



Where quality meets service



METALLUM

- Ball Valve -



WHERE QUALITY MEETS SERVICE



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- BALL VALVE -

YOU ORDERWE CREATE

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- BALL VALVE -

Quality First,
Customer Oriented.



COMPANY INTRODUCTION

Metallum Valve Co.,Ltd located in Lishui city China. We are a professional valves manufacturer in China & Belgium. Our products can be used in oil & gas field pipeline, refinery, power plant, chemical plant that exported to European Market, Northern America, Middle East and Southern of Asia.

The Valves are manufactured according to ANSI, API, ASTM standard and thre customers' requirements, the pressure range is Class 150- Class 2500, the size

range is 1/2"- 40", the material range include Carbon Steel, Low Alloy Steel, High Alloy Steel, Stainless Steel, Duplex Stainless Steel, Super Duplex Stainless Steel, Cooper Alloy, Nickel Alloy soft and meke teated.

In order to satisfy the international quality management system, Metallum Valve Co.,Ltd got the approval of ISO9001, API-6D, CE, API 607 and API 6FA certifications. Also, we established a multi-functional phys-chemical lab to

control the quality each time by using spectrum analyzer, portable spectrograph (PMI), impact tester, hardness meter, tensile tester, thickness meter, magnetic particle tester, fugitive emission tester, and NDE testing.

Main Principle of Metallum Valve Co.,Ltd is to "Where quality meets service" .





Pursuing excellence, Innovative thinking;
Improve the quality, offer perfect service;
Management creat benefit, System improve result;
We would like to share our success with you for common development.

PROCESSING EQUIPMENT



01. Work shop
 02. Work shop
 03. Machining facilities

04. The workshop
 05. Hydraulic test facilities
 06. Ball valve with Pneumatic operate(Spring Return)

07. Ball valve with Gas over Oil operate
 08. Fabricated workshop in Belgium

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Product quality determinates the success of an enterprise. Since its establishment, Metallum Valve has been devoted to constantly improving product quality. By adhering to the quality policy of "good quality, high efficiency and continuous improvement", and unceasingly upgrading and perfecting manufacturing equipment and technology, we ensure customers' reliance on our product quality.

PRODUCT INTRODUCTION

- 01. Forged trunnion ball valve
- 02. Fully Welded ball valve
- 03. Painting line

- 04. Finished ball valve
- 05. ESD ball valve
- 06. Packing



02



05



06

METALLUM

- BALL VALVE -



Scientific and advanced technological measures are adopted at every chain from the purchasing of raw materials till the delivery of products so as to strictly control manufacturing quality of products.

PRODUCT & QUALITY CONTROL



01. Spectrograph (PMI)
02. Fugitive emission Test
03. Cold Test

04. Tensile Test
05. Impact Test
06. Material Analysis Room

07. Hydraulic test in Belgium
08. Hydraulic test in Belgium

CERTIFICATE



API 6D Certificate



ISO9001 Certificate



Fire Safety Certificate



Fire Safety Certificate



HSE



HSE



ATEX



ATEX

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FIGURE NUMBERS

Example:

1	2	3	4	5	6	7
20	TCT	1	R	A	ADCC	G

i.e.

20" 3PC Body Cast Trunnion Mounted Ball Valve. Class 150. Raised Face Flange End,
WCB Body/Bonnet, PTFE Seat Insert. Viton O-Ring, .17-4PH Stem
A105+ENP Ball. A105+ENP Seat Ring, Gear Operation

- Valve Size

Full Bore													
NPS	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"
DN	15	20	25	40	50	65	80	100	125	150	200	250	300
Symbol	1/2	3/4	1	1-1/2	2	2-1/2	3	4	5	6	8	10	12
NPS	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"	36"	40"
DN	350	400	450	500	550	600	650	700	750	800	850	900	1000
Symbol	14	16	18	20	22	24	26	28	30	32	34	36	40

Reduced Bore										
NPS	3/4**1/2"	1**3/4"	1-1/2**1"	2**1-1/2"	3**2"	4**3"	6**4"	8**6"	10**8"	
DN	20*15	25*20	40*25	50*40	80*50	100*80	150*100	200*150	250*200	
Symbol	3/4*1/2	1*3/4	1-1/2*1	2*1-1/2	3*2	4*3	6*4	8*6	10*8	
NPS	12**10"	14**12"	16**12"	18**14"	20**16"	24**20"	30**24"	36**30"	40**34"	
DN	300*250	350*300	400*300	450*350	500*400	600*500	750*600	900*750	1000*850	
Symbol	12*10	14*12	16*12	18*14	20*16	24*20	30*24	36*30	40*34	

- Valve Type

Symbol	Floating Ball Valve	Symbol	Trunnion Mounted Ball Valve
FC	2PC Body Cast Floating Ball Valve	TF	3PC Body Forged Trunnion Mounted Ball Valve
FR	1PC Body Cast Floating Ball Valve	TC	2PC Body Cast Trunnion Mounted Ball Valve
FF	2PC Body Forged Floating Ball Valve	TCT	3PC Body Cast Trunnion Mounted Ball Valve
FT	3PC Body Forged Floating Ball Valve	TT	Top Entry Cast Trunnion Mounted Ball Valve
FS	Small Sizes Forged Floating Ball Valve	TW	Full Welded Trunnion Mounted Ball Valve
FM	Metal to Metal Seat Floating Ball Valve	TM	Metal to Metal Seat Trunnion Mounted Ball Valve

- Nominal Pressure

Class	150	300	400	600	800	900	1500	2500
Symbol	1	3	4	6	8	9	15	25

- End Type

Symbol	Type	Symbol	Type
R	Raised Face Flange	S	Socketed Welding End
J	Ring Joint Flange	N	Screwed End
F	Flat Face Flange	SN	Socketed Welding End x Screwed End
B	Butt-Welding End	W	Wafer

- Body/Bonnet Material

Material	Cast Forged	WCB	WCC	LCB	LCC	CA6NM	LC1	WC6	WC9	C5	C12	CN7M	No.6625
		Symbol	A	B	C	D	E	F	J	H	I	J	K

Material	Cast Forged	CF8	CF8M	CF3	CF3M	CF8C	MONEL	4A	6A	No.8825	
		Symbol	M	N	O	P	Q	R	S	T	U

- Trim Material

Floating Ball									
Seat		Stem				Ball			
Symbol	Material	Symbol	Material	Symbol	Material	Symbol	Material	Symbol	Material
A	PTFE	A	13Cr	Q	F53	A	13Cr	Q	F53
B	RPTFE	B	304	R	F51	B	304	R	F51
C	Nylon 1010	C	A105/ENP*	S	F321	C	A105/ENP*	S	F321
D	Delrin	D	17-4PH	T	F22	D	17-4PH	T	F22
E	PPL	E	4140/ENP*	U	F44	E	4140/ENP*	U	F44
F	Molon	F	316	V	F55	F	316	V	F55
		G	304L	W	Monel	G	304L	W	Monel
		O	316L	X	Inconel	O	316L	X	Inconel
		P	LF2/ENP*	Y	Alloy20	P	LF2/ENP*	Y	Alloy20

Trunnion Mounted Ball													
Seat		Stem				Ball				Seat Ring			
Symbol	Material	Symbol	Material	Symbol	Material	Symbol	Material	Symbol	Material	Symbol	Material	Symbol	Material
A	PTFE	A	13Cr	Q	F53	A	13Cr	Q	F53	A	13Cr	Q	F53
B	RPTFE	B	304	R	F51	B	304	R	F51	B	304	R	F51
C	Nylon 1010	C	A105/ENP*	S	F321	C	A105/ENP*	S	F321	C	A105/ENP*	S	F321
D	Delrin	D	17-4PH	T	F22	D	17-4PH	T	F22	D	17-4PH	T	F22
E	PPL	E	4140/ENP*	U	F44	E	4140/ENP*	U	F44	E	4140/ENP*	U	F44
F	Molon	F	316	V	F55	F	316	V	F55	F	316	V	F55
G	Devlon V	G	304L	W	Monel	G	304L	W	Monel	G	304L	W	Monel
O	Nylon 12	O	316L	X	Inconel	O	316L	X	Inconel	O	316L	X	Inconel
		P	LF2/ENP*	Y	Alloy20	P	LF2/ENP*	Y	Alloy20	P	LF2/ENP*	Y	Alloy20

*ENP thickness 0.003" is our standard; thickness 0.001" is on request.

