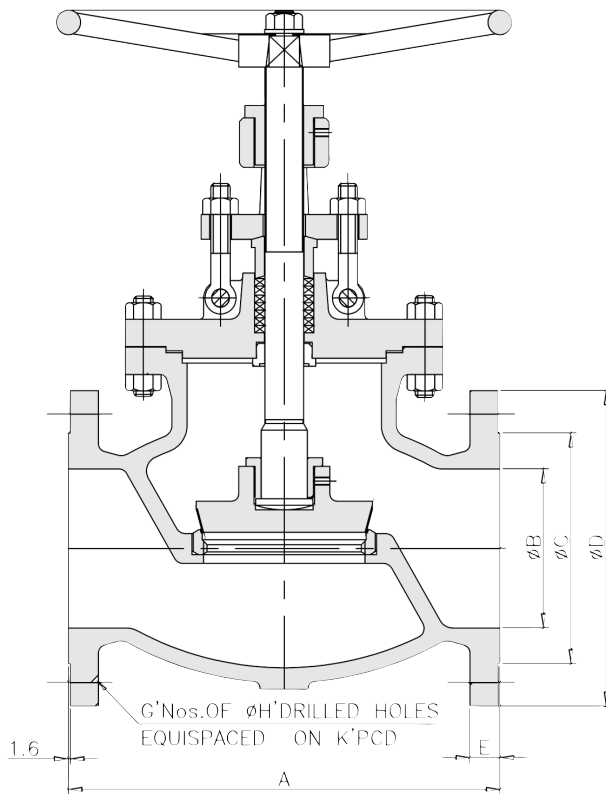
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- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Class-150

Size (NB)	A	B	C	D	E	G	H	K
1" (25)	127	25	50.8	108.0	11.1	4	15.8	79.2
1-1/2" (40)	165	38	73.2	127.0	14.3	4	15.8	98.6
2" (50)	203	51	91.9	152.4	15.8	4	19.1	120.7
2-1/2" (65)	216	63	104.6	177.8	19.1	4	19.1	139.7
3" (80)	241	76	127.0	190.5	19.1	4	19.1	152.4
4" (100)	292	102	157.2	228.6	23.9	8	19.1	190.5
5" (125)	356	127	185.7	254.0	23.9	8	22.2	215.9
6" (150)	406	152	215.9	279.4	25.4	8	22.2	241.3
8" (200)	495	203	269.7	342.9	28.6	8	22.2	298.5
10" (250)	622	254	323.9	406.4	30.3	12	25.4	362.0
12" (300)	699	305	381.0	482.6	31.8	12	25.4	431.8

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



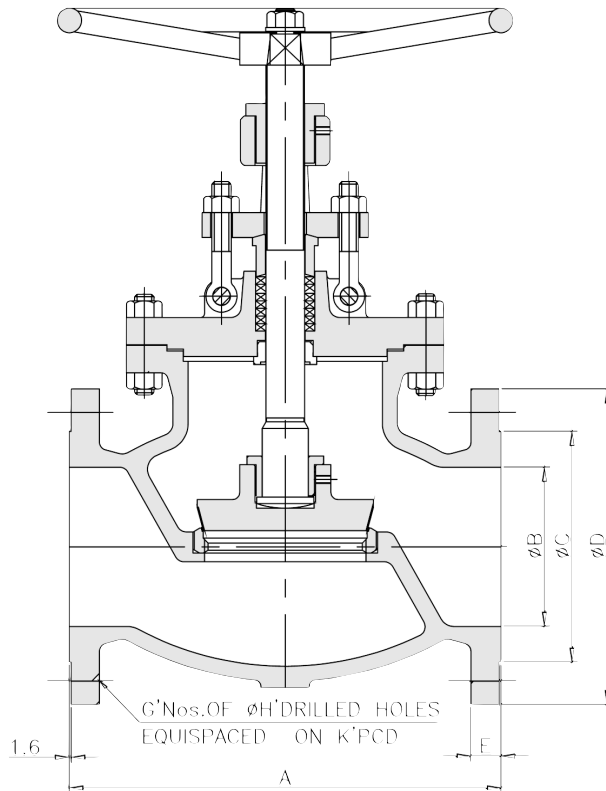
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1873, API-600, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Class-300

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	267	51	91.9	165.1	22.2	8	19.1	127.0
2-1/2" (65)	292	63	104.6	190.5	25.4	8	22.2	149.4
3" (80)	318	76	127.0	209.6	28.5	8	22.2	168.1
4" (100)	355	102	157.2	254.0	31.8	8	22.2	200.2
5" (125)	400	127	185.7	279.4	35.1	8	22.2	235.0
6" (150)	444	152	215.9	317.5	36.6	12	22.2	269.7
8" (200)	558	203	269.7	381.0	41.2	12	24.5	330.2
10" (250)	622	254	323.9	444.5	47.8	16	28.6	387.4
12" (300)	711	305	381.0	520.7	50.8	16	31.8	450.9

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



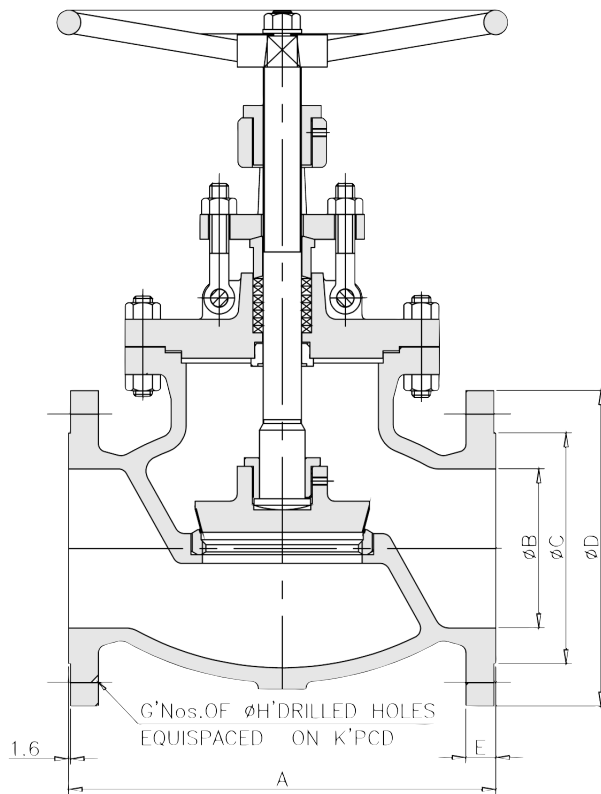
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1873, API-600, ANSI B16.34
- 2) FACE TO FACE AS PERS ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Class-600

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	292	51	91.9	165.1	31.8	8	19.1	127.0
2-1/2" (65)	330	63	104.6	190.5	34.9	8	22.2	149.4
3" (80)	356	76	127.0	209.6	38.1	8	22.2	168.1
4" (100)	432	102	157.2	273.1	44.5	8	25.4	215.9
5" (125)	508	127	185.7	330.2	50.8	8	28.6	266.7
6" (150)	559	152	215.9	355.6	54.2	12	28.6	292.1
8" (200)	660	200	269.7	419.1	62.0	12	31.8	349.3
10" (250)	787	248	323.9	508.0	69.9	16	35.1	431.8
12" (300)	838	298	381.0	558.8	73.0	20	35.1	489.0

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



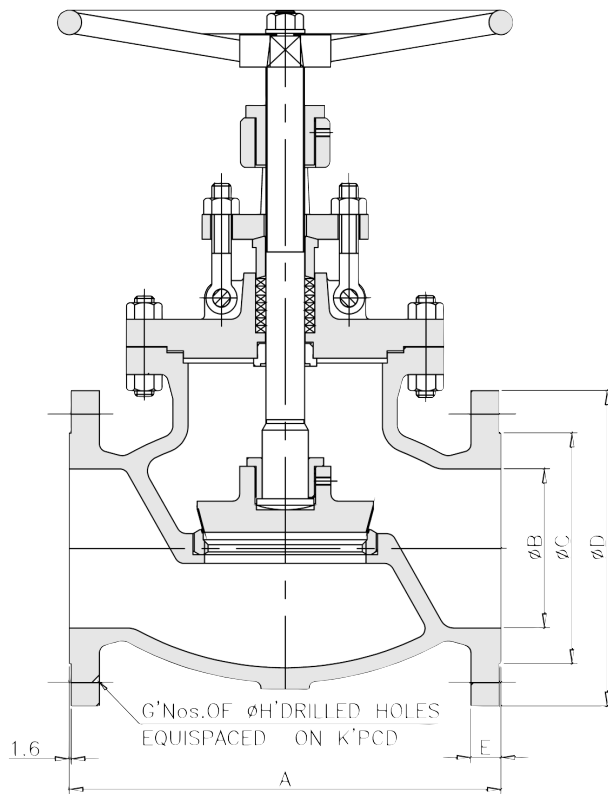
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1873, API-600, ANSI B16.34
- 2) FACE TO FACE AS PERS ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Class-900

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	368	48	91.9	215.9	44.5	8	25.4	165.1
2-1/2" (65)	419	60	104.6	244.3	47.6	8	28.6	190.5
3" (80)	381	73	127.0	241.3	44.5	8	25.4	190.5
4" (100)	457	98	157.2	292.1	50.8	8	31.8	235.0
5" (125)	559	124	185.7	349.3	57.1	8	35.0	279.4
6" (150)	610	146	215.9	381.0	62.0	12	31.8	317.5
8" (200)	737	190	269.7	469.9	69.9	12	38.1	393.7
10" (250)	838	238	323.9	546.1	76.2	16	38.1	469.9
12" (300)	965	283	381.0	609.6	85.9	20	38.1	533.4

