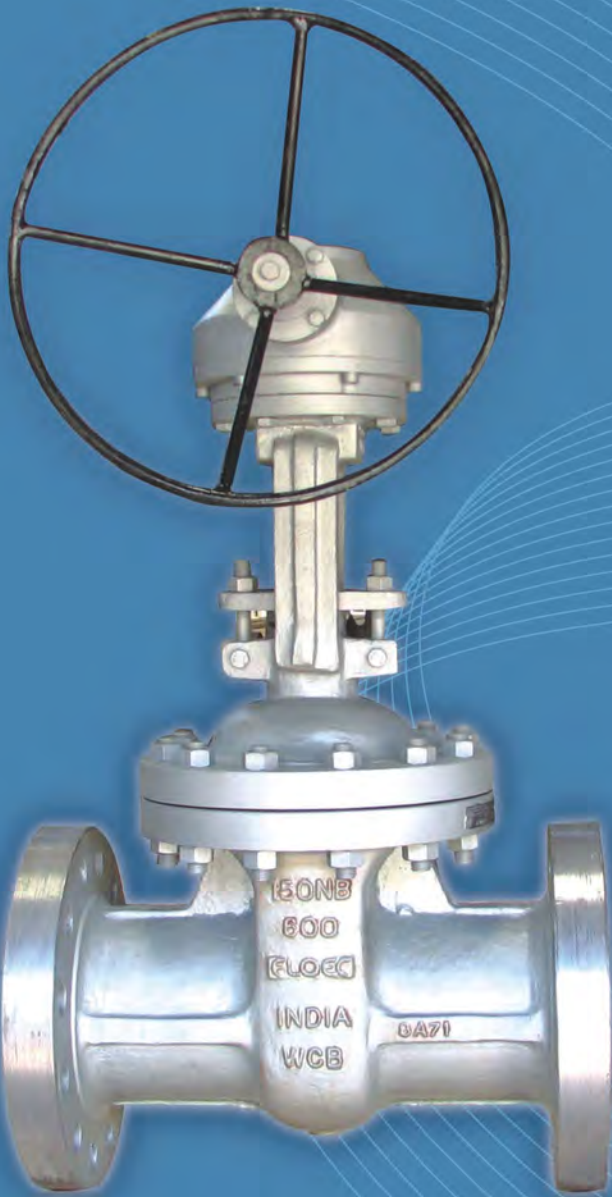


Excellence in service is our motto



CHEMICAL



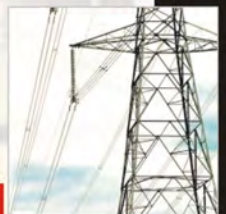
INDUSTRIAL



PETROCHEMICAL & REFINERY



POWER SECTOR



ISO 9001

BUREAU VERITAS
Certification



FLOEC[®]
ASHWATHI CONTROLS PVT. LTD.



QUALITY ASSURANCE

Each Valve is designed and manufactured to conform recognized standards of the Valve Industry such as ANSI, API, DIN, BS, MSS or IS. All Castings and Forgings are checked by means of chemical analysis and mechanical tests to guarantee that all raw-materials conform to specifications such as those of the ASTM. Radiography on castings and ultrasonic test on forgings are carried as per requirement.

Judicious designing, rigid quality control by meticulous checking of every individual part at different stages of production and pressure testing at pressure prescribed by the respective standard have made **FLOEC** Valves a product of International Standards. In fact, **FLOEC** has become a synonym for reliable and dependable Valves required for high/low pressure, high/low temperature and for highly corrosive fluids.

BUREAU VERITAS
Certification



*Certification
Awarded to*

ASHWATHI CONTROLS PVT. LTD.

FLOEC®

PLOT NO 253, ROAD NO 1, G.I.D.C INDUSTRIAL ESTATE, KATHWADA,
AHMEDABAD - 382 430, GUJARAT, INDIA.

*Bureau Veritas Certification (India) Private Limited certify that the
Management System of the above organisation has been audited and found
to be in accordance with the requirements of the standard detailed below*

STANDARD

ISO 9001:2008

SCOPE OF SUPPLY

DESIGN, MANUFACTURE AND DISPATCH OF MANUAL, ELECTRIC,
PNEUMATIC OPERATED INDUSTRIAL VALVES LIKE GATE VALVE, GLOBE VALVE,
CHECK VALVE, BALL VALVE, BUTTERFLY VALVE AND NEEDLE VALVE.

PERMITTED EXCLUSION(S)
Nil

Original Approval Date: 13 October 2005
Next Recertification Due Before: 22 August 2014

Subject to the continued satisfactory operation of the organisation's Management System,
this certificate is valid until: 12 October 2014

To check this certificate validity
please call: +91 22 6695 6300

Further clarifications regarding the scope of this certificate and the applicability of the
Management System requirements may be obtained by consulting the organisation.

Certificate Number: IND11.6735U


R. K. SHARMA
Director

Bureau Veritas Certification
using the accreditation
certificate number 008



008

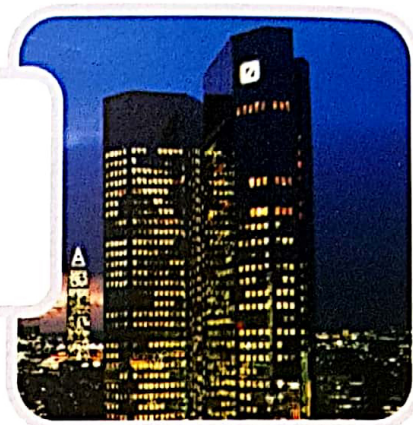
Certification / Managing Office Address: "Marwah Centre" 6th Floor, Krishanlal Marwah Marg,
Opp. Ansa Industrial Estate, Off Saki Vihar Road, Andheri (East), Mumbai - 400 072, India.

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C COMPANY PROFILE



HISTORY

"FLOEC", Ashwathi Controls Pvt. Ltd. An ISO 9001: 2015 is in Ahmedabad based Company engaged in manufacturing & exporting of industrial valves to various countries. It is Established for manufacturing of industrial valves in the year of 1971 in Ahmedabad, Gujarat, India. Considering the growing demand of various types of valves being manufactured. **Ashwathi Controls Pvt. Ltd.** had purchased new industrial plot from Gujarat Industrial Development Corporation, Kathwada Industrial Estate in Year 2004. We had constructed a factory with all modern machineries and testing facilities to manufacture of industrial valves under the brand name "FLOEC" Our motto is to focus more on the global demand of industrial valves meeting international standards of manufacturing.

BOARD OF DIRECTORS

Mr. Nitin Goraiya

Chairman And Managing Director, Giving his full time service and total in-charge of our operation. Each passing day fills me with more pride and belief that my company surpasses all when it comes to customer satisfaction. **ASHWATHI** family works day and night to develop the quality of valves promised and make all the deliveries on time.

Director : Mrs. Anita Goraiya - Marketing and Administration.

Director : Mr. Prabhakar G. Patil

27 Years of core experience in the valve's industries, Giving his full time and knowledge to the Team members. We will continue to work hard and pursue first-rate quality and service, creating an enthusiastic, open, sincere, co-operated, pioneering and win-win atmosphere.

Ashwathi Controls Group of companies

1. **AB Hydromantic Pvt. Ltd. (An ISO 9001:2015)** - Manufacturing of Hydraulic Cylinder, Hydraulic System for All applications.
2. **AB Industries (An ISO 9001:2015)** - MFG. of All types of Industrial valves (Gate, Globe, Check & Ball valves), IBR valves, Mov. valves.
3. **AB Engineers (An ISO 9001:2015)** - Manufacturing of Hoist Crane, Heavy Loading Equipment And fabrication works.
4. **Ran Engineers (An ISO 9001:2015)** - All types of electrical works.

TEST FACILITIES

- | | |
|---|---------|
| 1. Hydro-Pneumatic Test Pump Motorized 600 kg/cm ² | 1 unit |
| 2. Air Compressor for Pneumatic test 15 kg/cm ² | 1 unit |
| 3. Fire Safe Testing System | 1 unit |
| 4. Hydro-Pneumatic Test Bench | 5 heads |
| 5. Measuring Equipments and Gauges | Lot |

Brand

FLOEC is the registered Brand of Industrial Valves being manufactured by us in India with technical expertise for more than four decades.

Research and Development

Through continuous efforts in research and development we could bring out various types of High Performance Valves for high pressure, high temperature and for highly corrosive fluids

Reliability

Today, **FLOEC** Valves are giving trouble free service in leading Oil Fields, Fertilizer, Power, Drugs and Pharmaceutical, Petrochemical and Chemical Process Plants. The reliability of **FLOEC** Valves is confirmed and reassured by the very fact that they are regularly and repeatedly procured by all users. **Thus, FLOEC IS A NAME FOR TRIED OUT RELIABILITY AND INSTILLED CONFIDENCE.**

THEME

QUALITY & ECONOMY THROUGH
TECHNICAL EXPERTISE &
PERFORMANCE



PRODUCT RANGE

FORGED STEEL VALVES

	800#	1500#	2500#
1. GATE VALVE	15NB - 50NB	15NB - 40NB	15NB - 25NB
2. GLOBE VALVE	½" - 2"	½" - 1½"	½" - 1"
3. CHECK VALVE	½" - 2"	½" - 1½"	½" - 1"
4. BALL VALVE	15NB - 50NB	15NB - 40NB	-

CAST BODY VALVES

	150#	300#	600#	900#	1500#
1. GATE VALVE	40NB - 900NB	40NB - 600NB	40NB - 600NB	40NB - 600NB	40NB - 400NB
2. SWING CHECK VALVE	40NB - 900NB	40NB - 600NB	40NB - 600NB	40NB - 600NB	40NB - 400NB
3. DUAL DISC CHECK VALVE	50NB - 900NB	50NB - 900NB	50NB - 900NB	-	-
4. GLOBE VALVE	40NB - 400NB	40NB - 400NB	40NB - 300NB	40NB - 300NB	40NB - 200NB
5. BALL VALVE	40NB - 600NB	40NB - 600NB	40NB - 400NB	40NB - 400NB	40NB - 300NB
6. WAFER CHECK VALVE	40NB - 900NB	40NB - 900NB	40NB - 900NB	-	-
7. CHOKE VALVE	API 2000/3000/ 5000/10000	25NB - 100NB	-	-	-
8. KNIFE GATE VALVE	MSSP81	50NB - 900NB	-	-	-
9. BUTTERFLY VALVE	PN10/PN16	50NB - 1200NB	-	-	-
10. DIAPHRAGM VALVE	PN10/PN16	15NB - 300NB	-	-	-
11. STRAINER 'Y' TYPE	15NB - 900NB	15NB - 900NB	15NB - 900NB	15NB - 900NB	15NB - 900NB
12. NEEDLE VALVE	1/8" - 1 ½"	1/8" - 1 ½"	1/8" - 1 ½"	1/8" - 1 ½"	1/8" - 1 ½"

BODY - BONNET MATERIAL

STANDARD TRIM MATERIAL

	Wedge/Seat/Disc	Stem
1. CAST CARBON STEEL ASTM A 216 GR.WCB / WCC	13% Cr. S.S.	A 182 F6
2. CAST STEEL ASTM A352 GR LCB AND LCC	A351 CF8	A 182 F304
3. LOW ALLOY STEEL ASTM A217 Gr.WC1, WC6, WC9, C12	13% Cr. S.S.	A 182 F6
4. STAINLESS STEEL 304 ASTM A351 GR. CF8	A351 CF8	A 182 F304
5. STAINLESS STEEL 304L ASTM A351 GR CF3	S.S.304L CF3	A 182 F304L
6. STAINLESS STEEL 316 ASTM A351 GR.CF8M	S.S.316 CF8M	A 182 F316
7. STAINLESS STEEL 316L ASTM A351 GR CF3M	S.S.316L CF3M	A 182 F316L
8. ALLOY 20 ASTM A351 GR CN7M	CN7M	CN7M
9. DUPLEX SS CD4M Cu/CuN / CD3MN	DUPLEX STEEL	DUPLEX STEEL
10. SUPER DUPLEX A 890 Gr.1A,1B,1C, 2A, 3A, 4A,5A,6A	SUPER DUPLEX STEEL	SUPER DUPLEX STEEL
11. SUPER ALLOY STEEL - HASTELLOY GR B AND C	Hastelloy B/C	Hastelloy B/C
12. FORGED CARBON STEEL - ASTM A105	13% Cr. S.S.	A 182 F6
13. FORGED ALLOY STEEL - ASTM A 182 F11, F22 etc.	13% Cr. S.S.	A 182 F6
14. FORGED SS A182 F304 / 304L / F316 / 316L	F304/L/F316/L	F304/L/F316/L
15. SG/DUCTILE/C.I OF DIFFERENT GRADES	13% Cr.SS/CF8/CF8M	A 182 F6/F304/F316
16. COPPER ALLOYS OF DIFFERENT GRADES	Cu. Alloys/F304/L/F316/L	Cu. Alloys/F304/L/F316/L

TRIM MATERIAL

1. All Valves of 600# and higher ratings are provided with Stellite Trim.
2. Trim materials shown are of standard practice. Special trim material provided if demanded.
3. We continuously endeavor to improve our products quality, and as such the data provided are subject to change if found necessary.

Gate Valve

Pressure Rating **150#**

Manufacturing Std.

