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**STEAM TRAPS  
BALL VALVES**

**UNISON  
VALVES PVT. LTD.**

**'UNISON' Ball Valves**

for application in

**Water, Oil, Gas, Air,  
Vacuum & Chemical  
Services.**

- Blow Out Proof Stem
- Mirror Finish Floating Ball
- Compact Design
- Low torque, Less Wear
- Quarter Turn Shut Off
- Wide Variety Of End Connections
- No Lubrication Required
- Lever Position Indicates Port Direction
- Each Valve Individually Tested
- Guaranteed Performance

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STEAM TRAPS  
BALL VALVES  
INDUSTRIAL VALVES

**UNISON  
VALVES PVT. LTD.**

41 / 3 / 2, VADGAONSHERI, PUNE 411 014. (INDIA)  
Tele / Fax : 020-27030741 / 27032877 / 27034861  
E-mail : unisonvalves@gmail.com, unison2877@gmail.com  
Website : www.unisonvalves.net

## **QUALITY POLICY**

The Policy of **Unison Valves Pvt. Ltd.** is to achieve optimum customer satisfaction by integrating quality systems and continuously developing valves and related products to cater to enhanced markets with a commitment to conform to applicable requirements as per standards.



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# C E R T I F I C A T E

Management system as per  
**ISO 9001 : 2015**

In accordance with TÖV INDIA procedures, it is hereby certified that

**UNISON VALVES PVT. LTD.**  
41/3/2, Vadgaonsheri, Off Pune-Nagar Road,  
Pune - 411 014, Maharashtra,  
India



applies a management system in line with the above standard for the following scope

## Manufacture and Supply of Ball Valves

Certificate Registration No. QM 03 02661  
Audit Report No. Q 10143/2020

Valid until 08.03.2023

S.Kulkarni

Certification Body  
at TÖV INDIA PVT. LTD.

Issue 09.03.2020  
Place : Mumbai

This certification was conducted in accordance with the TÖV INDIA auditing and certification procedures & shall be valid  
subject to regular Surveillance Audits.

TÜV India Pvt. Ltd., 801, Raheja Plaza – 1, L.B.S. Marg, Ghatkopar (W), Mumbai - 400 086, India [cert.helpdesk@tuvindia.co.in](mailto:cert.helpdesk@tuvindia.co.in)





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VALVES PVT LTD**



DNV Id. No.:  
Ref:- PUN/12/NT/684  
Date:- 2012/11/21

**DET NORSKE VERITAS**

**FIRE SAFE TEST CERTIFICATE**

**M/s. UNISON VALVES PVT.LTD.  
41/3/2, VADGAONSHERI,  
PUNE, 411, 014**

Witnessed by surveyor of DET NORSKE VERITAS on 21<sup>ST</sup> NOV 2012, the fire safe testing of DN 50mm # 150 2 PD ,FB, F/E Ball Valve at M/s UNISON VALVES PVT. LTD. works.

**FIRE TEST WITNESS REPORT**

**Description of valve tested :**

	(I)	(II)
Manufacturing standard	API 6D/ EN ISO 17292:2004	API 6D/ EN ISO 17292:2004
Design	Ball valve	Ball valve
Type	2 PD SYMMETRIC UNIDIRECTIONAL	2 PD SYMMETRIC UNIDIRECTIONAL
Size /Class	50 MM / Class 150	50 MM / Class 150
Valve Sr. No	G-1	B-1
Drawing. No.	BV 266-50	BV 266-50

**Material of construction**

Body / Side piece	ASTM A 351 Gr CF8	ASTM A 216 Gr WCB,
Ball	ASTM A 351 Gr CF8	ASTM A 351 Gr CF8
Stem	AISI 304	AISI 304
Body Seal / Stem Seal	REINFORCED GRAPHITE	REINFORCED GRAPHITE

Fire safe testing is in accordance to API 607-2005 (5<sup>th</sup> Edition) and found the test results conforming to the required specifications.  
For further details please refer manufacturer's Test Report Fire Safe Design Ball Valve Doc. No.- UV:28:REV 00 DT. 21/11/2012

**Range Qualified:**

This valve qualifies following sizes and class ratings as per API 607 – 2005 (5<sup>th</sup> Edition), Errata November 2008/ ISO 10497-5 : 2004

Tested valve :- 50 DN #150	
Size : DN 50 & Below , 65 , 80 , 100	
Class : #150, #300	



*Nareesh*  
**NARESH TUREROAO**  
Surveyor of DET NORSKE VERITAS

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

DET NORSKE VERITAS , VERITASVEIEN 1, N-1222 HØVIK, NORWAY TEL INT: +47 67 57 99 00, TELEFAX: +47 67 57 99 11  
Form No.: 40.91a Issue: January 98

Page 1 of 1



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VALVES PVT LTD

एन एस आई सी		राष्ट्रीय लघु उद्योग निगम लिमिटेड		
<b>NSIC</b>		THE NATIONAL SMALL INDUSTRIES CORPORATION LIMITED		
ISO 9001 : 2008		(A Government of India Enterprise)		
(Valid From 07/10/2015 to 06/10/2017) CIN : U74140DL1955001002481		Sr. No. 40784		
ANNEXURE TO GOVERNMENT PURCHASES ENLISTMENT CERTIFICATE				
NO. NSIC/GP/PUN/2015/0016276 D.T. 07/10/2015				
ISSUED TO M/s. UNISON VALVES PVT LTD, MAHARASHTRA				
<b>STORE DETAILS</b>				
S NO-41/3/2,VADGAON SHERI,TAL-HAVELI, PUNE, MAHARASHTRA-411014				
SNo	Store(s)/ Service(s) Name	Specification(s)	Qualitative Capacity P.M.	Quantitative Capacity P.M.
01	INDUSTRIAL VALVES	AS PER CUSTOMERS SPECIFICATION	1/2"-24"	2600 NOS
02	THERMODYNAMIC STEAM TRAPS		1/2"-1"	120 NOS
Inspection agency comments / Note (Optional):				
 Authorised Signatory				
M/s. UNISON VALVES PVT LTD. "Authenticity of the certificate can be checked through the web portal: <a href="http://www.nsicspronline.com">www.nsicspronline.com</a> " 				
BIKASH CHANDRA NAIK / बिकाश चंद्र नायक SR. BRANCH MANAGER / सॉरिं ब्रांच मैनेजर राष्ट्रीय लघु उद्योग निगम लिमिटेड National Small Industries Corporation Ltd. भारत सरकार का उद्यम (A Government of India Enterprise) Branch Office, PUNE / शाढ़ा काशीलय, पुणे				
 				



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## BRIEF COMPANY PROFILE

Unison Valves Pvt Ltd is an ISO certified Company based in Pune.

The Company's main products are Thermodynamic steam Traps and Ball Valves.

The company's policy of strictly adhering to prescribed manufacturing and quality standards has resulted in 'UNISON' Valves being approved by / registered with various leading consultants/major organizations. Unison Valves are used in a wide spectrum of industries ( refer page-26 )both in India & overseas.

The company's marketing efforts are ably supported by a network of reputed dealers/stockists in several major cities like Aurangabad, Baramati, Bengaluru, Chandigarh, Chennai, Cochin, Goa, Indore, Jalandhar, Jamshedpur, Ludhiana, Mumbai, New Delhi, Satara, Sangli, Surat, Secunderabad, & Vapi.

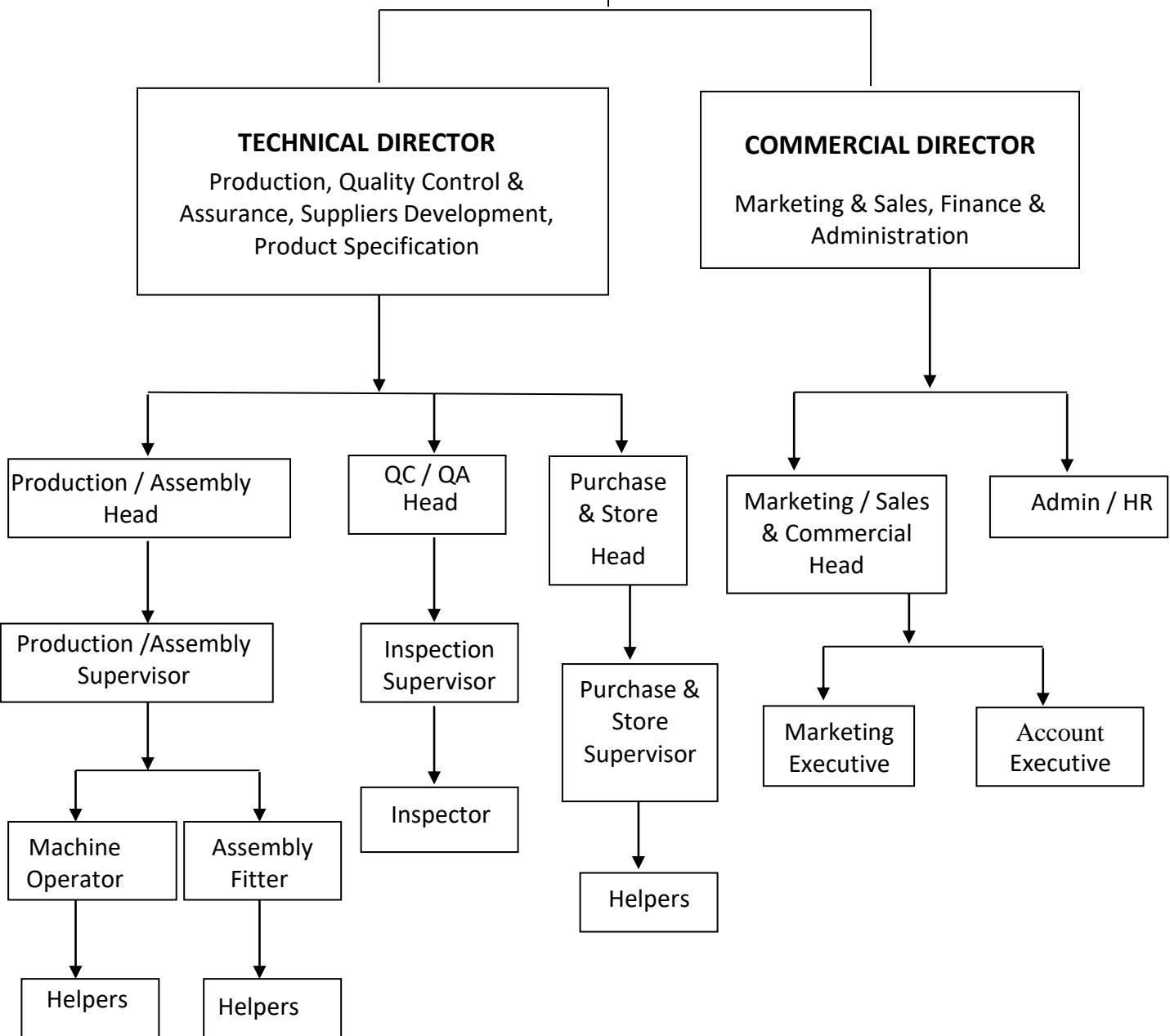
In line with the 'Quality Policy', Unison continues to focus on customer expectations with regard to quality and on time delivery.