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



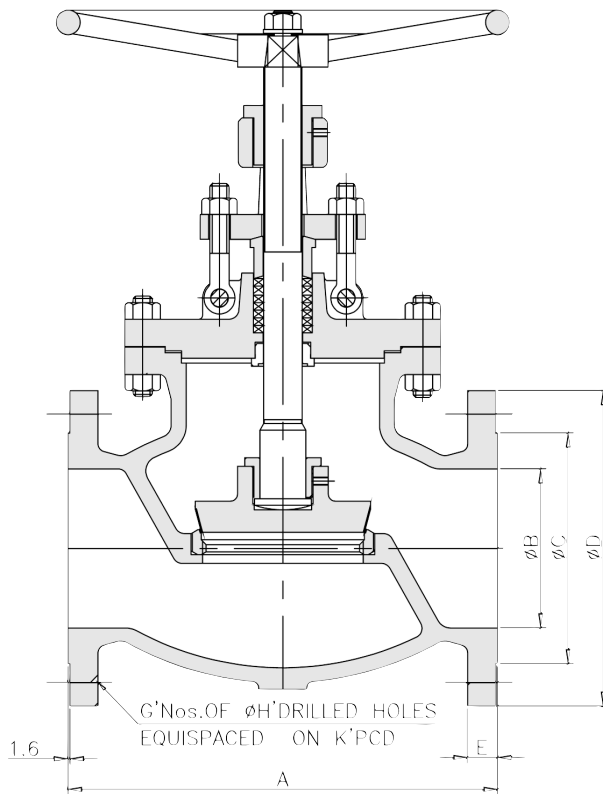
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1873, API-600, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Class-1500

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	368	48	91.9	215.9	44.5	8	25.4	165.1
2-1/2" (65)	419	57	104.6	244.3	47.6	8	28.6	190.5
3" (80)	470	70	127.0	266.7	53.9	8	31.8	203.2
4" (100)	546	92	157.2	311.2	60.3	8	34.9	241.3
5" (125)	673	120	185.7	374.7	79.3	8	41.3	292.1
6" (150)	705	137	215.9	393.7	89.0	12	38.1	317.5
8" (200)	832	178	269.7	482.6	98.3	12	44.5	393.7
10" (250)	991	222	323.9	584.2	114.5	12	50.8	482.6
12" (300)	1130	264	381.0	673.1	130.3	16	54.0	571.5

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1873, API-600, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) AVAILABLE WITH ACTUATOR OPERATOR
- 6) AVAILABLE WITH EXTENSION STEM

Class-2500

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	451	38	91.9	235.0	57.2	8	28.6	171.5
2-1/2" (65)	508	48	104.6	266.7	63.5	8	31.8	196.9
3" (80)	578	57	127.0	304.8	73.0	8	34.9	228.6
4" (100)	673	73	157.2	355.6	82.6	8	41.3	273.0
5" (125)	794	92	185.7	419.1	98.4	8	47.6	323.9
6" (150)	914	111	215.9	482.6	114.3	8	54.0	368.3
8" (200)	1022	146	269.7	552.5	133.4	12	54.0	438.1
10" (250)	1270	184	323.9	673.1	171.5	12	66.7	539.8
12" (300)	1422	219	381.0	762.0	190.5	16	73.0	619.4

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Check Valve

Check Valves are mechanical valves that permit gases and liquids to flow in only one direction, preventing processes flow from reversing. They are classified as one-way directional valves. Fluid flow in the desire direction opens the valve, while backflow forces the valve closed. Swing-Check Valves have low pressure drop and are best suitable for velocity applications.

PANAM Check Valves are manufactured as per API 600 and tested to API 598.

Body

Its spherical form of large radius allows for the stresses, turbulence and resistance to flow to be kept to minimum.

Cover

Cover is designed to have sufficient strength against internal pressure. The cover material is identical to the body material either cast or forged.

Body-Cover Joint

Body-Cover joint of Swing-Check Valves are machined as follows

On 150 Class - Male and Female.

On 300 and 600 Class - Male and Female.

On 900 and Over Class - Ring Joint Type.

we can supply any kind of gasket as per our customer's requirements.

Seat Ring

Seat rings are manufactured welded-in seat ring type, designed in order to prevent any turbulence and avoid damages due to the corrosion. Both are forged and rolled in one piece, for all dimensions, they are heat treated to obtain the requested surface hardness, and perfectly cleaned before assembling.

Disc

It is a one piece construction and heat treated so as to ensure adequate mechanical properties and surface hardness. The disc has sufficient seating surface area which is lapped to a mirror finish.

Bolting

The body cover bolting conforms to ANSI B1.1. The nuts are manufactured in accordance to ANSI B 18.2.2.

End Connections

- 1) Flange ends (RF, FF) that conform to ANSI B16.5 and face to face dimensions that conform to ANSI B16.10, with a raised face serrated finish or, on request with any other type of finish.
- 2) Butt-Welding ends (B.W) with end to end dimensions that conform to ANSI B16.10 customer must specify the type of schedule required, or class of pipe, or diameter and bore.
- 3) Ring-Joint flanged ends (R.T.J) that conforms to ANSI B16.5, with end to end dimensions to ANSI B 16.10 other special end connections are supplied to customer special requirements.

Applicable Codes & Standards

API 600 API 603 API 6D ASME B16.34 BS 1414 BS 6364 JPI DIN

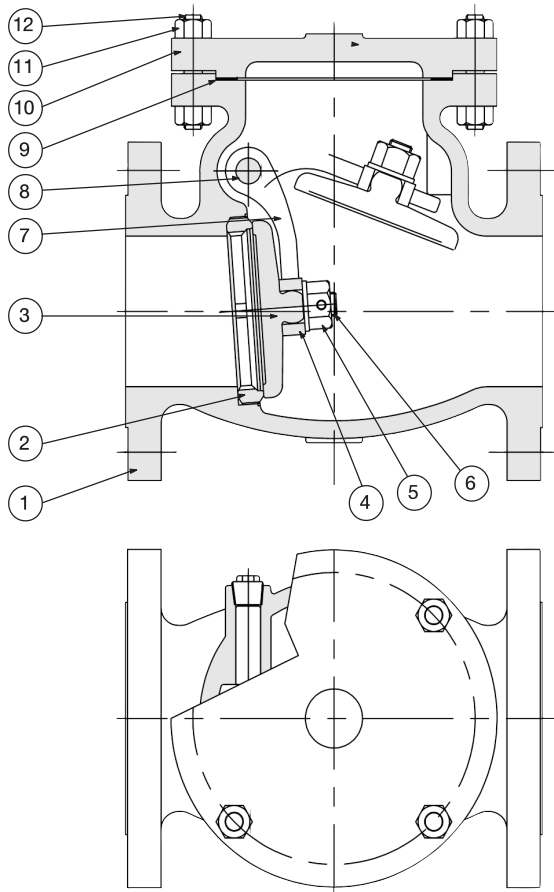
Manufacturing Ranges

CLASS	150	300	600 ~ 1500	2500
CARBON & LOW ALLOY	2" ~ 36"	2" ~ 24"	2" ~ 24"	2" ~ 24"
STAINLESS	1/2" ~ 28"	1/2" ~ 24"	1-1/2" ~ 24"	1-1/2" ~ 24"

PANAM can also supply all customers with the special materials and larger sizes upon customer's requirements. For example,

Stainless Steel : A351 - CN7M, A351 - CF8C, Duplex, etc.

Non Ferrous : Bronze, Hasteloy - B, Hasteloy - C, Monel.

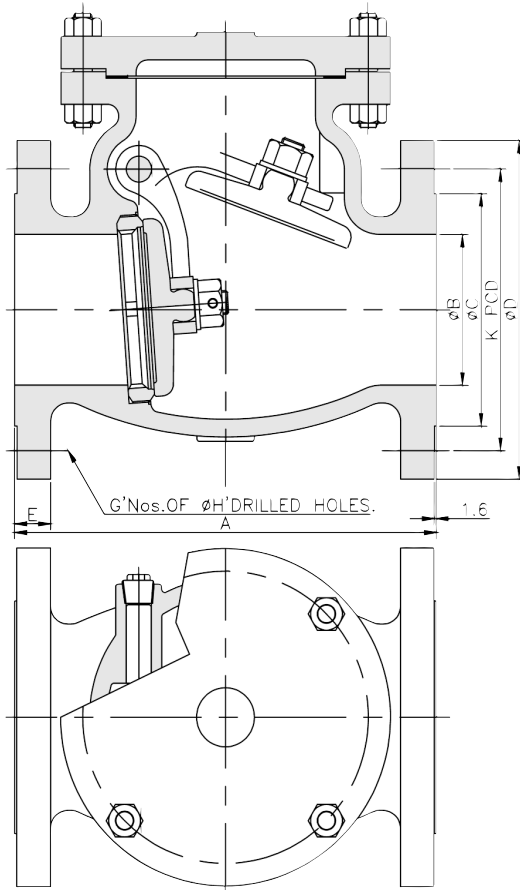


DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1868, API-600, ANSI B16.34
- 2) FACE TO FACE AS PERS ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) NON SLAM ARRANGEMENT AVAILABLE UPON REQUEST
- 6) AVAILABLE WITH EXTENSION STEM

