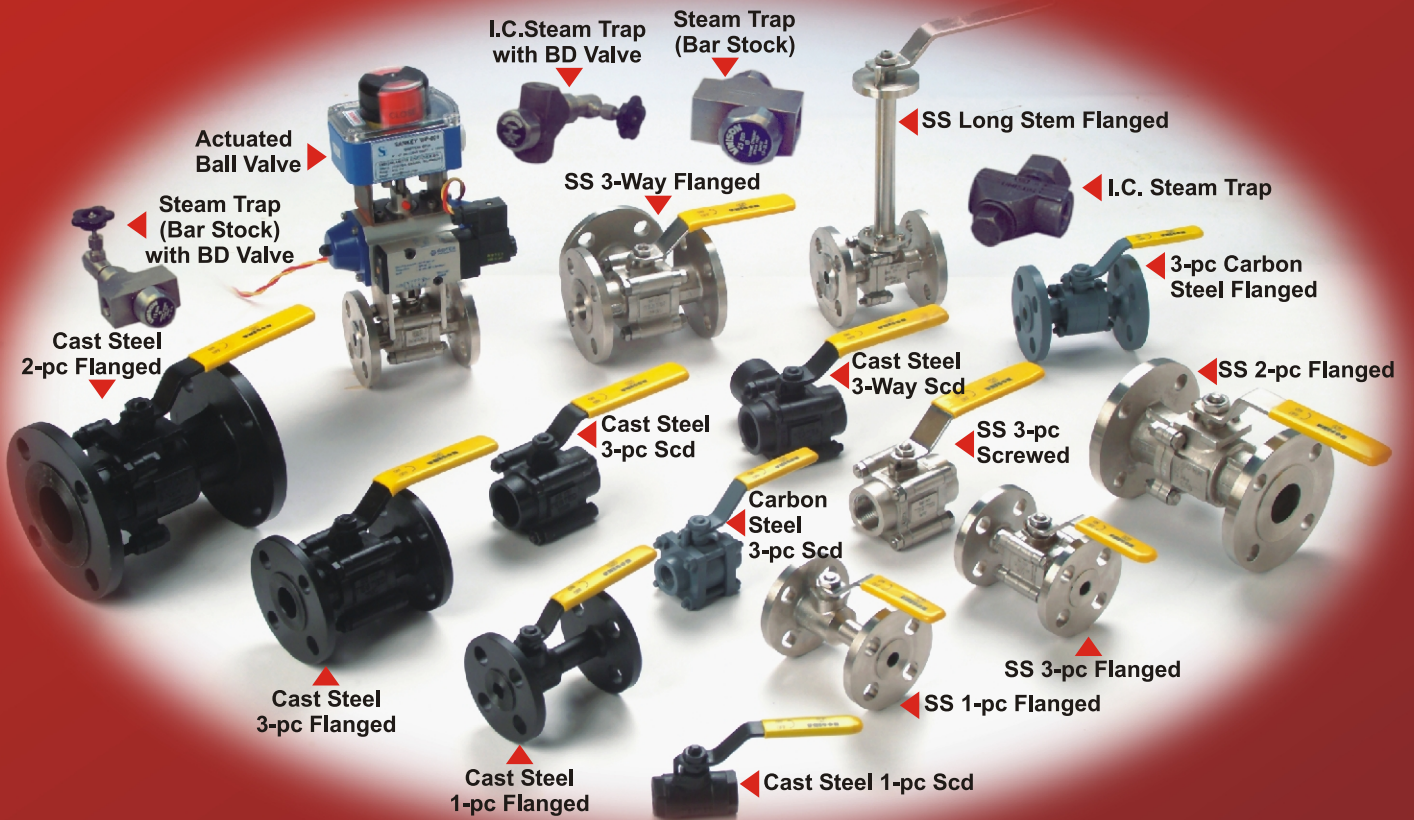


ENERGY & FUEL CONSERVERS



STEAM TRAPS BALL VALVES



'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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QUALITY POLICY

of Unison Valves Pvt Ltd is to
achieve continually,

Customer Satisfaction
Promised Delivery to Customer
Employee Skills Development
Supplier Involvement

CERTIFICATE 

Management system as per
ISO 9001 : 2008

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

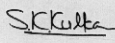
UNISON VALVES PVT. LTD.
41/3/2, Vadgaonsheri,
Pune – 411 014,
India

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

Manufacture and Supply of Ball Valves & Steam Traps

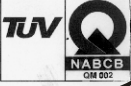
Certificate Registration No. **QM 03 00156**
Audit Report No. **Q 0842/2009**

Valid until **15.03.2012**
Initial Certification **04.08.2006**


TUV INDIA Certification Body

Mumbai, **30.03.2012**

This certification was conducted in accordance with the TUV INDIA auditing and certification procedures and is subject to regular surveillance audits.
TUV India Pvt. Ltd., 201, Ranaja Plaza – 1, L.B.S. Marg, Chhatkopar (W), Mumbai - 400 086, India www.tuvindia.co.in



TDC
TECHNICAL DEVELOPMENT COMMITTEE FOR INDIGENOUS MATERIALS
(PETROLEUM, PETROCHEMICALS & FERTILIZER INDUSTRIES)

Ref.TDC/10-11/01 Date : 14th May 2010

MEMBER ORGANIZATIONS

Aker Powergas Pvt. Ltd.
Bharat Petroleum Corporation Ltd.
Bongaigaon Refinery & Petrochemicals Ltd
Bharat Petroleum Corporation Ltd.
Bongaigaon Refinery & Petrochemicals Ltd
Chambal Fertilizers & Chemicals Ltd.
Chennai Petroleum Corporation Ltd.
Cochin Refineries Ltd.
Deepak Fertilizers & Petrochemicals Ltd.
Duncan Industries Ltd.
Engineers India Ltd.
Fertilizers Corporation of India Ltd.
Frost & Sullivan India Ltd.
GAIL India Ltd.
Gujarat Alkalies & Chemicals Ltd.
Gujarat Narmada Valley Fertilizers Co. Ltd.
Gujarat State Fertilizers & Chemicals Ltd.
Hindustan Organic Chemicals Ltd.
Hindustan Petroleum Corporation Ltd.
Ion Exchange India Ltd.
Indian Farmers Fertilizers Co-Op Ltd.
Indian Oil Corporation Ltd.
Indian Petrochemicals Corporation Ltd.
Indo Gulf Corporation Ltd.
Krishtak Bharati Co-Op. Ltd.
Kribhco Shyam Fertilizers Ltd.
Lloyd's Register Asia
Madras Fertilizers Ltd.
Mangalore Chemical & Fertilizers Ltd.
Mangalore Refinery & Petrochemicals Ltd.
National Fertilizers Ltd.
National Organic Chemical Industries Ltd.
Oil & Natural Gas Corporation Ltd.
Petroffs Co-op Ltd.
Pidilite Industries Ltd.
Project & Development India Ltd.
Rashtriya Chemicals and Fertilizers Ltd.
Reliance Industries Ltd.
Reliance Petrochemicals Ltd.
Rolta India Ltd.
Simon India Ltd.
Southern Petrochemicals Industries Corporation Ltd.
Synthetics and Chemicals Ltd.
SI Group India Ltd.
Toyo Engineering India Ltd.
Udde India Ltd.
Zuari Industries Ltd. Goa.