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## ORGANIZATION CHART





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## Machinery / Testing Facilities

Sr. No.	Particulars	Quantity
1.	General Purpose Lathes 5 ½"	4 Nos.
2.	General Purpose Lathes 4 ½"	12 Nos.
3.	CNC	1 Number
4.	Hacksaw Machines	4 Nos.
5.	Drilling Machines	4 Nos.
6.	Pedestal Grinders	4 Nos.
7.	Buffing Machines	2 Nos.
8.	Lapping Machine "HIFIN" make	1 unit
9.	Sander	1 Number
10.	Flywheel Press	1 Number
11.	Compressors "ELGI" make	2 Nos.
12.	Steam Boiler	1 Number
13.	Testing Rig for Hydraulic & Steam	1 unit
14.	Hydrostatic Test Stands	2 Nos.
15.	Pneumatic Test Stands	2 Nos.
16.	Fire Safe Testing Rig	1 unit
17.	Liquid Penetrant Testing	1 Kit
18.	Hardness Tester	1 Nos.

## Inspection Instruments

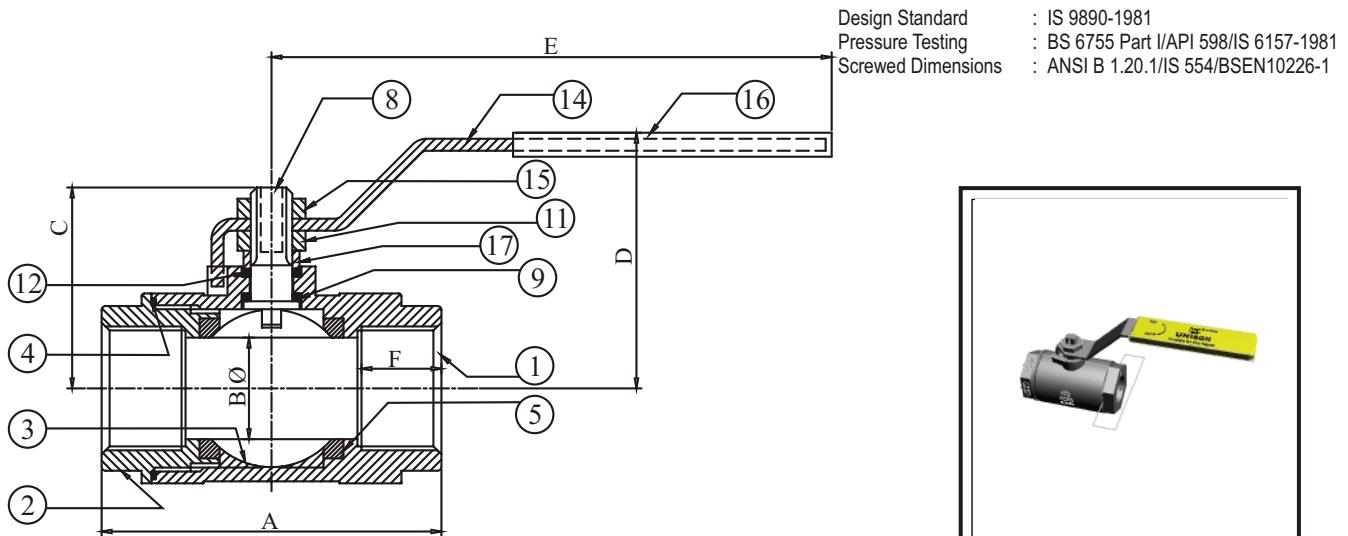
1.	Vernier Calipers (6", 8", 10", 12", 16")	26 Nos.
2.	Micrometers (0 - 250 mm)	14 Nos.
3.	Threaded Plug Gauges (Metric / BSP / NPT / BSPT)	55 Nos.
4.	Threaded Ring Gauges (Metric)	12 Nos.
5.	Plain Plug Gauges	20 Nos.
6.	Pressure Gauges (0 - 150 psi to 0 - 5000 psi)	14 Nos.
7.	Torque Wrench (0 to 340 Nm)	4 Nos.
8.	Moly Tester	2 Nos.
9.	Monochromatic Check Light	1 unit
10.	Rubber Hardness Tester (Shore D)	1 Number
11.	DFT meter	1 Nos.



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## One Piece Design Screwed Ball Valve (FB)



17	GLAND	01	CARBON STEEL	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.	P.V.C.
15	LEVER NUT	01	CARBON STEEL	AISI 304	AISI 304
14	LEVER	01	CARBON STEEL	SS / CARBON STEEL	SS / CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL	AISI 304	AISI 304
09	STEM SEAL	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
08	STEM	01	AISI 304	AISI 304	AISI 316
05	SEAT	02	P.T.F.E.	P.T.F.E.	P.T.F.E.
04	BODY GASKET	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
03	BALL	01	AISI 304 / CF8	AISI 304 / CF8	AISI 316 / CF8M
02	BODY NUT	01	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M
01	BODY	01	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M
NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION		

SIZES		A	B Ø	C	D	E	F
1/4"	6	60	10	35	58	110	15
3/8"	10	60	10	35	58	110	15
1/2"	15	63	12.7	43	62	120	17
3/4"	20	73	19	47	65	120	19
1"	25	85	25.4	51	70	150	21
1 1/4"	32	95	31.8	68	83	175	22.5
1 1/2"	40	105	37.5	73	90	175	22.5
2"	50	125	50	83	107	225	26.5

CLASS	TEST	MEDIUM	MIN.	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6

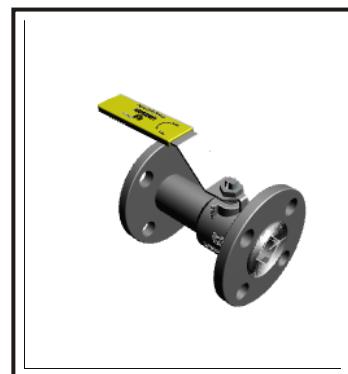
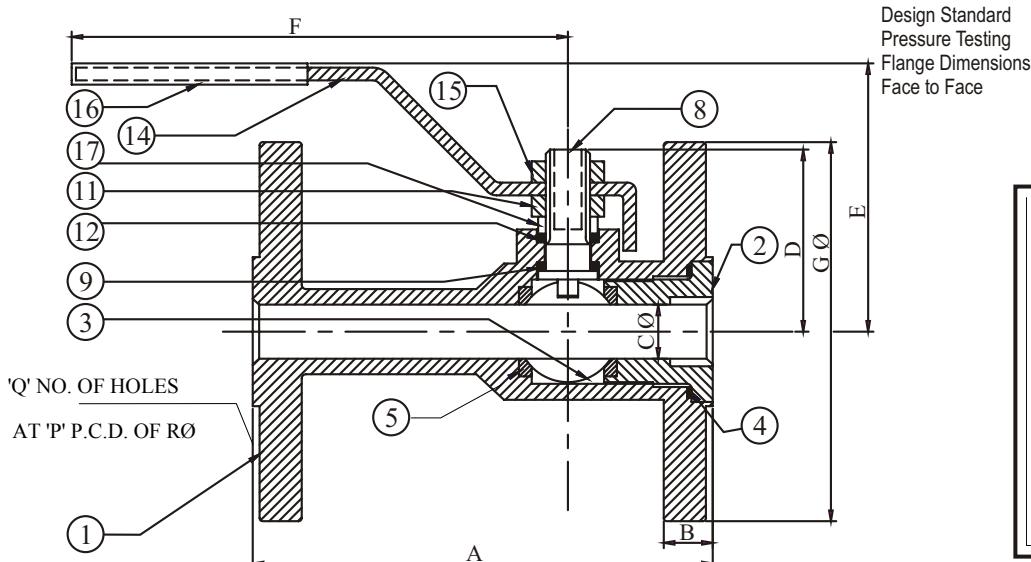
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## One Piece Design Flanged Ball Valve (FB)



17	GLAND	01	CARBON STEEL	AISI 304	AISI 304	
16	SLEEVE	01	P.V.C.	P.V.C.	P.V.C.	
15	LEVER NUT	01	CARBON STEEL	AISI 304	AISI 304	
14	LEVER	01	CARBON STEEL	SS/ CARBON STEEL	SS/ CARBON STEEL	
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.	P.T.F.E.	
11	GLAND NUT	01	CARBON STEEL	AISI 304	AISI 304	
09	STEM SEAL	01	P.T.F.E.	P.T.F.E.	P.T.F.E.	
08	STEM	01	AISI 304	AISI 304	AISI 316	
05	SEAT	02	P.T.F.E.	P.T.F.E.	P.T.F.E.	
04	BODY GASKET	01	P.T.F.E.	P.T.F.E.	P.T.F.E.	
03	BALL	01	AISI 304 / CF8	AISI 304 / CF8	AISI 316 / CF8M	
02	BODY NUT	01	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M	
01	BODY	01	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M	
NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION			

CLASS	TEST	MEDIUM	MIN.	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6
300	SHELL	HYDROSTATIC	1095	77
	SEAT	HYDROSTATIC	795	56
	SEAT	AIR	85	6