Material of Construction

Sr No.	Part	Qty.	Material	Specification
1	Body	1	Cast Carbon Steel	ASTM-A-216 Gr. WCB
2	Seat Ring	1	Carbon Steel Faced with 13% Cr. Steel	
3	Disc	1	ASTM-A-216 Gr. WCB Faced with 13% Cr. Steel	
4	Disc Washer	1	Stainless Steel	AISI 304
5	Disk Nut	1	Stainless Steel	AISI 304
6	Splite Pin	1	Stainless Steel	AISI 304
7	Hinge	1	Cast Carbon Steel	ASTM-A-216 Gr. WCB
8	Hinge Pin	1	Stainless Steel	AISI 410
9	Gasket	1	S.S. 304 Spiral Wound with CAF	
10	Cover	1	Cast Carbon Steel	ASTM-A-216 Gr. WCB
11	Cover Stud Nut	REQ	Carbon Steel	ASTM-A-194 Gr. 2H
12	Cover Stud	AS	Alloy Steel	ASTM-A-193 Gr. B7
13	Hung Pin Plug	1	Forged Carbon Steel	ASTM-A-105



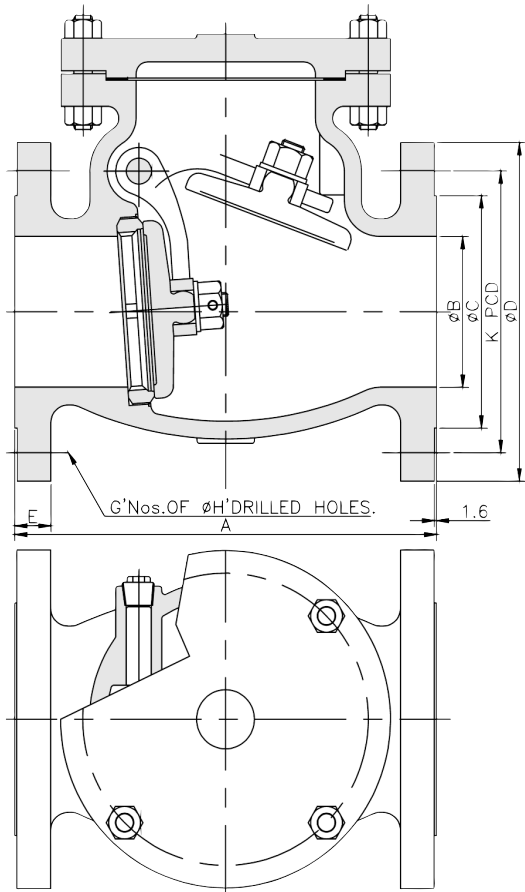
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1868, API-600, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) NON SLAM ARRANGEMENT AVAILABLE UPON REQUEST
- 6) AVAILABLE WITH EXTENSION STEM

Class-150

Size (NB)	A	B	C	D	E	G	H	K
1" (25)	127	25	50.8	108.0	11.1	4	15.8	79.2
1-1/2" (40)	165	38	73.2	127.0	14.3	4	15.8	98.6
2" (50)	203	51	91.9	152.4	15.8	4	19.1	120.7
2-1/2" (65)	216	63	104.6	177.8	19.1	4	19.1	139.7
3" (80)	241	76	127.0	190.5	19.1	4	19.1	152.4
4" (100)	292	102	157.2	228.6	23.9	8	19.1	190.5
5" (125)	330	127	185.7	254.0	23.9	8	22.2	215.9
6" (150)	356	152	215.9	279.4	25.4	8	22.2	241.3
8" (200)	495	203	269.7	342.9	28.6	8	22.2	298.5
10" (250)	622	254	323.9	406.4	30.3	12	25.4	362.0
12" (300)	699	305	381.0	482.6	31.8	12	25.4	431.8
14" (350)	787	337	412.8	533.4	35.1	12	28.6	476.3
16" (400)	864	387	469.9	596.9	36.6	16	28.6	539.8

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



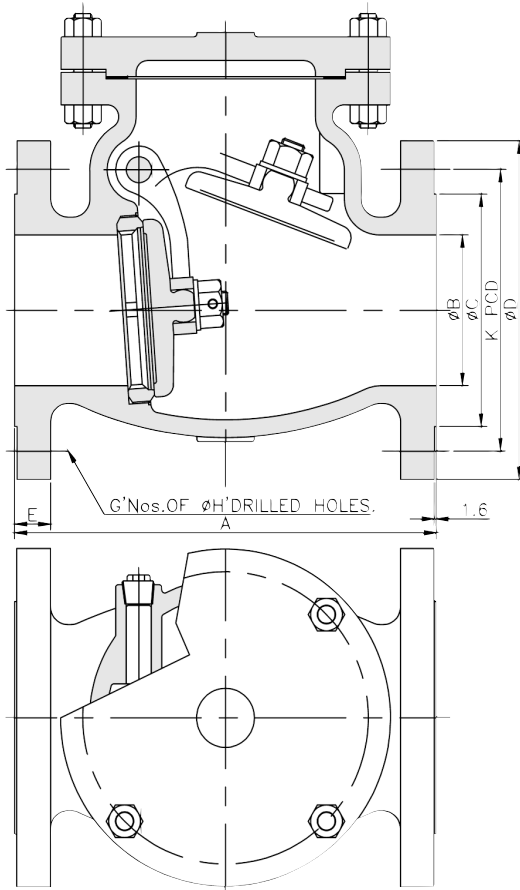
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1868, API-600, ANSI B16.34
- 2) FACE TO FACE AS PERS ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) NON SLAM ARRANGEMENT AVAILABLE UPON REQUEST
- 6) AVAILABLE WITH EXTENSION STEM

Class-300

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	267	51	91.9	165.1	22.2	8	19.1	127.0
2-1/2" (65)	292	63	104.6	190.5	25.4	8	22.2	149.4
3" (80)	318	76	127.0	209.6	28.5	8	22.2	168.1
4" (100)	355	102	157.2	254.0	31.8	8	22.2	200.2
5" (125)	400	127	185.7	279.4	35.1	8	22.2	235.0
6" (150)	444	152	215.9	317.5	36.6	12	22.2	269.7
8" (200)	558	203	269.7	381.0	41.2	12	24.5	330.2
10" (250)	622	254	323.9	444.5	47.8	16	28.6	387.4
12" (300)	711	305	381.0	520.7	50.8	16	31.8	450.9
14" (350)	838	337	412.8	584.2	53.9	20	31.8	514.4
16" (400)	864	387	469.9	647.7	57.2	20	35.1	571.5

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



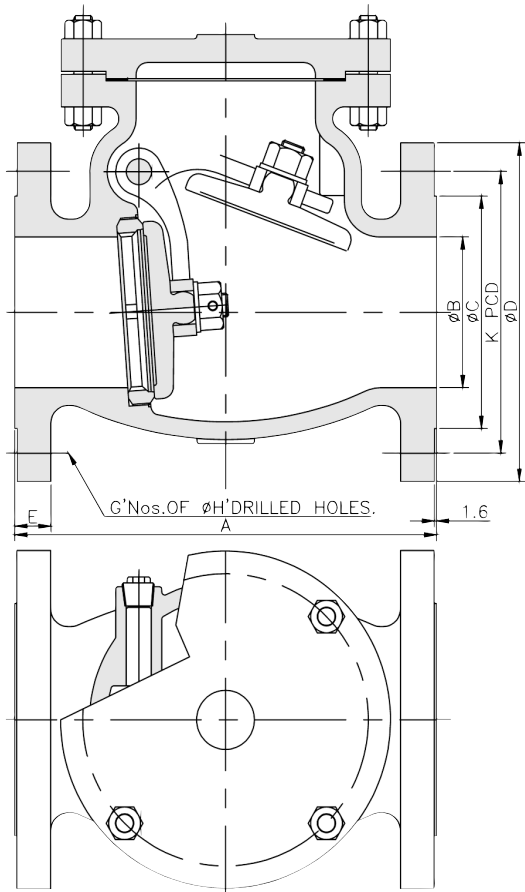
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1868, API-600, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) NON SLAM ARRANGEMENT AVAILABLE UPON REQUEST
- 6) AVAILABLE WITH EXTENSION STEM

Class-600

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	292	51	91.9	165.1	31.8	8	19.1	127.0
2-1/2" (65)	330	63	104.6	190.5	34.9	8	22.2	149.4
3" (80)	356	76	127.0	209.6	38.1	8	22.2	168.1
4" (100)	432	102	157.2	273.1	44.5	8	25.4	215.9
5" (125)	508	127	185.7	330.2	50.8	8	28.6	266.7
6" (150)	559	152	215.9	355.6	54.2	12	28.6	292.1
8" (200)	660	200	269.7	419.1	62.0	12	31.8	349.3
10" (250)	787	248	323.9	508.0	69.9	16	35.1	431.8
12" (300)	838	298	381.0	558.8	73.0	20	35.1	489.0

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



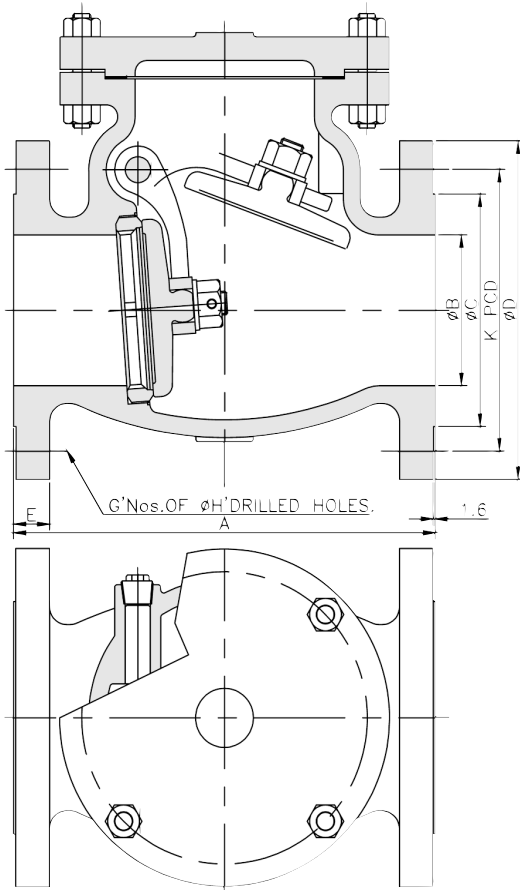
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1868, API-600, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) NON SLAM ARRANGEMENT AVAILABLE UPON REQUEST
- 6) AVAILABLE WITH EXTENSION STEM