To:
M/s. UNISON VALVES PVT. LTD
41/3/2, Vadgaonsheri
Pune

Dear Sir,

This has reference to the visit carried out at your works at Pune by the Technical Development Committee (West Zone) on 05th Feb.'10 consisting of following members:

Name	Organization
1. A S Kashikar	RCF Ltd.
2. S B Bhide	HOCL
3. Harshad Patel	Pidilite Industries Ltd.
4. N B Kulkarni	Toyo Engineering
5. S K Kulkarni	HPCL
6. N Mathur	EIL, Pune
7. Sankaral R	APG, Pune
8. P D Munshi	Udde India Pvt. Ltd.

The zonal committee has recommended you for following product range under customer / third party inspection.

Sr. No.	Product Range	Size	Material of Construction
1	Ball Valve as per design standard IS 9890	1 piece upto 2" NB – 150 # 2 piece upto 6" NB – 150 # 3 piece upto 4" NB – 150 #	CF 8 M / CF 8 / WCB
2	Thermodynamic Steam Trap	½", ¾", & 1" NG	

BRIEF COMPANY PROFILE

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

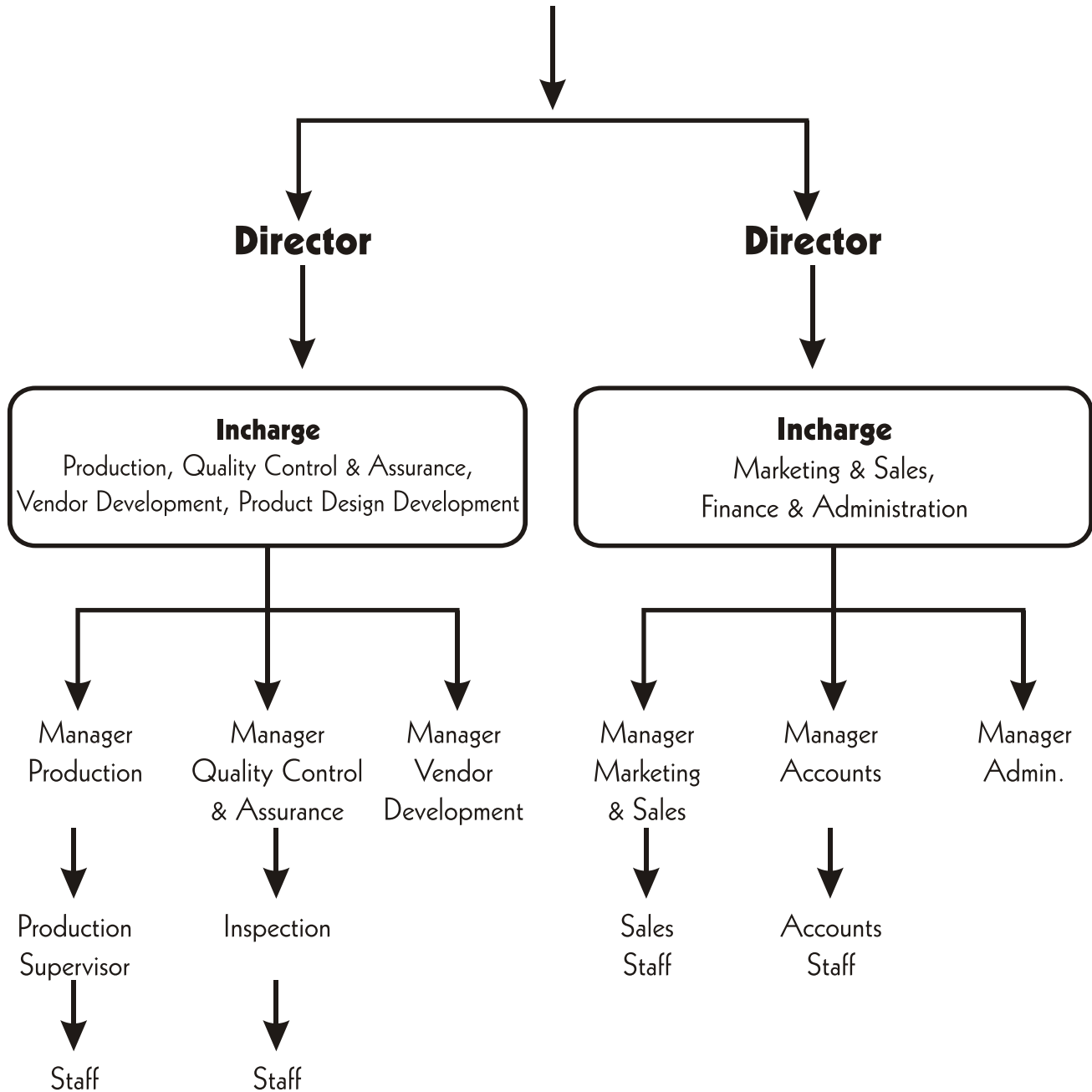
The Company's main products are Thermodynamic steam Traps and Ball Valves in various steels & alloys and the process to include other types of Valves such as Gate, Globe and check, is in the final stage of implementation.

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-21)both in India & overseas.

