



BALL VALVES FLOATING & TRUNNION MOUNTED



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Hart Valves

Consistent product quality and availability of substantial stocks, makes HART a dependable choice for cast gate, globe and check valves, where total reliability is the number one concern.

Hart valves offer valves either to standard specification, or valves can be modified to suit customers specific requirements. Both quickly and economically.

Hart has an extensive quality system which complies to the requirement of the major oil companies and has been audited and approved to ISO 9002 by Lloyd's register of industrial services.



Range

The range of products starts from 1/2" to 36". ANSI, JIS and DIN. Manufactured in carbon steel, low, medium and high alloys steel, special alloys. monel, inconel, duplex, hastelloy, etc.

Figure Number

Code table A			
Code Table 1 : VALVE TYPE			
HA	FLOATING BALL		
HB	FLOATING BALL 3 WAY FLANGE		
HE	FLOATING BALL REDUCED PORT		
HF	FLOATING BALL FULL PORT		
HH	TRUNNION MOUNTED 2 PCS BODY		
HT	TRUNNION MOUNTED 3 PCS BODY		
HW	FLOATING BALL WAFER TYPE		
HY	FLOATING BALL 3 WAY		
Code Table 2 : ANSI CLASS			
1	150 LB	9	900 LB
3	300 LB	10	1000 PSI
6	600 LB	15	1500 LB
8	800 LB	25	2500 LB

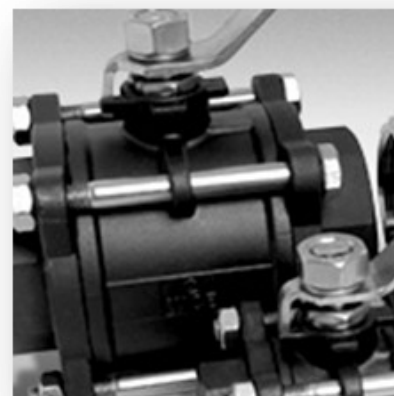
NOTE: Full material specification to be specified by user.

<u>Code Table:</u>	1	2	3	4
<u>Sample Valve:</u>	HF	1	1	R
<u>Result:</u>	FLOATING BALL FULL PORT	Class 150	WCB	RF

Code table B			
Code Table 3 : BODY MATERIAL			
1	WCB / A105	9	CN7M / ALLOY20
2	LCB / LF2	10	F51
3	F304	11	F53
4	F316	12	F91
5	CF8M	13	MONEL
6	CF3M / F316L	14	TITANIUM
7	CF8	15	SPECIAL
8	CF3 / F304L		
Code Table 4 : END CONNECTION			
R	RAISED FACE	S	SCREWED
RJ	RING TYPE JOINT	G	GRAYLOC HUB
BW	BUTT WELD	SP	SPECIAL
SW	SOCKET WELD		

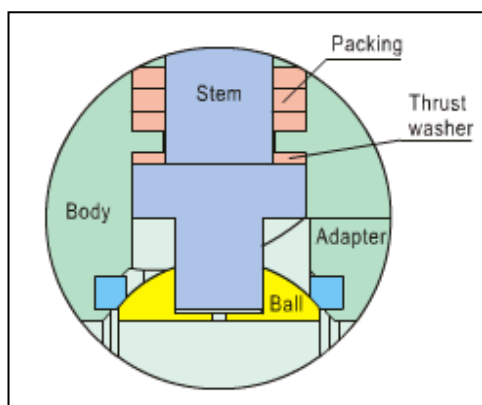
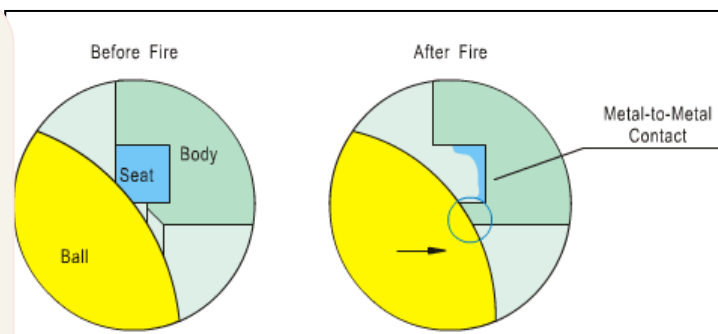
Floating Ball Valves

Technical Features



Fire Safe Seat Sealing

HART floating ball valves' fire safe is designed in accordance with API 607 & API SPEC 6FA. When non-metal resilient seats are destroyed in a fire, the upstream medium pressure push the ball into the downstream metal seat lip to cut off the line fluid and prevent the internal leakage due to a second-

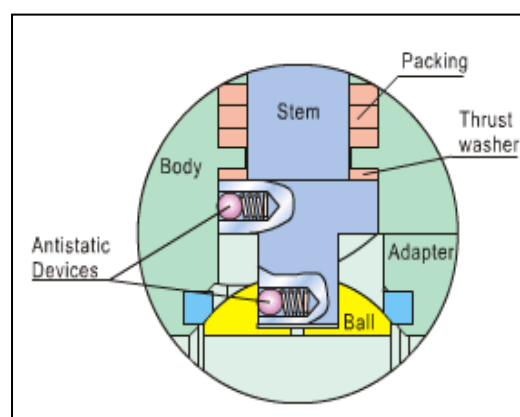


Blow-out Proof Stem

The stem is designed with integral T-type shoulder to provide blow-out proof effectively. It is internally inserted as the backseat function to assure stem seal-

Anti-Static Device

Antistatic devices between ball & stem and stem & body are assembled by a spring & a stainless steel ball, which ensure all metal valve parts are ground-





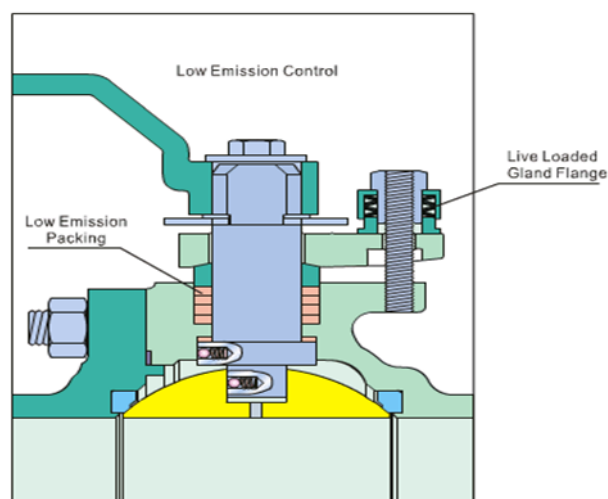
Floating Ball Valves

Low emission valve

With more and more concern for environment protection in the whole world, low emission valve will be widely used. It can prevent poisonous, flammable,

Low emission Packing

To ensure the seal of stem, the cone packing is made of expanding graphite in die-formed rings and has features of heat resistance, less stress relaxation and low creep. With this special structure, it allows for a low-friction on rotary & rising stem valve, therefore providing the stabilized sealing performance for long cycle life. For low temperature service, the standard



Controlled Stem and Stuffing Box Finish

The stem is made by cold rolling and stem surface finish is controlled by $Ra0.4$, which can reduce friction for stem moving and ensure the graphite to fill and migrate into the stems micro scratches, and function as a lubricant to reduce stem leakage. The stuffing box surface is controlled within $Ra1.6$ and $Ra3.2$ for better holding of the packing ring and results in a better sealing performance.

Full Port Ball Valve

Class 150

HF1

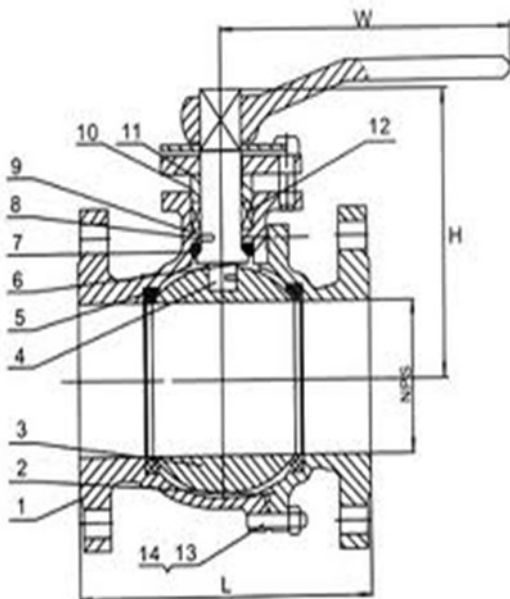


Description:

2-Piece Split body Floating ball
End Entry R.F. Flanged ends
Design and manufacture as API6D
Face to face dimensions as ANSI B16.10
End flange dimension as per ANSI B16.5
Pressure-temperature ratings as ANSI B16.34
Pressure test as API598

Standard Features:

Blow-Out Proof Stem
Fire safe design
Virgin grade sealing & Packing materials
Manual Operators:
Cast handles for size 1/2" to 3"
Cast pipe operator hand for sizes and larger



MATERIALS LIST

Description	Materials
Body	WCB, LCB, CF8M, CF8, DUPLEX
End cap	WCB, LCB, CF8M, CF8, DUPLEX
Ball	CF8 (304), CF8M (316), F51, ALLOY20
Seat ring	RPTFE, PTFE, PEEK, DEVLON, NYLON 304SS PTFE
Thrust washer	PTFE
Bolt	CARBOB STEEL, 304SS
Stem packing	TEFLON, PTFE
Stem	304SS, 316SS
Gland	304SS
Travel stop	304SS
Snap catch spring	304SS
Gland bolt	304SS
Handle	DUCTILE IRON
Yoke sleeve	ASTM A439 Tp.D2

VALVE DIMENSIONS AND APPROXIMATE WEIGHTS

Size	L		H	W	Weight	
	RF	RTJ			H.D	Gear
1/2"	108	119	72	115	4	-
3/4"	117	130	76	115	4	-
1"	127	140	92	150	5	-
1 1/2"	165	178	123	200	8	-
2"	178	191	132	200	12	-
2 1/2"	190	203	164	320	18	-
3"	203	216	173	320	24	-
4"	229	242	210	450	38	53
6"	394	407	288	800	82	102
8"	457	470	374	1120	145	185
10"	533	546	366	1420	-	280