API 595 / 600 / 603 / 604

Testing Std.

API 598



FLOEC Gate Valves conform to API-600 and 6D provided with smooth machined full bore. Full opening of Wedge eliminates additional pressure drop across the Valve. Long screwed-in replaceable Seat Rings ensure perfect tightness for a longer period of service. In case of high temperature and high pressure Valves Seat Rings are either integral with body or seal-welded for maximum perfection and safety.

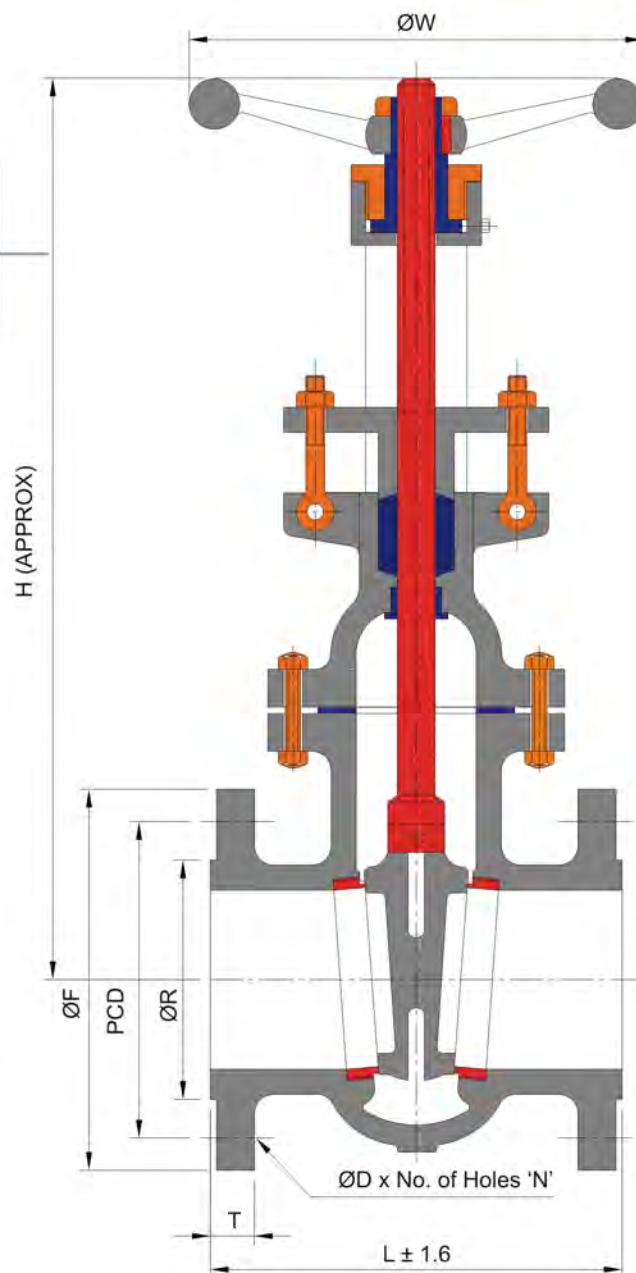
FLOEC Gate Valves are provided with properly machined and lapped backseat to facilitate replacing of Gland packing in stream while fully open. Availability of Solid Wedge, Flexible Wedge, Split Wedge and Parallel Wedge designs offer maximum option to clients for suitable selection.

Gaskets and Gland packing material are desired considering service conditions like temperature, corrosion, pressure/vacuum and other applications. **FLOEC** Gate Valves ensure smooth operation, tight shutoff, reliability, maximum safety and longer life. Available with varied operation options like Hand Wheel, Manual Gear and Electrical Actuator.

Material of Construction : Refer Material Chart in Page 2.

PRESSURE RATING -150#

SIZE NB	ALL DIMENSIONS ARE IN MM.							
	L	H	ØF	T	ØR	ØW	PCD	ØDx'N'
40	165	300	127	17.5	73	170	98	16x4
50	178	320	152	19.1	92	203	121	19x4
65	191	336	178	22.4	105	203	140	19x4
80	203	455	191	23.9	127	230	152	19x4
100	229	485	229	23.9	157	250	191	19x8
125	255	580	254	23.9	186	265	216	22x8
150	267	690	279	25.4	215	306	241	22x8
200	292	950	343	28.4	270	325	298	22x8
250	330	1050	406	30.2	324	400	362	25x12
300	356	1200	483	31.8	381	600	432	25x12
350	381	1206	534	35.0	413	610	476	28x12
400	407	1364	597	36.6	470	610	540	28x16
450	432	1444	635	39.7	533	610	578	32x16
500	457	1475	699	42.9	584	650	635	32x20
600	508	1720	813	47.7	692	650	749	35x20



Gate Valve

Pressure Rating

300#

&

600#

Manufacturing Std.

API 600

Testing Std.

API 598

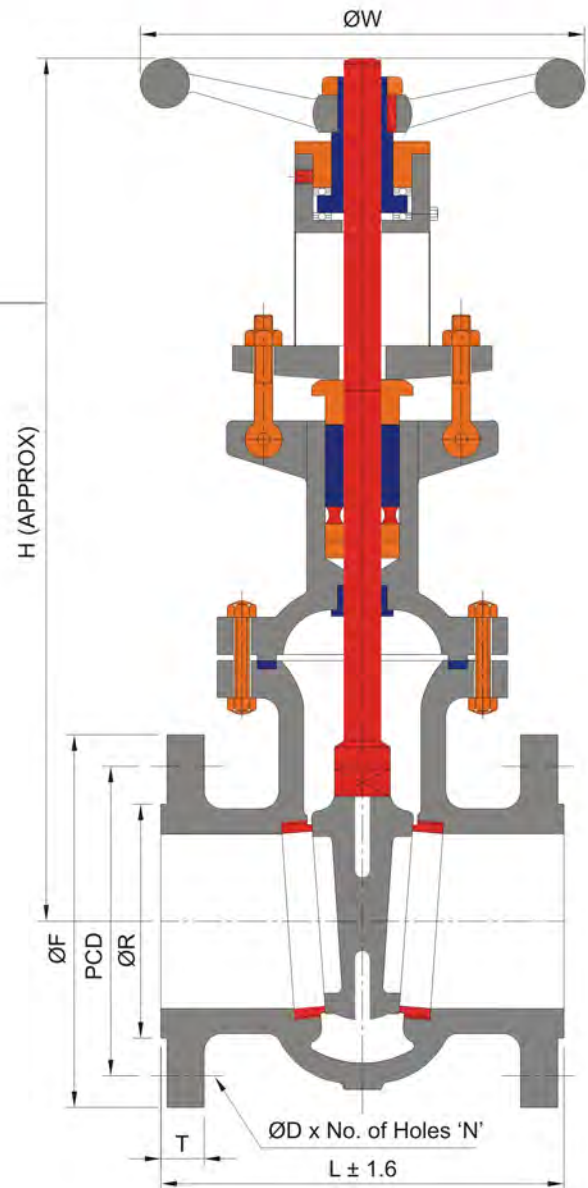


PRESSURE RATING - 300

SIZE	ALL DIMENSIONS ARE IN MM.							
NB	L	H	ØF	T	ØR	ØW	PCD	ØD x 'N'
40	191	350	156	20.7	73	200	114	22 x 4
50	216	390	165	22.3	92	200	127	19 x 8
65	241	430	190	25.4	105	225	149	22 x 8
80	283	450	210	28.6	127	300	168	22 x 8
100	305	525	254	31.8	157	350	200	22 x 8
125	381	610	280	35.0	185	400	235	22 x 8
150	403	750	318	36.6	216	500	270	22 x 12
200	419	855	381	41.3	270	600	330	22 x 12
250	457	950	445	47.7	324	600	387	29 x 16
300	502	1290	521	50.8	381	600	451	32 x 16
350	571.5	1380	584.2	54.0	412.5	600	514.35	32 x 20
400	609.6	1460	647.7	57.2	470	700	571.5	35 x 20
450	660.4	1550	711.2	60.4	533.4	700	628.65	35 x 24
500	711.2	1630	774.7	63.5	584.2	750	685.8	35 x 24
600	787.4	1820	914.4	69.9	698.5	800	812.8	41 x 24

PRESSURE RATING - 600

SIZE	ALL DIMENSIONS ARE IN MM.							
NB	L	H	ØF	T	ØR	ØW	PCD	ØD x 'N'
50	292	415	165	25.4	92	200	127	19 x 8
65	330	455	190	28.6	105	225	149	22 x 8
80	352.6	475	210	31.8	127	300	168	22 x 8
100	431.8	550	273	38.1	157	350	216	25 x 8
150	558.8	775	356	47.7	216	500	292	29 x 12
200	660.4	880	419	55.6	270	600	349	32 x 12
250	787.4	975	508	63.5	324	600	432	35 x 16
300	838.2	1315	559	66.7	381	600	489	35 x 20
350	889.0	1430	603.25	69.9	419	600	527.05	38.1 x 20
400	990.6	1510	685.8	76.2	470	700	603.25	41.27 x 20
450	1092.2	1600	743.0	82.6	533.4	700	654.05	44.45 x 20
500	1193.8	1680	812.8	88.9	584.2	750	723.9	44.45 x 24
600	1397	1870	939.8	101.6	692.15	800	838.2	50.8 x 24



Globe Valve

Pressure Rating **150#** & **300#**

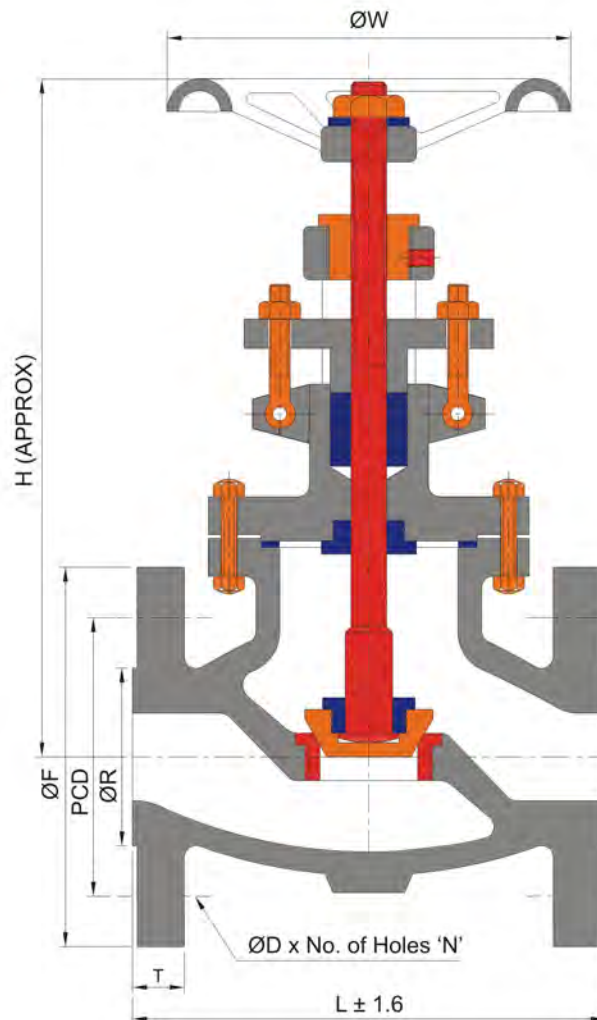
Manufacturing Std.
BS 1873

Testing Std.
BS 6755 / API 598

FLOEC Globe Valves are meticulously designed and provided with threaded replaceable Seat having full flow area ensures smooth flow and reduce pressure drop across the Valve to minimum. Weld deposited Seat and high temperature packing material are provided for superheated steam and high temperature oil and fluids to ensure trouble free service and longer life. A properly machined and lapped backseat facilitates replacement of Gland Packing when Valve is in full stream. **FLOEC** Globe Valves are available with On-Off Disc, Control Disc and Parabolic Disc designs.

Though, normal production restricts up to 400 NB, tailor-made Globe Valves in larger sizes, higher pressure ratings, special material of construction are also entertained.

Material of Construction : Refer Material Chart in Page 2.