Class-900

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	368	48	91.9	215.9	44.5	8	25.4	165.1
2-1/2" (65)	419	60	104.6	244.3	47.6	8	28.6	190.5
3" (80)	381	73	127.0	241.3	44.5	8	25.4	190.5
4" (100)	457	98	157.2	292.1	50.8	8	31.8	235.0
5" (125)	559	124	185.7	349.3	57.1	8	35.0	279.4
6" (150)	610	146	215.9	381.0	62.0	12	31.8	317.5
8" (200)	737	190	269.7	469.9	69.9	12	38.1	393.7
10" (250)	838	238	323.9	546.1	76.2	16	38.1	469.9
12" (300)	965	283	381.0	609.6	85.9	20	38.1	533.4

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



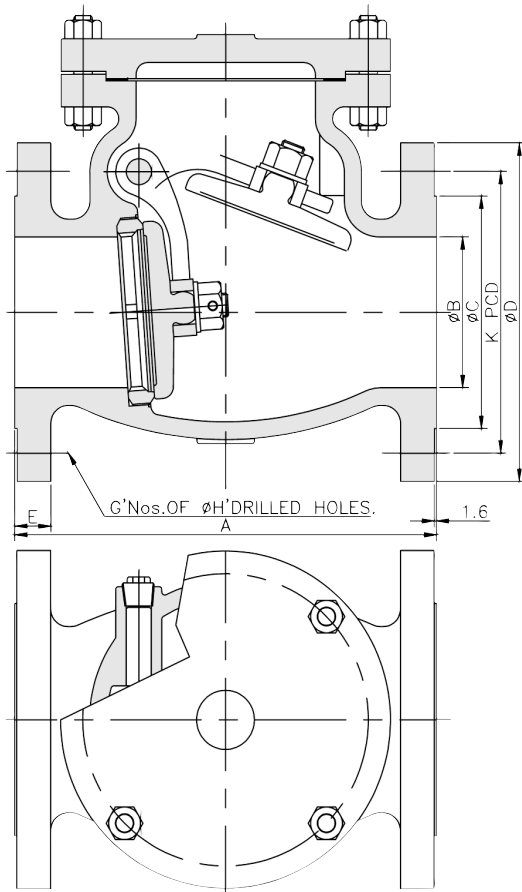
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1868, API-600, ANSI B16.34
- 2) FACE TO FACE AS PERS ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) NON SLAM ARRANGEMENT AVAILABLE UPON REQUEST
- 6) AVAILABLE WITH EXTENSION STEM

Class-1500

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	368	48	91.9	215.9	44.5	8	25.4	165.1
2-1/2" (65)	419	57	104.6	244.3	47.6	8	28.6	190.5
3" (80)	470	70	127.0	266.7	53.9	8	31.8	203.2
4" (100)	546	92	157.2	311.2	60.3	8	34.9	241.3
5" (125)	673	120	185.7	374.7	79.3	8	41.3	292.1
6" (150)	705	137	215.9	393.7	89.0	12	38.1	317.5
8" (200)	832	178	269.7	482.6	98.3	12	44.5	393.7
10" (250)	991	222	323.9	584.2	114.5	12	50.8	482.6
12" (300)	1130	264	381.0	673.1	130.3	16	54.0	571.5

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS1868, API-600, ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS5146, API-598
- 5) NON SLAM ARRANGEMENT AVAILABLE UPON REQUEST
- 6) AVAILABLE WITH EXTENSION STEM

Class-2500

Size (NB)	A	B	C	D	E	G	H	K
2" (50)	451	38	91.9	235.0	57.2	8	28.6	171.5
2-1/2" (65)	508	48	104.6	266.7	63.5	8	31.8	196.9
3" (80)	578	57	127.0	304.8	73.0	8	34.9	228.6
4" (100)	673	73	157.2	355.6	82.6	8	41.3	273.0
5" (125)	794	92	185.7	419.1	98.4	8	47.6	323.9
6" (150)	914	111	215.9	482.6	114.3	8	54.0	368.3
8" (200)	1022	146	269.7	552.5	133.4	12	54.0	438.1
10" (250)	1270	184	323.9	673.1	171.5	12	66.7	539.8
12" (300)	1422	219	381.0	762.0	190.5	16	73.0	619.4

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.

Ball Valve

Ball valves are quarter-turn, straight through flow valves that have a round closure element with matching rounded seats that permit uniform sealing stress. Ball valves are used in situations where tight shut-off is required. The type of seat can vary with the valve pressure rating and materials of construction.

Ball valves are available in a variety of body styles, including one-piece, two-piece, three-piece and flanged body construction. Each of these ball valve forms offers specific advantages depending upon the requirements of the given application. Similarly, they are designed using a wide variety of materials, as required by their application. Common Ball valve materials include brass, bronze, copper, cast iron, ductile iron, stainless and other steel types.

Ball valves are manufactured as per BS 5351 and tested in accordance to ASME B16.34. Face to face dimensions meet ANSI B16.10, and flange dimensions meet ANSI B 16.5.

BODY

Its spherical form of large radius allows for the stresses, turbulence and resistance to flow to be kept to minimum.

SIDE PIECE

Side Piece is designed to have sufficient strength against internal pressure. The Side Piece material is identical to the body material either cast or forged.

BALL

It is a one piece construction and heat treated so as to ensure adequate mechanical properties and surface hardness.

STEM

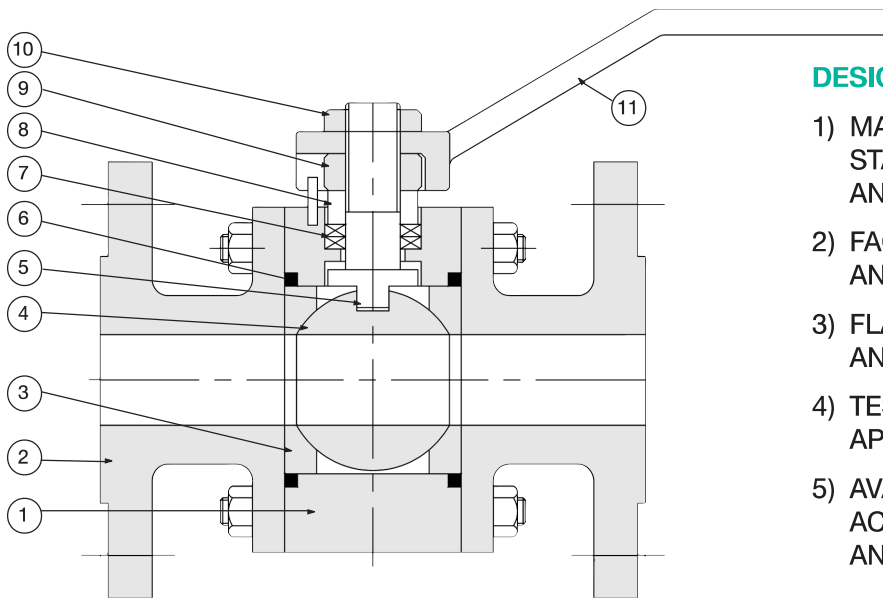
One piece construction blow-out proof stem.

BOLTING

The Body Side Piece bolting conforms to ANSI B1.1. The nuts are manufactured in accordance to ANSI B 18.2.2

END CONNECTIONS

- 1) Flange ends (RF,FF) that conform to ANSI B16.5 and face to face dimensions that conform to ANSI B16.10, with a raised face serrated finish or, on request with any other type of finish.
- 2) Butt-welding ends (B.W) with end to end Dimensions that conform to ANSI B16.10 customer must specify the type of schedule required, or class of pipe, or diameter and bore.
- 3) Ring-joint flanged ends (R.T.J) that conforms to ANSI B16.5, with end to end dimensions to ANSI B 16.10. Other special end connections are supplied to customer special requirements.