Class 300

HF3

Full Port Ball Valve

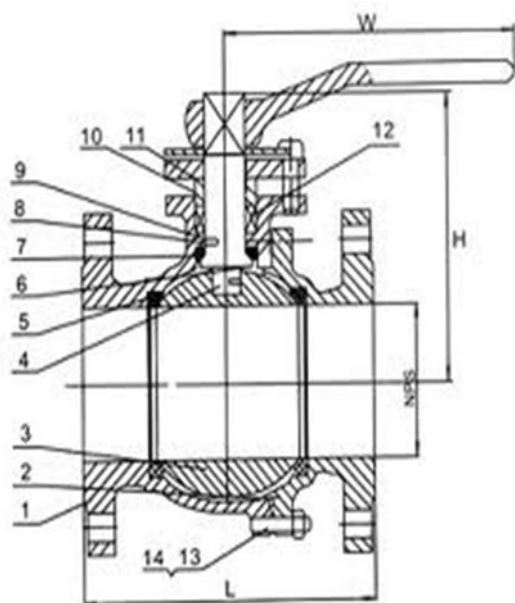


Description:

2-Piece Split body Floating ball
End Entry R.F. Flanged ends
Design and manufacture as API6D
Face to face dimensions as ANSI B16.10
End flange dimension as per ANSI B16.5
Pressure-temperature ratings as ANSI B16.34
Pressure test as API598

Standard Features:

Blow-Out Proof Stem
Fire safe design
Virgin grade sealing & Packing materials
Manual Operators:
Cast handles for size 1/2" to 3"
Cast pipe operator hand for sizes and larger



MATERIALS LIST

Description	Materials
Body	WCB, LCB, CF8M, CF8, DUPLEX
End cap	WCB, LCB, CF8M, CF8, DUPLEX
Ball	CF8 (304), CF8M (316), F51, ALLOY20
Seat ring	RPTFE, PTFE, PEEK, DEVLON, NYLON 304SS PTFE
Thrust washer	PTFE
Bolt	CARBOB STEEL, 304SS
Stem packing	TEFLON, PTFE
Stem	304SS, 316SS
Gland	304SS
Travel stop	304SS
Snap catch spring	304SS
Gland bolt	304SS
Handle	DUCTILE IRON
Yoke sleeve	ASTM A439 Tp.D2

VALVE DIMENSIONS AND APPROXIMATE WEIGHTS

Size	L		H	W	Weight	
	RF	RTJ			H.D	Gear
1/2"	140	151	72	115	3	-
3/4"	152	165	76	115	5	-
1"	165	178	92	150	6	-
1 1/2"	190	191	123	200	11	-
2"	216	203	132	200	16	-
2 1/2"	241	232	164	320	24	-
3"	283	257	173	320	34	52
4"	305	299	210	450	56	76
6"	403	321	336	800	125	163
8"	502	397	385	1120	222	267
10"	568	419	370	1420	288	328

Full Port Ball Valve

Class 600

HF6

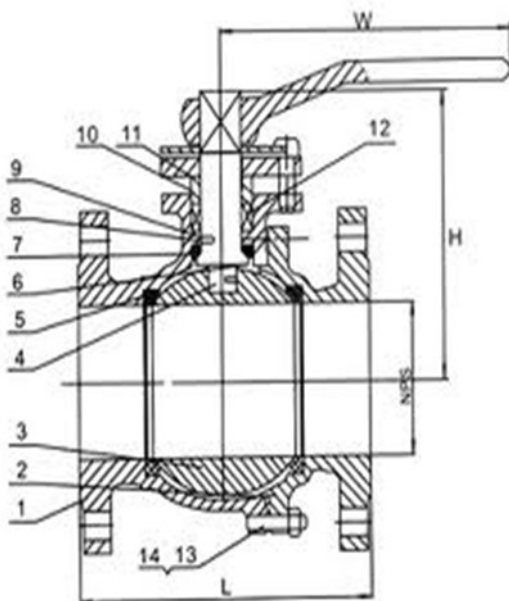


Description:

2-Piece Split body Floating ball
End Entry R.F. Flanged ends
Design and manufacture as API6D
Face to face dimensions as ANSI B16.10
End flange dimension as per ANSI B16.5
Pressure-temperature ratings as ANSI B16.34
Pressure test as API598

Standard Features:

Blow-Out Proof Stem
Fire safe design
Virgin grade sealing & Packing materials
Manual Operators:
Cast handles for size 1/2" to 3"
Cast pipe operator hand for sizes and larger



MATERIALS LIST

Description	Materials
Body	WCB, LCB, CF8M, CF8, DUPLEX
End cap	WCB, LCB, CF8M, CF8, DUPLEX
Ball	CF8 (304), CF8M (316), F51, ALLOY20
Seat ring	RPTFE, PTFE, PEEK, DEVLON, NYLON 304SS PTFE
Thrust washer	PTFE
Bolt	CARBON STEEL, 304SS
Stem packing	TEFLON, PTFE
Stem	304SS, 316SS
Gland	304SS
Travel stop	304SS
Snap catch spring	304SS
Gland bolt	304SS
Handle	DUCTILE IRON
Yoke sleeve	ASTM A439 Tp.D2

VALVE DIMENSIONS AND APPROXIMATE WEIGHTS

Size	L		H	W	Weight	
	RF	RTJ			H.D	Gear
1/2"	165	164	79	140	5	-
3/4"	190	190	83	140	7	-
1"	216	216	114	200	9	-
1 1/2"	241	241	125	250	17	-
2"	292	295	156	300	25	-
2 1/2"	330	333	172	350	42	-
3"	356	359	220	500	56	76
4"	432	435	250	650	85	123

Class 900

HF9

Full Port Ball Valve

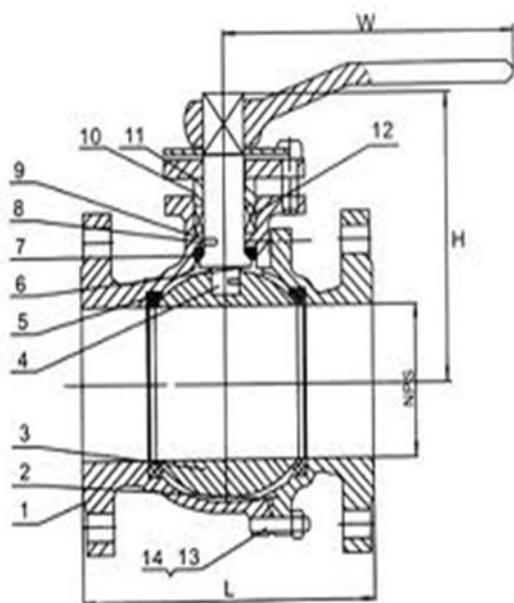


Description:

2-Piece Split body Floating ball
End Entry R.F. Flanged ends
Design and manufacture as API6D
Face to face dimensions as ANSI B16.10
End flange dimension as per ANSI B16.5
Pressure-temperature ratings as ANSI B16.34
Pressure test as API598

Standard Features:

Blow-Out Proof Stem
Fire safe design
Virgin grade sealing & Packing materials
Manual Operators:
Cast handles for size 1/2" to 3"
Cast pipe operator hand for sizes and larger



MATERIALS LIST

Description	Materials
Body	WCB, LCB, CF8M, CF8, DUPLEX
End cap	WCB, LCB, CF8M, CF8, DUPLEX
Ball	CF8 (304), CF8M (316), F51, ALLOY20
Seat ring	RPTFE, PTFE, PEEK, DEVLON, NYLON 304SS PTFE
Thrust washer	PTFE
Bolt	CARBOB STEEL, 304SS
Stem packing	TEFLON, PTFE
Stem	304SS, 316SS
Gland	304SS
Travel stop	304SS
Snap catch spring	304SS
Gland bolt	304SS
Handle	DUCTILE IRON
Yoke sleeve	ASTM A439 Tp.D2

VALVE DIMENSIONS AND APPROXIMATE WEIGHTS

Size	L		H	W	Weight	
	RF	RTJ			H.D	Gear
1/2"	216	216	98	150	9	-
3/4"	229	229	105	150	13	-
1"	254	254	110	200	16	-
1 1/2"	305	305	125	250	31	-
2"	368	371	160	350	45	-

Full Port Ball Valve

Class 1500

HF15

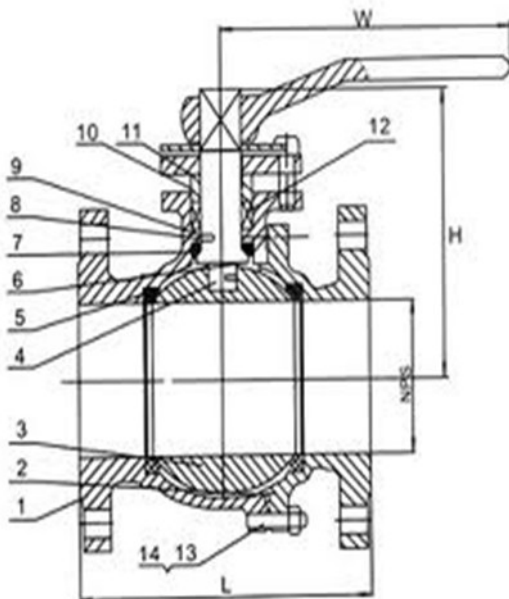


Description:

2-Piece Split body Floating ball
End Entry R.F. Flanged ends
Design and manufacture as API6D
Face to face dimensions as ANSI B16.10
End flange dimension as per ANSI B16.5
Pressure-temperature ratings as ANSI B16.34
Pressure test as API598

Standard Features:

Blow-Out Proof Stem
Fire safe design
Virgin grade sealing & Packing materials
Manual Operators:
Cast handles for size 1/2" to 3"
Cast pipe operator hand for sizes and larger



MATERIALS LIST

Description	Materials
Body	WCB, LCB, CF8M, CF8, DUPLEX
End cap	WCB, LCB, CF8M, CF8, DUPLEX
Ball	CF8 (304), CF8M (316), F51, ALLOY20
Seat ring	RPTFE, PTFE, PEEK, DEVLON, NYLON 304SS PTFE
Thrust washer	PTFE
Bolt	CARBON STEEL, 304SS
Stem packing	TEFLON, PTFE
Stem	304SS, 316SS
Gland	304SS
Travel stop	304SS
Snap catch spring	304SS
Gland bolt	304SS
Handle	DUCTILE IRON
Yoke sleeve	ASTM A439 Tp.D2

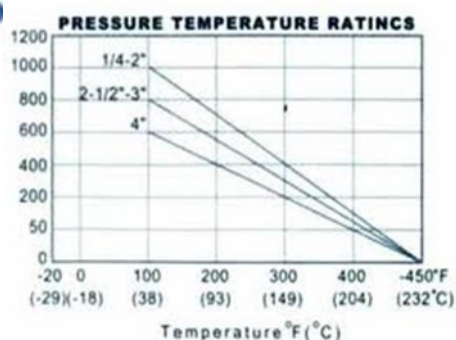
VALVE DIMENSIONS AND APPROXIMATE WEIGHTS