PRESSURE RATING - 150 #

SIZE NB	ALL DIMENSIONS ARE IN MM.							ØD x 'N'
	L	H	ØF	T	ØR	ØW	PCD	
25	127	210	108	14.3	51	100	79	16 x 4
40	165	275	127	17.5	73	170	98	16 x 4
50	203	285	152	19.1	92	203	121	19 x 4
65	216	300	178	22.4	105	203	140	19 x 4
80	242	325	191	23.9	127	230	152	19 x 4
100	292	375	229	23.9	157	250	191	19 x 8
125	356	425	254	23.9	186	265	216	22 x 8
150	407	475	279	25.4	216	300	241	22 x 8
200	495	575	343	28.4	270	325	298	22 x 8
250	622	650	408	30.2	324	400	362	25 x 12
300	699	740	483	31.8	381	450	432	25 x 12
350	787	815	534	35.0	413	500	476	28 x 12
400	864	890	597	36.6	470	550	540	28 x 16

PRESSURE RATING - 300 #

SIZE NB	ALL DIMENSIONS ARE IN MM.							ØD x 'N'
	L	H	ØF	T	ØR	ØW	PCD	
25	176	220	124	17.5	51	150	89	19x4
40	241	280	156	20.7	73	200	114	22x4
50	267	300	165	22.3	92	200	127	19x8
65	292	315	191	25.4	105	250	149	22x8
80	318	345	210	28.6	127	250	168	22x8
100	356	420	254	31.8	157	300	200	22x8
125	400	475	279	35.0	186	300	235	22x8
150	445	510	318	36.6	216	400	270	22x12
200	533	595	381	41.3	270	450	330	25x12
250	622	680	445	47.7	324	450	387	29x16
300	711	770	521	50.8	381	475	451	32x16
350	838	815	584	54.0	413	550	514.5	32x20
400	864	890	647.5	57.2	470	600	571.5	35x20

Globe Valve

Pressure Rating

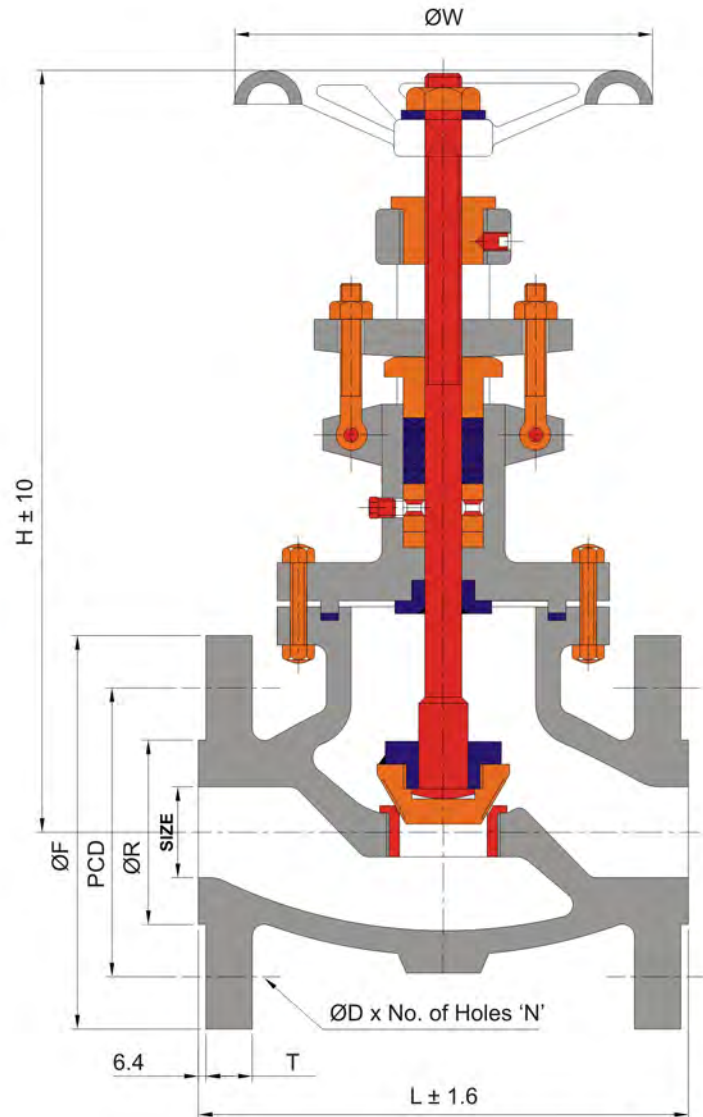
600#

Manufacturing Std.

BS 1873

Testing Std.

BS 6755 / API 598



PRESSURE RATING - 600

SIZE NB	ALL DIMENSIONS ARE IN MM.							ØD x 'N'
	L	H	ØF	T	ØR	ØW	PCD	
50	292	310	165	25.4	92	200	127	19 x 8
65	330	330	190	28.6	105	225	149	22 x 8
80	352.6	365	210	31.8	127	300	168	22 x 8
100	431.8	440	273	38.1	157	350	216	25 x 8
150	558.8	540	356	47.7	216	500	292	29 x 12
200	660.4	625	419	55.6	270	600	349	32 x 12
250	787.4	725	508	63.5	324	600	432	35 x 16
300	838.2	810	559	66.7	381	600	489	35 x 20
350	889.0	850	603.25	69.9	419	600	527.05	38.1 x 20
400	990.6	915	685.8	76.2	470	700	603.25	41.27 x 20

FLOEC[®]
ASHWATHI CONTROLS PVT. LTD.

Swing Check Valve

Pressure Rating

150#

Manufacturing Std.

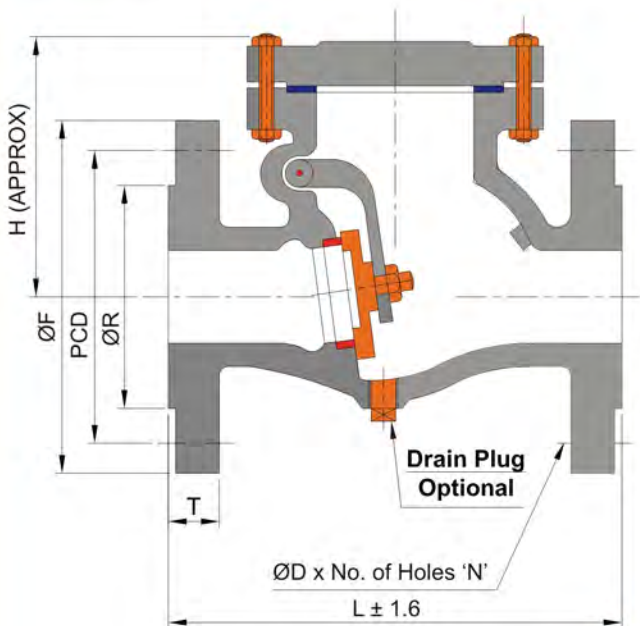
BS 1868

Testing Std.

BS 6755 / API 598

FLOEC Swing Check Valves are provided with properly guided Swing Disc through a Hinge. The Hinge and swivel Disc are connected maintaining sufficient flexibility for smooth and efficient sealing. **FLOEC** Swing Check Valves are available with Metal-to-Metal Sealing for High Temperature and Pressure; Soft Sealing for Pneumatic and Vacuum applications. Designed to ensure full flow, efficient function and minimum pressure drop across the Valve.

Material of Construction : Refer Material Chart in Page 2.



PRESSURE RATING - 150 #

SIZE NB	ALL DIMENSIONS ARE IN MM.						
	L	H	ØF	ØR	T	PCD	ØD x N
50	203	150	152	92	19.1	121	19 x 4
65	216	175	178	105	22.4	140	19 x 4
80	242	185	191	127	23.9	152	19 x 4
100	292	225	229	157	23.9	191	19 x 8
125	356	250	254	186	23.9	216	22 x 8
150	356	270	279	216	25.4	241	22 x 8
200	495	325	343	270	28.4	298	22 x 8
250	622	400	408	324	30.2	362	25 x 12
300	698	480	483	381	31.8	432	25 x 12
350	787	530	534	413	35.0	476	28 x 12
400	864	600	597	470	36.6	540	28 x 16

Swing Check Valve

Pressure Rating

300#

&

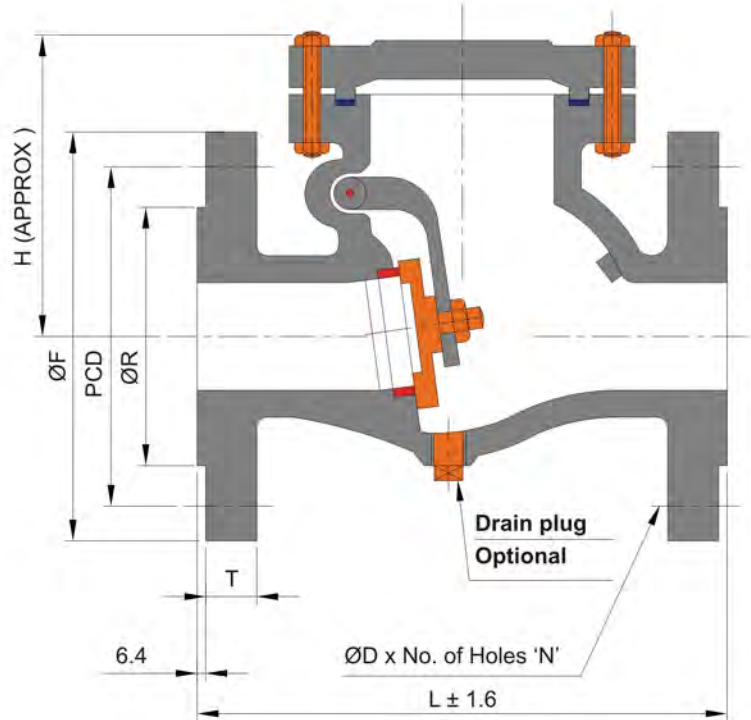
600#

Manufacturing Std.

BS-1868

Testing Std.

BS 6755 / API 598



PRESSURE RATING - 300

SIZE NB	ALL DIMENSIONS ARE IN MM.						
	L	H	ØF	ØR	T	PCD	ØD x 'N'
40	241	140	156	73	20.7	114	22 x 4
50	267	150	165	92	22.3	127	19 x 8
65	292	175	191	105	25.4	149	22 x 8
80	318	185	210	127	28.6	168	22 x 8
100	356	225	254	157	31.8	200	22 x 8
125	400	250	279	186	35.0	235	22 x 8
150	445	270	318	216	36.6	270	22 x 12
200	559	325	381	270	41.3	330	25 x 12
250	658	375	445	324	47.7	387	29 x 16
300	736	425	521	381	50.8	451	32 x 16
350	838	475	584	413	54.0	515	32 x 20
400	864	520	647.5	470	57.2	572	35 x 20

PRESSURE RATING - 600

SIZE NB	ALL DIMENSIONS ARE IN MM.						
	L	H	ØF	T	ØR	PCD	ØD x 'N'
50	292	175	165	25.4	92	127	19 x 8
65	330	200	190	28.6	105	149	22 x 8
80	352.6	230	210	31.8	127	168	22 x 8
100	431.8	280	273	38.1	157	216	25 x 8
150	558.8	350	356	47.7	216	292	29 x 12
200	660.4	405	419	55.6	270	349	32 x 12
250	787.4	440	508	63.5	324	432	35 x 16
300	838.2	495	559	66.7	381	489	35 x 20
350	889.0	540	603.25	69.9	419	527.05	38 x 20
400	990.6	595	685.8	76.2	470	603.25	42 x 20

Dual Plate Check Valve

Pressure Rating

150#

Manufacturing Std.

API 594

Testing Std.

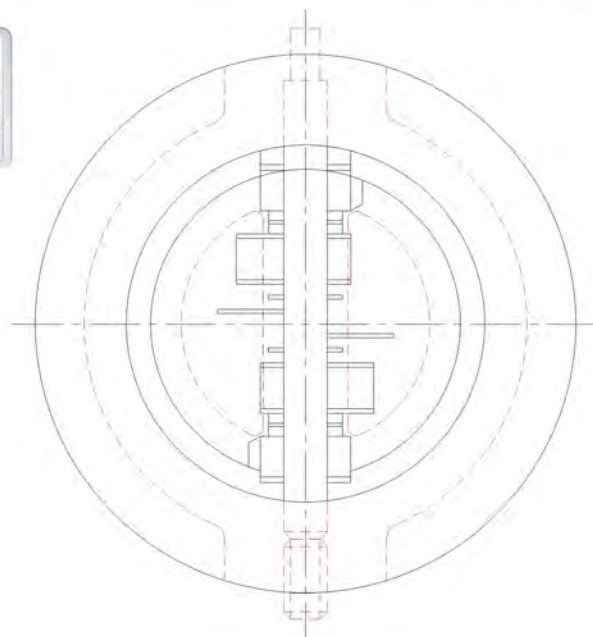
API 598



FLOEC Dual Plate Check Valves are designed and manufactured according to API 594 and available with Metal to Metal Sealing, Soft Sealing and totally lined wet area with Rubber of all varieties, PTFE/PFE.

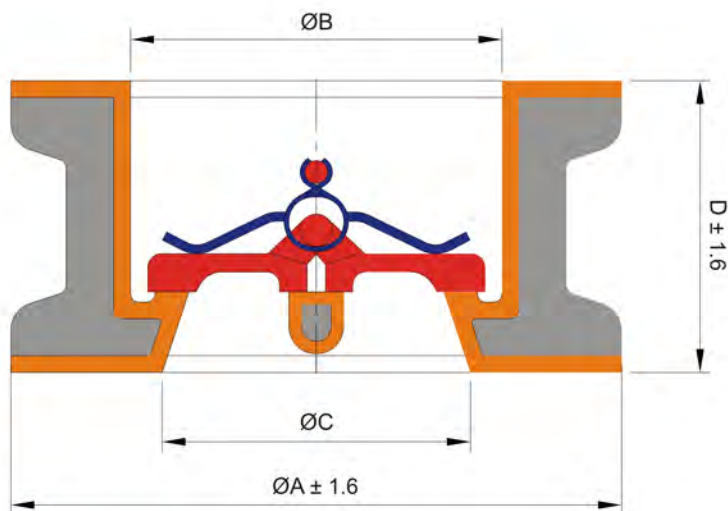
Dual Plate design ensures minimum pressure drop across the Valve. Spring loaded Disc ensures mounting of the Valve in Horizontal or Vertical direction. Available both with Flanged ends and Wafer type suitable to mount between flanges conforming to various standards.