### CLASS 150

PARAMETERS SIZE	A	B	CØ	D	E	F	GØ	Q	P	RØ
1/2"	108	11.5	12.7	43	62	120	89	4	60.3	16
3/4"	118	11.5	19	47	65	120	98.4	4	69.9	16
1"	127	11.5	25.4	51	70	150	108	4	79.4	16
1 1/2"	165	14.5	37.5	73	91	175	127	4	98.4	16
2"	178	16	50	82	107	225	152.4	4	120.7	19
3"	203	19	75.4	109	128	325	190.5	4	152.4	19

### CLASS 300

PARAMETERS SIZE	A	B	CØ	D	E	F	GØ	Q	P	RØ
1/2"	140	14.5	12.7	44	62	120	95	4	66.7	16
1"	165	17.5	25.4	64	78	175	123.8	4	89	19
1 1/2"	191	21	37.5	73	100	215	155.6	4	114.3	22.2
2"	216	22.5	50	92	123	273	165	8	127	19
2 1/2"	241	25.5	62	97.5	116	325	190.5	8	149.3	22.2
3"	283	28.5	75.4	122	137	400	209.5	8	168.3	22.2

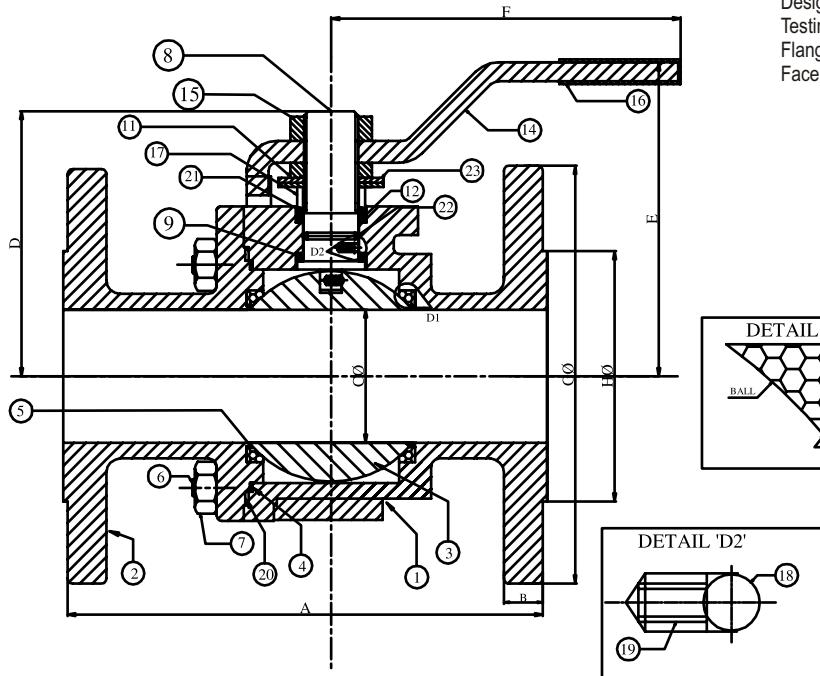
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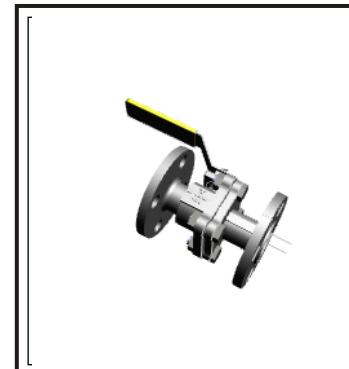
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## Two Piece Design Flanged Ball Valve (FB) (Fire Safe)



Design Standard : IS 9890-1981/ENISO17292/API6D  
 Testing Standard of Valves : BS 6755 Part I/API 598/IS 6157-1981 & API607  
 Flange Dimensions : ASME B 16.5 - 2009  
 Face to Face : ANSI B 16.10/API6D



NO.	COMPONANT NAME	QTY.	MATERIAL OF CONSTRUCTION		
23	DISC SPRINGS	2	SPRING STEEL/SS		
22	O RING	1	EPDM/NITRILE/VITON		
21	GLAND PACKING 2	1	PTFE/RPTFE		
20	BODY GASKET 2	1	REINFORCED GRAPHITE		
19	ANTISTATIC BALL	2	SS 304	SS 304	SS 316
18	ANSTATIC SPRING	2	SS 304	SS 304	SS 316
17	GLAND	1	CS	SS 304	SS 304
16	SLEEVE	1	PVC	PVC	PVC
15	LEVER NUT	1	CS	SS 304	SS 304
14	LEVER	1	CS	SS/CS	SS/CS
12	GLAND PACKING	1	REINFORCED GRAPHITE		
11	GLAND NUT	1	CS	SS 304	SS 304
9	STEM SEAL	1	REINFORCED GRAPHITE		
8	STEM	1	SS 304	SS 304	SS 316
7	BODY NUT	4/6/8	CS	SS 304	SS 304
6	BODY BOLT	4/6/8	CS	SS 304	SS 304
5	SEAT	2	PTFE	PTFE	PTFE
4	BODY GASKET 1	1	PTFE	PTFE	PTFE
3	BALL	1	SS 304/CF8	SS 304/CF8	SS 316/CF8M
2	FLANGED END	1	WCB	CF8	CF8M
1	HOUSING WITH F/E	1	WCB	CF8	CF8M

SIZES	DIMENSIONS						
	A	B	C Dia.	D	E	F	G Dia.
1/2"	108	10	13	48	67	120	89
3/4"	118	10.5	19	53	71	120	98.6
1"	127	11.5	25	56	75	150	108
1 1/2"	165	14.5	38	78	99	175	127
2"	178	16	49	98	117	225	152.4
2 1/2"	191	17.5	62	107	126	250	178
3"	203	19.1	74	116	135	325	190.5
4"	229	24	99.5	135	150	400	229
5"	254	24.5	126	168	186	400	254
6"	267	25.5	149	212	251	665	280

Note : Higher sizes valves and ASA 300 pressure class can be offered on request

CLASS	TEST	MEDIUM	PRESSURE MIN	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	32
	SEAT	AIR	85	6
	SEAT	HYDROSTATIC	300	22

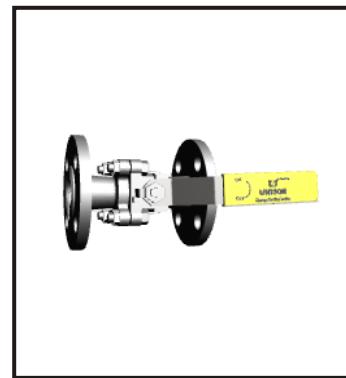
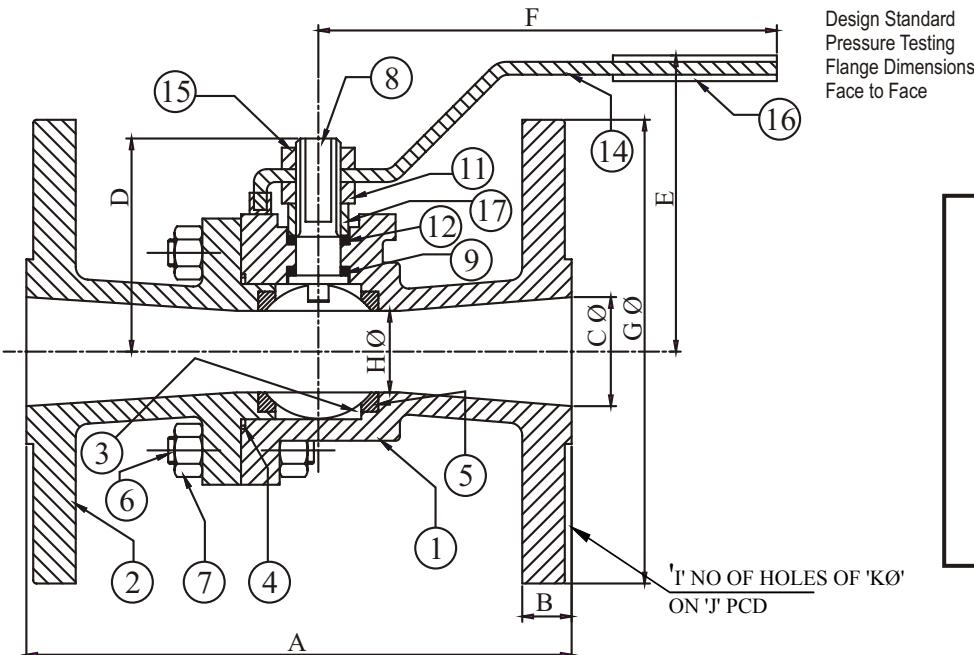
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## Two Piece Design Flanged Ball Valve (RB)



	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION		
17	GLAND	01	CARBON STEEL	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.	P.V.C.
15	LEVER NUT	01	CARBON STEEL	AISI 304	AISI 304
14	LEVER	01	CARBON STEEL	S.S./CARBON STEEL	S.S./CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL	AISI 304	AISI 304
09	STEM SEAL	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
08	STEM	01	AISI 304	AISI 304	AISI 316
07	BODY NUT	4/6/8	CARBON STEEL	AISI 304	AISI 304
06	BODY BOLT	4/6/8	CARBON STEEL	AISI 304	AISI 304
05	SEAT	02	P.T.F.E.	P.T.F.E.	P.T.F.E.
04	BODY GASKET	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
03	BALL	01	AISI 304 / CF8	AISI 304 / CF8	AISI 316 / CF8M
02	FLANGE END	01	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M
01	BODY	01	ASTM A216 GR WCB	ASTM A 351 GR CF8	[ASTM A 351 GR CF8M]
NO.					