Size	L		H	W	Weight	
	RF	RTJ			H.D	Gear
1/2"	216	216	98	182	10	-
3/4"	229	229	105	200	14	-
1"	254	254	110	250	17	-
1 1/2"	305	305	130	350	33	-
2"	368	371	160	500	48	-

1PC 1000PSI

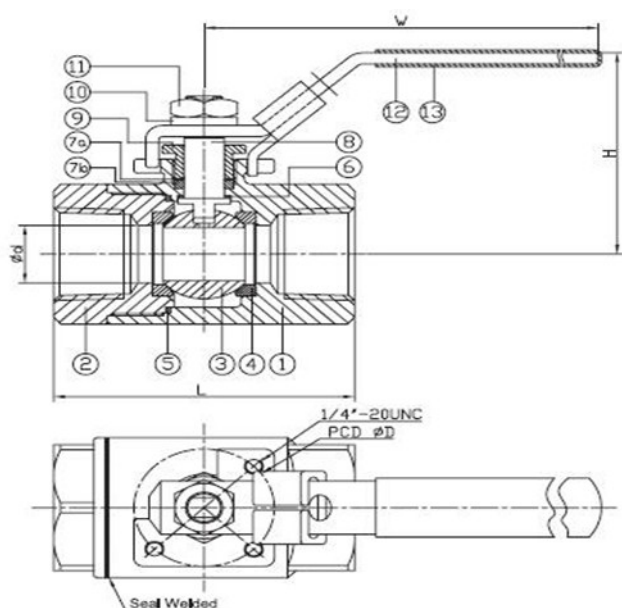
HF110

Reduced Port Ball Valve



Description:

Investment castings for body
Threaded ends : BSPT, NPT , DIN2999
Length according to DIN 3202-M3
Internal entry blow-out proof stem
Pressure rating : 1000PSI ,WOG (PN63)
Material : WCB, CF8M, CF8, CF3M
Pressure test as API598



MATERIALS LIST

Description	Materials
Body	WCB , CF8M , CF8
Retainer	WCB , CF8M , CF8
Ball	CF8 (304) , CF8M (316)
Seat A	PTFE , RTFE
	PTFE , RTFE
	SS304, SS316
Thrust washer	PTFE
Packing	PTFE
Gland ring	SS304
Spring washer	SS304
Stem nut	SS304
Handle	SS304
Handle	SS304
Handle sleeve	Plastic

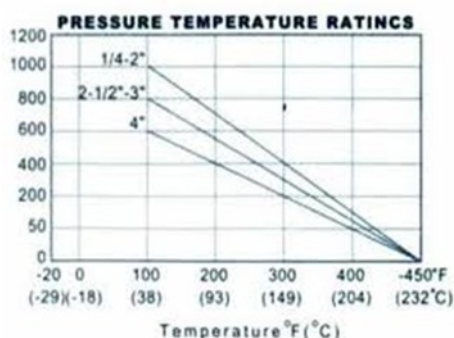
VALVE DIMENSIONS AND APPROXIMATE WEIGHTS

Size	L	d	H	W	Weight (Kg.)
3/8"	45	7	26	80	0.3
1/2"	57	9	31	88	0.4
3/4"	60	12	34	88	0.6
1"	72	15	38	105	1.1
1 1/4"	79	20	43	105	1.5
1 1/2"	85	25	50	124	2.8
2"	101	32	57	124	3.1
2 1/2"	125	38	89	180	5.6
3"	150	50	102	190	8.8
4"	195	65	120	215	

Reduced Port Ball Valve

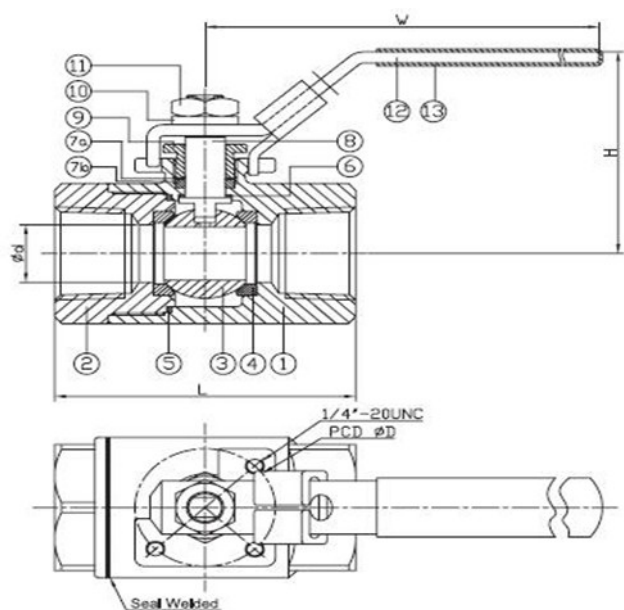
2PCs 1000PSI

HF210



Description:

Investment castings for body
Threaded ends : BSPT, NPT , DIN2999
Length according to DIN 3202-M3
Internal entry blow-out proof stem
Pressure rating : 1000PSI ,WOG (PN63)
Material : WCB, CF8M, CF8, CF3M
Pressure test as API598



MATERIALS LIST

Description	Materials
Body	WCB , CF8M , CF8 ,
End cap	WCB, LCB , CF8M , CF8 , DUPLEX
Ball	CF8 (304) , CF8M (316) , F51 , ALLOY20
Seat ring	RPTFE , PTFE , PEEK , DEVLON , NYLON 304SS PTFE
Thrust washer	PTFE
Bolt	CARBOB STEEL , 304SS
Stem packing	TEFLON , PTFE
Stem	304SS, 316SS
Gland	304SS
Travel stop	304SS
Snap catch spring	304SS
Gland bolt	304SS
Handle	DUCTILE IRON

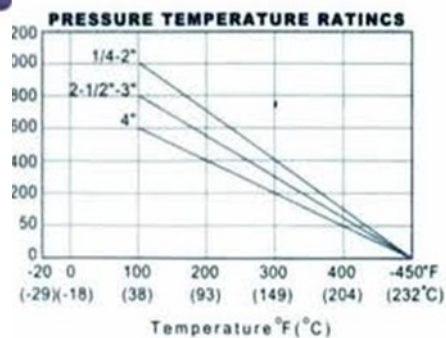
VALVE DIMENSIONS AND APPROXIMATE WEIGHTS

Size	L	d	H	W	Weight (Kg.)
1/4"	53	11.5	38.6	139	0.3
3/8"	54	12.5	38.6	139	0.3
1/2"	56	15	38.6	139	0.4
3/4"	67	20	46.15	139	0.6
1"	80	25	56.6	165	1.0
1 1/4"	94	32	61	165	1.6
1 1/2"	101	38	77.5	215	2.3
2"	115	49	85.2	215	3.3
2 1/2"	155	65	108.7	263	6.0
3"	180	80	117.4	263	9.8

3PCs 1000PSI

HF310

Reduced Port Ball Valve



Description:

Investment castings for body and cap
Threaded ends : ANSI B2.1, BS21, DIN 259/2999

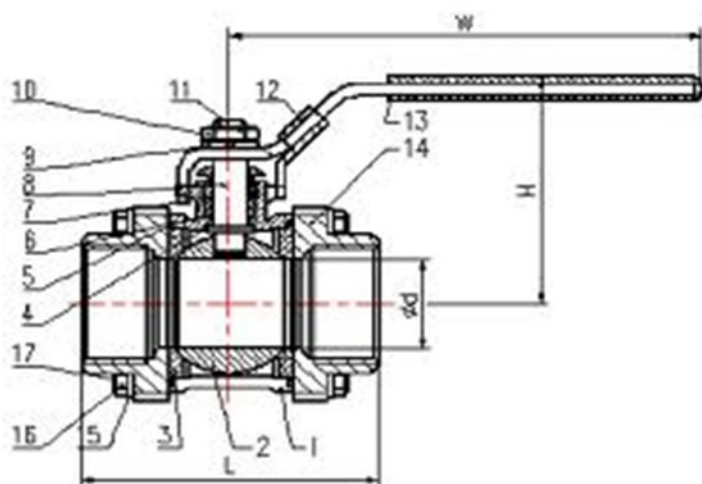
Length according to DIN 3202-M3

Internal entry blow-out proof stem

Pressure rating : 1000PSI (PN63)

Material : WCB, CF8M, CF8, CF3M

Pressure test as API598



MATERIALS LIST

Description	Materials
Body	WCB , CF8M , CF8
Ball	CF8 (304) , CF8M (316)
Ball seat	RPTFE , PTFE
Thrust washer	PTFE
	PTFE
Gland nut	SS304
Stem	SS316
Spring washer	SS304
Nut	SS304
Handle	SS304
Lock device	SS304
Handle cover	Plastic
Cap	CF8M
Spring washer	SS304
Bolt	SS304

VALVE DIMENSIONS AND APPROXIMATE WEIGHTS

Size	L	d	H	W	Torque (N-m)		Weight (Kg.)
					Action	Breakaway	
1/4"	55	8	40.3	120	2.47	3.64	0.33
3/8"	60	10	40.3	120	2.47	3.64	0.32
1/2"	75	15	40.3	120	2.47	3.64	0.39.
3/4"	80	20	45	120	4	6.11	0.76
1"	90	25	47.5	148	4.29	9.88	1.02
1 1/4"	110	32	55.5	148	11.7	15.6	1.73
1 1/2"	120	38	65.3	178	14	22	2.42
2"	140	50	73	178	19	26.78	3.42

Reduced Port Ball Valve

1 PC Class800

HA811

Description:

2Pieces Precision casting ball valve

Threaded ends : ANSI B1.20.1 (NPT)