Material of Construction : Refer Material Chart in Page 2.



PRESSURE RATING - 150 #

SIZE NB	ALL DIMENSIONS ARE IN MM.			
	ØA	ØB	ØC	D
50	105	60	50	60
65	124	75	65	67
80	134	90	80	73
100	172	115	100	73
125	197	145	125	90
150	220	165	150	98
200	276	220	200	127
250	338	265	250	146
300	407	320	300	181
350	448	370	335	184
400	514	425	390	191
450	549	475	440	203
500	603	520	485	219
600	718	625	590	222
750	883	770	735	305
900	1048	915	880	368



Rubber Lined



Dual Plate Check Valve

Pressure Rating

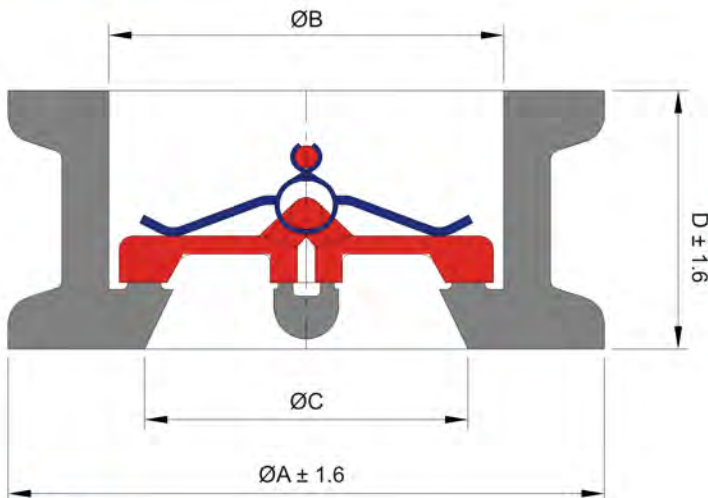
300#

Manufacturing Std.

API 594

Testing Std.

API 598



Metal Seat

PRESSURE RATING - 300 #

SIZE NB	ALL DIMENSIONS ARE IN MM.			
	ØA	ØB	ØC	D
50	111	60	50	60
65	130	75	65	67
80	149	90	80	73
100	181	115	100	73
125	216	145	125	86
150	251	165	150	98
200	308	220	200	127
250	362	265	250	146
300	422	320	300	181
350	486	370	335	222
400	540	425	390	232
450	597	475	440	264
500	654	520	485	292
600	775	625	590	318
750	953	770	735	368
900	1048	915	880	483

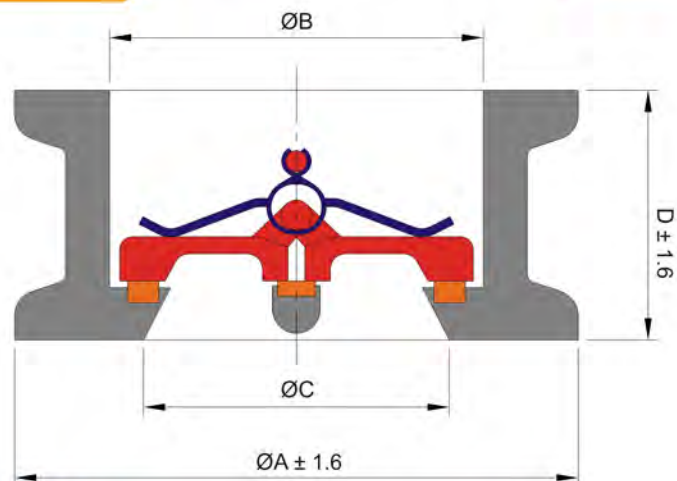
Dual Plate Check Valve

Pressure Rating

600#

PRESSURE RATING - 600 #

SIZE NB	ALL DIMENSIONS ARE IN MM.			
	ØA	ØB	ØC	D
50	111	60	50	60
65	130	75	65	67
80	149	90	80	73
100	194	115	100	79
125	241	145	125	105
150	267	165	150	137
200	321	220	200	165
250	400	265	250	213
300	457	320	300	229
350	492	370	335	273
400	565	425	390	305
450	613	475	440	362
500	683	520	485	368
600	791	625	590	438
750	972	770	735	505
900	1130	915	880	635



Soft Seat

FLOEC[®]
ASHWATHI CONTROLS PVT. LTD.

Knife Gate Valve

Pressure Rating

MSS SP - 81:10.3 bar

Manufacturing Std.

MSS SP - 81

Testing Std.

MSS SP - 81

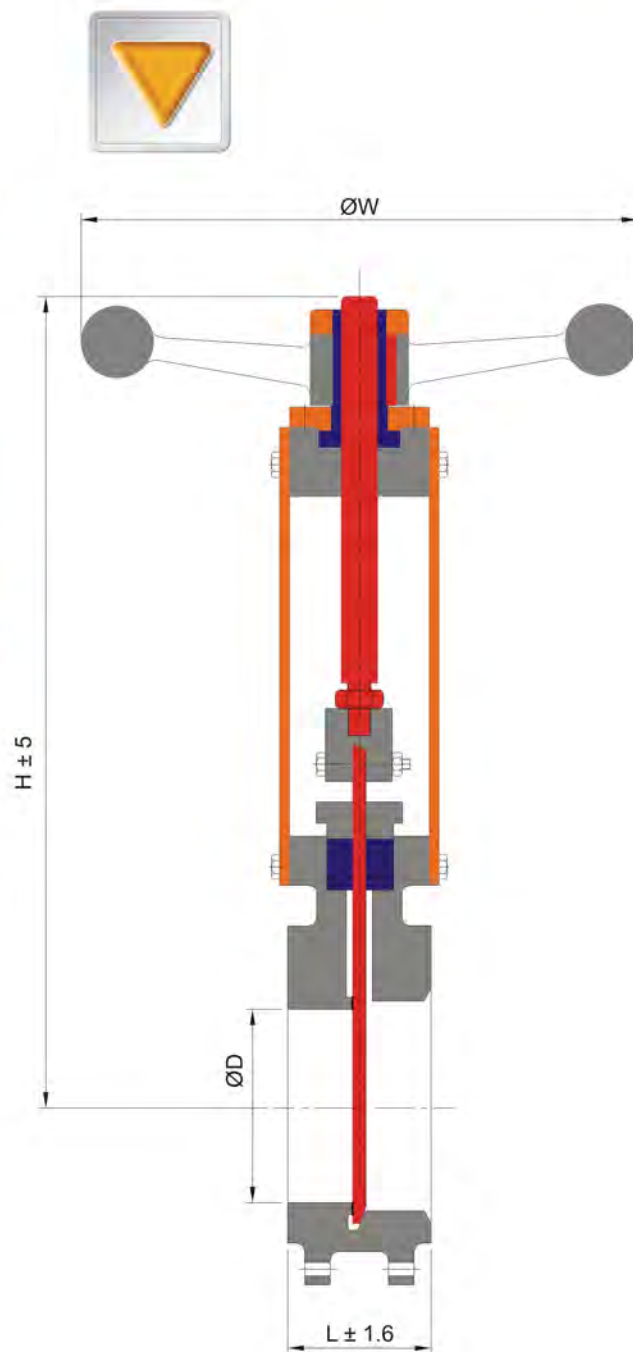
FLOEC Knife Gate Valves are designed to meet the worst working conditions in Pulp, Paper, Mining, Steel, Power and Chemical Industries to handle Semi-Solids, Dry-Ash, Chips, Fiber content Pulp and similar materials. Compact design of the Valve facilitates light weight, minimum space and maintenance friendly. Knife disc is manufactured from Stainless Steel Plates of various grades irrespective of Body material. Bottom of the disc is having Knife shaped edge which cuts through Semi-Solid or Paste type Pulp with possible fiber and Solid contents, Fly-Ash, Chemicals with solid contents and ensure smooth shutdown. Resilient Seat material is provided for tight shutoff against specific requirement.

FLOEC Knife Gate Valves are available in wide range of Material shown in the Material of Construction chart. Trim options are available to suit individual requirements for various working conditions. Varied operational options like Hand Wheel, Pneumatic Cylinder and Electrical Actuator are available.

Material of Construction : Refer Material Chart in Page 2.



Electrical Motor Actuated



Integral Seat Hand Wheel Operated

PRESSURE RATING - MSS SP-81:10.3 bar

SIZE NB	ALL DIMENSIONS ARE IN MM.				
	ØD	PCD	L	H	ØW
50	50	121	48	279	200
65	63	140	48	309	200
80	76	152	51	319	200
100	101	191	51	350	200
125	127	216	57	437	280
150	152	241	57	483	280
200	203	298	70	588	280
250	254	362	70	686	355
300	305	432	76	803	400
350	356	476	76	887	400
400	406	540	89	996	500
450	457	578	89	1096	560
500	508	635	114	1231	630
550	559	390	114	1329	630
600	610	749	114	1434	710
750	736	914	117	2040	750
800	787	920	117	2150	750
900	889	1086	117	2365	800

Knife Gate Valve

Pressure Rating

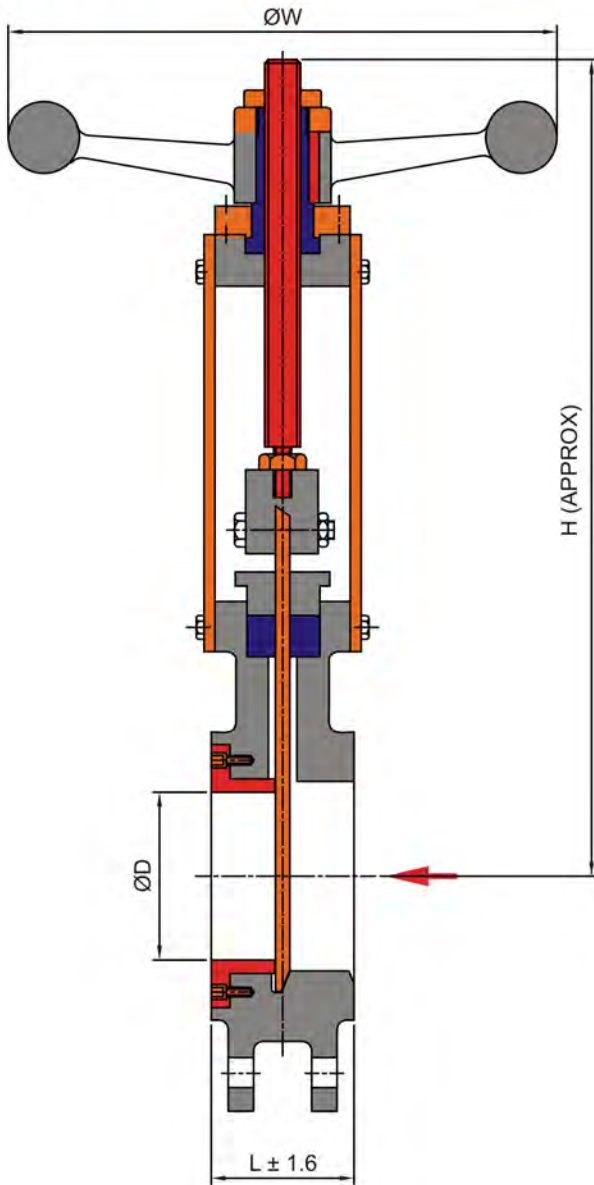
MSS SP - 81:10.3 bar

Manufacturing Std.

MSS SP - 81

Testing Std.

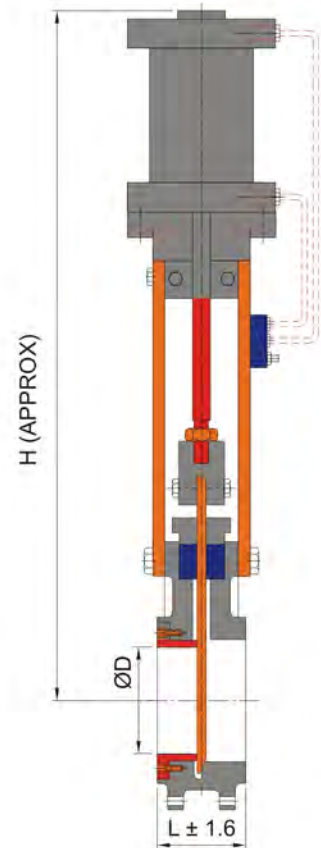
MSS SP - 81



**Replaceable Seat
Hand Wheel Operated**



Pneumatic Actuated



PRESSURE RATING - MSS SP-81:10.3 bar

SIZE NB	ALL DIMENSIONS ARE IN MM.			
	ØD	L	H	PCD
50	50	48	485	121
65	63	48	530	140
80	76	51	550	152
100	101	51	620	191
125	127	57	700	216
150	152	57	750	241
200	203	70	915	298
250	254	70	1080	362
300	304	76	1225	432
350	356	76	1375	476
400	406	89	1525	540
450	457	89	1750	578
500	508	114	1925	635
550	559	114	2150	690
600	610	114	2280	749
750	736	117	2890	914
800	787	117	3050	920
900	889	117	3365	1086

FLOEC[®]
ASHWATHI CONTROLS PVT. LTD.