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

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

Organisation Chart



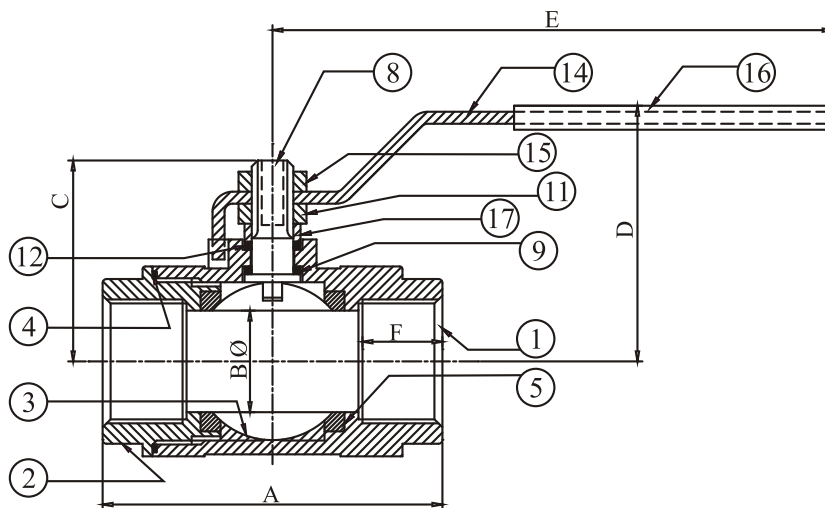
Machinery / Testing Facilities

Sr. No.	Particulars	Quantity
1.	General Purpose Lathes 5 1/2"	4 Nos.
2.	General Purpose Lathes 4 1/2"	17 Nos.
3.	Hacksaw Machines	4 Nos.
4.	Drilling Machines	4 Nos.
5.	Pedestal Grinders	4 Nos.
6.	Sander	1 Number
7.	Flywheel Press	1 Number
8.	Compressors ('ELGI')	2 Nos.
9.	Steam Boiler	1 No.
10.	Lapping Machine "HIFIN" Make	1 Unit
11.	Testing Rig for Hydraulic & Steam	1 Unit
12.	Hydrostatic Test Stands	2 Nos.

Inspection Instruments

1.	Vernier Calipers (6", 8", 10", 12", 16")	20 Nos.
2.	Micrometers (0-150)	11 Nos.
3.	Thread Plug & Ring Gauges (BSP / BSPT / NPT) (1/4" to 2")	43 Nos.
4.	Pressure Gauges (0-300 psi 0-3000 psi)	14 Nos.
5.	Moly Tester	2 Nos.
6.	Monochromatic Check Lite	1 Unit
7.	Torque Wrench (0 to 340) Nm.	3 Nos.

One Piece Design Screwed 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/BS 21/IS 554

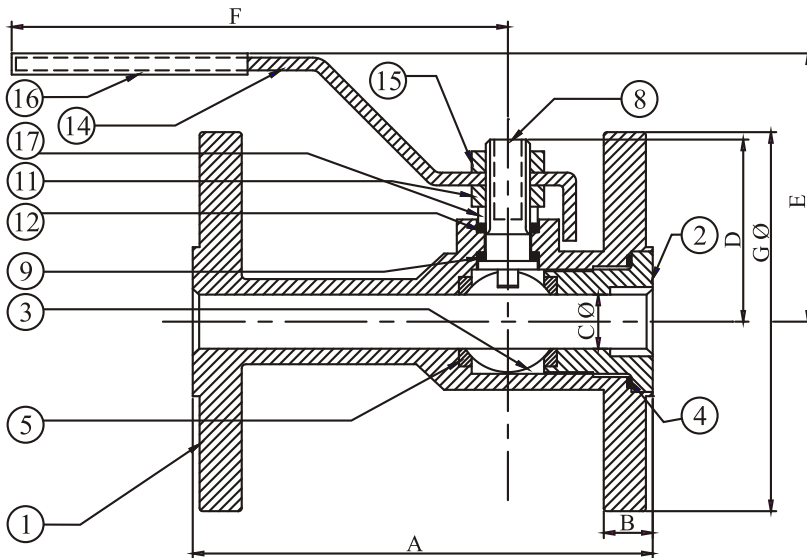


NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION		
17	GLAND	01	CARBON STEEL	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.	P.V.C.
15	LEVER NUT	01	CARBON STEEL	AISI 304	AISI 304
14	LEVER	01	CARBON STEEL	SS / CARBON STEEL	SS / CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	CARBON 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

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

One 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/IS 9884-1981



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	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 / CF8 M
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

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

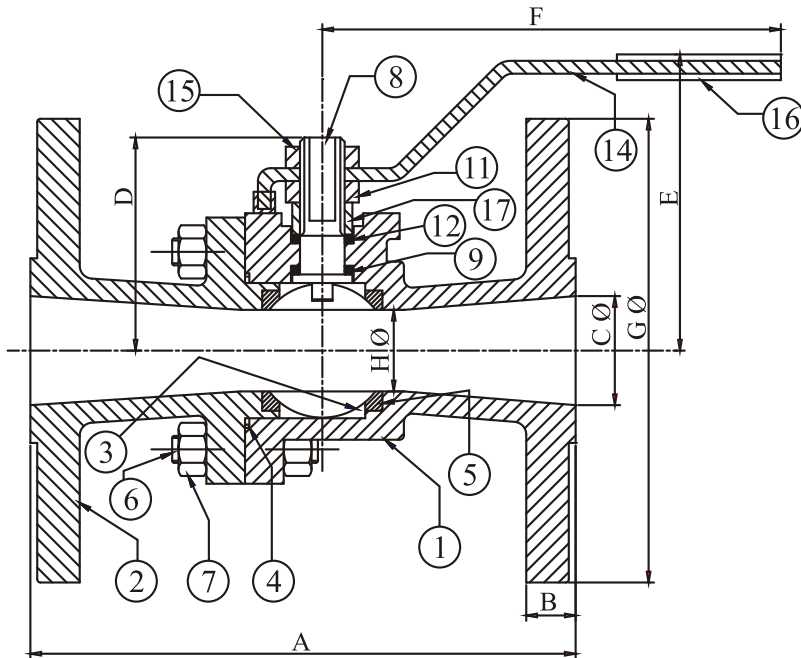
SIZES	A	B	C Ø	D	E	F	G Ø
1/2"	15	108	11.5	12.7	43	62	120
3/4"	20	118	11.5	19	47	65	120
1"	25	127	11.5	25.4	51	70	150
1 1/2"	40	165	14.5	37.5	73	91	175
2"	50	178	16	50	82	107	225
3"	80	203	19	75.4	109	128	325

CLASS 300

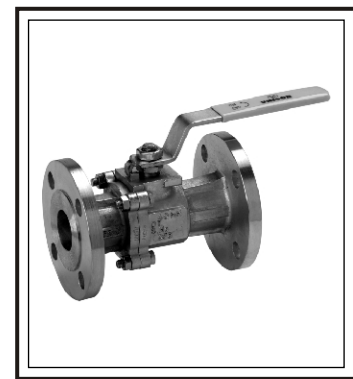
SIZES	A	B	C Ø	D	E	F	G Ø
1/2"	15	140	14.5	12.7	44	62	120
1"	20	165	17.5	25.4	64	78	175
1 1/2"	25	191	21	37.5	73	100	215
2"	40	216	22.5	50	92	123	273
2 1/2"	50	241	25.5	62	97.5	116	325
3"	80	283	28.5	75.4	122	137	400

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

Two Piece Design 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/IS 9884-1981