DIN2999 & BS21

ISO7/1 & EN10226

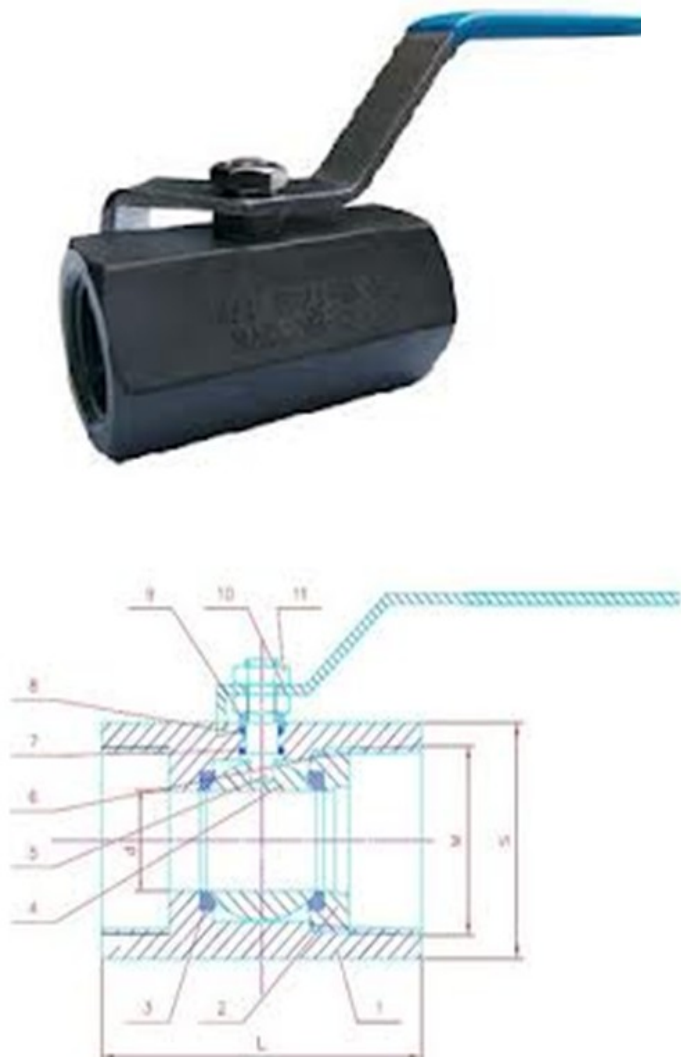
ASME B16.34 Wall thickness

Internal entry blow-out proof stem

Pressure rating : 2000 WOG/PSI

Material : A105 , LF2 , F316 , F304 , F51

Pressure test as API598



MATERIALS LIST

Description	Materials
Body	A105 , LF2 , F304 , F316 , F51
Bonnet	A105 , LF2 , F304 , F316 , F51
Ball	F316 , F304 , DUPLEX , ALLOY20
Seat	PTFE , RPTFE GRAPHITE RPTFE
a. Packing	PTFE
b. Packing	GRAPHITE
Stem	ASTM A276-316 , F316
Gland nut	SS304 , A194 2H
Spring washer	SS304
Nut	SS304
Handle	SS304
Handle sleeve	SS+PVC

VALVE DIMENSIONS AND APPROXIMATE WEIGHTS

Size	L	d	H	W
1/4"	43.2	5	27.5	60
3/8"	47.2	7	25.5	79
1/2"	62.5	9	51.9	118
3/4"	69.9	12.5	59.8	118
1"	85.9	15	67	120
1 1/4"	93.7	20	75.5	146
1 1/2"	101.6	25	78.5	146
2"	114.3	32	81.5	152

2PCs Class800

HA820

Reduced Port Ball Valve



Description:

2Pieces Precision casting ball valve

Threaded ends : ANSI B1.20.1 (NPT)

DIN2999 & BS21

ISO7/1 & EN10226

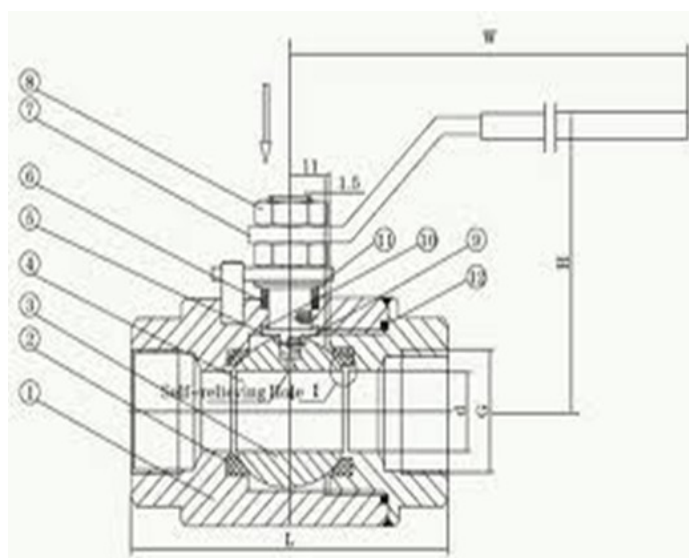
ASME B16.34 Wall thickness

Internal entry blow-out proof stem

Pressure rating : 2000 WOG/PSI

Material : A105 , LF2 , F316 , F304 , F51

Pressure test as API598



* Face to Face length can be as per customer s requirements.

MATERIALS LIST

Description	Materials
Body	A105 , LF2 , F304 , F316 , F51
Bonnet	A105 , LF2 , F304 , F316 , F51
Ball	F316 , F304 , DUPLEX , ALLOY20
Seat	PTFE , RPTFE
	GRAPHITE
	RPTFE
a. Packing	PTFE
b. Packing	GRAPHITE
Stem	ASTM A276-316 , F316
Gland nut	SS304 , A194 2H
Spring washer	SS304
Nut	SS304
Handle	SS304
Handle sleeve	SS+PVC

VALVE DIMENSIONS AND APPROXIMATE WEIGHTS

Size	L	d	H	W
1/4"	70	6	51	108
3/8"	70	9	51	108
1/2"	70	13	51	108
3/4"	80	17	68	146
1"	95	23	68	178
1 1/4"	115	28	85	178
1 1/2"	125	35	105	230
2"	135	49	105	230
2 1/2"	155	63	125	280
3"	180	80	180	280

Reduced Port Ball Valve

3PCs Class800

HA830



Description:

3 Pieces design ANSI B16.34, EN12516-1

Face to Face : ANSI B36.10

Threaded ends : ANSI B1.20.1 (NPT)

Socket-Weld ends : ANSI B16.11

BW Ends : ASME B16.9

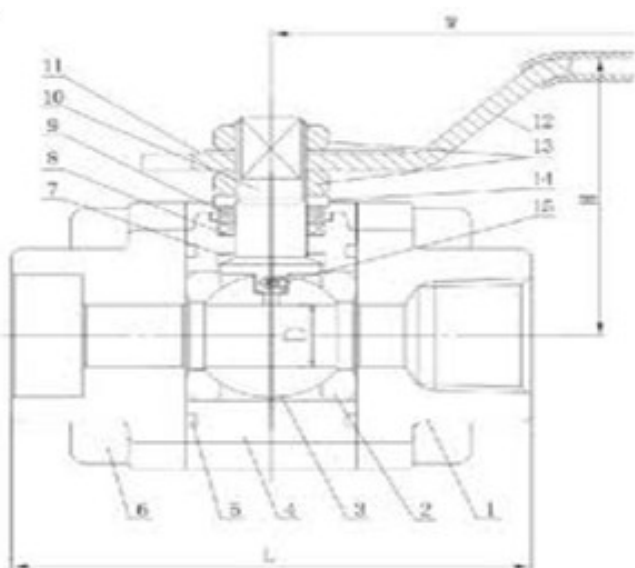
Valve Fire Safe Design : API607/API6FA

Blowout Proof Stem Design

Valve Marking : MSS-SP25

Pressure rating : 2000 WOG/PSI

Pressure test as API598



* Face to Face length can be as per customer s requirements.

MATERIALS LIST

Description	Materials
Body	A105N , LF2 , F304 , F316 , DUPLEX
Cap	A105N , LF2 , F304 , F316 , DUPLEX
Ball	F304 , F316 , F51 , ALLOY20
Seat	PTFE , RTFE , RPTFE , VITON
	PTFE , VITON
	PTFE , RPTFE
Stem packing	PTFE , RPTFE
Packing gland	SS304
Stem	ASTM A182 -F316
Handle washer	SS304
Stem nut	SS304
Bonnet nut	CARBON STEEL/Gr.B7, AISI304/Gr.B8
Washer	CARBON STEEL/Gr.2H, AISI304/Gr.8
Body stud	CARBON STEEL , AISI304
Handle	ZINC PLATED STEEL, AISI304
Handle sleeve	Plastic
Stop screw	CARBON STEEL , AISI304

VALVE DIMENSIONS AND APPROXIMATE WEIGHTS

Size	L	d	H	W
1/2"	92	9	51	108
3/4"	111	13	68	146
1"	127	18	81	178
1 1/4"	140	23	85	178
1 1/2"	152	28	105	200
2"	152	35	105	200
3"	250	57	140	250

3PCs Class1500

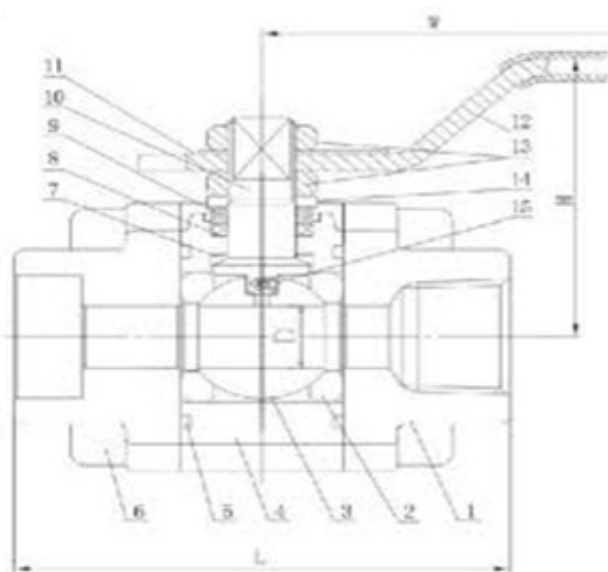
HA1530

Reduced Port Ball Valve



Description:

3 Pieces design ANSI B16.34
Face to Face : ANSI B36.10
Threaded ends : ANSI B1.20.1 (NPT)
Socket-Weld ends : ANSI B16.11
BW Ends : ASTM B16.9
Valve Fire Safe Design : API607 / API6FA
Valve Antistatic Design : API6D
Internal entry blow-out proof stem
Valve Marking : MSS-SP25
Pressure rating : 4000-6000 WOG/PSI
Pressure test as API598



* Face to Face length can be as per customer s requirements.