Ball Valve Full Port

Pressure Rating

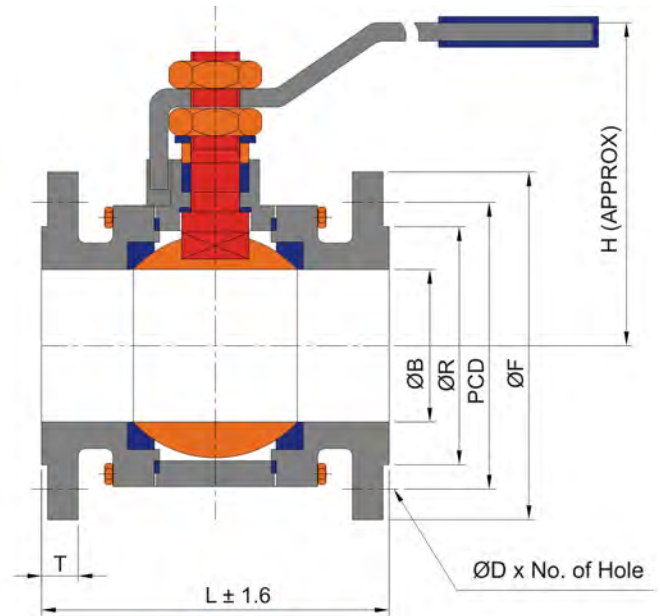
150# & 300#

Manufacturing Std.

BS-5351

Testing Std.

API 598 / BS 6755



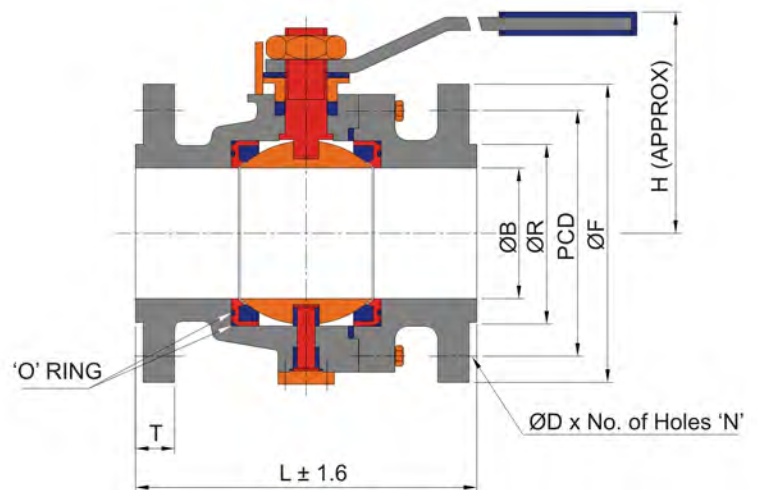
Three Piece Design

PRESSURE RATING - 150#

SIZE NB	ALL DIMENSIONS ARE IN MM.							ØD x No. of HOLES
	ØB	L	ØF	T	ØR	H	PCD	
25	25	127	108	14.3	51	125	79	16 x 4
32	32	140	117	15.9	63	130	89	16 x 4
40	38	165	127	17.5	73	135	98	16 x 4
50	50	178	152	19.1	92	152	121	19 x 4
65	63	191	178	22.4	105	178	140	19 x 4
80	76	203	191	23.9	127	191	152	19 x 4
100	100	229	229	23.9	157	229	191	19 x 8
125	125	255	254	23.9	186	254	216	22 x 8
150	150	267	279	25.4	216	279	241	22 x 8
200	200	292	343	28.4	270	343	298	22 x 8
250	250	330	406	30.2	324	420	362	25 x 12
300	300	356	483	31.8	381	485	432	25 x 12

PRESSURE RATING - 300#

SIZE NB	ALL DIMENSIONS ARE IN MM.							ØD x 'N'
	ØB	L	T	ØF	ØR	H	PCD	
25	25	176	17.5	124	51	125	89	19 x 4
40	38	191	20.7	156	73	135	114	22 x 4
50	50	216	22.3	165	92	152	127	19 x 8
65	63	241	25.4	190	105	178	149	22 x 8
80	76	283	28.6	210	127	191	168	22 x 8
100	100	305	31.8	254	157	229	200	22 x 8
125	125	381	35.0	280	185	254	235	22 x 8
150	150	403	36.6	318	216	279	270	22 x 12
200	200	419	41.3	381	270	343	330	25 x 12
250	250	457	47.7	444	324	395	387	29 x 16
300	300	501	50.8	521	381	450	451	32 x 16



**Trunnion Mounted
Two Piece Design**



Ball Valve

THREADED / SW ENDS

Pressure Rating

300#

Manufacturing Std.

BS - 5351

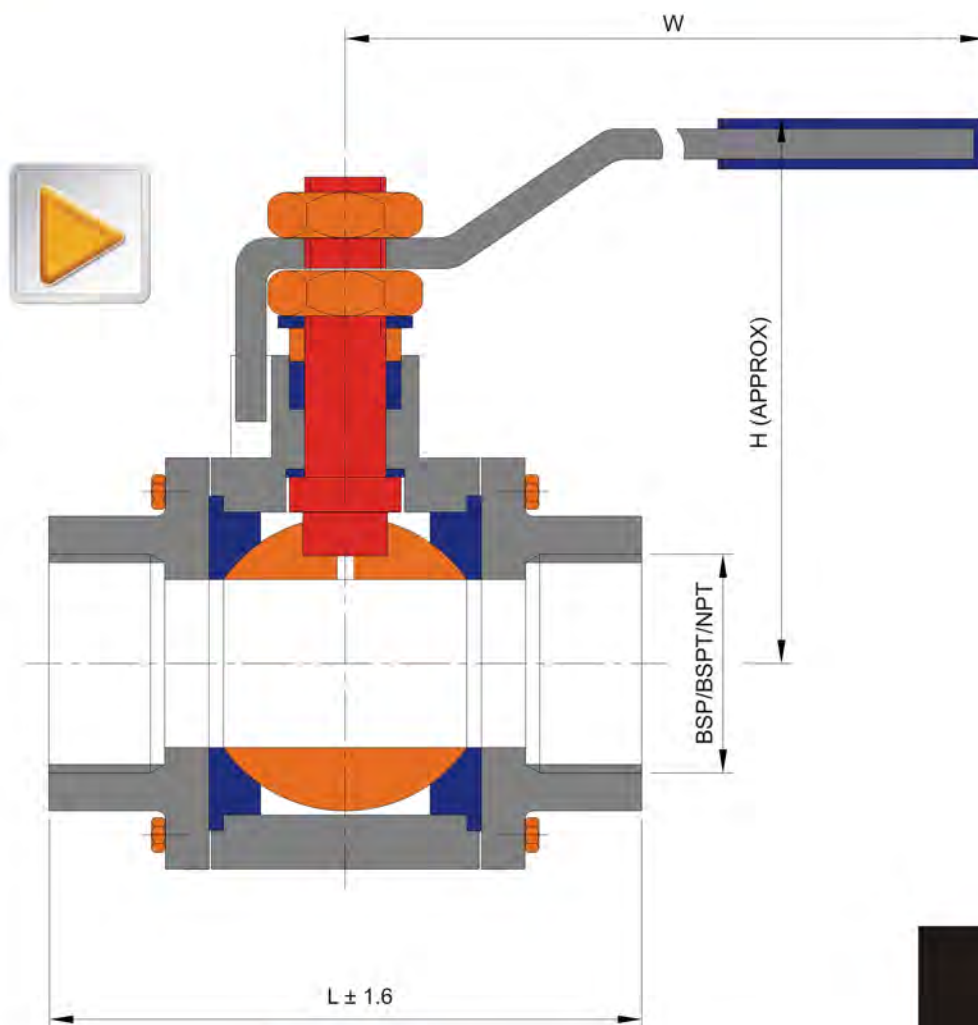
Testing Std.

API 598 / BS 6755

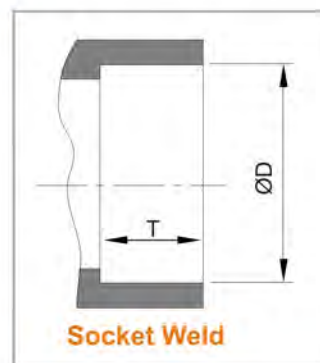
FLOEC Ball Valves are available in Three Piece, Two Piece and Single Piece Construction. Floating and Trunnion Mounted Ball Design in both two and three piece designs are in regular production. Available from 15NB through 300NB in size, 150# through 600# in pressure rating and in all materials shown in the Material of Construction chart in this catalogue. Smooth machined straight through flow area totally avoids pressure drop across the Valve. **FLOEC** Ball Valves are available with manual Lever, manual Gear and Pneumatic Actuator operation. Fire Safe design Ball Valves are manufactured against specific orders.

Material of Construction :

Refer Material Chart in Page 2.



Forged Body



PRESSURE RATING - 300#

SIZE NB	ALL DIMENSIONS ARE IN MM.				
	L	H	W	ØD	T
8	66.7	46	125	14.61	-
10	66.7	46	125	18.03	-
15	66.7	46	125	22.23	14.3
20	73	50	125	27.56	15.9
25	95	60	150	34.29	17.5
32	102	75	180	43.00	19.1
40	116	75	180	49.15	20.7
50	128	80	180	61.62	22.3

FLOEC[®]
ASHWATHI CONTROLS PVT. LTD.

Gate Valve

Pressure Rating

800#

Manufacturing Std.

API 602

Testing Std.

API 598

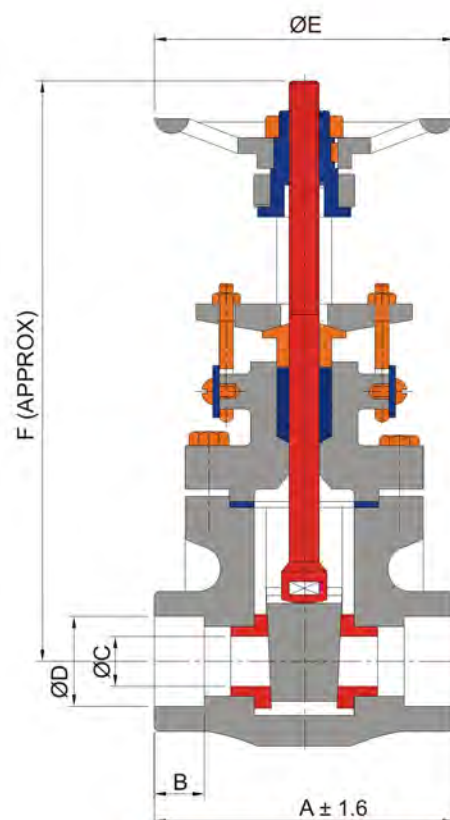
FLOEC compact design, high pressure, Forged Steel Globe Valves are designed and manufactured according to BS 5352 to meet requirements of small Pipelines up to 50NB. They are available either with Treaded or Socket Weld ends. Hard Faced Trim material ensures perfect Sealing and long life. Perfectly machined and Lapped Back Seat is provided to ensure re-packing/replacing of Gland Packing in stream, when the Valve is in full open condition, ensures maximum safety, convenience and economy.

While Gate Valves are available with Solid Wedge, Globe Valves are available with Flat Disc for on-off and Needle type Disc for fine control applications.

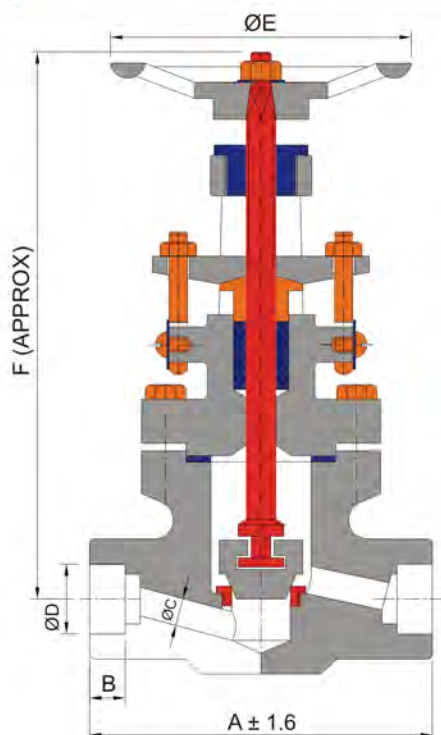
Material of Construction : Refer Material Chart in Page 2.

PRESSURE RATING - 800#

SIZE NB	ALL DIMENSIONS ARE IN MM.					
	A	B	ØC	ØD	ØE	F
8	82	9.5	9.5	14.1	75	145
10	82	9.5	9.5	17.5	75	145
15	82	9.5	9.5	21.7	75	145
20	90	12.7	12.7	27.1	90	154
25	105	12.7	18.0	33.8	90	172
32	128	12.7	23.8	43.0	115	230
40	128	12.7	26.0	49.0	115	230
50	143	16.0	36.5	61.0	125	270



Forged Steel Gate Valve



Forged Steel Globe Valve

Globe Valve

Manufacturing Std.

BS 5352

Testing Std.

BS 6755 / API 598

Pressure Rating

800#

Check Valve

Pressure Rating

800#

Manufacturing Std.