SIZES	A	B	C Ø	D	E	F	G Ø	H Ø	I	J PCD	K Ø
½"	108	11.5	12.7	43	65	120	89	12.7	4	60.3	16
¾"	118	13	19	43	65	120	98.4	12.7	4	69.9	16
1"	127	11.5	25.4	47	70	150	108	19	4	79.4	16
1½"	165	14.5	37.5	68	84	175	127	31.8	4	98.4	16
2"	178	16	50	73	94	225	152.4	37.5	4	120.7	19
2½"	191	17.5	64	91	110	250	178	50	4	139.7	19
3"	203	19	76	100	117	325	190.5	64	4	152.4	19
4"	229	24	99.5	129	145	400	229	75.4	8	190.5	19
6"	267	25.4	148	146	178	400	280	99.5	8	241.3	22.2
8"	292	28.6	200	212	243	475	343	149	8	298.5	22.2

CLASS	TEST	MEDIUM	MIN.	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6

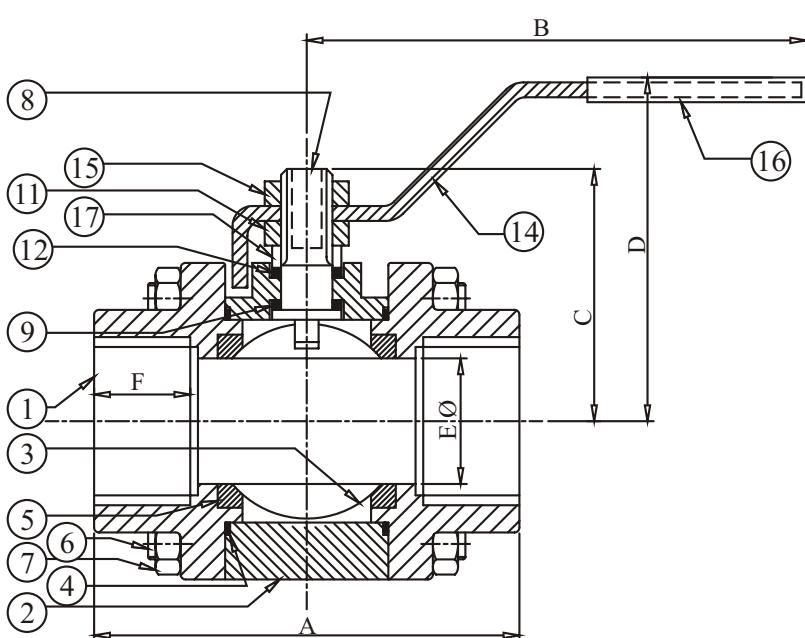
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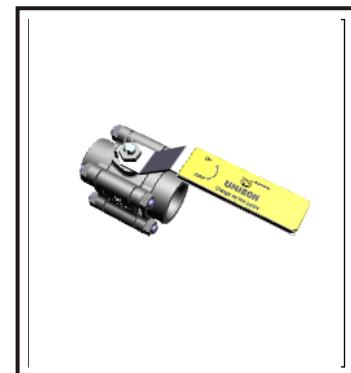
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VALVES PVT LTD

### Three Piece Design S/E, S/W, B/W Ball Valve (FB)



Design Standard : IS 9890-1981  
 Pressure Testing : BS 6755 Part I/API 598/IS 6157-1981  
 Screwed Dimensions : ANSI B 1.20.1/IS 554/BSEN10226-1  
 Socket Weld Dimensions: ANSI B 16.11/BS EN ISO 17292/IS 4712  
 Butt Weld Dimensions : ANSI B 16.25/BS EN ISO 17292/IS 11790



NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION	AISI 304	AISI 304
17	GLAND	01	CARBON STEEL	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.	P.V.C.
15	LEVER NUT	01	CARBON STEEL	AISI 304	AISI 304
14	LEVER	01	CARBON STEEL	S.S / CARBON STEEL	S.S / CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL	AISI 304	AISI 304
09	STEM SEAL	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
08	STEM	01	AISI 304	AISI 304	AISI 316
07	BODY NUT	08	CARBON STEEL	AISI 304	AISI 304
06	BODY STUD	04	CARBON STEEL	AISI 304	AISI 304
05	SEAT	02	P.T.F.E.	P.T.F.E.	P.T.F.E.
04	BODY GASKET	02	P.T.F.E.	P.T.F.E.	P.T.F.E.
03	BALL	01	AISI 304 / CF8	AISI 304 / CF8	AISI 316 / CF8M
02	BODY	01	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M
01	SCREWED END	02	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M

SIZES		A	E Ø	C	D	B	F
1/2"	15	67	12.7	43	64	120	16.5
3/4"	20	73	19	47	67	120	18.5
1"	25	86	25.4	51	70	150	21
1 1/4"	32	101	31.8	68	85	175	25
1 1/2"	40	105	37.5	73	88	175	22.5
2"	50	125	50	82	105	225	26.5

#### PRESSURE TABLE

CLASS	TEST	MEDIUM	MIN.	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6

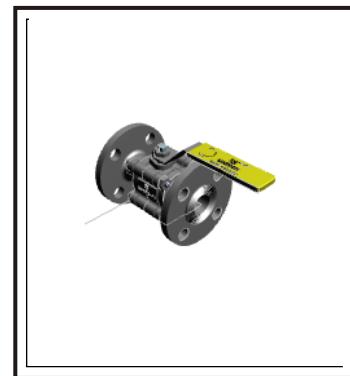
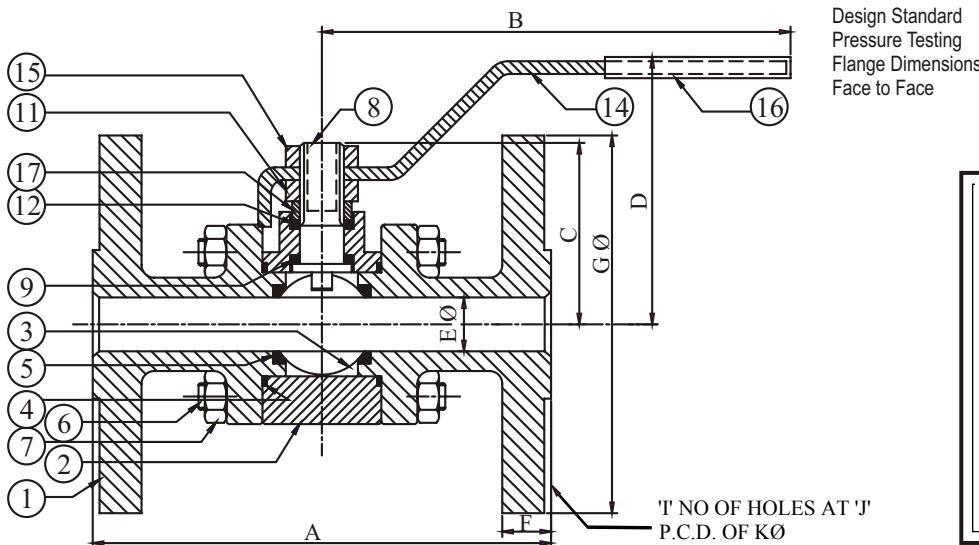
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### Three Piece Design Flanged Ball Valve (FB)



NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION		
17	GLAND	01	CARBON STEEL	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.	P.V.C.
15	LEVER NUT	01	CARBON STEEL	AISI 304	AISI 304
14	LEVER	01	CARBON STEEL	S S / CARBON STEEL	S S / CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL	AISI 304	AISI 304
09	STEM SEAL	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
08	STEM	01	AISI 304	AISI 304	AISI 316
07	BODY NUT	08/12	CARBON STEEL	AISI 304	AISI 304
06	BODY STUD	04/06	CARBON STEEL	AISI 304	AISI 304
05	SEAT	02	P.T.F.E.	P.T.F.E.	P.T.F.E.
04	BODY GASKET	02	P.T.F.E.	P.T.F.E.	P.T.F.E.
03	BALL	01	AISI 304 / CF8	AISI 304 / CF8	AISI 316 / CF8M
02	BODY	01	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M
01	FLANGE END	02	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M

SIZES		A	F	EO	C	D	B	GO	I	J	KO
1/2"	15	108	10	12.7	43	64	120	89	4	60.3	16
3/4"	20	118	11.5	19	47	67	120	98.4	4	69.9	16
1"	25	127	11.5	25.4	51	70	150	108	4	79.4	16
1 1/4"	32	140	13	31.8	68	85	175	117.5	4	89	16
1 1/2"	40	165	14.5	37.5	73	88	175	127	4	98.4	16
2"	50	178	16	50	82	106	225	152.4	4	120.7	19
2 1/2"	65	191	17.5	64	100	121	250	178	4	139.7	19
3"	80	203	19	75.4	110	130	325	190.5	4	152.4	19
4"	100	229	24	99.5	140	156	400	229	8	190.5	19

CLASS	TEST	MEDIUM	MIN.	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6

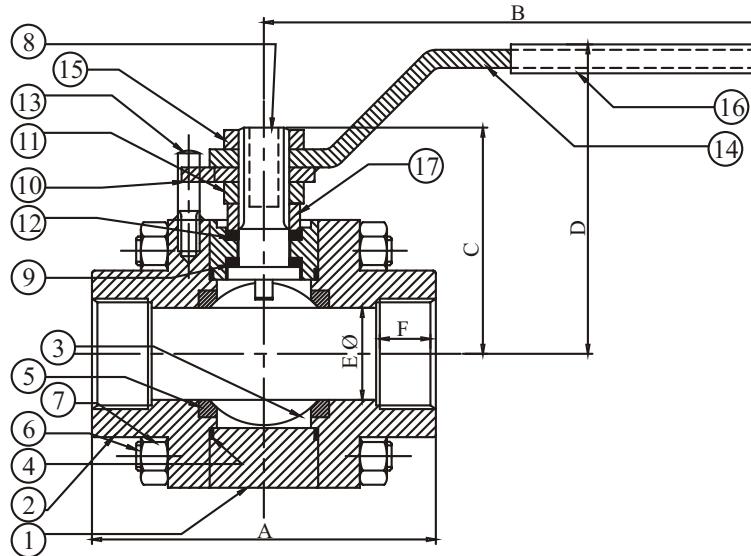
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## Carbon Steel Three Piece Design S/E, S/W, B/W Ball Valve (FB)



NO.	COMP. NAME	QTY.	MAT.OFCONST.
17	GLAND	01	CARBON STEEL
16	SLEEVE	01	P.V.C.
15	LEVER NUT	01	CARBON STEEL
14	LEVER	01	CARBON STEEL
13	STOP PIN	01	CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL
10	LEVER STOP PLATE	01	CARBON STEEL
09	STEM SEAL	01	P.T.F.E.
08	STEM	01	AISI 304
07	BODY NUT	08/12	CARBON STEEL
06	BODY STUD	04/06	CARBON STEEL
05	SEAT	02	P.T.F.E.
04	BODY GASKET	02	P.T.F.E.
03	BALL	01	AISI 304 / CF8
02	SCREWED END	02	CARBON STEEL
01	BODY	01	CARBON STEEL