- Valve Actuator

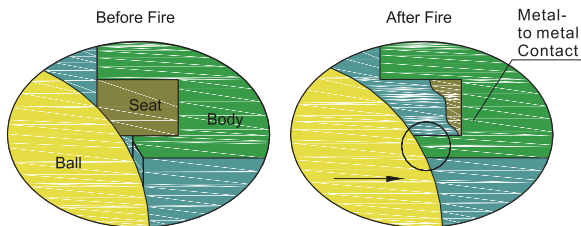
Type	Lever	Gear	Electric Actuator	Pneumatic Actuator	Bare Stem
Symbol	L	G	E	P	B

FLOATING BALL VALVES

▪ Metallum Ball Valve

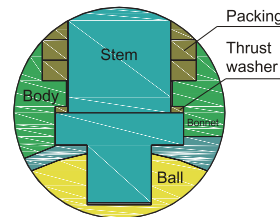
▪ Design Feature

Fire Safe Seat Sealing



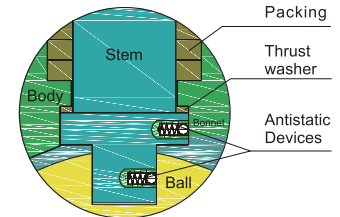
METALLUM floating ball valves¹ are fire safe and designed in accordance with API 607 & API SPEC 6FA . When nonmetal resilient seats are destroyed in a fire, the upstream medium pressure push the ball into the downstream metal seat lip to cut off the line fluid and prevent the internal leakage due to a secondary metal-to-metal seal.

Blow-out Proof Stem



The stem is designed with integral Ttype shoulder to provide blow-out proof effectively. It is internally inserted as the backseat function to assure stem sealing safety at all pressures.

Anti-Static Device

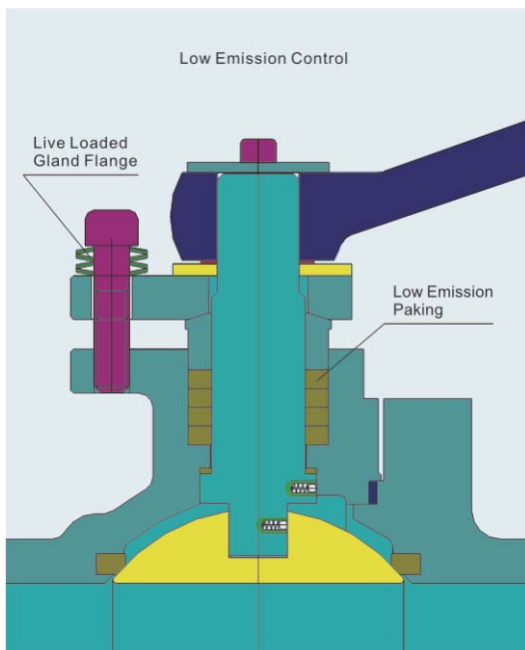


Antistatic devices between ball & stem and stem & body are assembled by a spring & a stainless steel ball, which ensure all metal valve parts are ensure all metal parts are connected without isolation space.

With more and more concerns about environment protection in the whole world, low emission valve will be widely used. Low emission valve can prevent poisonous, flammable, explosive medium from leaking to pollute the air, also important is that low emission valves minimize fugitive emissions of VOC to help to solve the problem of "Global Warming".

- Low Emission Packing

Because of frequent opening and closing of the valve, normal graphite granule can be drawn by the stem, which will cause leakage. METALLUM designed low emissions valve use special low emissions 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 V shape PTFE packing rings are used for low emissions control.



- Controlled Stem and Stuffing Box Finish

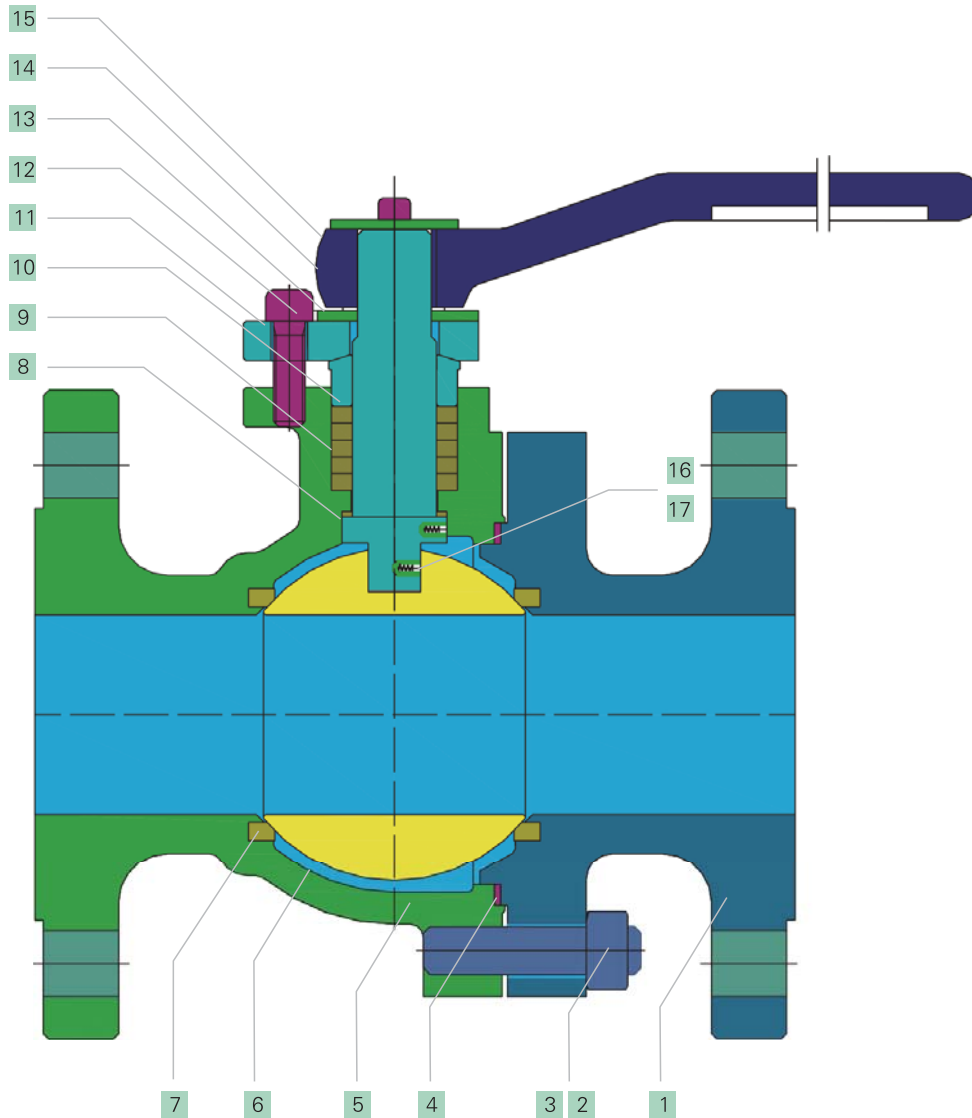
It's also a key point to control the stem and stuffing box finish when machining. The stem is made by cold rolling and stem surface finish is controlled by Ra0.4, which can reduce friction for stem moving and ensure the graphite to fill and migrate into the stems micro scratches, and function as a lubricant 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.