BS 5352

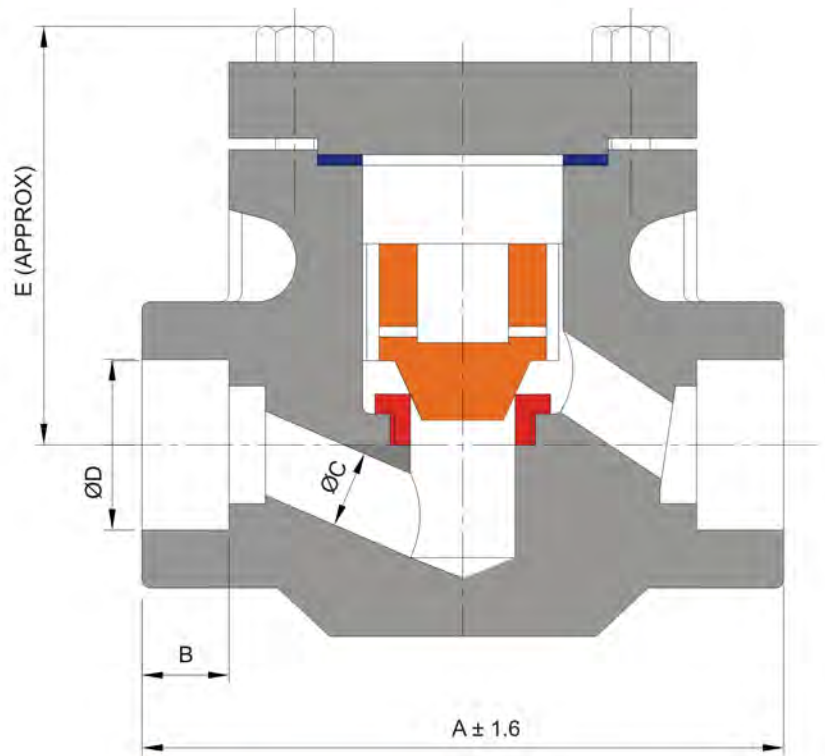
Testing Std.

BS 6755 / API 598



FLOEC compact design, high pressure, Forged Steel Check Valves are designed and manufactured according to BS 5352 to meet requirements of small Pipelines up to 50NB. They are available either with Threaded or Socket Weld ends. Hard Faced Trim material ensures perfect Sealing and long life. Properly guided Lift type Disc which acts on its own according to flow direction. These Valves are generally suitable for horizontal installation.

Material of Construction : Refer Material Chart in Page 2.



Forged Steel Check Valve

PRESSURE RATING - 800#

SIZE NB	ALL DIMENSIONS ARE IN MM.				
	A	B	ØC	ØD	E
8	82	9.5	9.5	14.1	54
10	82	9.5	9.5	17.5	54
15	87	9.5	9.5	21.7	54
20	90	12.7	12.7	27.1	63
25	105	12.7	18.0	33.8	77
32	128	12.7	23.8	43.0	98
40	128	12.7	26.0	49.0	98
50	142	16.0	36.5	61.0	105

Diaphragm Valve

[Rubber Lined]

Pressure Rating **125/150#**

Manufacturing Std.

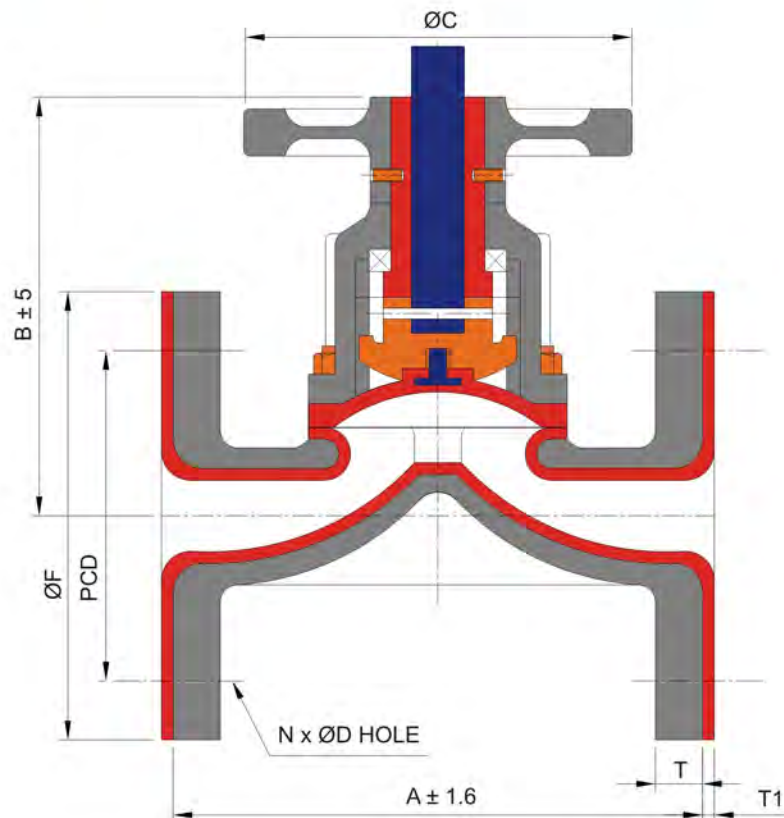
BS - 5156

Testing Std.

BS 6755 / API 598

FLOEC Diaphragm Valves are suitable for positive pressure and high vacuum applications. Due to wide range of material options it is suitable to handle almost all applications within its pressure-temperature limitations. Total wet area and working parts are isolated from the working media by suitable lining with various qualities of Rubber, PTFE/PFE etc. ensures handling of highly corrosive fluids.

Maintenance of these Valves is very simple. By dismantling the Bonnet from the Body, the entire Trim Assembly can be taken out for maintenance and the Body remains in the Pipeline. Thus the design permits online maintenance and saves time and energy. It has linear flow characteristics, which makes it well suited to throttling or modulating duties. On/off and control automation is provided with Pneumatic Cylinders.



P.NO.	PART NAME.	MATERIAL				
		CI / SG IRON	CAST STEEL	SS - 304/ 304L	SS - 316 / 316L	DUPLEX SS
1	BODY	CI / SG IRON GG 20/25/GGG 40	ASTM A-216 WCB	ASTM A-351 CF - 8 / CF-3	ASTM A-351 CF - 8M/ CF-3M	DUPLEX SS of VARIOUS Grades
2	BONNET	CI / SG IRON GG 20/25/GGG 40	ASTM A-216 WCB	ASTM A-351 CF - 8 / CF-3	ASTM A-351 CF - 8M/ CF-3M	DUPLEX SS of VARIOUS Grades
3	COMPRESSOR	CI / SG IRON GG 20/25/GGG 40	ASTM A-216 WCB	ASTM A-351 CF - 8 / CF-3	ASTM A-351 CF - 8M/ CF-3M	DUPLEX SS of VARIOUS Grades
4	STEM	ASTM A 182 F6	ASTM A 182 F6	A 182 F304/304L	A 182 F316/316L	DUPLEX SS
5	DIAPHRAGM	NEOPRENE / NITRILE / EPDM / NATURAL / PTFE LINED				
6	BOLTS & NUTS	A 193 B-7 / 194-2H	A 193 B-7 / 194-2H	A 193 B8/ 194-8	A 193 B8M / 194-8M	
7	HAND WHEEL	SG IRON / STEEL FABRICATED				
8	LINING	NEOPRENE / NITRILE / EPDM / NATURAL / PTFE / FEP				

PRESSURE RATING - 125 / 150#

SIZE NB	ALL DIMENSIONS ARE IN MM.							ØDx'N' HOLE
	A	B	ØC	T	ØF	PCD	T1	
20	117	90	70	12.7	98	70	3	16 x 4
25	127	108	100	14.3	108	79	3	16 x 4
40	159	142	114	17.5	127	98	3	16 x 4
50	190	171	150	19.1	152	121	3	19 x 4
65	215	200	150	22.4	178	140	3	19 x 4
80	253	241	200	23.9	191	152	4	19 x 4
100	305	273	250	23.9	229	191	4	19 x 8
150	406	368	350	25.4	279	241	5	22 x 8
200	520	514	482	28.4	343	298	6	22 x 8
250	635	610	610	30.2	408	362	6	25 x 12
300	750	710	710	31.8	483	432	6	25 x 12

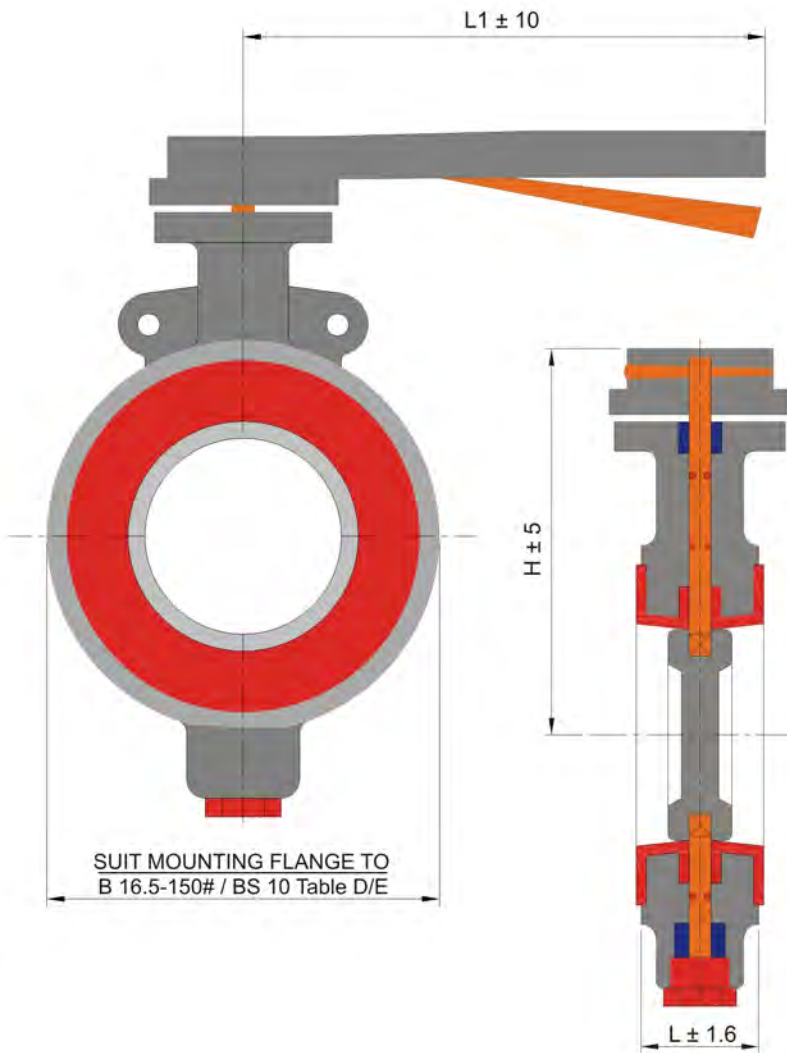
Wafer Type Butter Fly Valve

Manufacturing Std.

AWWA-C504/API-609/BS-5155

Testing Std.

BS 6755 / API 598



FLOEC Butterfly Valves, wafer type with replaceable or integrally molded elastomer body sleeve are designed for longer life and trouble free performance. While integrally molded sleeve ensures perfect resistance against friction between the disc and the sleeve, replaceable Sleeve ensures replacement of it during maintenance and reuse of the Body.

SPECIAL FEATURES:

1. Elastomer body liner is extended deep into the top and bottom of disc shaft passages with integral 'O' rings to ensure no working media contacts the body material thus ensures longer life for body.
2. Close tolerance maintained between the liner, disc and stem reduces operation torque and ensures smooth operation.
3. Pneumatic and Electrical actuated Valves are available on demand.
4. Top platform of the Valve is suitable to mount actuator or manual gearbox.
5. Flow Control Lever is provided to facilitate fine control of flow.

PRESSURE RATING - PN 10 / 16

ALL DIMENSIONS ARE IN MM.													
SIZE NB	50	65	80	100	125	150	200	250	300	350	400	450	500 600
L	43	46	46	52	56	56	60	68	78	92	102	114	127 154
H	163	180	192	210	230	250	310	345	430	315	345	380	415 475
L1	175	175	195	195	250	250	435	435	500	315	345	378	412 475

P.NO.	PART NAME.	MATERIAL
1	BODY	CI / WCB / CF8 / CF8M / CN-7M
2	SLEEVE	NITRILE / EPDM / NEOPRENE / VITON
3	DISC	CI/ SG IRON/ WCB/ CF8/ CF8M/ CN-7M
4	STEM	SS 410/ 304/ 316/ CN-7M
5	STEM SEAL	NITRILE/ EPDM / NEOPRENE/ VITON / PTFE
6	BEARING BUSH	NITRILE/ EPDM / NEOPRENE/ DELRIN
7	HANDLE	M.S. EPOXY COATED

FLOEC[®]
ASHWATHI CONTROLS PVT. LTD.