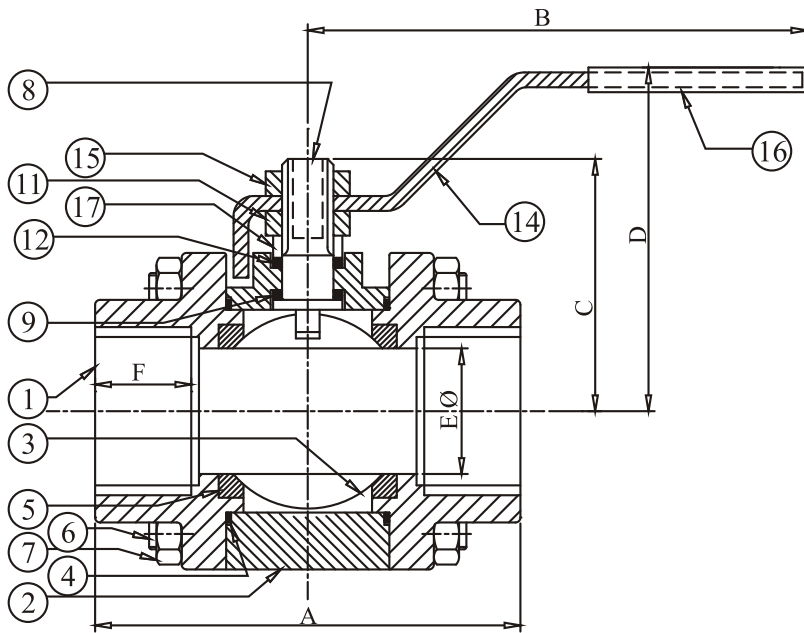


17	GLAND	01	CARBON STEEL	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.	P.V.C.
15	LEVER NUT	01	CARBON STEEL	AISI 304	AISI 304
14	LEVER	01	CARBON STEEL	S.S/ CARBON STEEL	S.S/ CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL	AISI 304	AISI 304
09	STEM SEAL	01	P.T.F.E.	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 SCREW	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.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION		

SIZES	A	B	C Ø	D	E	F	G Ø	H Ø
½"	15	108	11.5	12.7	43	65	120	89
¾"	20	118	13	19	43	65	120	98.4
1"	25	127	11.5	25.4	47	70	150	108
1½"	40	165	14.5	37.5	68	84	175	127
2"	50	178	16	50	73	94	225	152.4
2½"	65	191	17.5	64	91	110	250	178
3"	80	203	19	76	100	117	325	190.5
4"	100	229	24	99.5	129	145	400	229
6"	150	267	25.4	148	146	178	400	280
8"	200	292	28.6	200	212	243	475	343

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

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/BS 21/IS 554
 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



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
NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION		

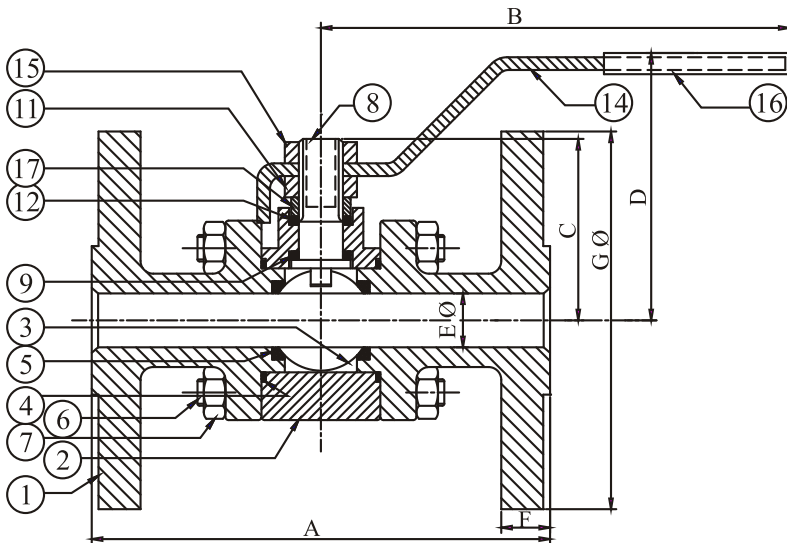
SIZES	A	E ∅	C	D	B	F
1/2"	15	67	12.7	43	64	120
3/4"	20	73	19	47	67	120
1"	25	86	25.4	51	70	150
1 1/4"	32	101	31.8	68	85	175
1 1/2"	40	105	37.5	73	88	175
2"	50	125	50	82	105	225

PRESSURE TABLE

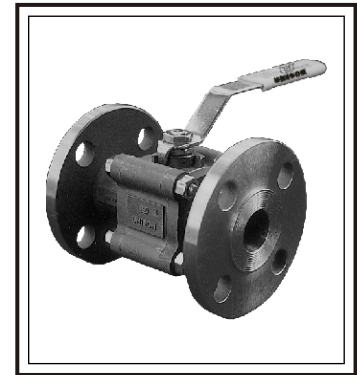
CLASS	TEST	MEDIUM	MIN.	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6

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

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/IS 9884-1981

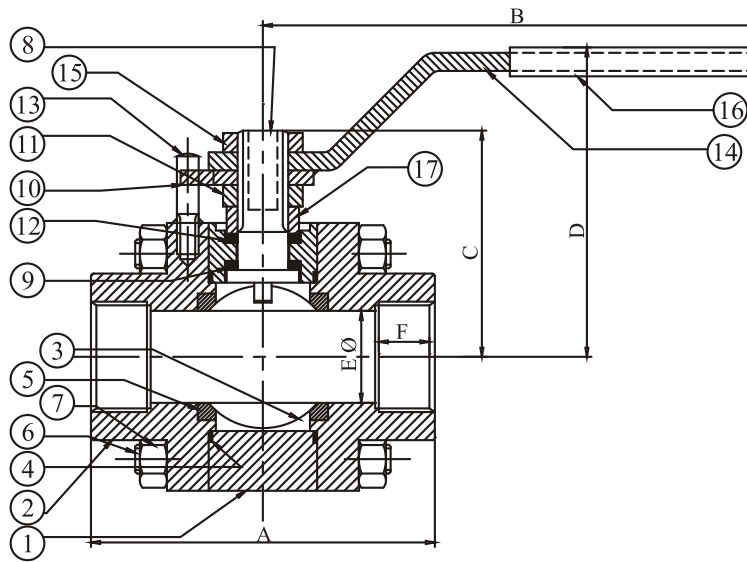


17	GLAND	01	CARBON STEEL	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.	P.V.C.
15	LEVER NUT	01	CARBON STEEL	AISI 304	AISI 304
14	LEVER	01	CARBON STEEL	S S / CARBON STEEL	S S / CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL	AISI 304	AISI 304
09	STEM SEAL	01	P.T.F.E.	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
NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION		