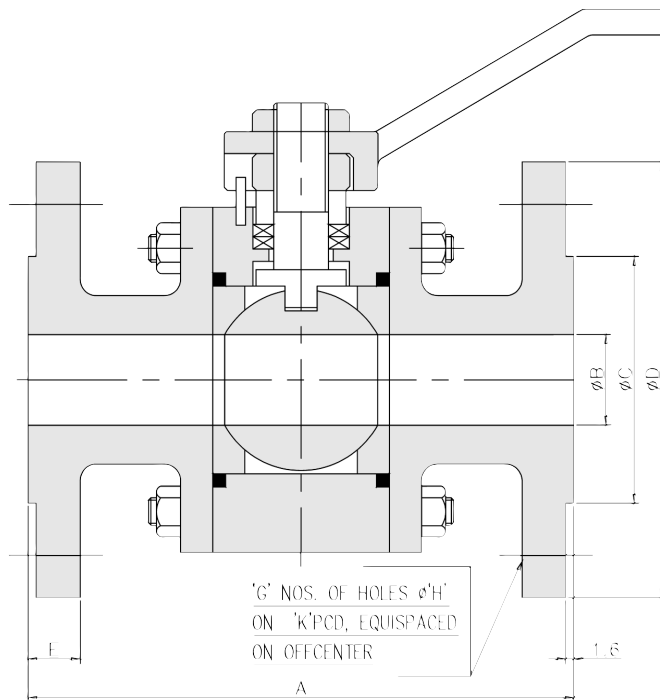


DESIGN FEATURES:-

- 1) MANUFACTURING STANDARD – BS 5351
ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS 5146,
API 598, BS 6755
- 5) AVAILABLE WITH ACTUATOR OPERATOR
AND OTHER ACTUATORS

Material of Construction

Sr No.	Part	Qty.	Material	Specification
1	Body	1	Stainless Steel	S.S. AISI 304/316
2	Side Piece	2	Stainless Steel	S.S. AISI 304/316
3	Seat Rings	2	PTFE	
4	Ball	1	Stainless Steel	S.S. AISI 304/316
5	Stem	1	Stainless Steel	S.S. AISI 304/316
6	Body Seal	2	PTFE	
7	Gland Packing	3	PTFE	
8	Gland	1	Stainless Steel	S.S. AISI 304/316
9	Gland Nut	1	Stainless Steel	S.S. AISI 304/316
10	Stud & Nut	REQ AS	Alloy Steel	A 193 Gr. B7/A914 Gr. 2H
11	Handle	1	Carbon Steel (Cadmium Plated)	



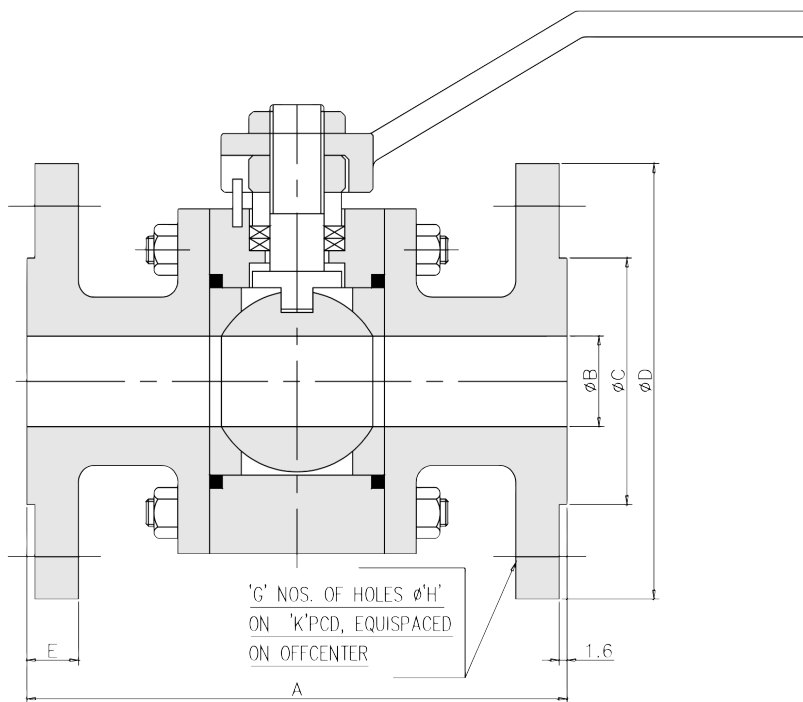
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARD – BS 5351 ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS 5146, API 598, BS 6755
- 5) AVAILABLE WITH ACTUATOR OPERATOR AND OTHER ACTUATORS

Class-150

Size (NB)	A	B	C	D	E	G	H	K
1/2" (15)	108	12.5	35.1	88.9	11.1	4	15.8	60.5
3/4" (20)	118	17	42.9	98.6	11.1	4	15.8	69.9
1" (25)	127	24	50.8	108.0	11.1	4	15.8	79.2
1-1/2" (40)	165	37	73.2	127.0	14.3	4	15.8	98.6
2" (50)	178	49	91.9	152.4	15.8	4	19.1	120.7

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



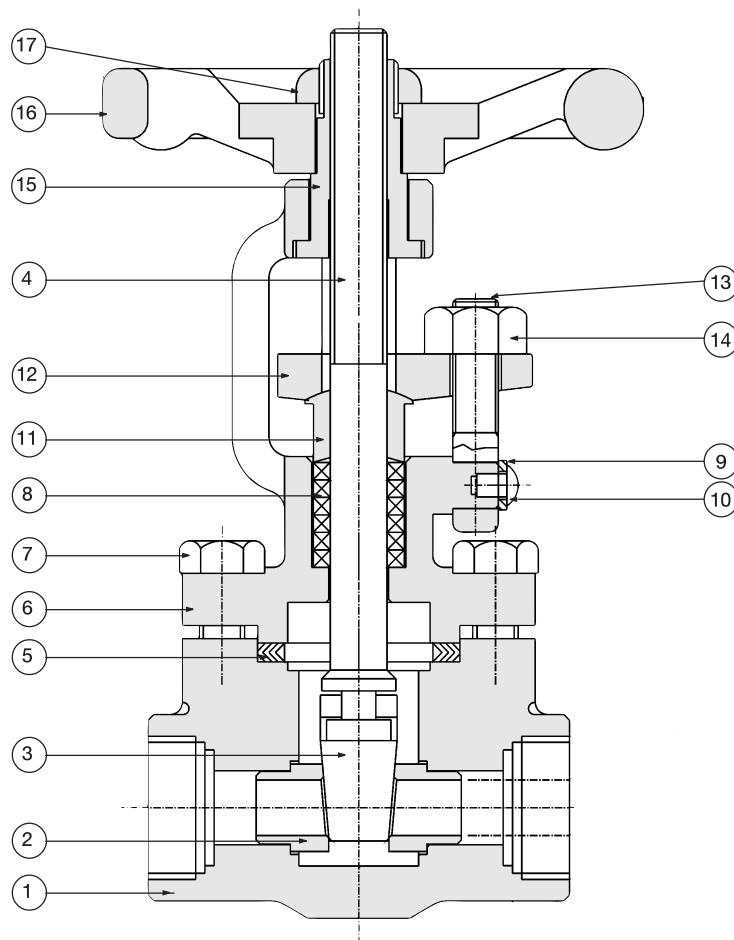
DESIGN FEATURES:-

- 1) MANUFACTURING STANDARD – BS 5351 ANSI B16.34
- 2) FACE TO FACE AS PER ANSI B16.10
- 3) FLANGE ENDS AS PER ANSI B16.5
- 4) TESTED AS PER BS 5146, API 598, BS 6755
- 5) AVAILABLE WITH ACTUATOR OPERATOR AND OTHER ACTUATORS

Class-300

Size (NB)	A	B	C	D	E	G	H	K
1/2" (15)	140	12.5	35.1	95.3	14.3	4	15.8	66.5
3/4" (20)	152	17	42.9	117.3	15.8	4	19.1	82.6
1" (25)	165	24	50.8	124	17.6	4	19.1	88.9
1-1/2" (40)	190	37	73.2	155.4	20.6	4	22.4	114.3
2" (50)	216	49	91.9	165.1	22.4	8	19.1	127

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.

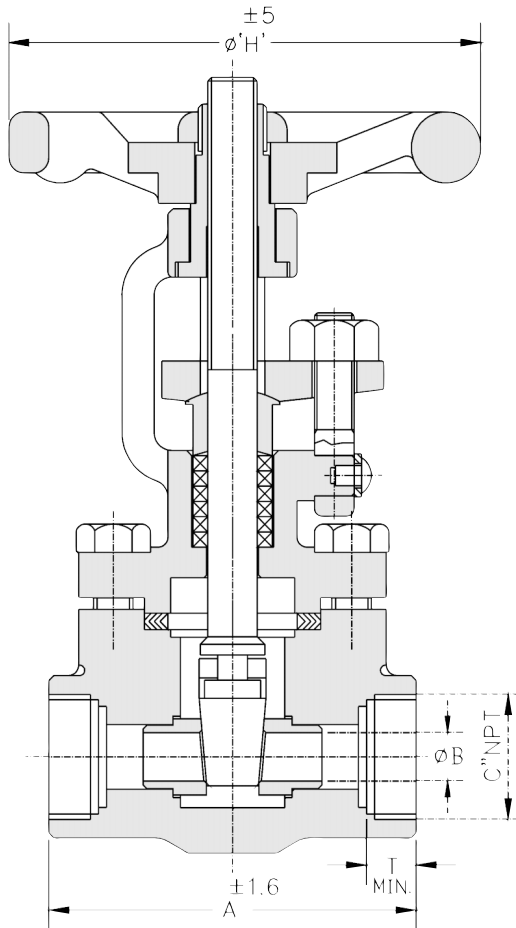


DESIGN FEATURES:-

- 1) MANUFACTURING STANDARD – BS 5352, API-602
- 2) SOCKET WELD END AS PER ANSI B16.11
- 3) SCREWED ENDS AS PER ANSI B2.1
- 4) TESTED AS PER BS 5146, API 598
- 5) ALSO AVAILABLE IN FULL BORE UPTO SIZE 40NB