SIZES		A	B	C	D	EØ	F
1/2"	15	67	120	43	65	12.7	18
¾"	20	73	120	51	73	19	19
1"	25	95	150	63	82	25.4	23
1 1/4"	32	101	175	70	88	31.8	25
1 ½"	40	116	175	75	92	37.5	25
2"	50	128	225	88	110	50	29
2 1/2"	65	154	250	98	121	64	33
3"	80	170	325	110	132	75.4	35
4"	100	216	400	141	162	99.5	41

CLASS	TEST	MEDIUM	MIN.	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	AIR	85	6
	SEAT	HYDROSTATIC	300	21

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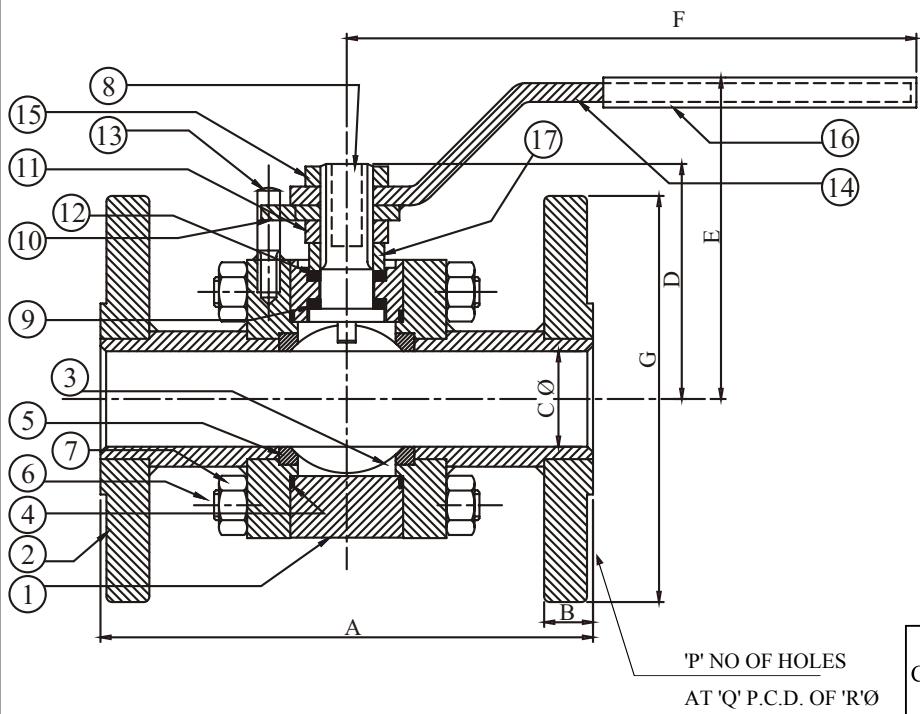


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## Carbon Steel Three Piece Design Flanged Ball Valve (FB)

Design Standard : IS 9890-1981  
 Pressure Testing : BS 6755 Part I/API 598/IS 6157-1981  
 Flange Dimensions : ANSI B 16.5  
 Face to Face : ANSI B 16.10



CLASS	TEST	MEDIUM	MIN.	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6

17	GLAND	01	CARBON STEEL
16	SLEEVE	01	P.V.C.
15	LEVER NUT	01	CARBON STEEL
14	LEVER	01	CARBON STEEL
13	STOP PIN	01	CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL
10	LEVER STOP PLATE	01	CARBON STEEL
09	STEM SEAL	01	P.T.F.E.
08	STEM	01	AISI 304
07	BODY NUT	08/12	CARBON STEEL
06	BODY STUD	04/06	CARBON STEEL
05	SEAT	02	P.T.F.E.
04	BODY GASKET	02	P.T.F.E.
03	BALL	01	AISI 304 / CF8
02	FLANGE END	02	CARBON STEEL
01	BODY	01	CARBON STEEL
NO.	COMP. NAME	QTY.	MAT.OF CONST.

SIZES	A	B	C Ø	D	E	F	GØ	P	'Q' P.C.D	RØ
1/2"	15	108	11.5	12.7	43	65	120	89	4	60.3 16
3/4"	20	118	11.5	19	51	73	120	98.4	4	69.9 16
1"	25	127	11.5	25.4	63	82	150	108	4	79.4 16
1 1/4"	32	140	13	31.8	69	88	175	117.5	4	89 16
1 1/2"	40	165	14.5	37.5	74	93	175	127	4	98.4 16
2"	50	178	15	50	88	110	225	152.4	4	120.7 19
2 1/2"	65	190	17.5	64	98	121	250	178	4	139.7 19
3"	80	203	19	75.4	109	132	325	190.5	4	152.4 19
4"	100	229	24	99.5	141	162	400	229	8	190.5 19

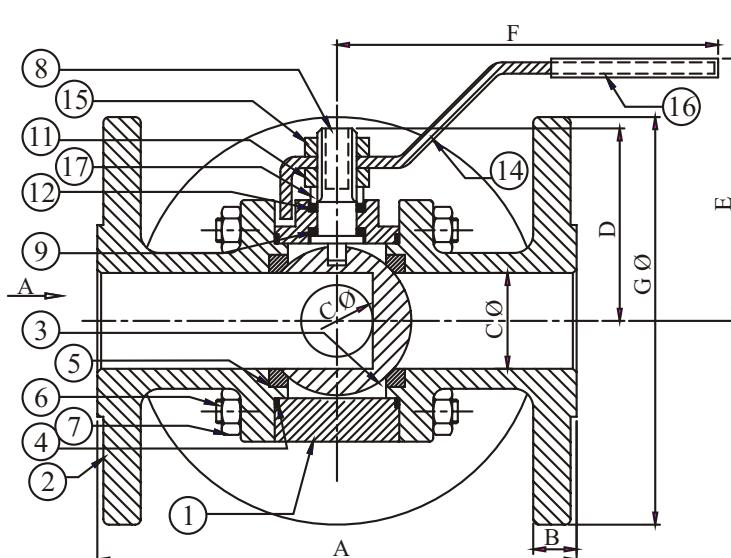
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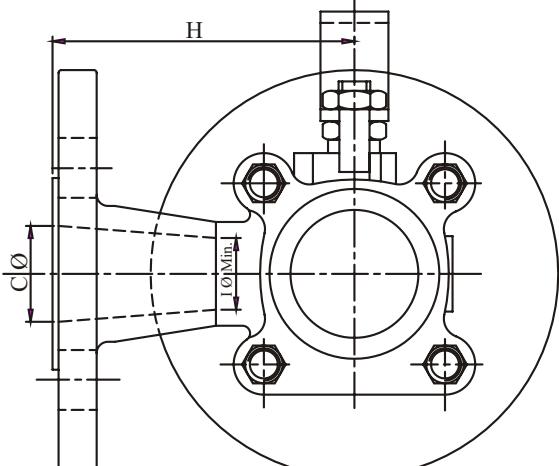
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### Three Piece Design Three Way L Port Flanged Ball Valve (RB)

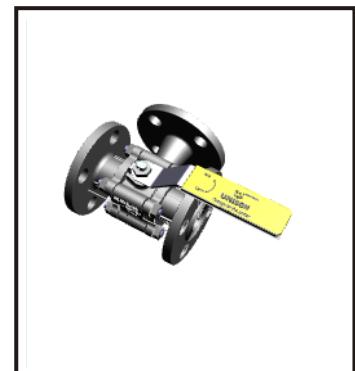


Design Standard : IS 9890-1981  
Pressure Testing : BS 6755 Part I/API 598/IS 6157-1981  
Flange Dimensions : ANSI B 16.5



VIEW : A

NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION		
17	GLAND	01	CARBON STEEL	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.	P.V.C.
15	LEVER NUT	01	CARBON STEEL	AISI 304	AISI 304
14	LEVER	01	CARBON STEEL	S.S / CARBON STEEL	S.S / CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL	AISI 304	AISI 304
09	STEM SEAL	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
08	STEM	01	AISI 304	AISI 304	AISI 316
07	BODY NUT	08/12	CARBON STEEL	AISI 304	AISI 304
06	BODY STUD	04/6	CARBON STEEL	AISI 304	AISI 304
05	SEAT	02	P.T.F.E.	P.T.F.E.	P.T.F.E.
04	BODY GASKET	02	P.T.F.E.	P.T.F.E.	P.T.F.E.
03	BALL	01	AISI 304 / CF8	AISI 304 / CF8	AISI 316 / CF8M
02	BODY	01	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M
01	FLANGE END	02	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M



SIZES		A	B	C Ø	D	E	F	G Ø	H	I Ø Min.
1/2"	15	108	11.5	12.7	43	64	120	89	70	10
3/4"	20	118	11.5	19	47	67	120	98.4	76	12.7
1"	25	127	11.5	25.4	51	70	150	108	80	19
1 1/2"	40	165	14.5	37.5	73	88	175	127	98	30
2"	50	178	16	50	82	106	225	152.4	107	38
2 1/2"	65	190	17.5	64	100	121	250	178	125	50
3"	80	203	19	75.4	109	130	325	190.5	133	57

CLASS	TEST	MEDIUM	MIN.	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	145	10
	SEAT	AIR	85	6

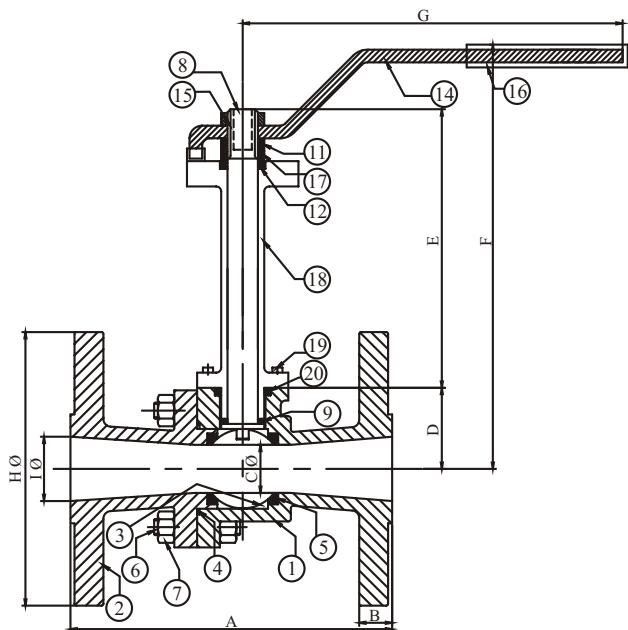
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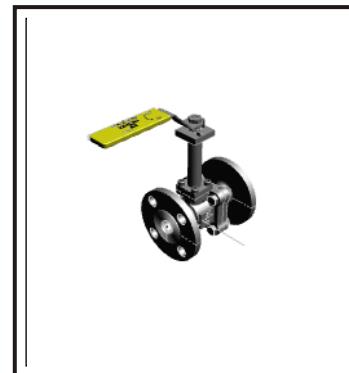
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## Two Piece Design Long Stem Flanged Ball Valve (RB)