- Live Loaded Gland Flange

In normal case, valve packing is tighten by gland and gland bolting. During the service, the gland load retention will be reduced by long time pressure from medium which will cause possible leakage with loosened packing. METALLUM designed low emissions valve use a seat of Belleville springs installed on each gland stud to provide a continuous compressive force on gland, which guarantees permanent load retention for the stem packing to avoid fugitive emissions.

2PC BODY CAST FLOATING BALL VALVE

Series FC



- Features

Size: 1/2"~10"
Class:150-300
Two Piece Cast Steel Body
Floating Ball, Full & Reduced Bore
Anti-Static Device
Blow-out Proof Stem
Fire Safe Design
Low Emission

- Specifications

Design	ASME B16.34/BS5351/ISO17292
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Fire Safe Test	API 607/API 6FA
Special	NACE MR-01-75

2PC BODY CAST FLOATING BALL VALVE

▪ Metallum Ball Valve

▪ Series FC

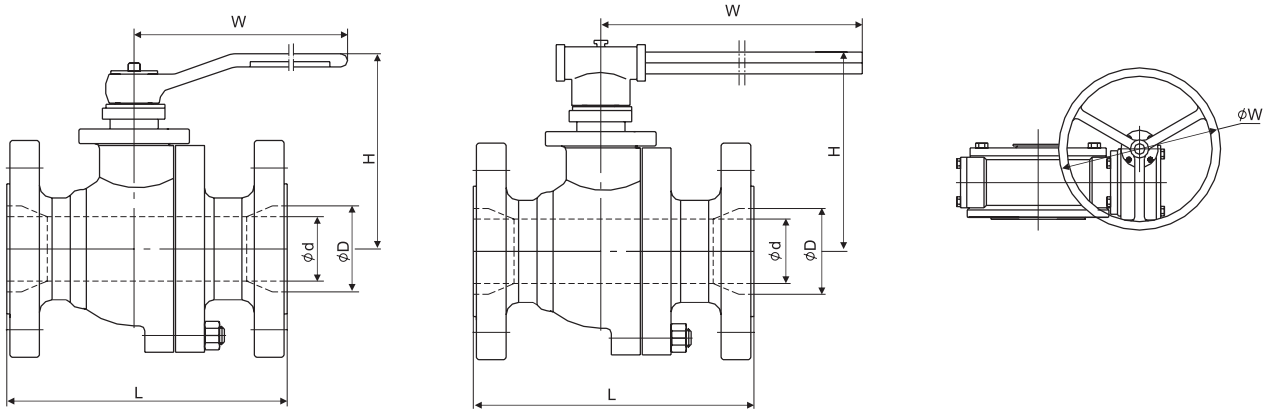
- Material Specifications

No.	Part	WCB/ENP	WCB/316	CF8M/316	LCC/316 NACE
1	Bonnet	ASTMA216-WCB	ASTMA216-WCB	ASTMA351-CF8M	ASTMA352-LCC
2	Body Stud	ASTMA193-B7	ASTMA193-B7	ASTMA193-B8	ASTMA320-L7M
3	Body Nut	ASTMA194-2H	ASTMA194-2H	ASTMA194-8	ASTM 194-7M
4	Body Gasket	304SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
5	Body	ASTMA216-WCB	ASTMA216-WCB	ASTMA351-CF8M	ASTMA352-LCC
6	Ball	ASTMA105/ENP	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
7	Seat	PTFE	PTFE	PTFE	PTFE
8	Stem	ASTMA182-F6a	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
9	Packing	PTFE / Graphite	PTFE / Graphite	PTFE / Graphite	PTFE / Graphite
10	Gland	ASTMA182 F6	ASTMA182 F316	ASTMA182 F316	ASTMA182 F316
11	Gland Flange	ASTMA216-WCB	ASTMA216-WCB	ASTMA351-CF8M	ASTMA352-LCC
12	Screw	ASTMA193-B7	ASTMA193-B7	ASTMA193-B8	ASTMA320-L7M
13	Stop Plate	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
14	Retainer	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
15	Lever	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
16	Antistatic spring	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
17	Steel Ball	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel

2PC BODY CAST FLOATING BALL VALVE



- Dimensions and Weights



Full Bore

Class 150

Size in	D mm	L mm	H mm	W mm	Weight kg
1/2	13	108	80	160	2.4
3/4	19	117	85	160	3.9
1	25	127	95	180	4.6
1-1/2	38	165	130	280	8.5
2	49	178	140	300	9.8
2-1/2	62	191	140	400	15.0
3	74	203	152	400	20.0
4	100	229	220	650	30.0
6	150	394	300	*300	74.0
8	201	457	380	*300	113.0
10	252	533	405	*400	178.0

Reduce Bore

Class 150

Size in	d mm	D mm	L mm	H mm	W mm	Weight kg
3/4*1/2	13	19	117	80	160	2.6
1*3/4	19	25	127	85	160	4.2
1-1/2*1	25	38	165	95	180	6.5
2*1-1/2	38	49	178	130	280	8.8
2 1/2*2	49	62	191	140	300	12.5
3*2	49	74	203	140	400	19.0
4*3	74	100	229	152	400	24.0
6*4	100	150	267	220	650	54.0
8*6	150	201	292	300	*300	84.0
10*8	201	252	330	380	*300	122.0

* Gear Operated

Full Bore

Class 300

Size in	D mm	L mm	H mm	W mm	Weight kg
1/2	13	140	80	160	2.6
3/4	19	152	85	160	3.6
1	25	165	95	180	5.5
1-1/2	38	191	130	280	9.2
2	49	216	140	300	12.9
2-1/2	62	241	140	400	21.0
3	74	283	152	400	27.0
4	100	305	220	650	40.0
6	150	403	300	*300	96.0
8	201	502	380	*300	149.0
10	252	568	405	*400	228.0