Material of Construction

Sr No.	Part	Qty.	Material	Specification
1	Body	1	Forged Carbon Steel	ASTM-A-105
2	Seat Ring	2	Stainless Steel	ASTM-A-182 Gr.F6+Stellite
3	Wedge	1	Stainless Steel	ASTM-A-182 Gr.F6+Stellite
4	Spindle	1	Stainless Steel	ASTM-A-182 Gr.F6
5	Gasket	1	S.S. 304, Spiral Wound with CAF	
6	Bonnet	1	Forged Carbon Steel	ASTM-A-105
7	Bonnet Stud	4	Alloy Steel	ASTM-A-193 Gr.B7
8	Gland Packing	Min.8	Flexible Graphite	
9	Washer	2	Carbon Steel	I.S.1367
10	Screw	2	Carbon Steel	I.S.1367
11	Gland bush	1	Stainless Steel	AISI-410
12	Gland Flange	1	Carbon Steel	I.S.2062
13	Eye Bolt	2	Carbon Steel	I.S.1367
14	Eye Bolt Nut	2	Carbon Steel	I.S.1367
15	Yoke Sleeve	1	Ni Resist Nodular C.I.	ASTM-A-439 Gr.D2
16	Handle Wheel	1	Malleable Iron/Ductile Iron/Cast Steel	
17	Lock Nut	1	Carbon Steel	I.S.1367



DESIGN FEATURES:-

- 1) MANUFACTURING STANDARD – BS 5352, API-602
- 2) SOCKET WELD END AS PER ANSI B16.11
- 3) SCREWED ENDS AS PER ANSI B2.1
- 4) TESTED AS PER BS 5146, API 598
- 5) ALSO AVAILABLE IN FULL BORE UPTO SIZE 40NB

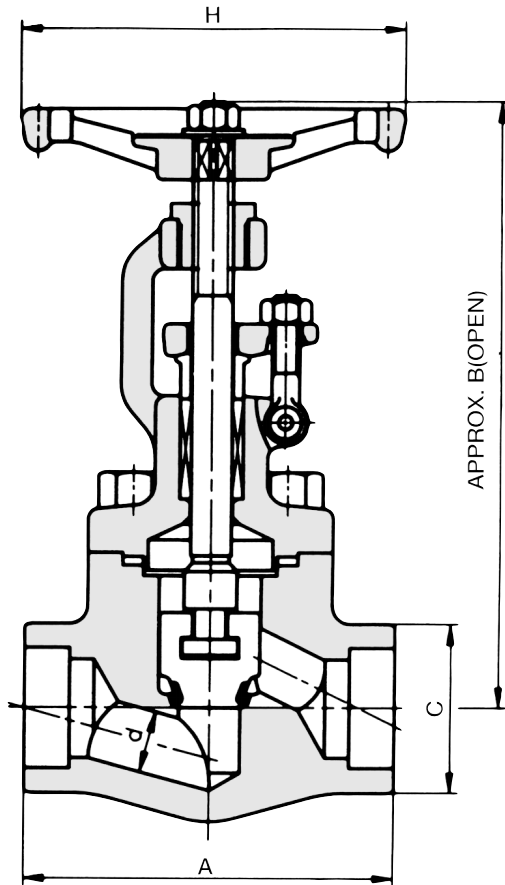
Class-800

Size (NB)	A	B	C	T	H	WT.*
1/4" (8)	79	13.0	1/2" NPT	13.5	95	1.4 Kg.
1/2" (15)	79	13.0	1/2" NPT	13.5	95	1.8 Kg.
3/4" (20)	92	13.0	3/4" NPT	14	95	2 Kg.
1" (25)	111	19.0	1" NPT	17.5	110	3.8 Kg.
2" (50)	140	36.5	2" NPT	19.5	170	10.1 Kg.

Class-1500

Size (NB)	A	B	C	T	H	WT.*
1/2" (15)	112	12	1/2" NPT	13.5	125	6 Kg.
3/4" (20)	134	15	3/4" NPT	14	150	8 Kg.
1" (25)	140	20	1" NPT	17.5	170	12 Kg.
2" (50)	229	32	2" NPT	19.5	260	33 Kg.

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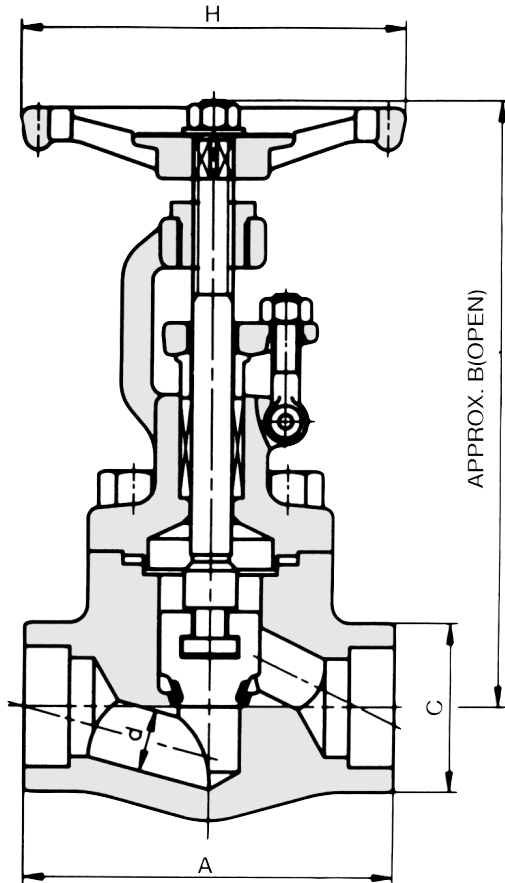


DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS5352
- 2) SOCKET WELD END AS PER ANSI B16.11
- 3) SCREWED ENDS AS PER ANSI B2.1
- 4) TESTED AS PER BS5146, API-598
- 5) ALSO AVAILABLE IN FULL BORE UPTO SIZE 40NB

Material of Construction

Sr No.	Part	Qty.	Material	Specification
1	Body	1	Forged Carbon Steel	ASTM-A-105
2	Seat Ring	2	Stainless Steel	ASTM-A-182 Gr.F6+Stellite
3	Wedge	1	Stainless Steel	ASTM-A-182 Gr.F6+Stellite
4	Spindle	1	Stainless Steel	ASTM-A-182 Gr.F6
5	Gasket	1	S.S. 304, Spiral Wound with CAF	
6	Bonnet	1	Forged Carbon Steel	ASTM-A-105
7	Bonnet Stud	4	Alloy Steel	ASTM-A-193 Gr.B7
8	Gland Packing	Min.8	Flexible Graphite	
9	Washer	2	Carbon Steel	I.S.1367
10	Screw	2	Carbon Steel	I.S.1367
11	Gland bush	1	Stainless Steel	AISI-410
12	Gland Flange	1	Carbon Steel	I.S.2062
13	Eye Bolt	2	Carbon Steel	I.S.1367
14	Eye Bolt Nut	2	Carbon Steel	I.S.1367
15	Yoke Sleeve	1	Ni Resist Nodular C.I.	ASTM-A-439 Gr.D2
16	Handle Wheel	1	Malleable Iron/Ductile Iron/Cast Steel	
17	Lock Nut	1	Carbon Steel	I.S.1367



DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS5352
- 2) SOCKET WELD END AS PER ANSI B16.11
- 3) SCREWED ENDS AS PER ANSI B2.1
- 4) TESTED AS PER BS5146, API-598
- 5) ALSO AVAILABLE IN FULL BORE UPTO SIZE 40NB

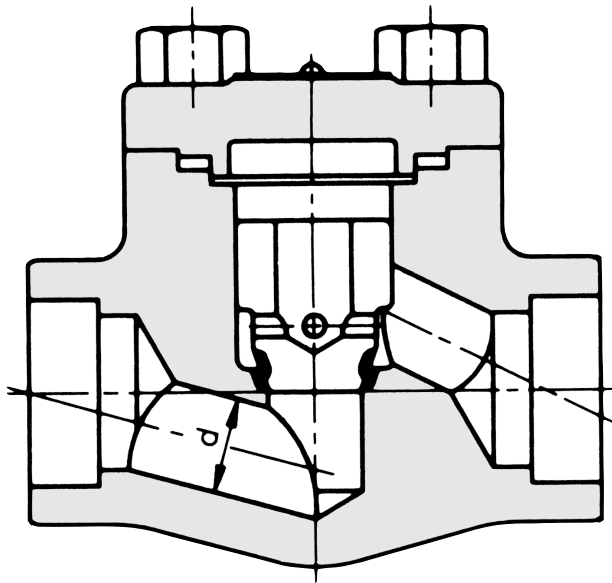
Class-800

Size (NB)	A	B	C	T	H	WT.*
1/4" (8)	74	135	33	6.5	80	1.5 Kg.
3/8" (10)	74	135	33	8.0	80	1.5 Kg.
1/2" (15)	74	135	33	10.0	80	1.4 Kg.
3/4" (20)	86	149	39	13.0	95	1.8 Kg.
1" (25)	106	185	48	17.5	110	3.0Kg.
1-1/4" (32)	130	218	57	25.0	140	5.1 Kg.
1-1/2" (40)	152	229	64	30.0	140	6.0 Kg.
2" (50)	172	262	77	37.0	170	9.4 Kg.

Class-1500

Size (NB)	A	B	C	T	H	WT.*
1/4" (8)	111	193	49	6.5	110	4.2 Kg.
3/8" (10)	111	193	49	8.0	110	4.2 Kg.
1/2" (15)	111	193	49	10.0	110	4.2 Kg.
3/4" (20)	111	193	49	13.0	110	4.1 Kg.
1" (25)	130	221	58	17.5	140	5.8 Kg.
1-1/4" (32)	152	247	65	25.0	140	7.9 Kg.
1-1/2" (40)	172	286	78	30.0	200	12.2 Kg.