MATERIALS LIST

Description	Materials
Body	A105N , LF2 , F304 , F316 , F51
Cap	A105N , LF2 , F304 , F316 , F51
Ball	304 , 316 , DUPLEX , ALLOY20
Seat	PTFE , RPTFE , PEEK , DEVLON
	PTFE , RPTFE , VITON , PEEK , DEVLON
	PTFE , RPTFE
Stem packing	PTFE , RPTFE
Packing gland	SS304
Stem	ASTM A276-316
Handle washer	SS304
Stem nut	SS304
Bonnet nut	CARBON STEEL/Gr.B7, AISI304/Gr.B8
Washer	CARBON STEEL/Gr.2H, AISI304/Gr.8
Body stud	CARBON STEEL , AISI304
Handle	ZINC PLATED STEEL, AISI304
Handle sleeve	Plastic
Stop screw	CARBON STEEL , AISI304

VALVE DIMENSIONS AND APPROXIMATE WEIGHTS

Size	L	d	H	W
1/2"	100	11.1	85	193
3/4"	127	15.5	95	193
1"	140	21	110	225
1 1/4"	170	34	140	350
1 1/2"	170	34	140	350
2"	200	43	150	350

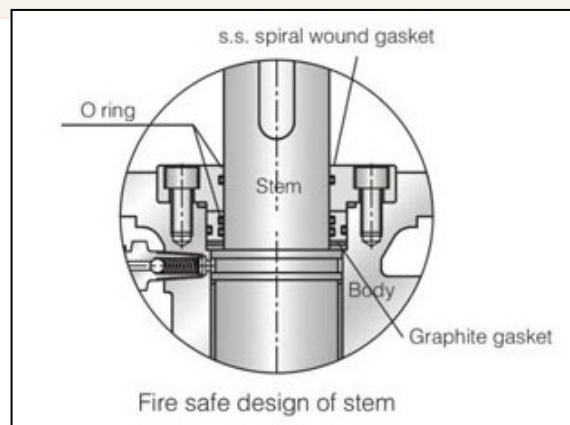
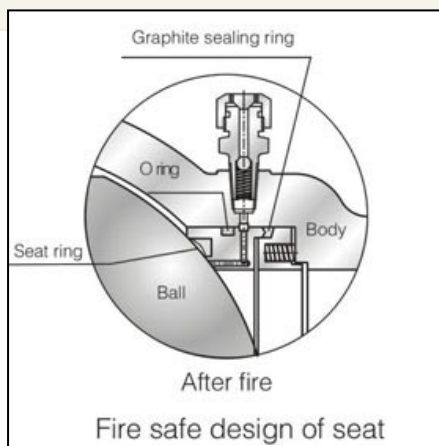
Trunnion mounted Ball Valve



Technical Features

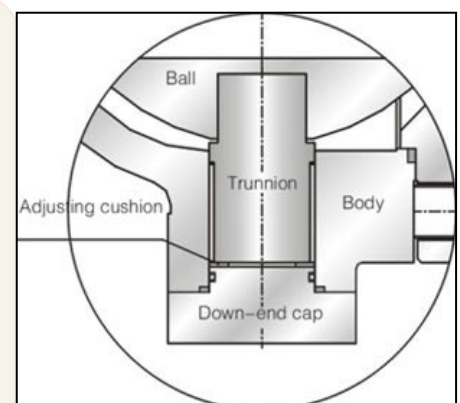
Ball Valve Sealant Injection Device

Trunnion Mounted Ball Valves are provided with devices for Sealant injection, which are on both the stem and seat for the trunnion ball valve and in the body cavity for ball valve. When the O ring of stem or the body seat ring is damaged due to accident, the medium leakage between body and stem can be prevented by injecting the Sealant through the device.



Anti-static Design

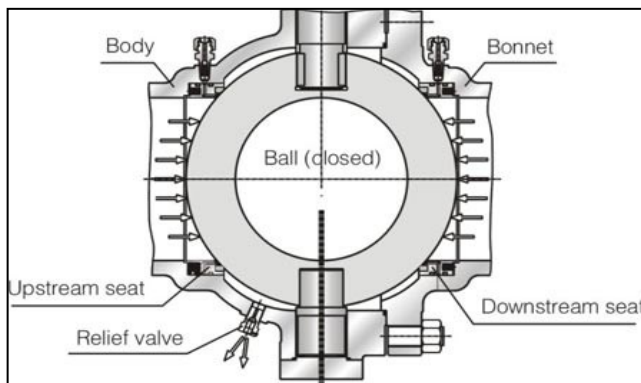
Except for the anti-static features floating ball valve has, the trunnion ball valve has more. The ball of the trunnion ball valve gets close contact with each other through the trunnion, adjusting cushion, and down-end cap, the passage of static electricity thus forms together with the valve, which may lead the static electricity caused by sparks generated by friction between the ball and seat during on and off performance to the ground to prevent the possible risk of fire or explosion.



Trunnion mounted Ball Valve

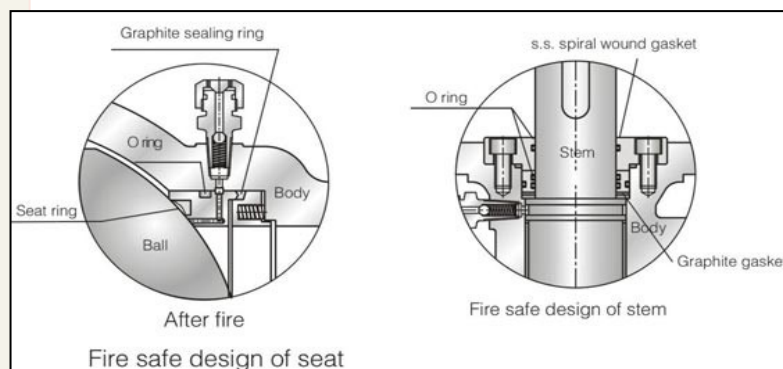
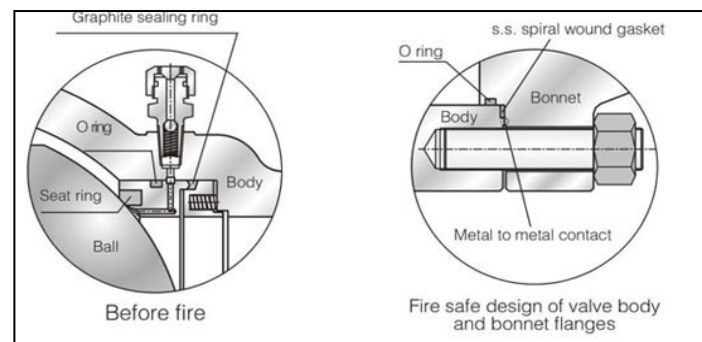
Double Block and Bleed

Trunnion Ball Valve features the front ball sealing design structure. Each seat of the ball valve can separately cut off medium at both upstream and downstream to achieve double block function. When the ball valve is closed, body cavity is segregated from both upstream and downstream even there is pressure at both ends. The medium left in the body cavity could increase the pressure to propel the seats. The medium could be bled out through the relief valve to ensure valve



Fire Safe Design

With the ball valves heated in a fire application, the nonmetal material parts such as seat sealing ring of PTFE, O ring for the stem, and sealing gasket for body and bonnet, might be damaged due to high temperature. HART's special design of auxiliary metal to metal or the graphite seal is designed for the trunnion ball valve to effectively prevent bolt internal and external leakage of the valve in case of fire as required by customers, HART's fire safe design for the trunnion ball valve meets the requirement of API607, API6Fa and BS6755.



Trunnion mounted Ball Valve

Class 150

HT1

Description:

Design & manufacture: API6D.

Face to face dimension : ASME B16.10

Flange dimension: ASME B16.5.

Double Block and Bleed

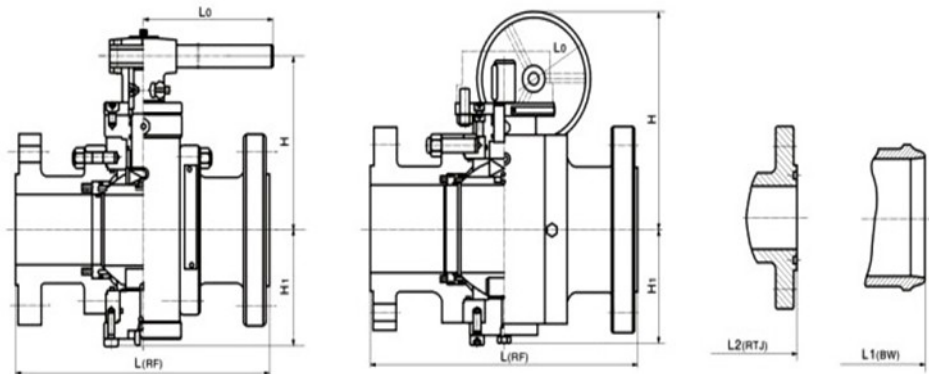
Anti-static Design

Fire Safe Design API607, API6Fa and BS6755

Inspect & test:API598

NACE 0175

Locking device



TWO PIECE TRUNNION MOUNTED * FULL AND REDUCED BORE * ASME 150

API6D		TEST PRESSURE 425 PSI								MAX.WP.275 PSI		
Size	L RF	L2 RTJ	L1 BW	B	B1	C	H1	H	L	Lo	H	Weight (Kg.)
2" X 1 1/2"	178	191	216	50	38	152	80	144	250	LEVER OPERATED		15
2" X 2"	178	191	216	50	N/A	152	80	144	250			15
3" X 2"	203	216	282	76	50	191	102	144	250			26
3" X 3"	203	216	282	76	N/A	191	102	194	350			33
4" X 3"	229	242	305	100	76	229	140	194	350			50
4" X 4"	229	242	305	100	N/A	229	140	210	460			56
6" X 4"	394	407	457	152	100	279	135	210	460			118
6" X 6"	394	407	457	152	N/A	279	135	195	800			125
8" X 6"	457	470	521	203	152	343	195	284	310	165	82.5	150
8" X 8"	457	470	521	203	N/A	343	195	318	355	210	97.5	195
10" X 8"	533	546	559	254	203	406	243	318	355	210	97.5	230
10" X 10"	533	546	559	254	N/A	406	243	378	355	210	97.5	270
12" X 10"	610	623	635	305	254	483	287	378	355	210	97.5	278
12" X 12"	610	623	635	305	N/A	483	287	435	470	285	140	850
14" X 12"	686	697	762	337	305	533	345	445	470	285	140	480
14" X 14"	686	697	762	337	N/A	533	345	500	600	360	215	1060
16" X 14"	762	775	838	387	337	597	383	502	600	360	215	585
16" X 16"	762	775	838	387	N/A	597	383	560	600	360	215	1380
18" X 16"	864	877	914	438	387	635	448	560	600	360	215	890
18" X 18"	864	877	914	438	N/A	635	448	595	600	360	295	1155
20" X 18"	914	927	991	489	438	698	483	595	600	360	295	955
20" X 20"	914	927	991	489	N/A	698	483	660	600	360	295	1815
24" X 20"	1067	1080	1143	591	489	812	538	660	600	360	295	1650
24" X 24"	1067	1080	1143	591	N/A	812	538	745	600	360	295	2550

Class300

HT3

Trunnion mounted Ball Valve

Description:

Design & manufacture: API6D.

Face to face dimension : ASME B16.10

Flange dimension: ASME B16.5.