SIZES	A	F	EØ	C	D	B	GØ
1/2"	15	108	11.5	12.7	43	64	120
3/4"	20	118	11.5	19	47	67	120
1"	25	127	11.5	25.4	51	70	150
1 ¼"	32	140	13	31.8	68	85	175
1 ½"	40	165	14.5	37.5	73	88	175
2"	50	178	16	50	82	106	225
2 1/2"	65	191	17.5	64	100	121	250
3"	80	203	19	75.4	110	130	325
4"	100	229	24	99.5	140	156	400

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

Carbon Steel 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/BS 21/IS 554
 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



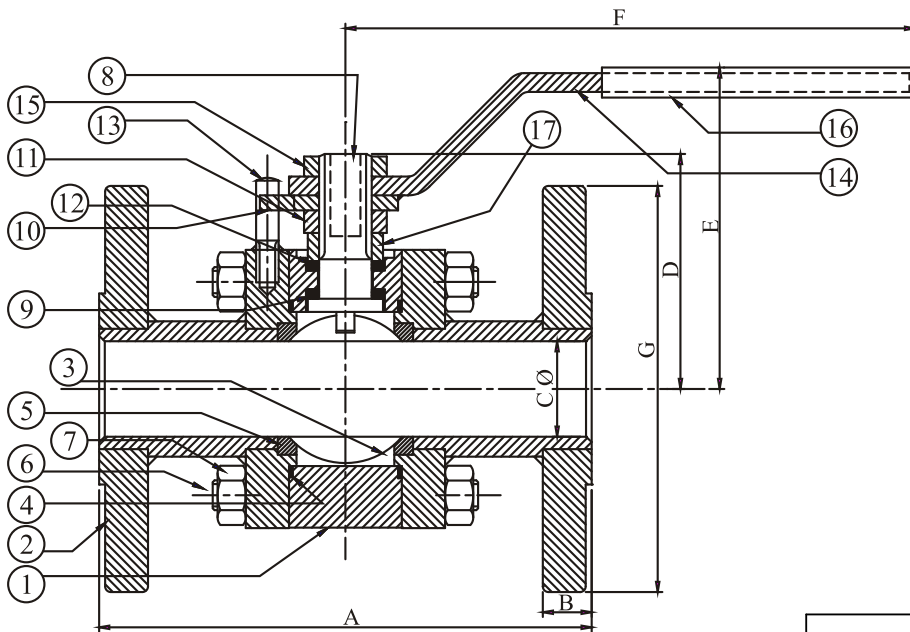
17	GLAND	01	CARBON STEEL
16	SLEEVE	01	P.V.C.
15	LEVER NUT	01	CARBON STEEL
14	LEVER	01	CARBON STEEL
13	STOP PIN	01	CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL
10	LEVER STOP PLATE	01	CARBON STEEL
09	STEM SEAL	01	P.T.F.E.
08	STEM	01	AISI 304
07	BODY NUT	08/12	CARBON STEEL
06	BODY 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
NO.	COMP. NAME	QTY.	MAT.OFCONST.

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
1½"	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

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/IS 9884-1981

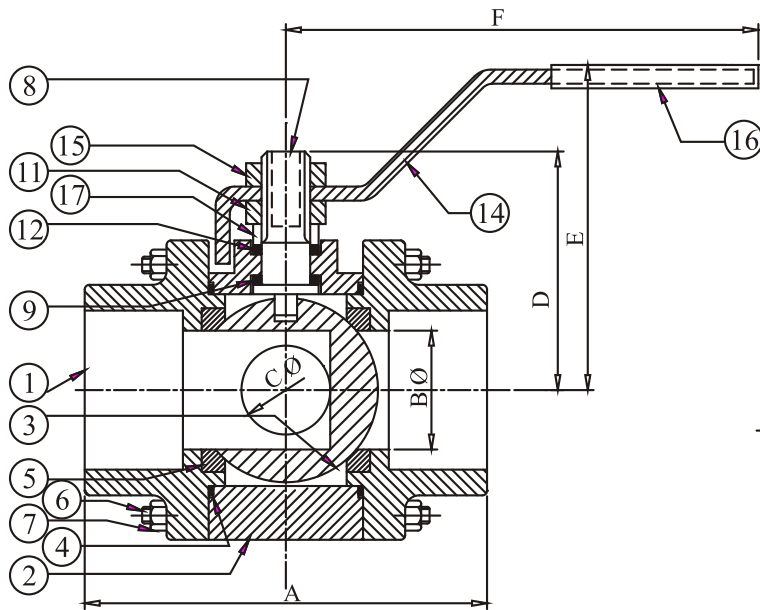


17	GLAND	01	CARBON STEEL
16	SLEEVE	01	P.V.C.
15	LEVER NUT	01	CARBON STEEL
14	LEVER	01	CARBON STEEL
13	STOP PIN	01	CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL
10	LEVER STOP PLATE	01	CARBON STEEL
09	STEM SEAL	01	P.T.F.E.
08	STEM	01	AISI 304
07	BODY NUT	08/12	CARBON STEEL
06	BODY 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.

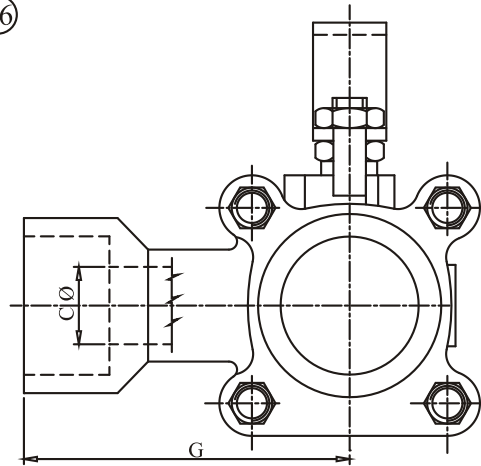
SIZES	A	B	C Ø	D	E	F	G Ø	
½"	15	108	11.5	12.7	43	65	120	89
¾"	20	118	11.5	19	51	73	120	98.4
1"	25	127	11.5	25.4	63	82	150	108
1 1/4"	32	140	13	31.8	69	88	175	117.5
1 ½"	40	165	14.5	37.5	74	93	175	127
2"	50	178	15	50	88	110	225	152.4
2 ½"	65	190	17.5	64	98	121	250	178
3"	80	203	19	75.4	109	132	325	190.5
4"	100	229	24	99.5	141	162	400	229

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

Three Piece Design Three Way L Port, S/E, S/W, B/W Ball Valve (RB)



Design Standard : IS 9890-1981
 Pressure Testing : BS 6755 Part I/API 598/IS 6157-1981
 Screwed Dimensions : ANSI B 1.20.1/BS 21/IS 554
 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



NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION
17	GLAND	01	CARBON STEEL
16	SLEEVE	01	P.V.C.
15	LEVER NUT	01	CARBON STEEL
14	LEVER	01	CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.
11	GLAND NUT	01	CARBON STEEL
09	STEM SEAL	01	P.T.F.E.
08	STEM	01	AISI 304
07	BODY NUT	08	CARBON STEEL
06	BODY STUD	04	CARBON STEEL
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 A216 GR WCB
01	SCREWED END	02	ASTM A216 GR WCB

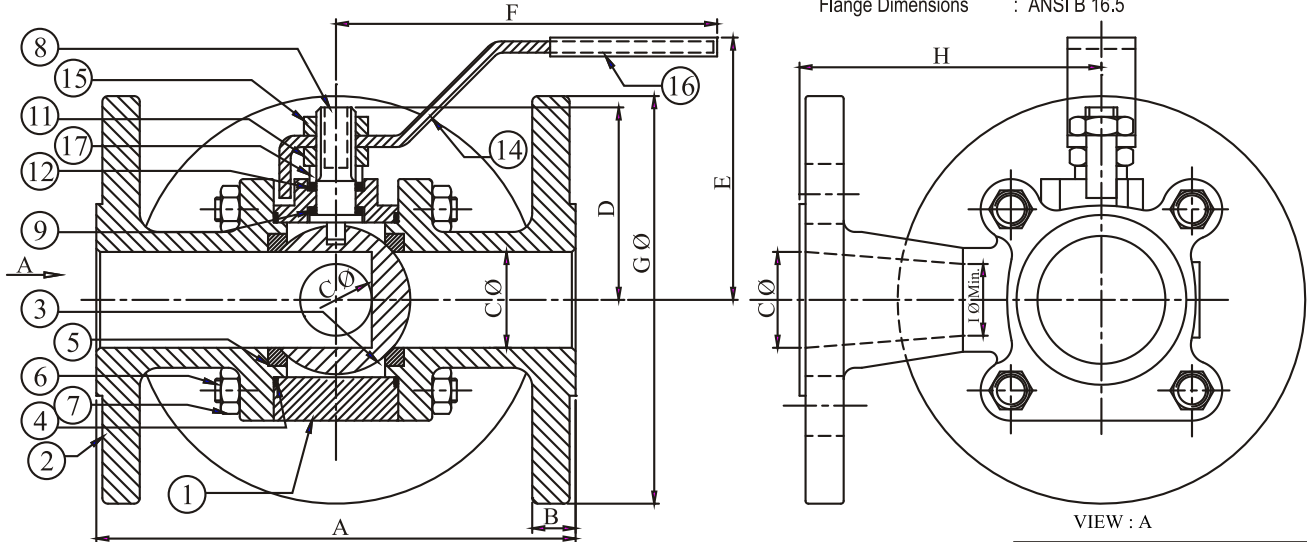
SIZES	A	B Ø	C Ø	D	E	F	G
1/2"	15	67	12.7	10	43	64	120
3/4"	20	73	19	12.7	47	67	120
1"	25	86	25.4	19	51	70	150
1 1/2"	40	105	37.5	30	73	88	175
2"	50	125	50	38	82	105	225

CLASS	TEST	MEDIUM	MIN.	
			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

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



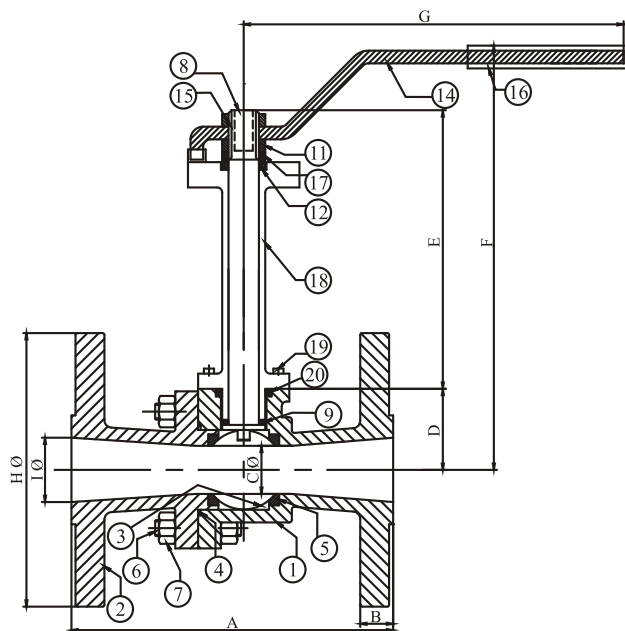
NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION		
17	GLAND	01	CARBON STEEL	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.	P.V.C.
15	LEVER NUT	01	CARBON STEEL	AISI 304	AISI 304
14	LEVER	01	CARBON STEEL	S.S / CARBON STEEL	S.S / CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	CARBON 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
3/4"	20	118	11.5	19	47	67	120	98.4	76
1"	25	127	11.5	25.4	51	70	150	108	80
1 1/2"	40	165	14.5	37.5	73	88	175	127	98
2"	50	178	16	50	82	106	225	152.4	107
2 1/2"	65	190	17.5	64	100	121	250	178	125
3"	80	203	19	75.4	109	130	325	190.5	133

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

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/IS 9884-1981



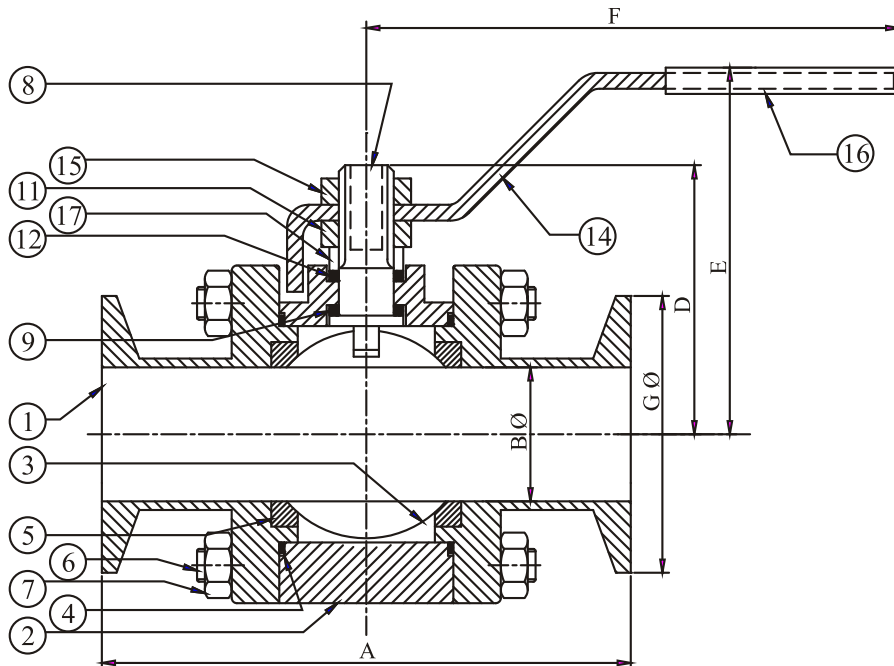
20	BONET SEAL	01	P.T.F.E.	P.T.F.E.	P.T.F.E.
19	BONET SCREW	04	CARBON STEEL	AISI 304	AISI 304
18	BONET	01	WCB/CARBON STEEL	CF8/AISI 304	CF8M/ AISI 316
17	GLAND	01	CARBON STEEL	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.	P.V.C.
15	LEVER NUT	01	CARBON STEEL	AISI 304	AISI 304
14	LEVER	01	CARBON STEEL	S 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 SCREW	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
NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION		