Reduce Bore

Class 300

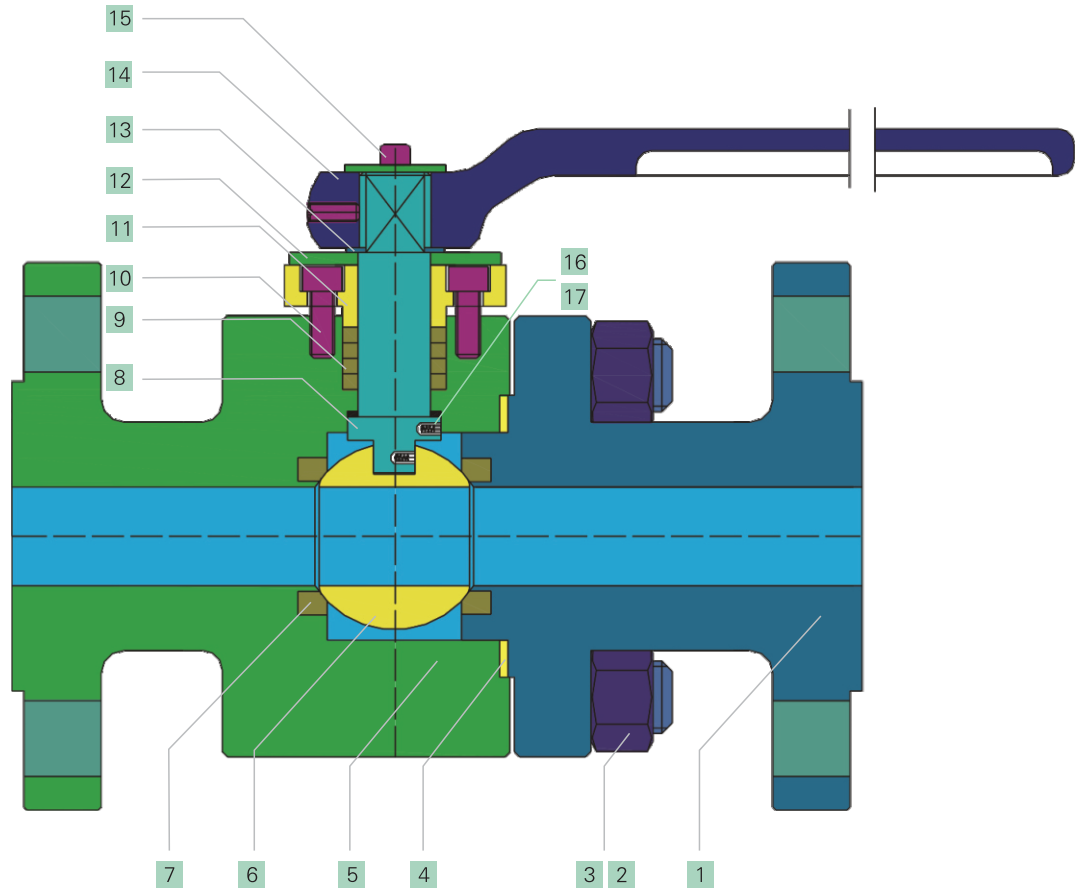
Size in	d mm	D mm	L mm	H mm	W mm	Weight kg
3/4*1/2	13	19	152	80	160	3.2
1*3/4	19	25	165	85	160	5.2
1-1/2*1	25	38	191	95	180	8.1
2*1-1/2	38	49	216	130	280	12.2
2 1/2*2	49	62	241	140	300	19.1
3*2	49	74	283	140	400	25.8
4*3	74	100	305	152	400	38.2
6*4	100	150	403	220	650	76.0
8*6	150	201	419	300	*300	128.0
10*8	201	252	457	380	*400	199.0

* Gear Operated

2PC BODY FORGED FLOATING BALL VALVE

▪ Metallum Ball Valve

▪ Series FF



- Features

Size: 1/2"~10"
Class:150-2500
Two Piece Forged Steel Body
Floating Ball, Full & Reduced Bore
Anti-Static Device
Blow-out Proof Stem
Fire Safe Design
Low Emission

- Specifications

Design	ASME B16.34/BS5351/ISO17292
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Fire Safe Test	API 607/API 6FA
Special	NACE MR-01-75

- Material Specifications

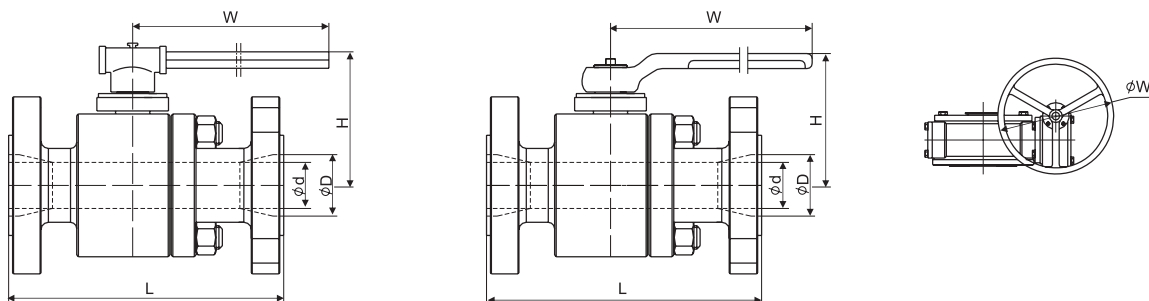
No.	Part	A105/ENP	A105/316	F316/F316	LF2/316 NACE
1	Bonnet	ASTMA105	ASTMA105	ASTMA182-F316	ASTMA350-LF2
2	Body Stud	ASTMA193-B7	ASTMA193-B7	ASTMA193-B8	ASTMA320-L7M
3	Body Nut	ASTMA194-2H	ASTMA194-2H	ASTMA194-8	ASTM 194-7M
4	Body Gasket	304SS+Graphite	316SS+Graphite	316SS+Graphite	316SS+Graphite
5	Body	ASTMA105	ASTMA105	ASTMA182-F316	ASTMA350-LF2
6	Ball	ASTMA105/ENP	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
7	Seat	PTFE/Nylon	PTFE/Nylon	PTFE/Nylon	PTFE/Nylon
8	Stem	ASTMA182-F6a	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
9	Packing	PTFE / Graphite	PTFE / Graphite	PTFE / Graphite	PTFE / Graphite
10	Screw	ASTMA193-B7	ASTMA193-B7	ASTMA193-B8	ASTMA320-L7M
11	Gland Flange	ASTMA105	ASTMA105	ASTMA182-F316	ASTMA350-LF2
12	Stop Plate	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
13	Retainer	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
14	Lever	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
15	Screw	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
16	Antistatic spring	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
17	Steel Ball	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel

2PC BODY FORGED FLOATING BALL VALVE

▪ Metallum Ball Valve

▪ Series FF

- Dimensions and Weights



Full Bore

Class 150

Reduce Bore

Class 150

Size in	D mm	L mm	H mm	W mm	Weight kg
1/2	13	108	81	150	3.0
3/4	19	117	85	150	4.0
1	25	127	98	180	5.5
1-1/2	38	165	133	280	8.5
2	49	178	141	280	11.0
2-1/2	62	191	139	400	18.5
3	74	203	150	400	23.0
4	100	229	223	650	39.0
6	150	394	297	*300	89.0
8	201	457	378	*300	138.0
10	252	533	408	*400	228.0

Size in	d mm	D mm	L mm	H mm	W mm	Weight kg
3/4*1/2	13	19	117	81	150	3.5
1*3/4	19	25	127	85	150	5.0
1-1/2*1	25	38	165	98	180	7.5
2*1-1/2	38	49	178	133	280	10.0
2 1/2*2	49	62	191	141	280	16.0
3*2	49	74	203	141	280	21.0
4*3	74	100	229	150	400	35.0
6*4	100	150	267	223	650	72.0
8*6	150	201	292	297	*300	118.0
10*8	201	252	330	378	*300	195.0