HYDRAULIC AND PNEUMATIC TEST PRESSURE FOR VALVES OF VARIOUS PRESSURE RATINGS

PRESSURE RATING	BODY	SEAT	BACK SEAT	SEAT (AIR)
150LBS.	31 Kg/cm2	22Kg/cm2	22Kg/cm2	6Kg/cm2
300 LBS.	78Kg/cm2	58Kg/cm2	58Kg/cm2	6Kg/cm2
600 LBS.	156Kg/cm2	115Kg/cm2	115Kg/cm2	6Kg/cm2
800 LBS.	211 Kg/cm2	141 Kg/cm2	141 Kg/cm2	6Kg/cm2
900 LBS.	235Kg/cm2	178 Kg/cm2	178 Kg/cm2	6Kg/cm2
1500 LBS.	392Kg/cm2	287 Kg/cm2	287 Kg/cm2	6Kg/cm2
2500 LBS.	651 Kg/cm2	478 Kg/cm2	478 Kg/cm2	6Kg/cm2
PN-40(Kg/cm2)	60Kg/cm2	40Kg/cm2	40Kg/cm2	6Kg/cm2
PN-64(Kg/cm2)	96Kg/cm2	64Kg/cm2	64Kg/cm2	6Kg/cm2
PN-100(Kg/cm2)	150Kg/cm2	100Kg/cm2	100Kg/cm2	6Kg/cm2
PN-250(Kg/cm2)	375Kg/cm2	250Kg/cm2	250Kg/cm2	6Kg/cm2

PRESSURE-TEMPERATURE RATING FOR VARIOUS ANSI STANDARD VALVES

Temperature		Maximum non Shock Service Pressure in Kg/cm2									
		Series 150		Series 300		Series 600		Series 900		Series 1500	
°C	°F	Steel	SS316	Steel	SS316	Steel	SS316	Steel	SS316	Steel	SS316
-29 to 38	-20 to 100	20.0	19.3	52.0	50.6	104	101.2	156.3	152.1	260.9	253.5
66	150	19.0	17.9	49.6	47.1	99.1	94.2	149.2	100.5	249.2	235.5
93	200	18.3	16.9	47.5	43.6	94.9	87.2	142.6	130.9	237.6	217.9
121	250	17.2	15.8	46.7	41.5	93.5	83.0	140.4	124.6	234.1	207.3
149	300	16.2	15.1	46.0	39.4	92.4	78.7	138.7	118.3	230.9	196.8
177	350	15.1	14.4	45.3	37.6	90.7	75.6	136.2	113.3	227.1	188.7
204	400	14.1	13.7	44.6	36.2	89.3	72.4	133.8	108.4	223.2	180.9
232	450	13.0	12.7	43.2	34.8	86.8	69.6	129.9	104.5	216.9	174.6
260	500	12.0	12.0	42.2	33.7	84.4	67.1	126.4	101.0	210.9	168.3
288	550	10.9	10.9	40.4	32.7	80.5	65.4	120.7	98.2	201.7	163.3
316	600	9.8	9.8	38.7	31.6	77.0	63.6	115.4	95.4	192.6	158.8
343	650	8.8	8.8	37.6	31.3	75.6	62.6	113.3	93.6	189.0	156.3
371	700	7.7	7.7	37.6	30.2	74.9	60.8	112.6	91.1	187.6	152.1
399	750	6.7	6.7	35.5	29.9	71.0	59.4	106.3	89.4	177.4	148.5
427	800	5.6	5.6	28.8	29.2	58.0	58.3	86.9	87.6	145.0	146.1
454	850	4.4	4.6	19.0	28.5	37.6	56.9	56.6	85.5	94.3	142.9
468	875	3.9	3.9	15.5	28.1	30.9	56.2	46.4	84.1	77.4	140.8
482	900	3.5	3.5	12	27.8	24.3	55.5	36.2	83	60.5	138.7
496	925	2.8	2.8	9.5	27.4	19.3	54.8	28.8	82.3	48.2	137.3
510	950	2.5	2.5	7.4	27.1	14.4	54.5	21.8	81.6	36.2	135.9
524	975	1.8	1.8	5.3	26.4	10.9	52.7	16.1	79.2	27.1	132.0
538	1000	1.4	1.4	3.5	25.7	7.4	51.0	10.9	76.7	18.3	128.1

Pressure-Temperature Rating for DIN Standard Valves

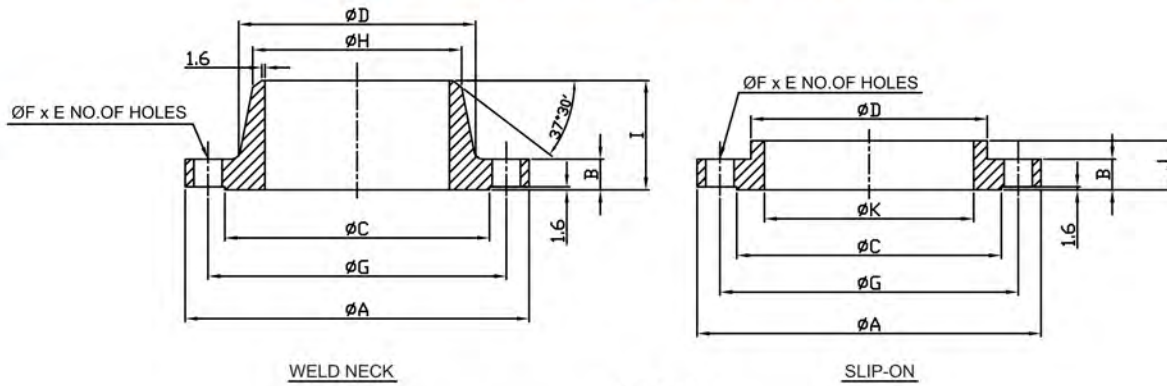
Service Temperature Maximum permissible working pressure in Kg/cm2					
	PN-16	PN-40	PN-64	PN-100	PN-250
Upto 200°C	16	40	64	100	250
Upto 300°C	13	32	50	80	200
Upto 400°C	10	25	40	64	160

CHEMICAL & PHYSICAL PROPERTIES OF RAW MATERIALS GENERALLY USED

Sr.No.	Materials Specifications	CHEMICAL PROPERTIES									
		C.Max	Si.max	Mn.max	S.Max	P.Max	Ni.	Mo.	Cr.	Cu.	Nitrogen
1	Cast Steel ASTM A216 WCB	0.30	0.60	1.00	0.045	0.040	0.5 Max	0.2 Max	0.5 Max	-	-
2	Alloy Steel A 217 WC-1	0.25	0.60	0.50-0.80	0.045	0.040	-	0.45-0.65	-	-	-
3	Alloy Steel A 217 WC-6	0.05-0.20	0.60	0.50-0.80	0.045	0.040	-	0.45-0.65	1.00-1.50	-	-
4	Alloy Steel A 217 WC-9	0.05-0.18	0.60	0.40-0.70	0.045	0.040	-	0.90-1.20	2.00-2.75	-	-
5	Alloy Steel A 217 C-12	0.20	1.00	0.35-0.65	0.045	0.040	-	0.90-1.20	8.00-10.0	-	-
6	SS 304 ASTM A 351 CF8	0.08	2.00	1.50	0.040	0.040	8.0-11.0	-	18.0-21.0	-	-
7	SS 304L ASTM A 351 CF 3	0.03	2.00	1.50	0.040	0.040	8.0-12.0	0.5 Max	17.0-21.0	-	-
8	SS 316 ASTM A351 CF8M	0.08	1.50	2.00	0.040	0.040	9.0-12.0	2.0-3.0	18.0-21.0	-	-
9	SS 316L ASTM A351 CF3M	0.03	1.50	1.50	0.040	0.040	9.0-13.0	2.0-3.0	17.0-21.0	-	-
10	Alloy-20 ASTM A351 CN7M	0.07	1.50	1.50	0.040	0.040	27.5-30.5	2.0-3.0	19.0-22.0	-	-
11	Duplex S.S. CD4MCu.	0.04	1.00	1.00	0.040	0.040	4.75-6.00	1.75-2.25	24.5-26.5	2.75-3.25	-
12	Duplex S.S. CD4MCuN	0.04	1.00	1.00	0.040	0.040	4.7-6.0	1.70-2.3	24.5-26.5	2.7-3.3	0.10-0.25
13	Duplex S.S. CDSMCuN	0.03	1.10	1.20	0.030	0.030	5.6-6.7	2.9-3.8	24.0-26.7	1.4-1.9	0.22-0.33
14	Duplex S.S. CD3MN	0.03	1.00	1.50	0.020	0.040	4.50-6.50	2.50-3.50	21.00	1.00max.	0.10-0.30
15	Cast Steel ASTM A352 LCB	0.30	0.60	1.00	0.045	0.040	0.50 max.	0.50 max.	0.50 max.	-	-
16	Cast Steel ASTM A352 LCC	0.25	0.60	1.20	0.045	0.040	0.50 max.	0.20 max.	0.50 max.	-	-

Materials Specifications		Physical properties					
		Tensile Strength in Mpa	Yield Stress in Mpa	Elongation in [%] Min	Reduction of Area in [%] Min	Impact Value in [J] Min.	Testing Temp. Deg.C
1	Cast Steel ASTM A216 WCB	485-655	250min.	22	35	--	Ambient
2	Alloy Steel A217 WC-1	450-620	240min	24	35	--	Ambient
3	Alloy Steel A217 WC-6	485-655	275min	20	35	--	Ambient
4	Alloy Steel A217 WC-9	485-655	275min	20	35	--	Ambient
5	Alloy Steel A217C-12	620-795	415min	18	35	--	Ambient
6	SS 304 ASTM A 351 CF8	485min.	205min.	35	--	--	Ambient
7	SS 304L ASTM A 351 CF 3	485min.	205min.	35	--	--	Ambient
8	SS316ASTMA351 CF8M	485min.	205min.	30	--	--	Ambient
9	SS316LASTMA351 CF3M	485min.	205min.	30	--	--	Ambient
10	Alloy-20 ASTM A351 CN7M	425min.	170min.	35	--	--	Ambient
11	Duplex S.S. CD4MCu.	690min.	485min.	16	--	--	Ambient
12	Duplex S.S. CD4MCuN	690min.	485min.	16	--	--	Ambient
13	Duplex S.S. CDSMCuN	690min.	450min.	25	--	--	Ambient
14	Duplex S.S. CD3MN	620min.	415min.	25	--	--	Ambient
15	Cast Steel ASTM A352 LCB	450-620	240min.	24	35	18	-46
16	Cast Steel ASTM A352 LCC	485-655	275min.	22	35	20	-46

Forged Steel Flanges to ANSI B16.5



150#

SIZE	COMMON SIZES							WELD NECK		SLIP-ON	
NB	ϕA	B	ϕC	ϕD	E	ϕF	ϕG	ϕH	I	J	ϕK
15	89	11.2	34.9	30	4	16	60.3	21.3	47.6	16	22.4
20	98.5	12.7	42.9	38	4	16	69.9	26.7	52.4	16	27.7
25	108	14.3	50.8	49	4	16	79.4	33.4	55.6	17.5	34.5
32	117.5	15.9	63.5	59	4	16	88.9	42.2	57.2	20.5	43.2
40	127	17.5	73	65	4	16	98.4	48.3	61.9	22	49.5
50	152.5	19.1	92.1	78	4	19	120.6	60.3	63.5	25.5	62
65	178	22.4	104.8	90.5	4	19	139.7	73	70	28.5	74.7
80	190.5	23.9	127	108	4	19	152.4	88.9	70	30	90.7
100	228.5	23.9	157.2	135	8	19	190.5	114.3	76.2	33.5	116.1
125	254	23.9	185.7	163.5	8	23	215.9	141.3	88.9	36.5	143.8
150	279.5	25.4	215.9	192	8	23	241.3	168.3	88.9	39.5	170.7
200	343	28.4	269.9	246	8	23	298.5	219.1	102	44.5	221.5
250	406.5	30.2	323.9	305	12	25	362	273	102	49	276.4
300	482.5	31.8	381	365	12	25	431.8	323.9	114.3	55.5	327.2
350	533.5	35.0	412.8	400	12	29	476.3	355.6	127	57	359.2
400	597	36.6	469.9	457	16	29	539.8	406.4	127	63.5	410.5
450	635	39.7	533.4	505	16	32	577.9	457.2	139.7	68.5	461.8
500	698.5	42.9	584.2	559	20	32	635	508	144.5	73	513.1
600	813	47.7	692.2	663.5	20	35	749.3	609.6	152.4	82.5	616

300#

SIZE	COMMON SIZES							WELD NECK		SLIP-ON	
NB	ϕA	B	ϕC	ϕD	E	ϕF	ϕG	ϕH	I	J	ϕK
15	95	14.3	34.9	38	4	16	67	21.3	52.5	22	22.4
20	117.5	15.9	42.9	48	4	19	83	26.7	57	25.5	27.7
25	124	17.5	50.8	54	4	19	89	33.4	62	27	34.5
32	133.5	19.1	63.5	63	4	19	98.5	42.2	65	27	43.5
40	156	20.7	73	70	4	22.2	114.5	48.3	68.5	30	49.5
50	165	22.3	92.1	84	8	19	127	60.3	70	33.5	62
65	190.5	25.4	104.8	100	8	22.2	149	73	76	38	74.7
80	209.5	28.6	127	117	8	22.2	168.5	88.9	79.5	43	90.7
100	254	31.8	157.2	146	8	22.2	200	114.3	85.5	47.5	116.1
125	279	35.0	185.7	178	8	22.2	235	141.3	98.5	50.5	143.8
150	317.5	36.6	215.9	206	12	22.2	270	168.3	98.5	52.5	170.7
200	381	41.3	269.9	260	12	25.4	330	219.1	111	62	221.5
250	444.5	47.7	323.9	321	16	29	387.5	273	117.5	66.5	276.4
300	520.5	50.8	381	375	16	32	451	323.9	130	73	327.2
350	584	54.0	412.8	425	20	32	514.5	355.6	143	76	359.2
400	647.5	57.2	469.9	483	20	35	571.5	406.4	146	82.5	410.5
450	711	60.4	533.4	533	24	35	628.5	457.2	158.5	89	461.8
500	774.5	63.5	584.2	587	24	35	686	508	162	95	513.1
600	914.5	69.9	692.2	702	24	42	813	609.6	168.5	106.5	616