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

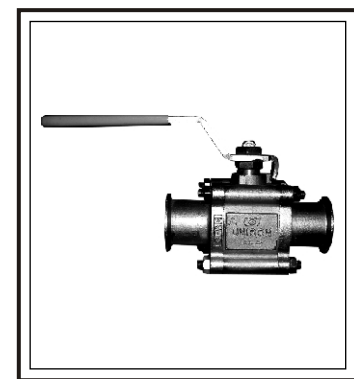
CLASS	TEST	MEDIUM	MIN.	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6

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

Three Piece Design Tri Clover End Ball Valve



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

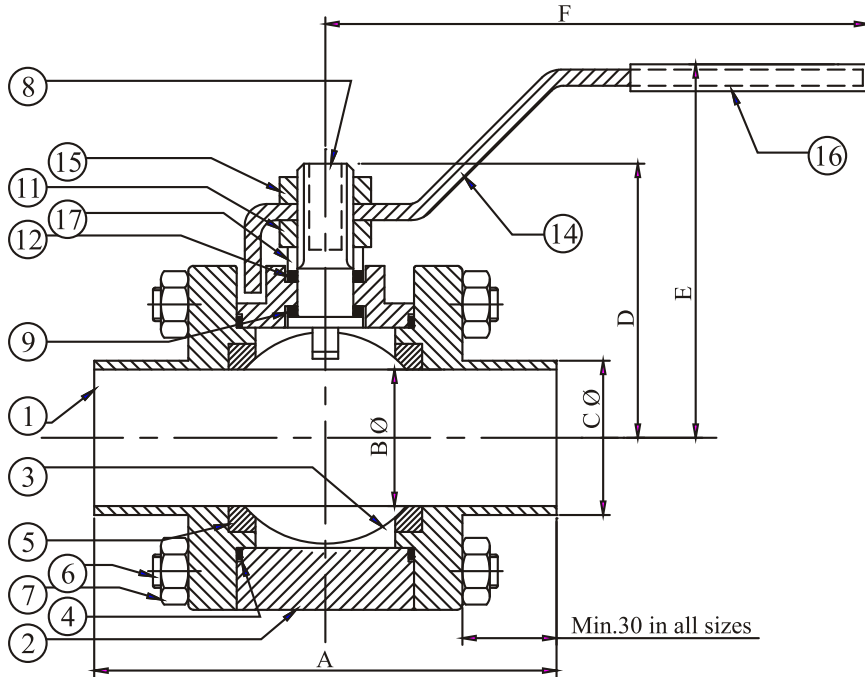


17	GLAND	01	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.
15	LEVER NUT	01	AISI 304	AISI 304
14	LEVER	01	S S / CARBON STEEL	S S / CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	AISI 304	AISI 304
09	STEM SEAL	01	P.T.F.E.	P.T.F.E.
08	STEM	01	AISI 304	AISI 316
07	BODY NUT	08	AISI 304	AISI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

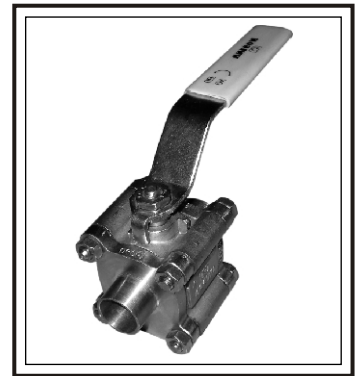
SIZES	A	B Ø	D	E	F	G Ø
1/2"	15	126	9.4	43	64	50.4
3/4"	20	125	15.75	47	67	50.4
1"	25	130	22.2	51	70	50.4
1 1/2"	40	140	34.8	73	88	50.4
2"	50	152	47.5	82	103	64

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

Three Piece Design OD Base Ball Valve



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



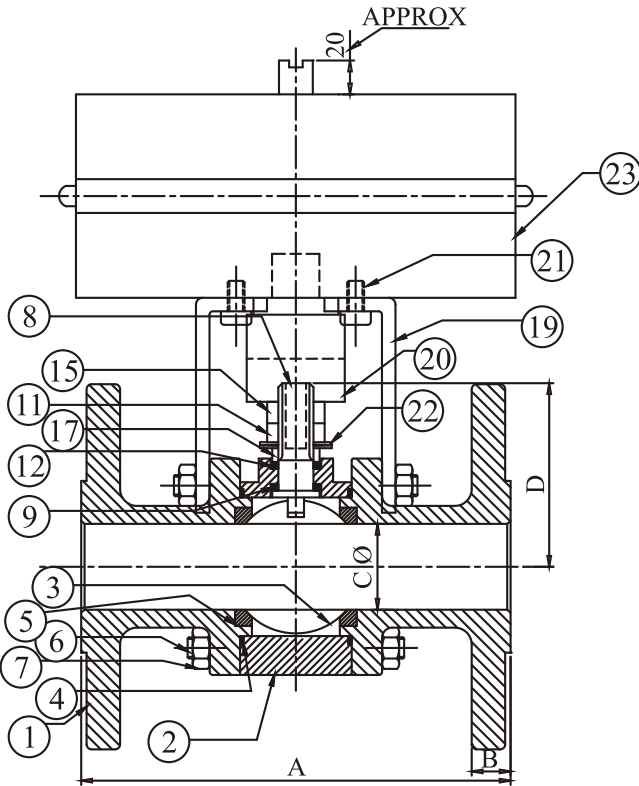
17	GLAND	01	AISI 304	AISI 304
16	SLEEVE	01	P.V.C.	P.V.C.
15	LEVER NUT	01	AISI 304	AISI 304
14	LEVER	01	S S / CARBON STEEL	S S / CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.	P.T.F.E.
11	GLAND NUT	01	AISI 304	AISI 304
09	STEM SEAL	01	P.T.F.E.	P.T.F.E.
08	STEM	01	AISI 304	AISI 316
07	BODY NUT	08	AISI 304	AISI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