Design Standard : IS 9890-1981  
 Pressure Testing : BS 6755 Part I/API 598/IS 6157-1981  
 Flange Dimensions : ANSI B 16.5  
 Face to Face : ANSI B 16.10



NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION	P.T.F.E.	P.T.F.E.	P.T.F.E.
20	BONET SEAL	01	P.T.F.E.	P.T.F.E.	P.T.F.E.	P.T.F.E.
19	BONET SCREW	04	CARBON STEEL	AISI 304	AISI 304	
18	BONET	01	WCB/CARBON STEEL	CF8/AISI 304	CF8M/ AISI 316	
17	GLAND	01	CARBON STEEL	AISI 304	AISI 304	
16	SLEEVE	01	P.V.C.	P.V.C.	P.V.C.	
15	LEVER NUT	01	CARBON STEEL	AISI 304	AISI 304	
14	LEVER	01	CARBON STEEL	S S / CARBON STEEL	S S / CARBON STEEL	
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.	P.T.F.E.	
11	GLAND NUT	01	CARBON STEEL	AISI 304	AISI 304	
09	STEM SEAL	01	P.T.F.E.	P.T.F.E.	P.T.F.E.	
08	STEM	01	AISI 304	AISI 304	AISI 316	
07	BODY NUT	4/6	CARBON STEEL	AISI 304	AISI 304	
06	BODY BOLT	4/6	CARBON STEEL	AISI 304	AISI 304	
05	SEAT	02	P.T.F.E.	P.T.F.E.	P.T.F.E.	
04	BODY GASKET	01	P.T.F.E.	P.T.F.E.	P.T.F.E.	
03	BALL	01	AISI 304 / CF8	AISI 304 / CF8	AISI 316 / CF8M	
02	FLANGE END	01	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M	
01	HOUSING WITH F/E	01	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M	

SIZES	A	B	C Ø MIN.	D	E	F	G	HØ	IØ	
1/2"	15	108	11.5	12.7	28	110	161	120	89	12.7
3/4"	20	118	13	12.7	28	110	161	120	98.4	19
1"	25	127	11.5	19	32	110	163	150	108	25.4
1½"	40	165	14.5	31.8	40	110	171	175	127	37.5
2"	50	178	16	37.5	45	110	177	225	152.4	50
2 1/2"	65	191	17.5	50	56	110	191	250	178	64
3"	80	203.2	19	64	63.5	110	195	325	190.5	75.4
4"	100	229	24	75.4	84	110	210	400	229	99.5
6"	150	267	25.4	99.5	105	110	230	400	279.4	148

CLASS	TEST	MEDIUM	MIN.	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6

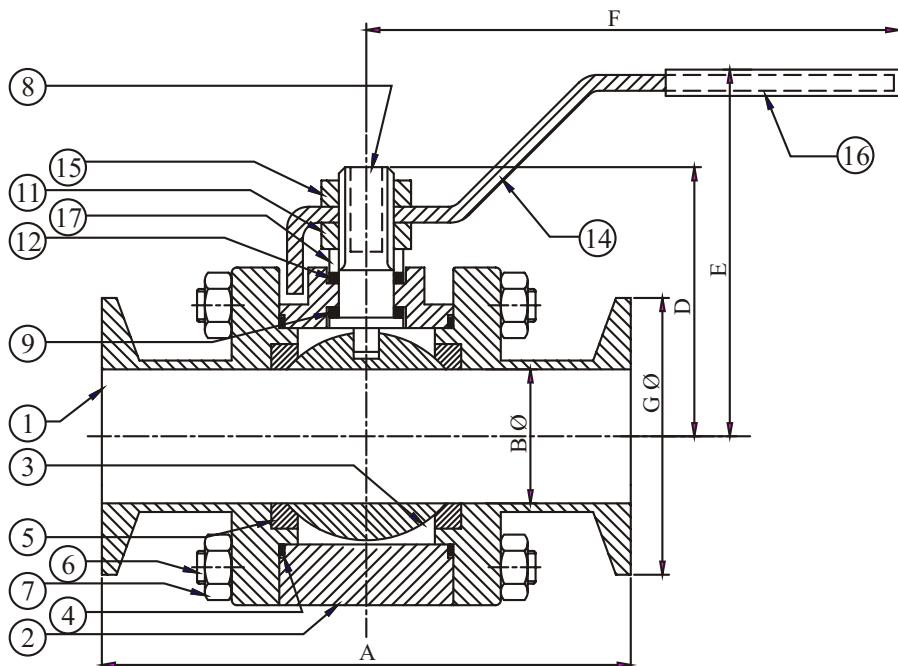
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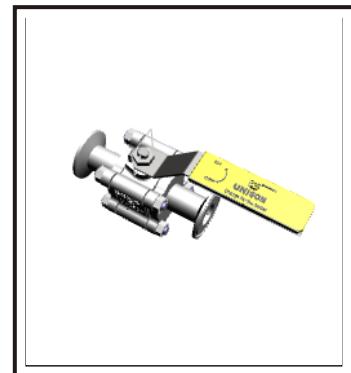
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### Three Piece Design Tri Clover End Ball Valve



Design Standard : IS 9890 - 1981  
Testing Standard : IS 6157 - 1981  
: BS 6755 Part 1/ API 598



NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION
17	GLAND	01	AISI 304
16	SLEEVE	01	P.V.C.
15	LEVER NUT	01	AISI 304
14	LEVER	01	S S
12	GLAND PACKING	01	P.T.F.E.
11	GLAND NUT	01	AISI 304
09	STEM SEAL	01	P.T.F.E.
08	STEM	01	AISI 304
07	BODY NUT	08	AISI 304
06	BODY STUD	04	AISI 304
05	SEAT	02	P.T.F.E.
04	BODY GASKET	02	P.T.F.E.
03	BALL	01	AISI 304 / CF8
02	BODY	01	ASTM A 351 GR CF8
01	TRI CLOVER END	02	ASTM A 351 GR CF8M

SIZES		A	B Ø	D	E	F	GØ
1/2"	15	126	9.4	43	64	120	50.4
3/4"	20	125	15.75	47	67	120	50.4
1"	25	130	22.2	51	70	150	50.4
1 1/2"	40	140	34.8	73	88	175	50.4
2"	50	152	47.5	82	103	225	64

CLASS	TEST	MEDIUM	MIN.	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6

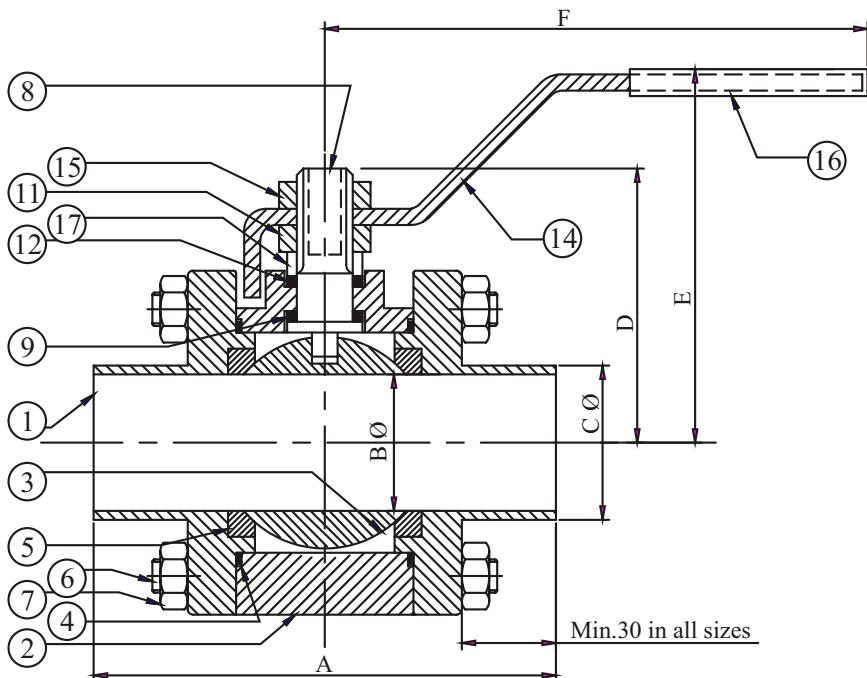
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### Three Piece Design OD Base Ball Valve



Design Standard : IS 9890 - 1981  
Testing Standard : IS 6755 Part1 - 1981  
API 598 / IS 6157 - 1981



NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION
17	GLAND	01	AISI 304
16	SLEEVE	01	P.V.C.
15	LEVER NUT	01	AISI 304
14	LEVER	01	S S
12	GLAND PACKING	01	P.T.F.E.
11	GLAND NUT	01	AISI 304
09	STEM SEAL	01	P.T.F.E.
08	STEM	01	AISI 304
07	BODY NUT	08	AISI 304
06	BODY STUD	04	AISI 304
05	SEAT	02	P.T.F.E.
04	BODY GASKET	02	P.T.F.E.
03	BALL	01	AISI 304 / CF8
02	BODY	01	ASTM A 351 GR CF8
01	TRI CLOVER END	02	ASTM A 351 GR CF8M

SIZES		A	B Ø	C Ø	D	E	F
1/2"	15	107	9.4	12.7	43	64	120
3/4"	20	108	15.75	19.05	47	67	120
1"	25	113	22.2	25.4	51	70	150
1 1/2"	40	127	34.8	38.1	73	88	175
2"	50	139	47.5	50.8	82	103	225

CLASS	TEST	MEDIUM	PRESSURE	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6