* Gear Operated

Full Bore

Class 300

Reduce Bore

Class 300

Size in	D mm	L mm	H mm	W mm	Weight kg
1/2	13	140	81	150	3.0
3/4	19	152	85	150	4.0
1	25	165	98	180	6.5
1-1/2	38	191	133	280	13.0
2	49	216	141	280	19.0
2-1/2	62	241	139	400	28.0
3	74	283	150	400	39.0
4	100	305	223	650	59.0
6	150	403	297	*300	128.0
8	201	502	378	*400	192.0
10	252	568	408	*400	288.0

Size in	d mm	D mm	L mm	H mm	W mm	Weight kg
3/4*1/2	13	19	152	81	150	3.7
1*3/4	19	25	165	85	150	5.8
1-1/2*1	25	38	191	98	180	10.5
2*1-1/2	38	49	216	133	280	16.0
2 1/2*2	49	62	241	141	280	24.5
3*2	49	74	283	141	280	34.5
4*3	74	100	305	150	400	52.0
6*4	100	150	403	223	650	98.0
8*6	150	201	419	297	*300	167.0
10*8	201	252	457	378	*400	248.0

* Gear Operated

Full Bore

Class 600

Reduce Bore

Class 600

Size in	D mm	L mm	H mm	W mm	Weight kg
1/2	13	165	66	150	3.5
3/4	19	191	88	170	5.0
1	25	216	90	250	7.5
1-1/2	38	241	120	400	15.0
2	49	292	135	400	22.5
3	74	356	164	400	48.5
4	100	432	224	995	80.0
6	150	559	260	*400	155.0

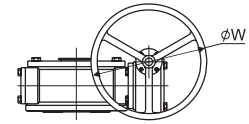
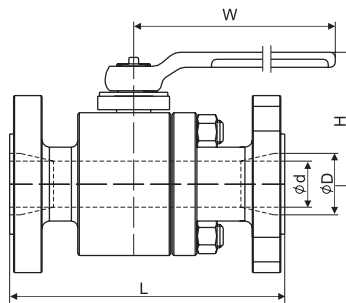
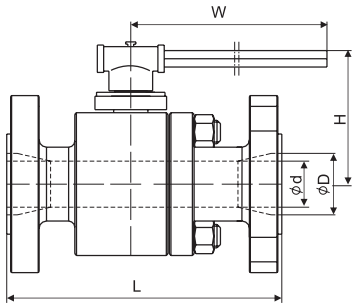
Size in	d mm	D mm	L mm	H mm	W mm	Weight kg
3/4*1/2	13	19	191	66	150	4.0
1*3/4	19	25	216	88	170	5.5
1-1/2*1	25	38	241	90	250	10.5
2*1-1/2	38	49	292	120	400	19.5
3*2	49	74	356	135	400	28.5
4*3	74	100	432	164	400	58.0
6*4	100	150	559	224	995	93.5
8*6	150	201	660	260	*400	188.0

* Gear Operated

2PC BODY FORGED FLOATING BALL VALVE



- Dimensions and Weights



Full Bore

Class 900

Size in	D mm	L mm	H mm	W mm	Weight kg
1/2	13	216	75	140	4.8
3/4	19	229	91	180	8.0
1	25	254	108	250	10.0
1-1/2	38	305	133	400	20.0
2	49	368	150	500	29.0
3	74	381	160	500	54.5

Reduce Bore

Class 900

Size in	d mm	D mm	L mm	H mm	W mm	Weight kg
3/4*1/2	13	19	229	75	140	7.0
1*3/4	19	25	254	91	180	9.5
1-1/2*1	25	38	305	108	250	16.5
2*1-1/2	38	49	368	133	400	23.0
3*2	49	74	381	150	500	42.0
4*3	74	100	457	160	500	65.0

Full Bore

Class 1500

Size in	D mm	L mm	H mm	W mm	Weight kg
1/2	13	216	75	180	5.0
3/4	19	229	91	200	8.2
1	25	254	108	320	10.8
1-1/2	38	305	133	500	20.5
2	49	368	150	600	29.5
3	74	470	160	700	66.0

Reduce Bore

Class 1500

Size in	d mm	D mm	L mm	H mm	W mm	Weight kg
3/4*1/2	13	19	229	75	180	7.2
1*3/4	19	25	254	91	200	9.8
1-1/2*1	25	38	305	108	320	17.0
2*1-1/2	38	49	368	133	500	23.6
3*2	49	74	470	150	600	58.0
4*3	74	100	546	160	700	72.0

Full Bore

Class 2500

Size in	D mm	L mm	H mm	W mm	Weight kg
1/2	13	264	88	230	7.5
3/4	19	273	117	230	12.0
1	25	308	128	400	15.0
1-1/2	38	384	148	550	30.0
2	42	451	183	650	38.0

Reduce Bore

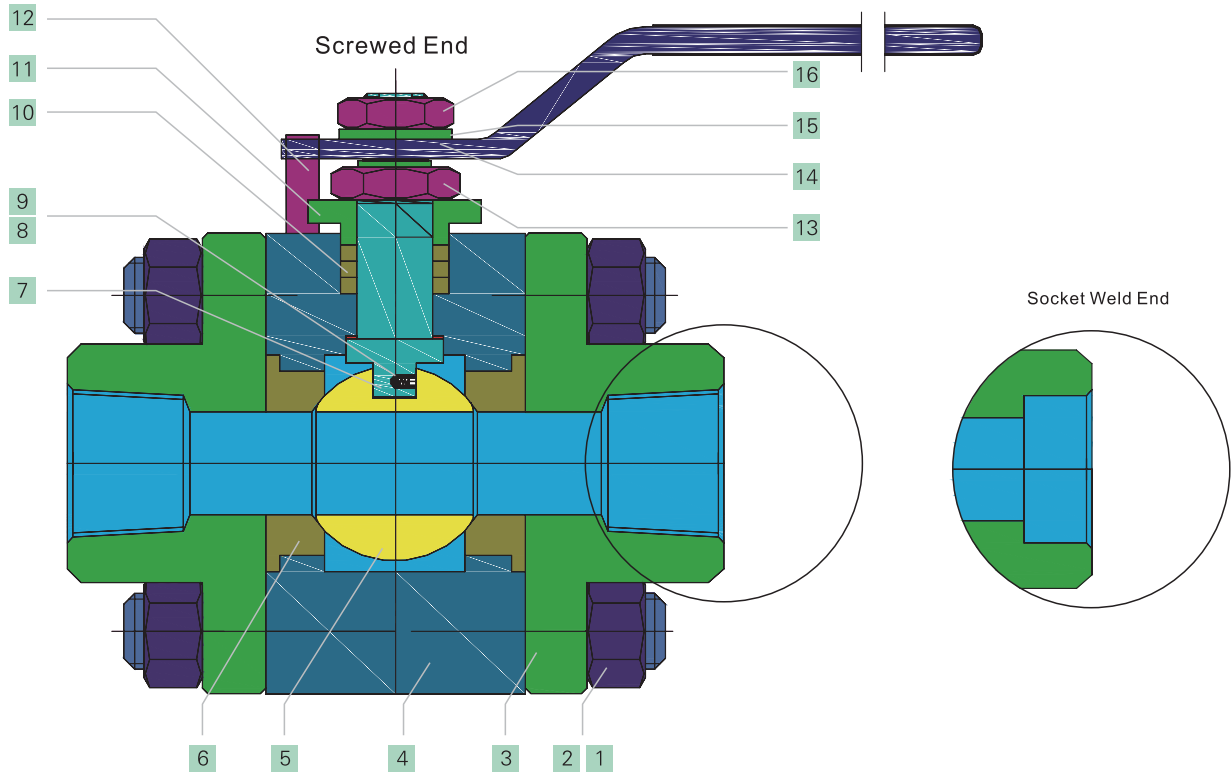
Class 2500

Size in	d mm	D mm	L mm	H mm	W mm	Weight kg
3/4*1/2	13	19	237	88	230	11.0
1*3/4	19	25	308	117	230	14.2
1-1/2*1	25	38	384	128	400	25.3
2*1-1/2	38	42	451	148	550	35.5
3*2	42	62	578	183	650	59.0