SIZES	A	B Ø	C Ø	D	E	F	
1/2"	15	107	9.4	12.7	43	64	120
¾"	20	108	15.75	19.05	47	67	120
1"	25	113	22.2	25.4	51	70	150
1½"	40	127	34.8	38.1	73	88	175
2"	50	139	47.5	50.8	82	103	225

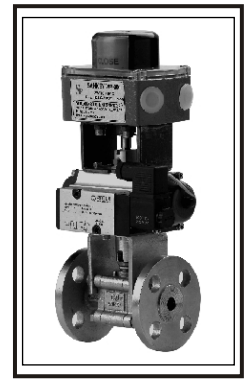
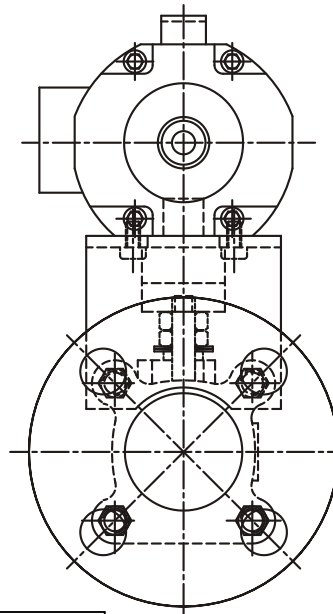
CLASS	TEST	MEDIUM	PRESSURE	
			PSI	BAR
150	SHELL	HYDROSTATIC	440	31
	SEAT	HYDROSTATIC	300	21
	SEAT	AIR	85	6

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

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/IS 9884-1981
 Screwed Dimensions : ANSI B 1.20.1/BS 21/IS 554
 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
21	ALLEN SCREW	04	CARBON STEEL
20	ADAPTOR	01	CARBON STEEL
19	BRACKET	02	CARBON STEEL
17	GLAND	01	CARBON STEEL
15	GLAND LOCK NUT	01	CARBON STEEL
12	GLAND PACKING	01	P.T.F.E.
11	GLAND NUT	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	04/6	CARBON STEEL
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 A216 GR WCB
01	FLANGE END	02	ASTM A216 GR WCB
NO.	COMP. NAME	QTY.	MATERIAL OF CONSTRUCTION

Note : Minimum air pressure to the actuator is 5 kg/cm².

SIZES	A			B	CØ	D
	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	68
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

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

Thermodynamic Steam Trap

Energy & Fuel Conservers

UNISON US - 55



ALSO
AVAILABLE
WITH IBR
APPROVAL

- 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.

US - 55 DIMENSIONS

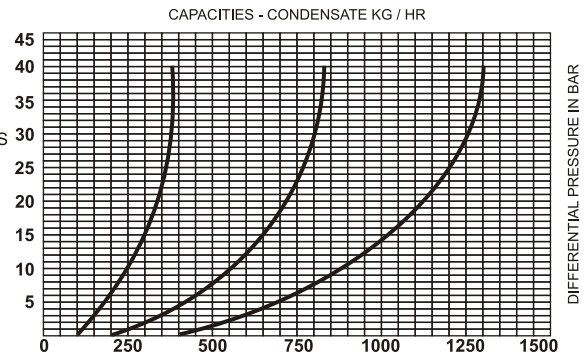
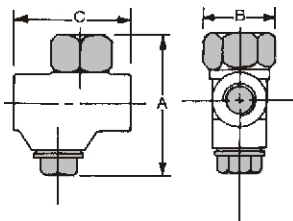
(APPROXIMATE) IN MILLIMETERS

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 : 15, 20 & 25 MM.NB
 RANGE : MAX. 32 BAR AT 425°C
 SCREWED ENDS
 MAX. 44 BAR AT 450°C
 SOCKET WELDED ENDS

CONNECTIONS: SCREWED BSPT OR
 N.P.T., SOCKET
 WELDED

M.O.C.
 BODY, CAP,
 DISC, PLUG : AISI 420
 STRAINER : AISI 304



● FOR CONTINUOUS DISCHARGE OF CONDENSATE AT SATURATED STEAM TEMPERATURE, BACK PRESSURE SHOULD NOT EXCEED 50% OF INLET PRESSURE.

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.

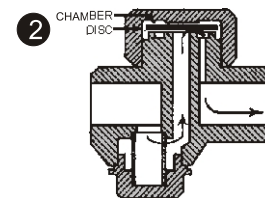
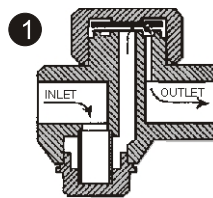
Horizontal piping to the trap should be such that it facilitates gravity drainage.

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.

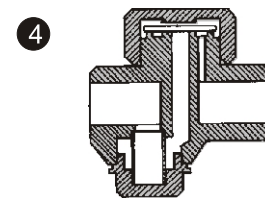
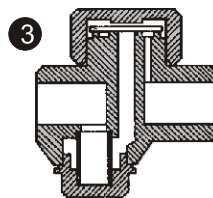
It is advisable to have a larger return line to prevent back pressure build-up.

OPERATING PRINCIPLE



The disc is lifted of 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.

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
150mm		14.00

Note : Nm = Kgm X 9.8



LIST OF SOME VALUABLE CLIENTS

- 1) Crane Process Flow Technologies Ltd.
- 2) Ceat Ltd.
- 3) Emcure Group Of Companies.
- 4) Hetero Labs Ltd.
- 5) Hikal Ltd.
- 6) Ion Exchange Ltd.
- 7) Kirloskar Brothers Ltd.
- 8) Biocon Ltd.
- 9) Praj Industries Ltd.
- 10) Pepsico Holdings Ltd.
- 11) Sun Pharmaceuticals Ltd.
- 12) Shasun Chemicals & Drugs Ltd.
- 13) Thermax Ltd.
- 14) Wipro Ltd.
- 15) Alfalaval (India) Ltd.

Certifications / Registrations

High Energy Materials Research laboratory (HEMRL)
Hindustan Aeronautics Limited (HAL)
Bharat Heavy Electricals Limited (BHEL)
Bharat Heavy Plate & Vessels Limited (BHPV)
Bongaigaon Refinery & Petrochemicals Limited (BPR)
Rashtriya Chemicals & Fertilizers Limited (RCF)
Hindustan Petroleum Corporation Limited (HPCL)
Technical Development Committee (TDC)
Indian Boiler Regulations (IBR)
Tata Consultancy Services (TCS)
Mitcon Consultancy Services
Chempro Expertise Private Limited
Doshi Consultants Private Limited
Arnita Engineers Private Limited

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Pune - 411 014. (INDIA) Tel. : 020-32922888. Tel./Fax.: 020-27030741 / 27032877 / 27034861
E-mail : unisonvalves@gmail.com Website : www.unisonvalves.net

UV: DOC:32 REV:02