NOTE : 1.6 mm Raised face thickness included in B & I in case of 150# & 300# flanges

Forged Steel Flanges to ANSI B16.5

600#

SIZE	COMMON SIZES							WELD NECK		SLIP-ON	
NB	ØA	B	ØC	ØD	E	ØF	ØG	ØH	I	J	ØK
15	95	14.3	34.9	38	4	16	67	21.3	52.4	22.2	22.4
20	117.5	15.9	42.9	48	4	19	83	26.7	57.2	25.4	27.7
25	124	17.5	50.8	54	4	19	89	33.4	61.9	27	34.5
32	133.5	20.7	63.5	63	4	19	98.5	42.2	66.7	28.6	40.2
40	156	22.3	73	70	4	23	114.5	48.3	69.9	31.8	49.5
50	165	25.4	92.1	84	8	19	127	60.3	73	36.5	62
65	190.5	28.6	104.8	100	8	23	149	73	79.4	41.3	74.7
80	209.5	31.8	127	117	8	23	168.5	88.9	82.5	46	90.7
100	273	38.1	157.2	152	8	25	216	114.3	101.6	54	116.1
125	330	44.5	185.7	189	8	29	267	141.3	114.3	60.3	143.8
150	355.5	47.7	215.9	222	12	29	292	168.3	117.5	66.7	170.7
200	419	55.6	269.9	273	12	32	349	219.1	133.4	76.2	221.5
250	508	63.5	323.9	343	16	35	432	273	152.4	85.7	276.4
300	559	66.7	381	400	20	35	489	323.9	155.6	92.1	327.2
350	603	69.9	412.8	432	20	38	527	355.6	165.1	93.7	359.2
400	686	76.2	469.9	495	20	42	603.5	406.4	177.8	106.4	410.5
450	743	82.6	533.4	546	20	45	654	457.2	184.2	117.5	461.8
500	813	88.9	584.2	610	24	45	724	508	190.5	127	513.1
600	940	101.6	692.2	718	24	51	838	609.6	203.2	139.7	616

900#

SIZE	COMMON SIZES							WELD NECK		SLIP-ON	
NB	ØA	B	ØC	ØD	E	ØF	ØG	ØH	I	J	ØK
15 to 65	USE CLASS 1500										
80	241.3	38.1	127	127	8	25.4	190.5	88.9	101.6	53.85	90.7
100	292.1	44.45	157.2	158.75	8	31.75	234.95	114.3	114.3	70.10	116.1
125	349.25	50.8	185.7	190.5	8	35.05	279.4	141.3	127	79.25	143.8
150	381	55.63	215.9	234.95	12	31.75	317.5	168.3	139.7	85.85	170.7
200	469.9	63.5	269.9	298.45	12	38.1	393.7	219.1	162.05	101.6	221.5
250	546.1	69.85	323.9	355.6	16	38.1	469.9	273	184.15	108.20	276.4
300	609.6	79.25	381	406.4	20	38.1	533.4	323.9	198.12	117.35	327.2
350	641.35	85.85	412.8	450.85	20	41.15	558.8	355.6	212.85	130.05	359.2
400	704.85	88.9	469.9	508	20	44.45	615.95	406.4	218.44	144.78	410.5
450	787.4	101.6	533.4	565.15	20	50.8	685.8	457.2	228.6	152.4	461.8
500	857.25	107.95	584.2	622.3	20	53.85	749.3	508	247.65	158.75	513.1
600	1041.4	139.7	692.2	749.3	20	66.55	901.7	609.6	292.1	203.2	616

1500#

SIZE	COMMON SIZES							WELD NECK		SLIP-ON	
NB	ØA	B	ØC	ØD	E	ØF	ØG	ØH	I	J	ØK
15	121	22.35	34.9	38	4	22.2	82.5	21.3	60.3	31.8	22.4
20	130	25.4	42.9	44.5	4	22.2	89	26.7	69.9	34.9	27.7
25	149	28.45	50.8	25.5	4	25.4	101.5	33.4	73	41.3	34.5
32	159	28.45	63.5	63.5	4	25.4	111	42.2	73	41.3	43.2
40	178	31.75	73	70	4	29	124	48.3	82.5	44.5	49.5
50	216	38.1	92.1	105	8	25.4	165	60.3	101.6	57.2	62
65	244.5	41.15	104.8	124	8	29	190.5	73	104.8	63.5	74.7
80	266.5	47.75	127	133.5	8	32	203	88.9	117.5	73	90.7
100	311	53.85	157.2	162	8	35	241.5	114.3	123.8	90.5	116.1
125	374.5	73.15	185.7	197	8	42	292	141.3	155.6	104.8	143.8
150	394	82.55	215.9	229	12	38	317.5	168.3	171.5	119.1	170.7

NOTE : 6.4 mm Raised face thickness not included in B & I in case of 600# , 900# & 1500# flanges

STEEL TUBE WEIGHTS AND SIZES

NB	Outside Diameter mm	Wall Thickness mm	Weight Kg/m	Pipe Schedule
1/8"	10.3	1.24	0.28	10S
		1.73	0.36	40 (S)
		2.41	0.46	80 (S)
1/4"	13.7	1.65	0.49	10S
		2.24	0.63	40 (S)
		3.02	0.80	80 (S)
3/8"	17.1	1.65	0.63	10 S
		2.31	0.85	40 (S)
		3.20	1.10	80 (S)
1/2"	21.3	2.77	1.26	40 (S)
		3.73	1.62	80 (S)
		4.78	1.95	160
3/4"	26.7	2.87	1.68	40 (S)
		3.91	2.19	80 (S)
		5.56	2.89	160
1"	33.4	3.38	2.50	40 (S)
		4.55	3.23	80 (S)
		6.35	4.23	160
1.1/4"	42.2	3.56	3.38	40 (S)
		4.85	4.46	80 (S)
		6.35	5.60	160
1.1/2"	48.3	3.68	4.05	40 (S)
		5.08	5.40	80 (S)
		7.14	7.23	160
2"	60.3	3.91	5.43	40 (S)
		5.54	7.47	80 (S)
		8.74	11.10	160
2.1/2"	73.0	5.16	8.62	40 (S)
		7.01	11.40	80 (S)
		9.52	14.90	160
3"	88.9	5.49	11.30	40 (S)
		7.62	15.30	80(8)
		11.10	21.30	160
4"	114.3	6.02	16.10	40 (S)
		8.56	22.30	80 (S)
		11.10	28.20	120
		13.50	33.50	160
5"	141.3	6.55	21.80	40 S
		9.52	30.90	80S
		12.70	40.20	120
		15.90	49.00	160
6"	168.3	7.11	28.20	40 (S)
		11.00	42.50	80 (S)
		14.30	54.20	120
		18.30	67.50	160
8"	219.1	8.18	42.50	40 (S)
		12.70	64.60	80 (S)
		18.30	90.30	120
		20.60	101.00	140
		23.00	111.00	160

NB	Outside Diameter mm	Wall Thickness mm	Weight Kg/m	Pipe Schedule
10"	273.0	9.27	60.20	40 (S)
		15.10	95.80	80
		21.40	133.00	120
		25.40	155.00	140
		28.60	172.00	160
12"	323.9	9.52	73.80	40 S
		12.70	97.40	80S
		25.40	187.00	120
		28.60	208.00	140
		33.30	239.00	160
14"	355.6	7.92	68.00	20
		11.10	94.30	40
		12.70	107.00	80S
		27.80	224.00	120
		31.80	253.00	140
		35.70	281.00	160
16"	406.40	7.92	77.90	20
		9.52	93.10	30/40 S
		21.40	203.00	80
		31.00	286.00	120
		36.50	333.00	140
		40.50	365.00	160
18"	457.20	7.92	87.80	20
		9.52	105.00	40 S
		12.70	139.00	80S
		34.90	363.00	120
		39.70	408.00	140
		45.20	459.00	160
20"	508.00	9.52	117.00	20/40 S
		15.10	183.00	40
		26.20	311.00	80
		38.10	441.00	120
		44.50	508.00	140
		50.00	564.00	160
22"	558.80	9.52	129.00	20/40 S
		15.90	212.00	40
		28.60	373.00	80
		41.30	526.00	120
		47.60	600.00	140]
		54.00	671.00	160
24"	609.60	9.52	141.00	20/40 S
		12.70	187.00	80S
		46.00	639.00	120
		52.40	719.00	140
		59.50	807.00	160

CONVERSION FACTORS

LENGTH & AREA

1 Statute mile	= 1760 yards = 5280 feet = 1.609 kilometres	1 nautical mile per hour	= 1 knot
1 Yard	= 3 feet = 0.914 metre	1 metre.	= 100 centimetres = 1000 millimetres = 1.094 yards = 3.281 feet = 39.37 inches
1 foot	= 12 inches = 30.48 centimetres	1 millimetre	= 1000 microns
1 inch	= 25.4 millimetres	1 metre per sec.	= 196.9 feet per min.
100ft. Permin.	= 0.508 metre per sec.	1 sq. kilometre	= 100 hectares = 0.3861 sq. mile
1 square mile	= 640 acres = 259.0 hectares	1 hectare	= 10000sq. metres = 2.471 acres
1 acre	= 4840 sq. yards = 0.405 hectare	1 sq.metre	= 10000 sq. centimetres = 1.196sq. yards = 10.76sq. feet = 100sq. feet
1 sq. yard	= 9 sq. feet = 0.836 sq. metre	1 sq. centimetre	= 100 sq. millimetres = 0.1550 sq. inch
1 sq. foot	= 144 sq. inches = 0.0929 sq. metre		
1 sq. inch	= 6.45 sq. centimetres		
1 nautical mile	= 6080 feet = 1.853 kilometres		

VOLUME

1 cubic yard	= 27 cubic feet = 0.765 cubic metre	1 cu. ft. per min	= 1.699 cu. m/hr
1 cubic foot	= 1728 cubic inches = 28.32 litres	1 cubic metre	= 1000 litres = 1.308 cubic yards = 35.31 cubic feet
1 cubic inch	= 16.39 cu.cm	1 litre	= 1000 cu. cm. = 0.2200 Imp. gallon = 0.2642 USA gallon = 61.0 cubic inches
1 imp. gallon	= 277.4 cubic inches = 4.55 litres	1 cu. m/hr	= 0.589 cu. ft./min.
1 USA gallon	= 0.833 imp. gallon = 3.785 litres = 231.Ocu. inches		
1 USA barel (Petroleum)	= 42 U.S. A gallons = 35 Imp. gallons		

WEIGHT

1 ton Avoirdupois (US Long ton)	= 20 hundredweights = 2240 pounds	1 pound per foot	= 1.488 kg/m
1 short ton	= 2000 pounds = 907 kilogrammes	1 metric tonne	= 1000 kilogrammes = 0.984 ton = 1.02 short tons = 2205 pounds
1 hundredweight	= 4 quarters = 112 pounds	1 kilogramme	= 1000 grammes = 2.205 pounds
1 pound	= 16 ounces = 7000 grains = 0.454 kilogramme	1 gramme	= 1000 milligramme = 0.03527 ounce = 15.43 grains
1 ounce	= 28.35 grammes	1 milligramme	= 1000 microgrammes
1 grain	= 64.8 milligrammes	1 kg/m	= 0.672 lb./ft.

PRESSURE

1 Atmosphere physical)	= 760 mm. (29.92in.) of mercury with density of 13.60 g/cu.cm = 14.70 lb/sq.in = 1.033 kg/sq.cm = 1013 millibars	1 lb/sq.in.	= 2.307 ft. head of water = 0.0703 kg/sq.cm = 0.0690 hectopieze
1 Atmosphere (metric)	= 1 kg/sq. cm = 736 mm. of mercury = 10 metres head of water = 14.22 lb/sq.in.	1 ton/sq.in	= 1.575 kg/sq. mm
1 Bar hectopieze	= 1000 millibars = 10000 000 dynes/sq.cm. = 750 mm of mercury = 1.020 kg/sq. cm = 14.50 lb/sq.in.	1 in water gauge	= 5.20 lb/sq.ft.
1 lb/sq.ft.	= 0.1922 in water gauge = 4.88 kg/sq. m.	1 ft. head of water	= 0.434 lb/sq.in
		1 m. head of water	= 0.1000 kg/sq. cm
		1 in mercury	= 0.491 lb./sq.in
		1 m. mercury	= 1.360 kg/sq. cm = 1.333 millibars
		1 kg./sq.m.	= 1 mm water gauge = 0.2048 lb/sq.ft
		1 kg.sq.cm.	= 736 mm mercury = 0.981 hectopieze = 14.22 lb/sq.in
		1 kg/sq. mm.	= 0.635 tons/sq.in
		1 millibar	= 0.3997 in water gauge

(In these conversions water is measured at 39.2 degree (4 degree C) and mercury at 32 degree F)

Information provided in this catalogue are best of our knowledge. We do not confirm these are reproduction of any standards.



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