SMALL SIZES FORGED FLOATING BALL VALVE

▪ Metallum Ball Valve

▪ Series FS



- Features

Size: 1/2"-2"
Class:800-1500
Three Piece Forged Steel Body
Floating Ball, Full Bore
Anti-Static Device
Blow-out Proof Stem

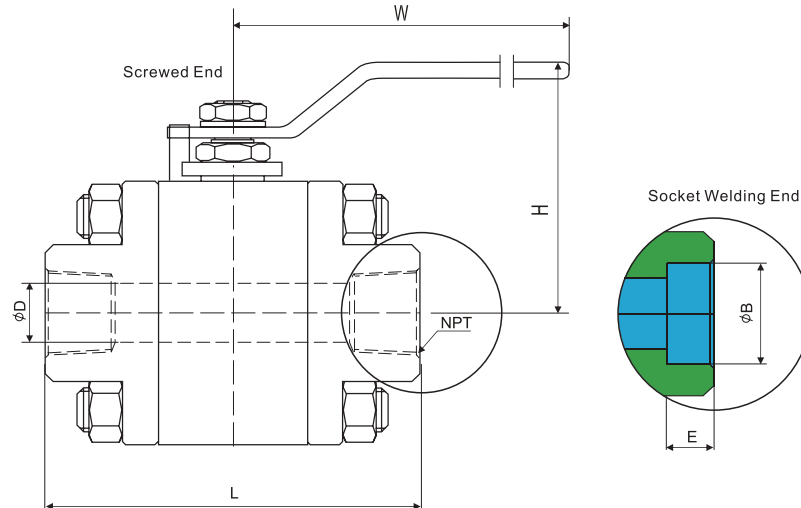
- Specifications

Design	ASME B16.34/BS5351
End to End	Manufacturer Standard
Screwed End	ASME B1.20.1
Socket Welding End	ASME B16.11
Test	API 598
Special	NACE MR-01-75

- Material Specifications

No.	Part	A105/304	A105/316	F316/F316	LF2/316 NACE
1	Body Bolt	ASTMA193-B7	ASTMA193-B7M	ASTMA193-B8	ASTMA320-L7M
2	Body Nut	ASTMA194-2H	ASTMA194-2HM	ASTMA194-8	ASTM 194-7M
3	Bonnet	ASTMA105	ASTMA105	ASTMA182-F316	ASTMA350-LF2
4	Body	ASTMA105	ASTMA105	ASTMA182-F316	ASTMA350-LF2
5	Ball	ASTMA182-F304	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
6	Seat	PTFE	PTFE	PTFE	PTFE
7	Stem	ASTMA182-F304	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
8	Antistatic spring	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
9	Steel ball	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
10	Stem Packing	PTFE	PTFE	PTFE	PTFE
11	Gland	ASTMA276-410	ASTMA276-410	ASTMA276-F316	ASTMA276-F316
12	Stop Pin	Carbon Steel	Carbon Steel	Stainless Steel	Stainless Steel
13	Screw	ASTMA193-B7	ASTMA193-B7	ASTMA193-B8	ASTMA320-L7M
14	Lever	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
15	Spring Washer	Carbon Steel	Carbon Steel	Stainless Steel	Stainless Steel
16	Lever Nut	ASTMA194-2H	ASTMA194-2H	ASTMA194-8	ASTM 194-7M

- Dimensions and Weights



Class 800/1500

Size in	D mm	L mm	H mm	W mm	B mm	E mm	NPT in	Weight kg
1/2	13	90	65	140	21.8	9.6	1/2	1.5
3/4	18	100	75	140	27.1	12.7	3/4	1.7
1	23	110	80	200	33.8	12.7	1	3.3
1-1/4	28	130	85	250	42.6	12.7	1-1/4	7.0
1-1/2	35	140	95	250	48.7	12.7	1-1/2	8.0
2	47	160	95	250	61.2	15.7	2	11.0

- Seat Sealing Feature

- a) Upstream seat: The seats can be moved slightly along the valve axis, Upstream line pressure acting on the seat area (A1) does not equalize on the seat area (A2). The differential force in the area (D1) pushes the seat tightly against the ball surface resulting in a tight effective seal. (Fig.1)
- b) Downstream seat: When the body cavity pressure is lower than the downstream pressure, the net pressure difference acting over area (D2), pushes the downstream seat tightly against the ball surface creating a positive seal. (Fig.1)

- Self Relieving Seat

When the body cavity pressure exceeds the downstream seat spring preloaded force, the differential force in the area (D2) pushes the downstream seat away from the ball, the body cavity pressure will automatically relieve. And then the seat returns to the ball under spring action. (Fig.1)

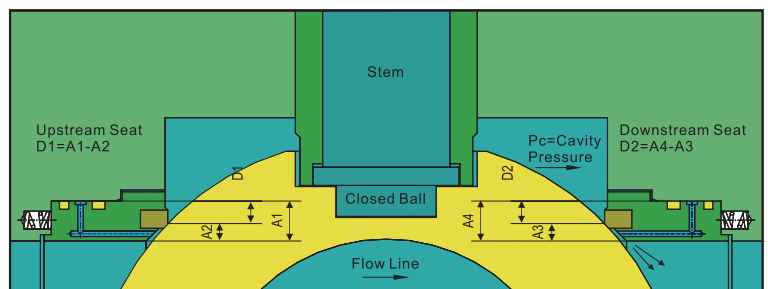


Fig.1

- Double Block and Bleed

When the ball is in the closed position, each seat of the ball valve can cut off the medium independently on the upstream and downstream side to realize double-block functions. the body cavity are isolated from each side of the valve, the body cavity pressure could be released through the vent valve. (Fig. 2)

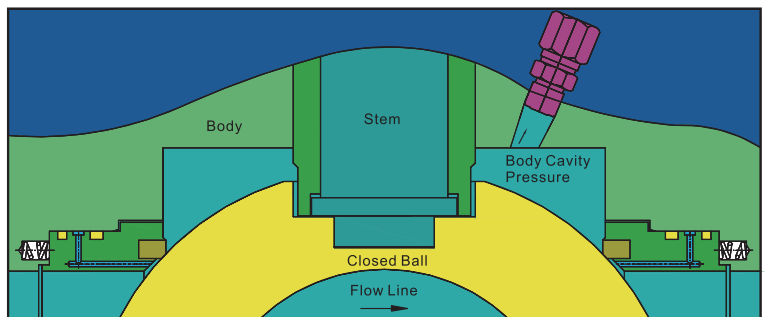


Fig.2

- Blow-out Proof Stem

The stem with integral T-type shoulder, supported by gland, can be guaranteed not to be blow-out by the medium even if at abnormal risen pressure in the cavity. (Fig. 3)

- Anti-Static Device

During turning of the stem to opening and closing the valve, static electricity is easily caused by sparks generated by friction. Antistatic devices, assembled by a spring & a grounding plunger, assure the electrical continuity, between ball and stem, stem and body, to prevent the possible risk of fire or explosion. (Fig.3)

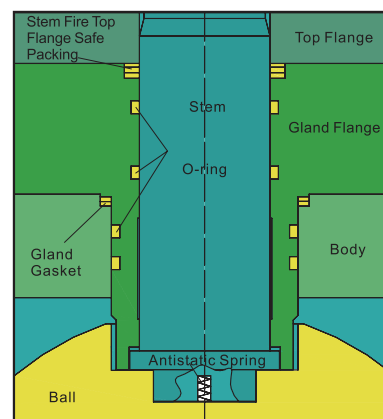


Fig.3

- Emergency Sealant Injection System

For 6 inch and larger trunnion mounted ball valves, or small valves on request, special sealants may be injected through a sealant injection fittings that are located on the bonnet and the gland to obtain emergency sealing, in case of seat or stem O-ring are damaged and leakage occur by fire or other accident. This injection unit consists of an injection fitting with a built in Check Valve to provide back up sealing.