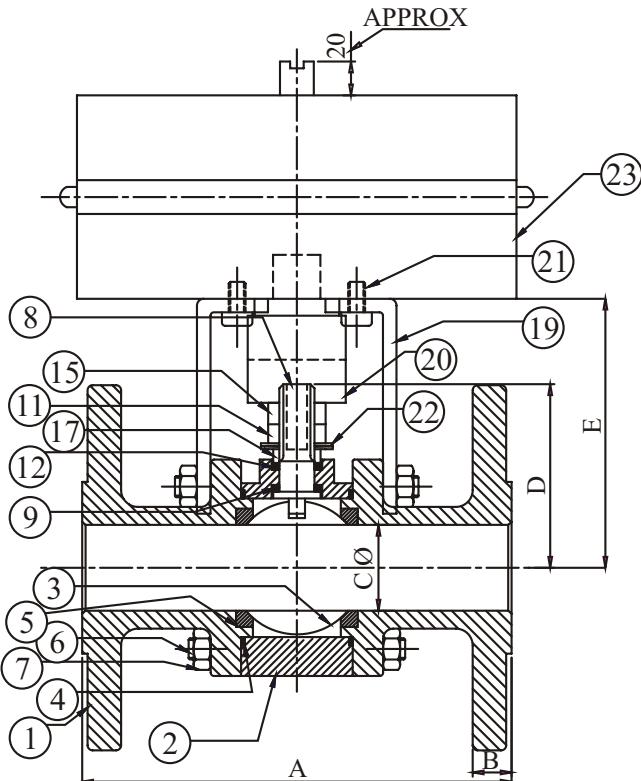
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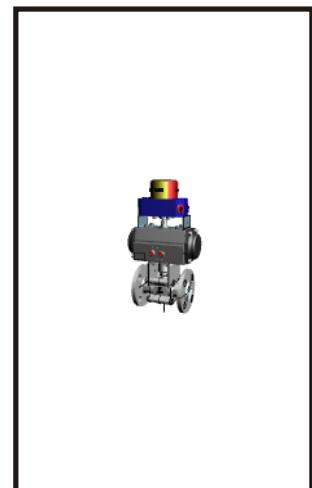
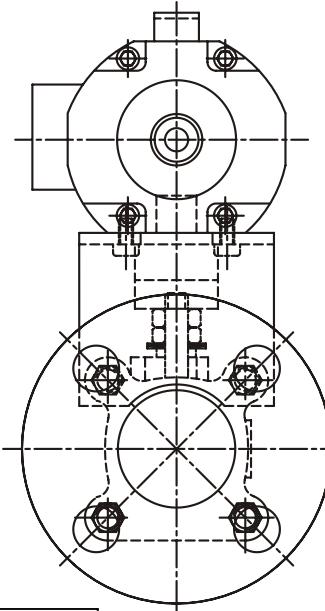
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## Pneumatically Actuated Ball Valve



Design Standard : IS 9890-1981  
 Pressure Testing : BS 6755 Part I/API 598/IS 6157-1981  
 Flange Dimensions : ANSI B 16.5  
 Face to Face : ANSI B 16.10  
 Screwed Dimensions : ANSI B 1.20.1/IS 554/BSEN10226-1  
 Socket Weld Dimensions : ANSI B 16.11/BS EN ISO 17292/ IS 4712  
 Butt Weld Dimensions : ANSI B 16.25/BS EN ISO 17292/ IS 11790



NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION			
23	PNEUMATIC ACTUATOR	01	—	—	—	—
22	DISC SPRING	02	SPRING STEEL	SS	SS	SS
21	ALLEN SCREW	04	CARBON STEEL	AISI 304	AISI 304	AISI 304
20	ADAPTOR	01	AISI 304	AISI 304	AISI 304	AISI 304
19	BRACKET	02	CARBON STEEL	AISI 304	AISI 304	AISI 304
17	GLAND	01	CARBON STEEL	AISI 304	AISI 304	AISI 304
15	GLAND LOCK NUT	01	CARBON STEEL	AISI 304	AISI 304	AISI 304
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL	AISI 304	AISI 304	AISI 304
09	STEM SEAL	01	P.T.F.E.	P.T.F.E.	P.T.F.E.	P.T.F.E.
08	STEM	01	AISI 304	AISI 304	AISI 316	AISI 316
07	BODY NUT	08/12	CARBON STEEL	AISI 304	AISI 304	AISI 304
06	BODY STUD	04/6	CARBON STEEL	AISI 304	AISI 304	AISI 304
05	SEAT	02	P.T.F.E.	P.T.F.E.	P.T.F.E.	P.T.F.E.
04	BODY GASKET	02	P.T.F.E.	P.T.F.E.	P.T.F.E.	P.T.F.E.
03	BALL	01	AISI 304 / CF8	AISI 304 / CF8	AISI 316 / CF8M	AISI 316 / CF8M
02	BODY	01	ASTM A216 GR WCB	ASTM A 351 GR CF8	ASTM A 351 GR CF8M	ASTM A 351 GR CF8M
Note : Minimum air pressure to the actuator is 5 kg/cm <sup>2</sup> .						

SIZES	A		B	C $\varnothing$	D	E
	S/E	F/E				
1/2"	15	67	108	11.5	12.7	43
3/4"	20	73	118	11.5	19	47
1"	25	86	127	11.5	25.4	51
1 1/4 "	32	101	140	13	31.8	83
1 1/2 "	40	105	165	14.5	37.5	73
2"	50	125	178	16	50	82
2 1/2"	65		190	17.5	64	100
3"	80		203	19	75.4	109
4"	100		229	24	99.5	140
					160.5	

CLASS	TEST	MEDIUM	PRESSURE	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6

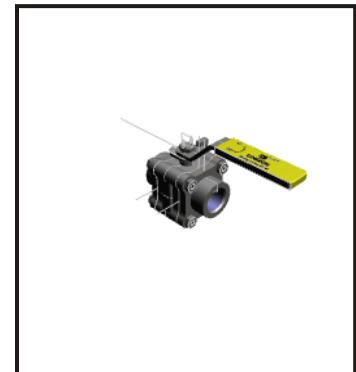
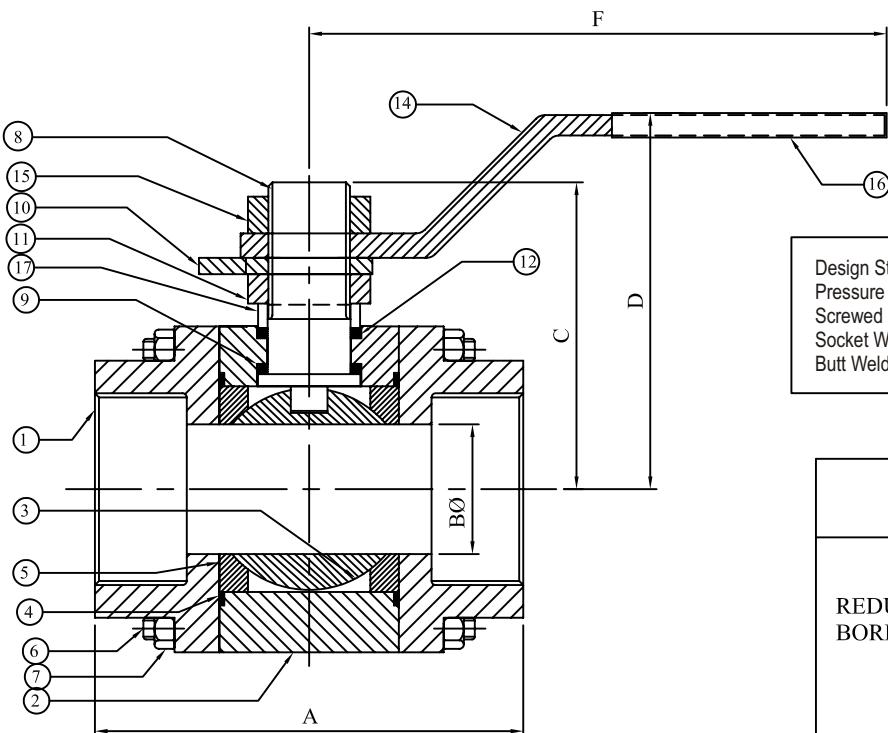
DUE TO CONTINUOUS DEVELOPMENT, WE RESERVE THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE



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**UNISON**  
VALVE PVT LTD

## A105 Three piece Design Forged Steel Ball Valve F/B & R/B in SE & SW



Design Standard	: IS 9890-1981
Pressure Testing	: BS 6755 Part I/API 598/IS 6157-1981
Screwed Dimensions	: ANSI B 1.20.1/IS554/BSEN10226-1
Socket Weld Dimensions	: ANSI B 16.25/IS4712/BSENISO17292
Butt Weld Dimensions	: ANSI B 16.25/IS11790/BSENISO17292

	PARAMETERS SIZES	A	B Ø	F	C	D
REDUCED BORE	1/2"	67	10	120	42	65
	3/4"	73	12.7	120	43	66
	1"	86	19	150	60	85
	1½"	105	31.8	225	74	95
	2"	125	37.4	225	43	66
FULL BORE	3/8"	67	10	120	42	65
	1/2"	67	12.7	120	43	66
	3/4"	80	19	150	61	80
	1"	95	25	150	61	86
	1½"	115	37.4	225	81	103

17	GLAND	01	C.S
16	SLEEVE	01	P.V.C.
15	LEVER NUT	01	C.S
14	LEVER	01	C.S
12	GLAND PACKING	01	R.P.T.F.E.
11	GLAND NUT	01	C.S
10	LEVER STOP PLATE	01	C.S
09	STEM SEAL	01	P.T.F.E.
08	STEM	01	AISI 304
07	BODY NUT	08	C.S/AISI 304
06	BODY STUD	04	C.S/AISI 304
05	SEAT	02	R.P.T.F.E.
04	BODY GASKET	02	R.P.T.F.E.
03	BALL	01	AISI 304/CF8
02	BODY	01	A 105
01	SCREWED END	02	A 105
NO.	COMP. NAME	QTY.	MOC