Double Block and Bleed

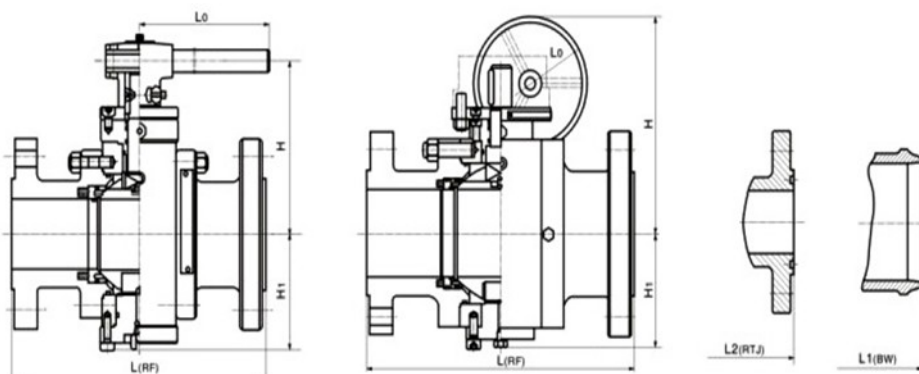
Anti-static Design

Fire Safe Design API607, API6Fa and BS6755

Inspect & test:API598

NACE 0175

Locking device



TWO PIECE TRUNNION MOUNTED * FULL AND REDUCED BORE * ASME 300

API6D			TEST PRESSURE 1100 PSI							MAX.WP. 720 PSI		
Size	L RF	L2 RTJ	L1 BW	B	B1	C	H1	H	L	Lo	H	Weight (Kg.)
2" X 1 1/2"	216	232	216	50	38	165	90	144	250	LEVER OPERATED		18
2" X 2"	216	232	216	50	N/A	165	90	144	250			24
3" X 2"	282	298	282	76	50	210	115	144	250			35
3" X 3"	282	298	282	76	N/A	210	115	194	350			44
4" X 3"	305	321	305	100	76	254	135	194	350			65
4" X 4"	305	321	305	100	N/A	254	135	210	460			75
6" X 4"	403	419	457	152	100	318	170	210	460			105
6" X 6"	403	419	457	152	N/A	318	170	195	800			125
8" X 6"	502	518	521	203	152	381	195	265	310	165	82.5	150
8" X 8"	502	518	521	203	N/A	381	243	318	355	210	97.5	195
10" X 8"	568	584	559	254	203	445	243	318	355	210	97.5	230
10" X 10"	568	584	559	254	N/A	445	287	378	355	210	97.5	270
12" X 10"	648	664	635	305	254	521	287	378	355	210	97.5	278
12" X 12"	648	664	635	305	N/A	521	345	435	470	285	140	850
14" X 12"	762	778	762	337	305	584	345	435	470	285	140	480
14" X 14"	762	778	762	337	N/A	584	383	500	600	360	215	1060
16" X 14"	838	854	838	387	337	648	383	500	600	360	215	585
16" X 16"	838	854	838	387	N/A	648	448	560	600	360	215	1380
18" X 16"	914	930	914	438	387	711	448	560	600	360	215	890
18" X 18"	914	930	914	438	N/A	711	483	595	600	360	295	1155
20" X 18"	991	1010	991	489	438	775	483	595	600	360	295	955
20" X 20"	991	1010	991	489	N/A	775	538	660	600	360	295	1815
24" X 20"	1143	1114	1143	597	489	914	538	660	600	360	295	1650
24" X 24"	1143	1114	1143	597	N/A	914	627	745	600	360	295	2550

Trunnion mounted Ball Valve

Class600

HT6

Description:

Design & manufacture: API6D.

Face to face dimension : ASME B16.10

Flange dimension: ASME B16.5.

Double Block and Bleed

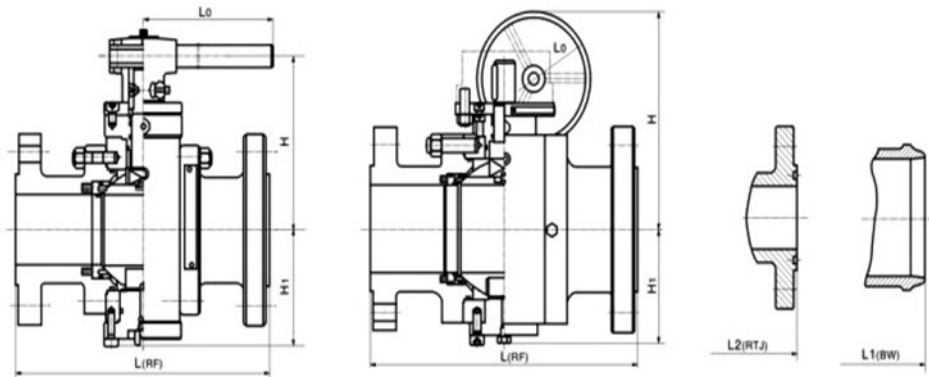
Anti-static Design

Fire Safe Design API607, API6Fa and BS6755

Inspect & test:API598

NACE 0175

Locking device



TWO PIECE TRUNNION MOUNTED * FULL AND REDUCED BORE * ASME 600

API6D TEST PRESSURE 2175 PSI										MAX.WP.1440 PSI		
Size	L RF	L2 RTJ	L1 BW	B	B1	C	H1	H	L	Lo	H	Weight (Kg.)
2" X 1 1/2"	292	292	292	50	N/A	165	N/A	144	250	LEVER OPERATED		25
2" x 2"	292	292	292	50	N/A	165	N/A	144	250			27
3" X 2"	356	356	356	76	50	210	N/A	194	460			46
3" X 3"	356	356	356	76	N/A	209	N/A	194	460			53
4" X 3"	432	432	432	100	76	273	N/A	194	460			120
4" X 4"	432	432	432	100	N/A	273	165	276	800			93
6" X 4"	559	559	559	152	100	356	165	276	800			240
6" X 6"	559	559	559	152	N/A	356	207	327	800			180
8" X 6"	660	660	660	203	152	419	207	288	355	210	97.5	150
8" X 8"	660	660	660	203	N/A	419	260	360	470	285	140	195
10" X 8"	787	787	787	254	203	508	260	360	470	285	140	230
10" X 10"	787	787	787	254	N/A	508	313	430	600	360	215	270
12" X 10"	838	838	838	305	254	559	313	430	600	360	215	278
12" X 12"	838	838	838	305	N/A	559	358	470	600	360	215	850
14" X 12"	889	889	889	337	305	603	358	470	600	360	215	480
14" X 14"	889	889	889	337	N/A	603	418	530	600	360	215	1060
16" X 14"	991	991	991	387	337	686	418	530	600	360	215	585
16" X 16"	991	991	991	387	N/A	686	472	611	800	550	240	1380
18" X 16"	1092	1092	1092	438	387	743	472	611	800	550	240	890
18" X 18"	1092	1092	1092	438	N/A	743	540	698	800	570	283	1155
20" X 18"	1194	1194	1194	489	438	812	540	698	800	570	283	955
20" X 20"	1194	1194	1194	489	N/A	812	960	685	800	620	283	1815
24" X 20"	1397	1397	1397	597	489	939	960	685	800	620	283	1650

Class900

HT9

Trunnion mounted Ball Valve

Description:

Design & manufacture: API6D.

Face to face dimension : ASME B16.10

Flange dimension: ASME B16.5.

Double Block and Bleed

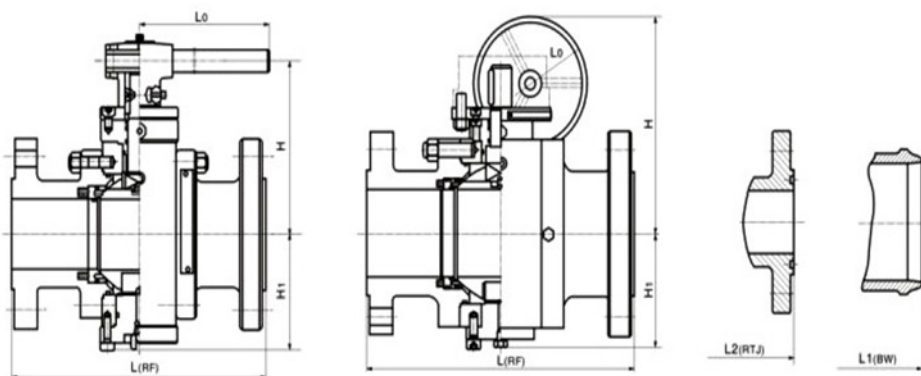
Anti-static Design

Fire Safe Design API607, API6Fa and BS6755

Inspect & test:API598

NACE 0175

Locking device



TWO PIECE TRUNNION MOUNTED * FULL AND REDUCED BORE * ASME 900

API6D

TEST PRESSURE 3250 PSI

MAX.WP. 2160 PSI

Size	L RF	L2 RTJ	L1 BW	B	B1	C	H1	H	L	Lo	H	Weight (Kg.)
2" X 1 1/2"	368	371	368	50	38	216	158	740	LEVER OPERATED			65
2" X 2"	368	371	368	50	N/A	216	158	740				65
3" X 2"	381	384	381	76	50	241	158	740				73
3" X 3"	381	384	381	76	N/A	241	230	830				80
4" X 3"	457	460	457	100	76	292	230	830				120
4" X 4"	457	460	457	100	N/A	292	140	235	500	230	66	155
6" X 4"	610	613	610	152	100	349	140	235	500	230	66	260
6" X 6"	610	613	610	152	N/A	349	180	320	600	365	130	410
8" X 6"	737	740	737	203	152	470	180	320	600	365	130	470
8" X 8"	737	740	737	203	N/A	470	245	360	500	405	211	840
10" X 8"	838	841	838	254	203	546	245	360	500	405	211	920
10" X 10"	838	841	838	254	N/A	546	285	401	600	405	211	1100
12" X 10"	965	968	965	304	254	609	285	401	600	405	211	1320
12" X 12"	965	968	965	304	N/A	609	320	455	500	502	211	1705
14" X 12"	1029	1039	1029	355	304	641	320	455	500	502	211	1920
14" X 14"	1029	1039	1029	355	N/A	641	335	425	500	502	265	2020
16" X 14"	1130	1140	1130	406	355	705	335	425	500	502	265	2410
16" X 16"	1130	1140	1130	406	N/A	705	365	620	600	420	265	3200
18" X 16"	1219	1232	1219	457	406	787	365	620	600	420	265	3550
18" X 18"	1219	1232	1219	457	N/A	787	405	660	600	520	66	4670
20" X 18"	1321	1334	1321	508	406	857	405	620	600	520	66	4020
20" X 20"	1321	1334	1321	508	N/A	857	435	787	600	520	66	4800
24" X 20"	1549	1568	1549	610	508	1041	435	787	600	520	66	5000
24" X 24"	1549	1568	1549	610	N/A	1041	530	900	600	520	205	6020