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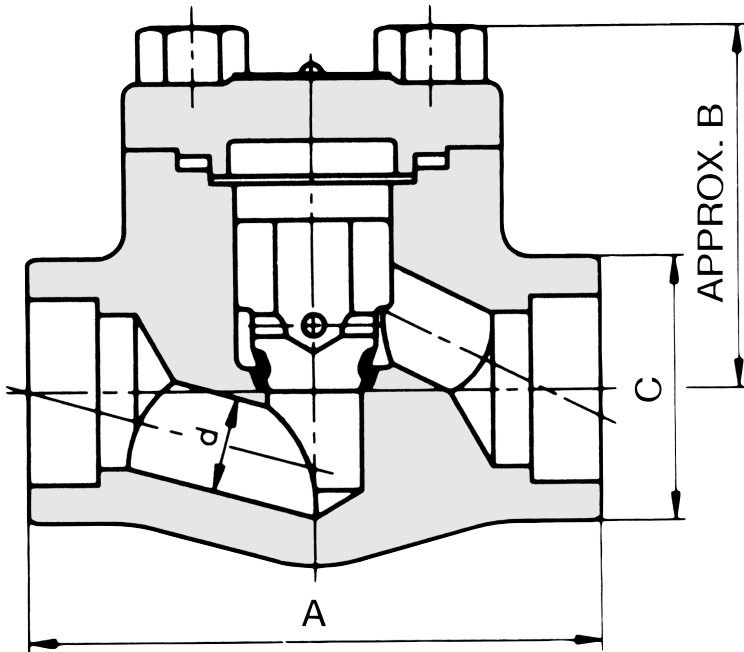


DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS5352
- 2) SOCKET WELD END AS PER ANSI B16.11
- 3) SCREWED ENDS AS PER ANSI B2.1
- 4) TESTED AS PER BS5146, API-598
- 5) ALSO AVAILABLE IN FULL BORE UPTO SIZE 40NB

Material of Construction

Sr No.	Part	Qty.	Material	Specification
1	Body	1	Forged Carbon Steel	ASTM-A-105
2	Seat Ring	2	Stainless Steel	ASTM-A-182 Gr.F6+Stellite
3	Wedge	1	Stainless Steel	ASTM-A-182 Gr.F6+Stellite
4	Spindle	1	Stainless Steel	ASTM-A-182 Gr.F6
5	Gasket	1	S.S. 304, Spiral Wound with CAF	
6	Bonnet	1	Forged Carbon Steel	ASTM-A-105
7	Bonnet Stud	4	Alloy Steel	ASTM-A-193 Gr.B7
8	Gland Packing	Min.8	Flexible Graphite	
9	Washer	2	Carbon Steel	I.S.1367
10	Screw	2	Carbon Steel	I.S.1367
11	Gland bush	1	Stainless Steel	AISI-410
12	Gland Flange	1	Carbon Steel	I.S.2062
13	Eye Bolt	2	Carbon Steel	I.S.1367
14	Eye Bolt Nut	2	Carbon Steel	I.S.1367
15	Yoke Sleeve	1	Ni Resist Nodular C.I.	ASTM-A-439 Gr.D2
16	Handle Wheel	1	Malleable Iron/Ductile Iron/Cast Steel	
17	Lock Nut	1	Carbon Steel	I.S.1367



DESIGN FEATURES:-

- 1) MANUFACTURING STANDARDS BS5352
- 2) SOCKET WELD END AS PER ANSI B16.11
- 3) SCREWED ENDS AS PER ANSI B2.1
- 4) TESTED AS PER BS5146, API-598
- 5) ALSO AVAILABLE IN FULL BORE UPTO SIZE 40NB

Class-800

Size (NB)	A	B	C	d	WT.*
1/4" (8)	74	44	33	6.5	1.5 Kg.
3/8" (10)	74	44	33	8.0	1.5 Kg.
1/2" (15)	74	44	33	10.0	1.4 Kg.
3/4" (20)	86	52	39	13.0	1.8 Kg.
1" (25)	106	66	49	17.5	3.0Kg.
1-1/4" (32)	130	74	57	25.0	5.1 Kg.
1-1/2" (40)	152	82	64	30.0	6.0 Kg.
2" (50)	172	97	77	37.0	9.4 Kg.

Class-1500

Size (NB)	A	B	C	d	WT.*
1/4" (8)	111	72	49	6.5	2.8 Kg.
3/8" (10)	111	72	49	8.0	2.8 Kg.
1/2" (15)	111	72	49	10.0	2.8 Kg.
3/4" (20)	111	72	49	13.0	2.7 Kg.
1" (25)	130	85	58	17.5	4.1 Kg.
1-1/4" (32)	152	103	65	25.0	5.8 Kg.
1-1/2" (40)	172	116	78	30.0	9.1 Kg.
2" (50)	200	136	92	37.0	13.0 Kg.

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.

Standards Pertaining to Valves

Standards Pertaining to Parallel and Wedge Gate Valves

MSS SP-6	Standard finishes for contact faces of pipe flanges and connecting-end flanges of valves and fittings.
MSS SP-9	Spot facing for bronze, iron, and steel flanges.
MSS SP-44	Steel pipeline flanges.
MSS SP-51	Class 150 LW corrosion-resistant cast flanges and flanged fittings.
MSS SP-65	High-pressure chemical industry flanges and threaded stubs for use with lens gaskets.
MSS SP-84	Steel valves-socket welding and threaded ends.
API 6A	Specification for wellhead equipment (including flanges).
API 605	Large diameter carbon steel flanges.
ASME B1.20.1	Pipe threads, general purpose (inch).
ASME B1.20.3	Dryseal pipe threads (inch).
ASME B16.1	Cast iron pipe flanges and flanged fittings.
ASME B16.5	Pipe flanges and flanged fittings.
ASME B16.20	Ring joining gaskets and grooves for steel pipe flanges.
ASME B16.24	Bronze pipe flanges and flanged fittings.
ASME B16.25	Butt-welding ends.
BS 10	Flanges and bolting for pipes, valves, and fittings (obsolescent).
BS 21	Pipe threads for tubes and fittings where pressure-tight joints are made on the threads. (metric dimensions)
BS 1560	Steel pipe flanges and flanged fittings (normal sizes 1/2 in to 24 in) for the petroleum industry. Part 2 (1970), metric dimensions.
BS 3293	Carbon steel flanges (over 24 in nominal size) for the petroleum industry.
BS 4504	Flanges and bolting for pipes, valves, and fittings, metric series, Part 1 (1969), ferrous, Part 2 (1974), copper alloy and composite flanges.

Standards Pertaining to Parallel and Wedge Gate Valves

MSS SP-42	Corrosion-resistant gate, globe, angle, and check valves with flanged and butt-weld ends.
MSS SP-45	By pass and drain connection standard.
MSS SP-61	Hydrostatic testing of steel valves.
MSS SP-70	Cast iron gate valves, flanged threaded ends.
MSS SP-80	Bronze gate, globe, angle, and check valves.
MSS SP-81	Stainless steel, bonnetless, flanged, wafer, knife gate valves.
API 6D	Specification for pipeline valves, end closures, connectors, and swivels.
API RP 6F	Recommended practice for fire test for valves (tentative).
API 595	Cast iron gate valves, flanged ends.
API 597	Steel venturi gate valves, flanged or butt welding ends.
API 598	Valve inspection and test.
API 600	Steel gate valves, flanged and butt welding ends. bolted and pressure steel bonnets.
API 602	Compact steel gate valves-flanged, threaded, welding, and extended-body ends.
API 603	Class 150, corrosion-resistant, flanged-end gate valves.

Standards Pertaining to Valves

API 604	Ductile iron gate valves, flanged ends.
ASME B16.10	Face-to-face and end-to-end dimensions of ferrous valves.
ASME B16.34	Valves-flanged threaded and welding end.
BS 1414	Steel wedge gate valves (flanged and butt welding ends) for the petroleum, petrochemical and allied industries.
BS 2080	Face-to-face, center-to-face, end-to-end, and center-to-end dimensions of flanged and butt welding end steel valves, for the petroleum, petrochemical, and allied industries.
BS 6755	Testing of valves.
Part 1	Specification for production pressure testing requirements.
Part 2	Specification for fire type testing requirements.
BS 5150	Cast iron wedge and double-disc gate valves, for general purposes.
BS 51501	Cast iron parallel slide gate valves, for general purposes.
BS 5154	Copper alloy globe, globe stop and check, check, and gate valves (including parallel slide type), for general purposes. BS 5157 Steel parallel slide gate valves, for general purposes.
BS 5163	Double-flanged cast iron wedge gate valves for water works purposes.
BS 5352	Cast and forged steel wedge gate, globe, check, and plug valves, screwed and socket welding, sizes 50mm and smaller, for the petroleum, petrochemical, and allied industries.

Standards Pertaining to Globe Valves

MSS SP-42	Class 150 corrosion-resistant gate, globe, angle, and check valves with flanged and butt weld ends.
MSS SP-61	Pressure testing of steel valves.
MSS SP-80	Bronze gate, globe, angle, and check valves.
MSS SP-84	Steel valves-socket welding and threaded ends.
MSS SP-85	Cast iron globe and angle valves, flanged and threaded ends.
API RP 6F	Recommended practice for fire test for valves (tentative).
ASME B16.10	Face-to-face and end-to-end dimensions of ferrous valves.
ASME B16.34	Valves-flanged threaded and welding end.
BS 1873	Steel globe valves and stop and check valves (flanged and butt-welding ends), for the petroleum, petrochemical, and allied industries.
BS 2080	Face-to-face, center-to-face, end-to-end, and center-to-end dimensions of flanged and butt welding end steel valves, for the petroleum, petrochemical, and allied industries.
BS 5352	Cast and forged steel wedge gate, globe, check, and plug valves, screwed and socket welding, sizes 50mm and smaller, for the petroleum, petrochemical, and allied industries.
BS 6755	Testing of valves.
Part 1	Specification for production pressure testing requirements.
Part 2	Specification for fire type testing requirements.
BS 5152	Cast iron globe and globe stop and check valves, for general purposes.
BS 5154	Copper alloy globe, globe stop and check, check, and gate valves (including parallel slide type), for general purposes.
BS 5160	Specification for flanged steel globe valve, globe stop and check valves, and lift-type check valves for general purposes.