- Firesafe Design

Internal leakage prevention when inserts (O-Ring and Spacer) are damaged in a fire(a). The line pressure and the preloaded seat spring will push the metal seat against the ball surface to close the valve completely(b). In this position the valve can still be opened or closed depending on the actual situation.

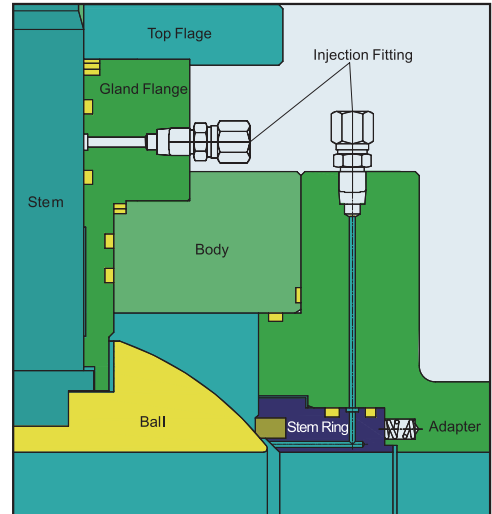


Fig.4

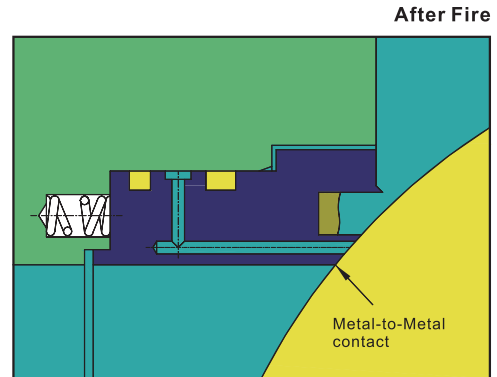
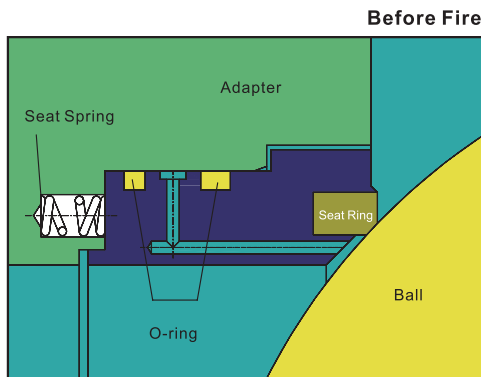


Fig.5

a) Internal leakage prevention

When seat insert, O-ring and spacer are damaged in a fire. The line pressure and the seat preloaded spring push the seat metal lip into the ball surface to cut off the line fluid and prevent the internal leakage to reach fire-safe purpose. Besides, the seat graphite packing can prevent fluid leakage from between the valve body and the seat. (Fig.5)

b) External leakage prevention

A combination of O-rings and graphite gaskets on body/bonnet connection, body/gland connection, and stem/gland joint, can prevent the external leakage. When O-rings are damaged after a fire, body gasket, gland gasket, and stem packing, can reach sealing function and prevents external fluid leakage. (Fig.6)

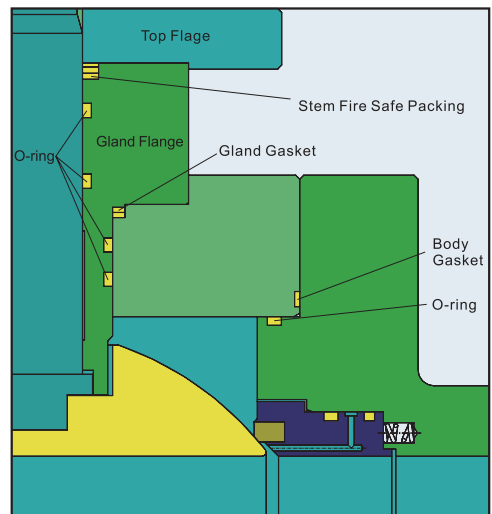
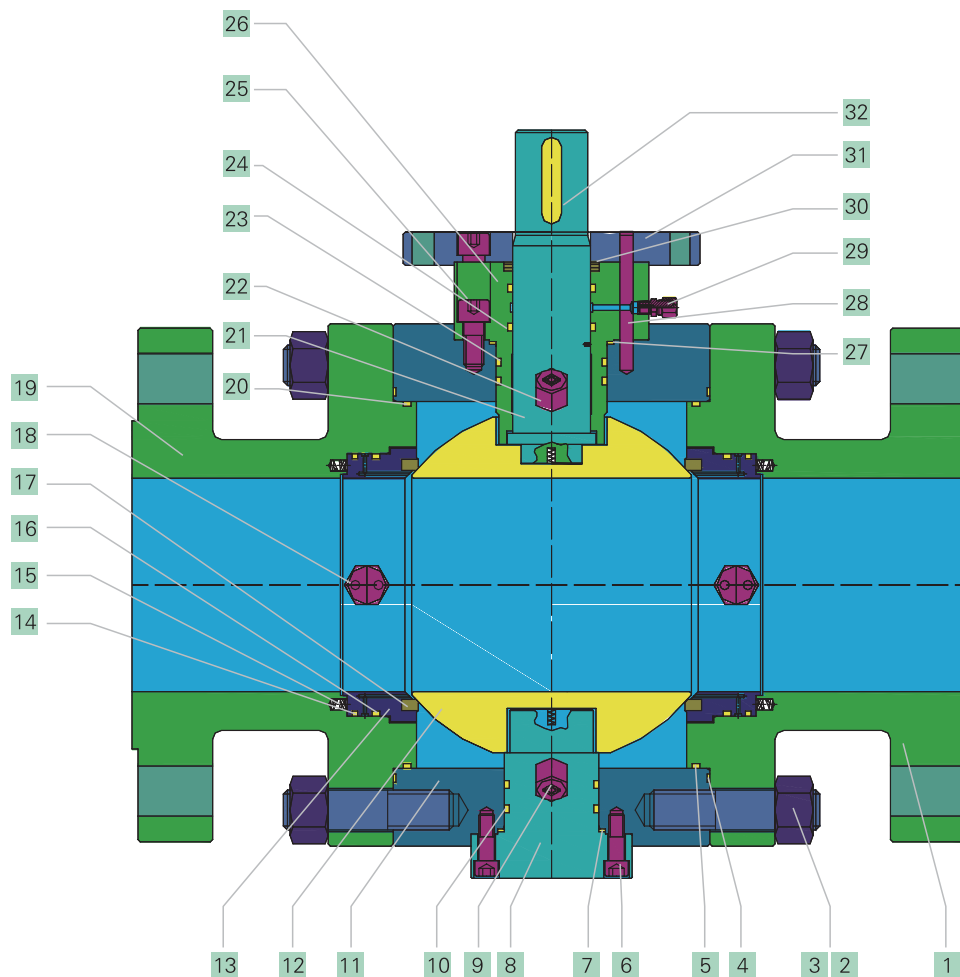