### PRESSURE TABLE

CLASS	TEST	MEDIUM	PRESSURE	
			PSI	BAR
ASA 800	SHELL	HYDROSTATIC	2980	210
	SEAT	HYDROSTATIC	2170	153
	SEAT	AIR	85	6

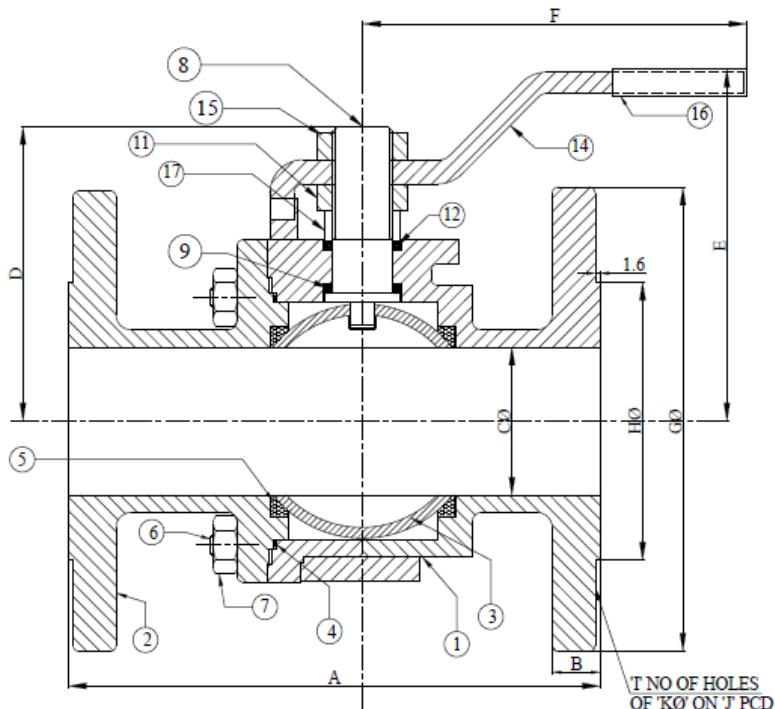
DUE TO CONTINUOUS DEVELOPMENT, WE RESERVE THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE



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## Two Piece Design Flanged Ball Valve (FB) ASA 150



Design Standard	: IS 9890 - 1981
Pressure Testing	: BS 6755 PART I/API 598/IS 6157-1981
Flange Dimensions	: ANSI B 16.5
Face to Face	: ANSI B 16.10
Pressure Class	: 150



SIZES	A	B	CØ	D	E	F	GØ	HØ	I	T PCD	KØ
1/2"	15	108	10	12.7	48	67	120	89	35	4	60.3
3/4"	20	118	10.5	19	53	71	120	98.4	43	4	69.9
1"	25	127	11.5	25	56	75	150	108	50.8	4	79.4
1½"	40	165	14.5	37.5	78	99	175	127	73	4	98.4
2"	50	178	16	49	98	117	225	152.4	92	4	120.7
2½"	65	191	17.5	62	107	126	250	178	104.8	4	139.7
3"	80	203	19	74	116	135	325	190.5	127	4	152.4
4"	100	229	24	99.5	135	150	400	229	157.2	8	190.5
5"	125	254	24.5	126	168	186	400	254	185.7	8	215.9
6"	150	267	25.5	149	212	251	665	280	216	8	241.3

NO.	COMP.	NAME	QTY.	MATERIAL OF CONSTRUCTION
17	GLAND	01	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.
15	LEVER NUT	01	AISI 304	CARBON STEEL
14	LEVER	01	C.S/S S	CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	SS 304	CARBON STEEL
09	STEM SEAL	01	P.T.F.E.	P.T.F.E.
08	STEM	01	AISI 316	AISI 304
07	BODY NUT	SET	AISI 304	CARBON STEEL
06	BODY BOLT	SET	AISI 304	CARBON STEEL
05	SEAT	02	P.T.F.E.	P.T.F.E.
04	BODY GASKET	01	P.T.F.E.	P.T.F.E.
03	BALL	01	CF8M / AISI 316	CF8 / AISI 304
02	FLANGE	01	ASTM A351 GR CF8M	ASTM A351 GR CF8
01	HOUSING WITH FE	01	ASTM A351 GR CF8M	ASTM A351 GR CF8
				ASTM A216 GR WCB

NOTE:-  
1) ALL DIMENSIONS ARE IN mm.  
2) BALL WILL BE SOLID UP TO 1".

PRESSURE TABLE AT AMBIENT TEMPERATURE

CLASS	TEST	MEDIUM	PRESSURE MIN.	
			PSI	BAR
ASA 150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6



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**UNISON**  
VALVES PVT LTD

## Thermodynamic Steam Trap

### Energy & Fuel Conservers

# UNISON US - 55



- Streamlined & compact.
- All stainless steel construction for corrosive resistance.
- High resistance to waterhammer.
- Long life due to hardened working parts.
- Only one moving part, therefore minimal maintenance.
- Efficient operation under varying loads and pressures.
- Discharges condensate at steam temperature, to prevent waterlogging.
- All mating parts have metal to metal seating thereby eliminating sealing material.
- Non - IBR trap can also be supplied with blow-down valve screwed directly below the strainer unit.

ALSO  
AVAILABLE  
WITH IBR  
APPROVAL



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VALVES PVT LTD

## US - 55 DIMENSIONS

(APPROXIMATE) IN MILLIMETERS

SIZE	A	B (MAX)	C	WEIGHT APP. KG.
1/2" & 3/4"	91.5	48.0	75.0	0.9
1"	105	52	90	1.5

SIZE

RANGE

: 15, 20 & 25 MM.NB

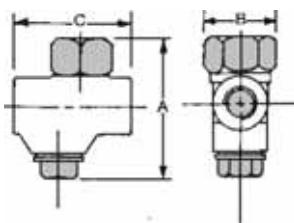
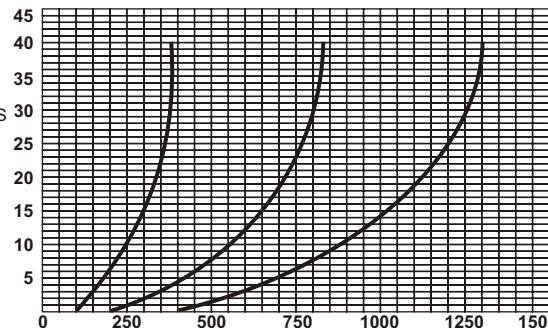
: MAX. 32 BAR AT 425°C  
SCREWED ENDS  
MAX. 44 BAR AT 450°C  
SOCKET WELDED ENDS

M.O.C.

BODY, CAP,  
DISC. PLUG : AISI 420

STRAINER : AISI 304

CAPACITIES - CONDENSATE KG / HR



## GENERAL INFORMATION

Unions or flanges installed on both sides of the trap permits easy maintenance.

The trap should be so placed that it is directly below and as close as possible to the equipment being drained.

It is advisable to install the trap with the disc in horizontal position instead of vertical position to ensure maximum life.

Sight-glasses should be fitted on the outlet, away from the trap for observing its performance.

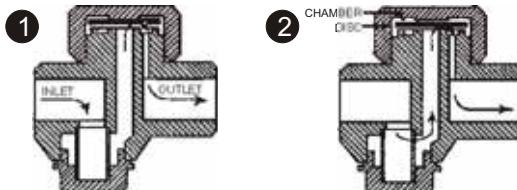
Horizontal piping to the trap should be such that it facilitates gravity drainage.

Have a collecting leg of a larger pipe size with a dirt pocket before a trap inlet.

Have a bypass line around the trap, where the equipment cannot be shut-down. A standby trap in the bypass line allows uninterrupted service.

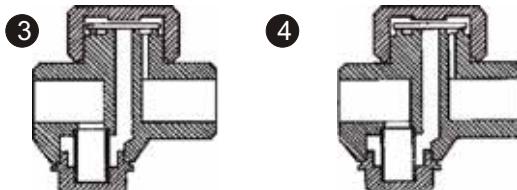
It is advisable to have a larger return line to prevent back pressure build-up.

## OPERATING PRINCIPLE



The disc is lifted off its seat by the pressure of condensate or air and flow takes place below the disc to the outlet port, till flashing condensate approaches steam temperature.

The flow of flash steam below the disc results in a low pressure zone and at the same time builds pressure in the chamber above the disc. The differential pressure forces the disc to the seat resulting in a tight closure.



Force acting on the disc, due to steam pressure in the chamber, forces the disc to remain on the seat against the smaller inlet force.

The moment condensate collects below the disc, it reduces heat transfer to the chamber, resulting in steam condensing, which leads to a pressure drop. The higher inlet pressure now forces the disc to rise and the condensate is discharged.



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## TORQUE VALUES OF BALL VALVES

### TORQUE

Size	Full Bore (FB) (Kgm)	Regular Bore (RB) (Kgm)
15mm	0.2	0.18
20mm	0.40	0.2
25mm	0.75	0.40
32mm	1.13	0.75
40mm	1.50	1.13
50mm	3.00	1.50
65mm	4.50	3.00
80mm	7.00	4.50
100mm	14.00	7.00
125mm	20.00	
150mm	30.00	14.00

**Note : Nm = Kgm X 9.8**



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## LIST OF SOME VALUABLE CLIENTS

- |                                      |                         |
|--------------------------------------|-------------------------|
| Alfalaval ( India ) Ltd.             | Ion Exchange Ltd.       |
| Biocon Ltd.                          | Kirloskar Brothers Ltd. |
| Crane Process Flow Technologies Ltd. | Pepsico Holdings Ltd.   |
| Deepak Nitrite Ltd.                  | Praj Industries Ltd.    |
| Desmet Ballestra India (P) Ltd.      | Privi Group             |
| Emcure Group Of Companies.           | Sesa Goa Ltd.           |
| Hindustan Unilever Ltd.              | Thermax Ltd.            |

## Certifications / Registrations

- Armita Engineers Private Limited  
Bharat Heavy Electricals Limited ( BHEL )  
Bharat Heavy Plate & Vessels Limited ( BHPV )  
Bongaigaon Refinery & Petrochemicals Limited ( BPR )  
Chempro Expertise Private Limited  
Hindustan Aeronautics Limited ( HAL )  
Hindustan Petroleum Corporation Limited ( HPCL )  
Indian Boiler Regulations ( IBR )  
NNE Pharma Plan  
Rashtriya Chemicals & Fertilizers Limited ( RCF )  
Tata Consulting Engineers ( TCE )  
Technical Development Committee ( TDC )

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