Standards Pertaining to Valves

Standards Pertaining to Check Valves

MSS SP-42	Class 150 corrosion-resistant gate, globe, angle, and check valves with flanged and buttweld ends.
MSS SP-61	Pressure testing of steel valves.
MSS SP-71	Cast iron swing check valves, flanged and threaded ends.
MSS SP-80	Bronze gate, globe, angle, and check valves.
MSS SP-84	Steel valves-socket welding and threaded ends.
API 6D	Specification for pipelines valves, end closures, connectors, and swivels.
API RP 6F	Recommended practice for fire test for valves (tentative).
API 594	Wafer-type check valves.
ASME B16.10	Face-to-face and end-to-end dimensions of ferrous valves.
ASME B16.34	Valves-flanged threaded and welding end.
BS 1868	Steel check valves (flanged and butt-welding ends) for the petroleum, petrochemical, and allied industries.
BS 1873	Steel globe valves and stop and check valves (flanged and butt-welding ends), for the petroleum, petrochemical, and allied industries.
BS 2080	Face-to-face, center-to-face, end-to-end, and center-to-end dimensions of flanged and buttwelding end steel valves, for the petroleum, petrochemical, and allied industries.
BS 6755	Testing of valves.
Part 1	Specification for production pressure testing requirements.
Part 2	Specification for fire type testing requirements.
BS 5152	Cast iron globe and globe stop and check valves, for general purposes.
BS 5153	Cast iron check valves for general purposes.
BS 5154	Copper alloy globe, globe stop and check, check, and gate valves
BS 5160	Specification for flanged steel globe valve, globe stop and check valves, and lift-type check valves for general purposes.
BS 5352	Cast and forged steel wedge gate, globe, check, and plug valves, screwed and socket welding, sizes 50mm and smaller, for the petroleum, petrochemical, and allied industries.

Standards Pertaining to Ball Valves

MSS SP-61	Pressure testing of steel valves.
MSS SP-72	Ball valves with flanged or butt-welding ends for general service.
MSS SP-84	Steel valves, socket welding and threaded ends.
API 6D	Specifications for pipeline valves, end closures, connectors, and swivels.
API 598	Valve inspection and test.
API 607	Fire test for soft-seated ball valves (tentative).
API 608	Metal ball valves-flanged and butt-welding ends.
ASME B16.10	Face-to-face and end-to-end dimensions of ferrous valves.
ASME B16.34	Valves-flanged, threaded and welding end.
BS 2080	Face-to-face, center-to-face, end-to-end, and center-to-end dimensions of flanged and butt-welding end steel valves for the petroleum, petrochemical, and allied industries.
BS 5159	Cast iron valves for the petroleum, petrochemical, and allied industries.

Standards Pertaining to Valves

Standards Pertaining to Plug Valves

MSS SP-61	Pressure testing of steel valves.
MSS SP-78	Cast iron plug valves, flanged and threaded ends.
MSS SP-84	Steel valves-socket welding and threaded ends.
API 6A	Specification for wellhead equipment.
API 6D	Specifications for pipeline valves, end closures, connectors, and swivels.
API RP 6F	Recommended practice for fire test for valves (tentative).
API 593	Ductile iron plug valves, flanged ends.
API 599	Steel plug valves, flanged and butt-welding ends.
ASME B16.10	Face-to-face and end-to-end dimensions of ferrous valves.
ASME B16.34	Valves-flanged, threaded and welding end.
BS 2080	Face-to-face, center-to-face, end-to-end, and center-to-end dimensions of flanged and butt-welding end steel valves for the petroleum, petrochemical, and allied industries.
BS 6755	Testing of valves.
Part 1	Specification for production pressure testing requirements.
Part 2	Specification for fire type testing requirements.
BS 5158	Cast iron and cast steel plug valves for general purposes.
BS 5353	Specification for plug valves.

Standards Pertaining to Butterfly Valves

MSS SP-67	Butterfly valves.
API 598	Valve inspection and test.
API 609	Butterfly valves, lug-type and wafer-type.
ASME/AWWA	C504-80 Rubber-seated butterfly valves.
BS 5155	Butterfly valves.

Standards for the inspection and Testing of Valves

MSS SP-61	Pressure testing of steel valves.
MSS SP-82	Valve-pressure testing methods.
API 6FA	Fire test for valves.
API 6FC	Fire test for valve with selective backseats.
API 607	Fire test for soft-seated quarter-turn valves.
API 527	Commercial seat tightness of safety relief valves with metal-to-metal seats.
API 598	Valve inspection and test.
BS 3636	Methods for proving the gas tightness of vacuum or pressurized plant.
BS 6755	Testing of valves.
Part 1	Specification for production pressure testing requirements.
Part 2	Specification for fire type testing requirements.

Materials-Equivalence and Correspondance

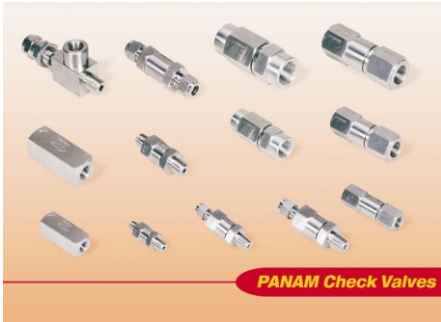
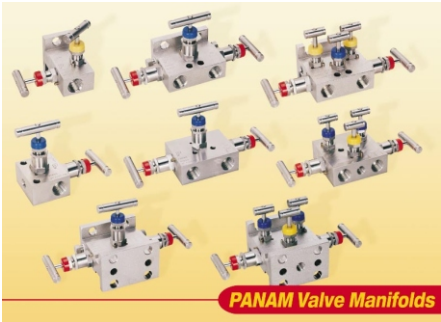
Materials-Equivalences

UNS	ASTM	BS	DIN	AFNOR	JIS	TRADE MARK
J03002	A216-WCB	161-480	GS-CK25	A480 CP-M	SCPH2	-
J12524	A217-WC1	240	GS-22Mo4	20MN5-M	SCPH11	-
J12072	A217-WC6	621	GS-17CrMo55	15CD5,05M	SCPH21	-
J21890	A217-WC9	622	GS-12GrMo910	15CD5,10M	SCPH32-CF	-
J42045	A217-C5	625	GS-12crMo19.5	Z15CD5,05M	SCPH61	-
J82090	A217-C12	629	G-X 12crMo101	-	-	-
J92500	A351-CF3	304 C12	G-X2CrNi189	Z2CN18,10M	SCS19	-
J03003	A352-LCB	161-480	GS-CK24	-	SCPL1	-
J31550	A352-LC3	503-LT60	GS-10Ni14	-	SCP31	-
J92800	A351-CF3M	316 C12	G-X2CrNiMo1810	Z2CN18,12M	SCS16	-
J92600	A351-CF8	304 C15	G-X6CrNi189	Z6CN19,10M	SCS13	-
J92710	A351-CF8C	-	-	-	-	-
J92900	A351-CF8M	315 C16	G-X2CrNiMo1810	Z6CN18,12M	SCS14	-
N08007	A351-CN7M	332 C11	G-XNiCrMOCuNb2520	Z6NCDU252004M	SCS23	-
N10001	A494-N-12MV	-	NiMo30	-	-	Hastelloy B
N10002	A494-CW-12MV	-	NiMo16GW	-	-	Hastelloy C
N04400	A494-M35-1	NA 13	NiCu30Fe	-	-	Monel 400
N06625	A494-CW-6MC	-	NiCr22Mo9Nb	-	-	Iconel 625
N008825	-	NA 16	NiCr21Mo	-	-	Incoly 825

Materials-Correspondence

CASTINGS	FORGINGS	PLATES	BARS & SHAPES	TUBULAR
A216-WCB	A105	A516-70	A105	A106-B
A217-WC1	A182-F1	A204-A	-	A335-P1
A217-WC6	A182-F11	A387-11	A739-B11	A335-P11
A217-WC9	A182-F22	A387-22	A739-B22	A335-P22
A217-C5	A182-F5	A387-5	A182-F5	A335-P5
A217-C12	A182-F9	A387-9	A182-F9	A395-P9
A217-CA12	A182-F6	A240-410	A276/ A479-410	-
A352-LCB	A350-LF2	A516-70	A696-C	A333-6
A352-LC2	-	A203-B	-	A333-7
A325-LC3	A350-LF3	A203-E	-	A333-3
A351-CF3	A182-F304L	A204-304L	A276/ A479-304L	A312-304L
A351-CF3M	A182-F316L	A240-316L	A276/ A479-316L	A312-316L
A351-CF8	A182-F304	A240-304	A276/ A479-304	A312-304
A351-CF8C	A182-F347	A204-347	A276/ A479-347	A312-347
A351-CF8M	A182-F316	A240-316	A276/ A479-316	A312-316

Other Products





PANAM ENGINEERS LTD.

An ISO 9001:2008 Company

203, Jaisingh Business Center, Parsiwada, Sahar Road, Andheri (East), Mumbai - 400 099. INDIA
Tel.: +91 22 2831 5555 / 57 / 58 • Fax: +91 22 2831 5574 • email: sales@panamengineers.com, sales@panam.in
website: www.panamengineers.com, www.panam.in