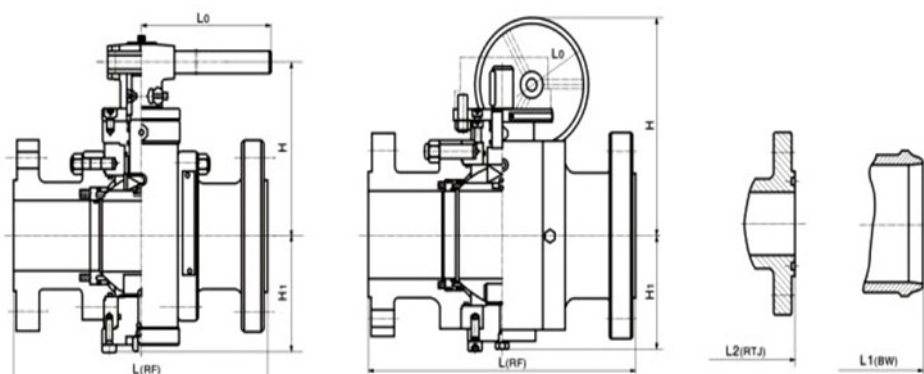
Trunnion mounted Ball Valve

Class 1500

HT15

Description:

Design & manufacture: API6D.
 Face to face dimension : ASME B16.10
 Flange dimension: ASME B16.5.
 Double Block and Bleed
 Anti-static Design
 Fire Safe Design API607, API6Fa and BS6755
 Inspect & test:API598
 NACE 0175
 Locking device



TWO PIECE TRUNNION MOUNTED * FULL AND REDUCED BORE * ASME 1500

API6D			TEST PRESSURE 5400 PSI						MAX.WP.3600 PSI			
Size	L RF	L2 RTJ	L1 BW	B	B1	C	H1	H	L	Lo	H	Weight (Kg.)
2" X 1 1/2"	368	371	368	50	38	216	195	740	LEVER OPERATED			66
2" x 2"	368	371	368	50	N/A	216	195	740				66
3" X 2"	470	473	470	76	50	267	195	740				88
3" X 3"	470	473	470	76	N/A	267	225	830				120
4" X 3"	546	549	546	100	76	311	225	830				1320
4" X 4"	546	549	546	100	N/A	311	169	235	500	280	130	182
6" X 4"	705	711	705	146	100	394	210	235	500	280	130	198
6" X 6"	705	711	705	146	N/A	394	250	320	600	360	130	520
8" X 6"	832	842	832	194	146	482	250	320	600	360	130	675
8" X 8"	832	842	832	194	N/A	482	275	360	500	395	182	1215
10" X 8"	991	1001	991	241	194	584	275	360	500	395	182	1420
10" X 10"	991	1001	991	241	N/A	584	305	401	600	420	182	1900
12" X 10"	1130	1146	1130	289	241	673	305	401	600	420	182	2200
12" X 12"	1130	1146	1130	289	N/A	673	330	455	800	490	256	2600
14" X 12"	1257	1276	1257	318	289	749	330	455	800	490	256	2925
14" X 14"	1257	1276	1257	318	N/A	749	360	425	600	510	256	3495
16" X 14"	1384	1406	1384	362	318	825	360	425	600	510	256	3750
16" X 16"	1384	1406	1384	362	N/A	825	410	620	800	570	310	4600

Trunnion mounted Ball Valve

MATERIALS LIST

Description	Material
Right Body	ASTM A216 WCB
Stud	ASTM A193 B7
Nut	ASTM A194 2H
Sealing Gasket	304+Graphite
O-ring	VITON
Left Body	ASTM A216 WCB
Cap	ASTM A105
Trunnion	ASTM A105
Sealing Gasket	304+Graphite
Screw	ASTM A193 B7
O-ring	VITON
Plug	ASTM A105
Slide Bearing	304+PTFE
Thrust Gasket	PTFE
Ball	ASTM A182 F316
Seat Insert	PTFE
O-ring	VITON
Fire-safe Ping	Graphite+304
Seat Ring	ASTM A105
Spring	17-4PH
Plug	ASTM A105
Stem	ASTM A182 F316
Thrust Gasket	PTFE
Slide Bearing	316+PTFE
Anti-static Spring	SS316
Backseat	ASTM A105
O-ring	VITON
O-ring	VITON
Plug	ASTM A105
Sealing Gasket	Graphite+304
Screw	ASTM A193 B7
Packing	Graphite
Screw	ASTM A193 B7
Mounting Pad	304
Pin	AISI 1035
Key	AISI 1045
Plug	ASTM A105
Stud	ASTM A193 B7
Nut	ASTM A194 2H
Warm Gear	Assembly

Soft Seat Trunnion Mounted ball valves

Trunnion Mounted bolted construction Ball Valves are designed and manufactured in accordance with the latest industry standard.

Valve Range 2" – 48" Class 150 -2500, API 5000, API 10000

Special face to face dimensions can be supplied. All valves are available in Full or Reduced Bore, with Raised Face, Ring Type Joint, Hub End, Butt Weld or Socket end connections. Pressure rating range from ANSI 150 thru ANSI 2500, compact flanges and higher pressure ratings are available on request.

Valves are supplied as Lever Operated, Gear Operated or Actuated to customer's specification.

Valves are manufactured from forged rings, which ensure a high ture and improved sealing between the components.

Standard Sealing is by O-rings and Graphite rings. The Graphite ring continues to provide a seal in the event of a fire. O-rings can be supplied suitable for AED (Rapid Gas Decompression) applications in a variety of materials. Energized Lip seal designs are also available to cope with more extreme service conditions and temperatures.

ANSI Lined Ball Valve

Product Description



1. Two pieces full port standard lined ball valves offer high stability, rigidity and eliminating potential leak path.

2. Full port design minimizes pressure losses and increases flow capacities thus reducing energy and pumping costs.

3. Full bore design almost no fluid resistance, and good shut-off performance.

4. It features zero leakage, maintenance-free, one-piece stem and ball design, high sealing performance and can be used under full vacuum service and pumping costs.

5. Lower pressure drop and high flow characterized the efficiency of Hart lined ball valves.

6. It can work as on-off or control valve.

7. It can sustain any corrosive medium in addition to the "molten alkali metals and fluorine elements". It is ideal products used in chlor-alkali, industrial in organic chemicals, metal and mining, nitrogen and phosphatic fertilizers, petroleum refining, pharmaceutical etc.

8. Lining material : PFA, FEP, PO etc.

9. Operation methods: manual, worm gear, electric, pneumatic and hydraulic actuator.

10. Hart lined butterfly valves are available as per the needs of applications in additional sizes and other than standard materials.

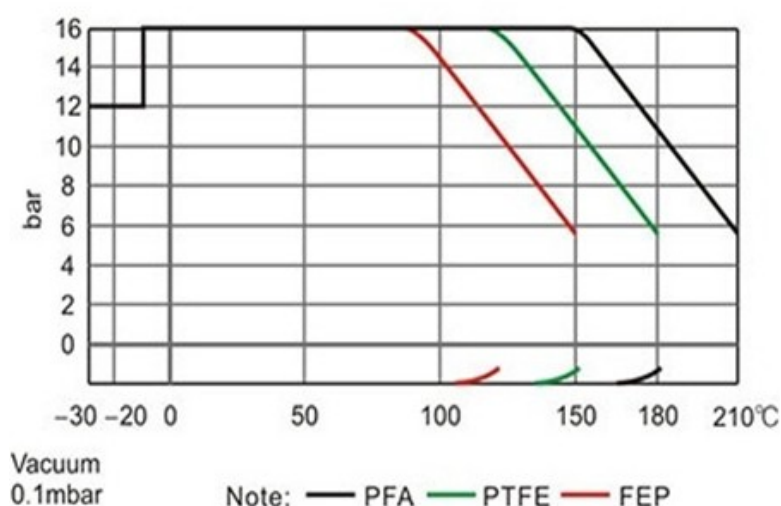
ANSI Lined Ball Valve

Technical Specification

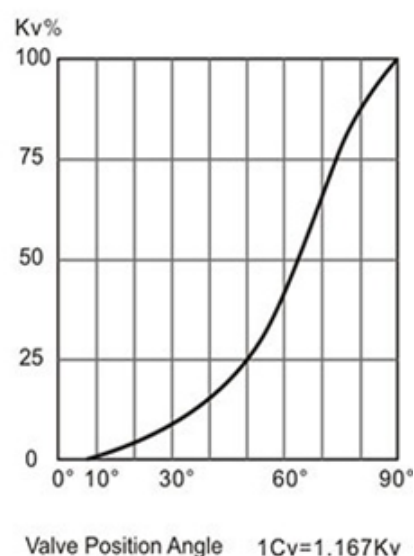
Design & Manufacture Standard		HG/T 3704, GB/T 12237		API 6D
Face-to-face Dimension		HG/T 3704, GB/T 12221		ASME B16.10
Flange Standard		HG/T 20592, GB/T 9119		ASME B16.5, JIS B2220
Inspection and Test Standard		GB/T 13927, JB/T 9092		API 598
Nominal Diameter(Mpa)		1.0	1.6	CLASS 150
Pressure Test (Mpa)	Shell Test	1.5	1.5	1.5
	High Pressure Sealing	1.1	1.1	1.1
	Low Pressure Sealing	0.6	0.6	0.6
Temperature Range (°C)		PFA : -30~200	FEP : -30~150	GXPO : -10~80
Applicable medium		Strong corrosive medium i.e. hydrochloric acid, Nitric acid, Hydrofluoric acid, Liquid chlorine, Sulfuric Acid and Aqua regia etc.		

Note : Test standard refers general valve standard, high pressure should be customized for processing.

Pressure-Temperature Curve



Flow Characteristic



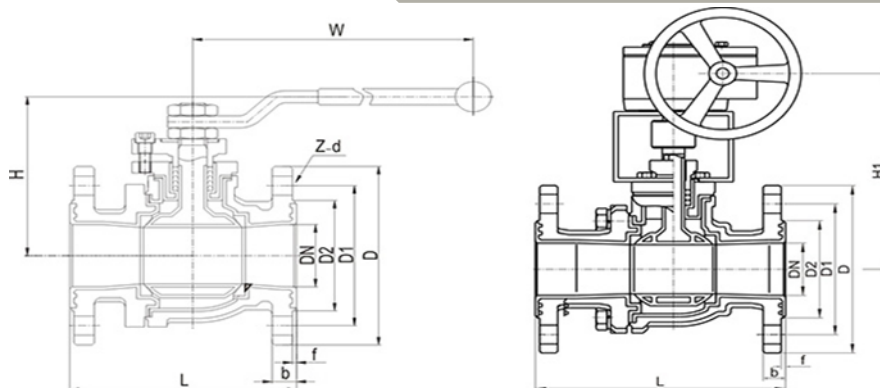
ANSI Lined Ball Valve

Material Specification



Code	Name	Materials		
1	Nut	A194 2H	A194 8	A194 8M
2	Lever	A216 WCB	A351 CF8 A351 CF8M	A351 CF3 A351 CF3M
3	Locating Plate	25# SS304		
4	Body bolt	A193 B7	A320 B8	A193 B8M
5	Gland	A216 WCB	A351 CF8 A351 CF8M	A351 CF3 A351 CF3M
6	Packing	PTFE		
7	Stuffing box	A216 WCB + Lining material	A351 CF8, CF8M + Lining material	A351 CF3,CF3M + Lining material
8	Body bolt	A193 B7	A320 B8	A193 B8M
9	Body	A216 WCB + Lining material	A351 CF8, CF8M + Lining material	A351 CF3,CF3M + Lining material
10	Seat	PTFE , RPTFE , PEEK		
11	Ball / Stem	A216 WCB + Lining material	A351 CF8, CF8M + Lining material	A351 CF3, CF3M + Lining material
12	Bonnet	A216 WCB + Lining material	A351 CF8, CF8M + Lining material	A351 CF3, CF3M + Lining material

ANSI Lined Ball Valve



ASME B16.5 Class 150 (Unit : mm)

NPS	L	D	D1	D2	Z-d	f	b	H	W	H1	Wt (kg)
1/2"	110	95	70	51	4-16	2	12	100	140		3.5
3/4"	117	100	75.0	56	4-16	2	12	105	160		4
1"	127	125	90.0	67	4-19	2	12	110	200		5.5
1 1/4"	140	135	100.0	76	4-19	2	13	130	200		7
1 1/2"	165	140	105.0	81	4-19	2	15	135	220		9
2"	178	155	120.0	96	4-19	2	16	145	220		15.5
2 1/2"	190	175	140.0	116	4-19	2	18	155	350		19.5
3"	203	185	150.0	126	8-19	2	19	210	400	340	30
4"	229	210	175.0	151	8-19	2	24	235	400	360	40
5"	254	250	210.0	182	8-23	3	24	255	550	405	57
6"	267	280	240.0	212	8-23	3	26	285	550	425	73.5
8"	292	330	290.0	262	12-23	3	29	328		505	121
10"	330	400	355.0	325	12-25	4	31	370		540	159

JIS B2220 10K (Unit : mm)

NPS	L	D	D1	D2	Z-d	f	b	H	W	H1	Wt (kg)
15	110	95	70	51	4-16	2	12	100	140		3.5
20	117	100	75.0	56	4-16	2	12	105	160		4
25	127	125	90.0	67	4-19	2	12	110	200		5.5
32	140	135	100.0	76	4-19	2	13	130	200		7
40	165	140	105.0	81	4-19	2	15	135	220		9
50	178	155	120.0	96	4-19	2	16	145	220		15.5
65	190	175	140.0	116	4-19	2	18	155	350		19.5
80	203	185	150.0	126	8-19	2	19	210	400	340	30
100	229	210	175.0	151	8-19	2	24	235	400	360	40
125	254	250	210.0	182	8-23	3	24	255	550	405	57
150	267	280	240.0	212	8-23	3	26	285	550	425	73.5
200	292	330	290.0	262	12-23	3	29	328		505	121
250	330	400	355.0	325	12-25	4	31	370		540	159

Parts & Materials

SEAT MATERIALS

PCTFE

Capable of higher loads than PTFE. Good low temperature strength, Excellent chemical resistance

FILLED PTFE

Mixed with an inert filler at the processing stage to give a stiffer material than virgin polymer, this material gives good chemical resistance and low coefficient of friction.

DEVLO V

For services higher than filled PTFE, Devlon V gives good resistance to oils, greases and solvents. Its low water absorption gives superior dimensional stability.

PEEK

This material is an abrasion resistant high performance thermo plastic which retains good tensile and flexural properties at temperatures in excess of plus 250 deg C.

SEAL MATERIALS

VITON

Shore hardness 90. Suitable for low, medium and high temperature applications

NITRILE

Shore hardness 90. Suitable for medium to low temperature applications

FLUOROSILICONE

Shore hardness 70. Suitable for low temperature applications

EXPLOSIVE DECOMPRESSION VITON

Shore hardness 90. Suitable for medium and high temperature applications..

OTHERS ON APPLICATION

FIRESAFE MATERIALS

Natural Graphite

Natural Graphite is purified, expanded, and pressed into a typical hexagonal crystalline structure of Graphite which remains permanently flexible.

Supplied in moulded ring form it is suitable for temperatures of minus 250 deg C to plus 2500 deg C in non-oxidizing atmosphere and up to plus 500 deg C in oxygen. Operating experience at pressure up to 350 bar. Its features include natural resilience, self lubricating, almost chemically inert, no fillers or binders and no structural change against pressure temperature or time

Pressure-Temperature Ratings

Ratings Curve for Body, Seat & Seal Materials

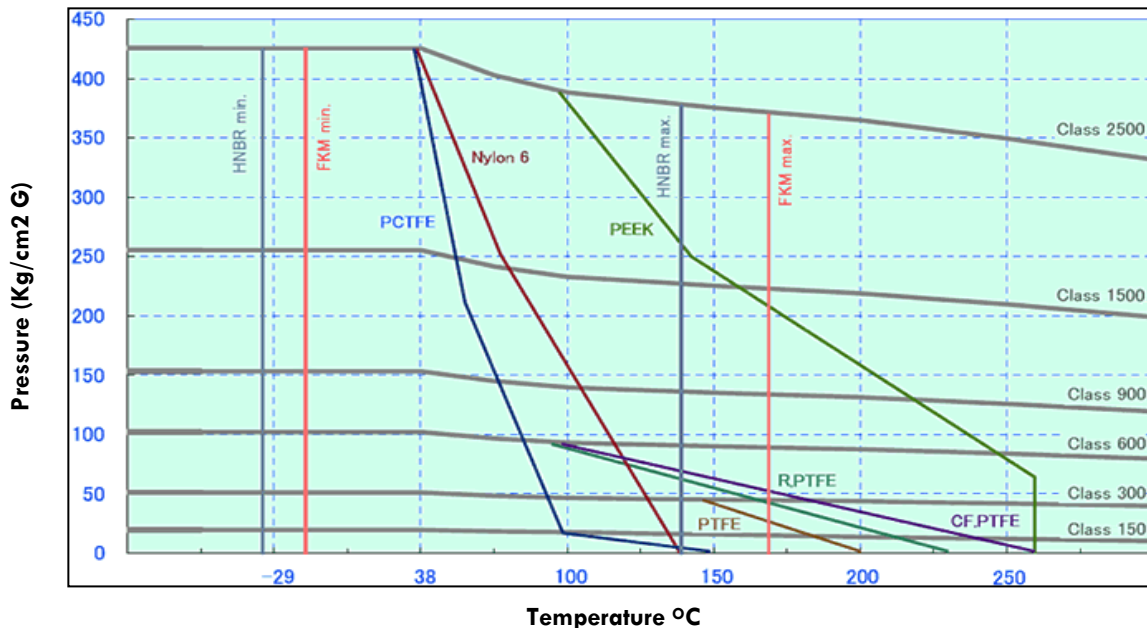
Rating listed per ANSI B16.34, Standard Class Valves

Type : Trunnion

LOW TEMPERATURE LIMITS

Body Material			Seat Material			Seal Material		
WCB	-20 °F	(-29 °C)	Nylon	-25°F	(-32°C)	Viton	-25°F	(-29°C)
17-4PH	-40 °F	(-40 °C)	RTFE	-50°F	(-46°C)	EPDM	-50°F	(-46°C)
LCC(B)	-50 °F	(-46 °C)	PEEK	-50°F	(-46°C)	Graphite	-140°F	(-96°C)
ALLOY20	-50 °F	(-46 °C)	Carbon	-140 °F	(-96°C)	VIRGIN PTFE	-328°F	(-200°C)
INCONNEL	-325 °F	(-198 °C)	PCTFE	-450°F	(-268°C)			
CF8M	-425 °F	(-253 °C)						

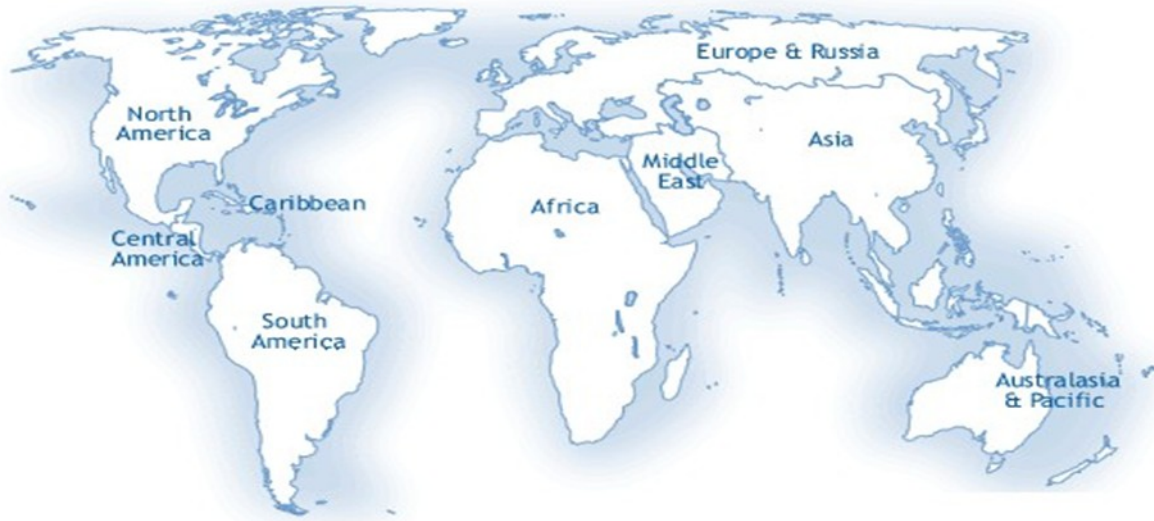
ASME B31.3



WARRANTY

ALL HART valves are guaranteed to the original Buyer only for a one year period from and after the invoice date against defects in material and workmanship under normal and proper use and service. And not caused or resulting from improper usage or application, improper installation improper maintenance and repairs, modifications or alterations, normal wear and tears, corrosion, erosion or chemical attacks. Seller's obligation under this warranty is limited only to repairing or replacing, at Seller's election, any parts or products determined by the Seller to be defective, or refunding the purchasing price to the original buyer, Seller shall bear normal surface transportation cost for shipping the replacements, but shall in no event bear any losses or damages, installation re-installation, engineering, or any other costs incurred thereof by the Buyer.

WORLDWIDE NETWORK OF AGENTS AND DISTRIBUTORS



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