Fig.6

3PC BODY FORGED TRUNNION MOUNTED BALL VALVE

▪ Metallum Ball Valve

▪ Series TF



- Features

Size: 2"~40"
Class:150-2500
Three Pieces Forged Steel Body
Trunnion Mounted Ball, Full & Reduced Bore
Anti-Static Device
Blow-out Proof Stem
Double Block and Bleed
Fire Safe Design
Emergency Sealant Injector (6" & larger)
Vent valve (6" & larger)
Lifting Lug & Supporting Feet (8" & larger)

- Specifications

Design	ASME B16.34/API 6D
Face to Face	ASME B16.10/API 6D
End to End	ASME B16.10/API 6D
End Flange	ASME B16.5 / B16.47
BW End	ASME B16.25
Test	API 6D
Fire Safe Test	API 607/API 6FA
Special	NACE MR-01-75
Seat Pocket Overlay (On Request)	
Seals Area Overlay (On Request)	

3PC BODY FORGED TRUNNION MOUNTED BALL VALVE



- Material Specifications

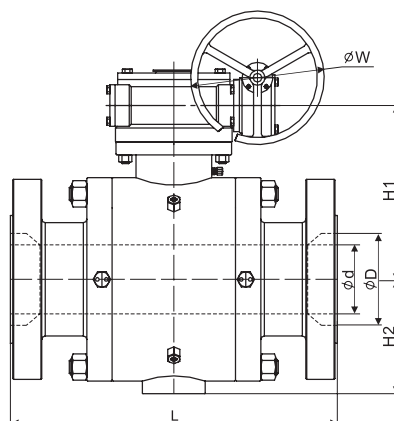
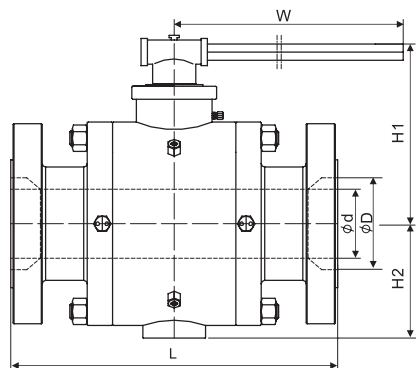
No.	Part	A105/ENP	A105/316	F316/F316	LF2/316 NACE
1	Bonnet	ASTMA105	ASTMA105	ASTMA182-F316	ASTMA350-LF2
2	Body Stud	ASTMA193-B7	ASTMA193-B7	ASTMA193-B8	ASTMA320-L7M
3	Body Nut	ASTMA194-2H	ASTMA194-2H	ASTMA194-8	ASTM 194-7M
4	Body Gasket	304SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
5	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
6	Screw	Carbon Steel	Carbon Steel	Stainless Steel	ASTM A320-L7M
7	Gasket	304SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
8	Trunnion Support	ASTM A105/ENP	ASTM A105/ENP	ASTM A182-F316	ASTM A350-LF2/ENP
9	Drain	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
10	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
11	Body	ASTM A105	ASTM A105	ASTM A182-F316	ASTM A350-LF2
12	Ball	ASTM A105/ENP	ASTM A182-F316	ASTM A182-F316	ASTM A182-F316
13	Seat Ring	ASTM A105/ENP	ASTM A182-F316	ASTM A182-F316	ASTM A182-F316
14	Seat Firesafe Packing	Flexible Graphite	Flexible Graphite	Flexible Graphite	Flexible Graphite
15	Seat Spring	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
16	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
17	Seat Insert	PTFE/Nylon	PTFE/Nylon	PTFE/Nylon	PTFE/Nylon
18	Seat Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
19	Bonnet	ASTM A105	ASTM A105	ASTM A182-F316	ASTM A350-LF2
20	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
21	Stem	ASTM A182F6a	17-4PH	17-4PH	17-4PH
22	Vent Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
23	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
24	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
25	Screw	Carbon Steel	Carbon Steel	Stainless Steel	ASTM A320-L7M
26	Gland Flange	ASTM A105	ASTMA105	ASTMA182-F316	ASTMA350-LF2
27	Gland Gasket	304SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
28	Gland Pin	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
29	Stem Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
30	Stem Firesafe Packing	Flexible Graphite	Flexible Graphite	Flexible Graphite	Flexible Graphite
31	Top Flange	ASTM A105	ASTM A105	ASTM A182-F316	ASTM A350-LF2
32	Key	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel

3PC BODY FORGED TRUNNION MOUNTED BALL VALVE

▪ Metallum Ball Valve

▪ Series TF

- Dimensions and Weights



Full Bore

Class 150

Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2	49	178	180	138	265	26
3	74	203	190	150	285	53
4	100	229	212	170	400	80
6	150	394	277	183	*400	160
8	201	457	301	216	*400	280
10	252	533	359	260	*500	470
12	303	610	419	287	*600	750
14	334	686	460	338	*600	859
16	385	762	494	375	*600	1020
18	436	864	521	402	*600	1440
20	487	914	656	427	*600	1918
22	538	991	733	480	*600	2352
24	589	1067	795	518	*700	2803
28	684	1245	935	542	*800	4045
30	735	1295	1010	605	*800	4820
32	779	1372	1060	650	*800	5490
34	830	1473	1077	650	*800	6704
36	874	1524	1115	700	*800	7615
40	976	1727	1400	865	*800	10271

Reduce Bore

Class 150

Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2*1-1/2	38	49	178	140	110	250	24
3*2	49	74	203	180	130	265	32
4*3	74	100	229	190	150	285	58
6*4	100	150	394	212	170	400	95
8*6	150	201	457	277	183	*400	195
10*8	201	252	533	301	216	*400	320
12*10	252	303	610	359	260	*500	533
14*12	303	335	686	419	287	*600	730
16*12	303	385	762	460	338	*600	790
18*14	335	436	864	494	375	*600	1095
20*16	385	487	914	521	402	*600	1152
22*18	436	538	991	521	402	*600	2343
24*20	487	589	1067	656	427	*600	1060
28*24	589	684	1245	795	518	*700	2700
30*24	589	735	1295	795	518	*700	2918
32*26	633	779	1372	870	535	*800	4005
34*28	684	830	1473	935	542	*800	4445
36*30	735	874	1524	1010	605	*800	4995
40*34	830	976	1727	1077	650	*800	8200

Full Bore

Class 300

Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2	49	216	180	130	265	30
3	74	283	190	150	285	66
4	100	305	212	170	400	92
6	150	403	277	183	*400	180
8	201	502	308	217	*500	350
10	252	568	381	264	*600	520
12	303	648	429	307	*600	750
14	334	762	460	338	*600	840
16	385	838	581	375	*600	1250
18	436	914	674	414	*700	1715
20	487	991	713	450	*700	2090
22	538	1092	780	492	*700	2220
24	589	1143	850	531	*760	2890
28	684	1346	958	556	*800	4575
30	735	1397	1035	620	*800	5590
32	779	1524	1087	666	*800	6240
34	830	1626	1104	666	*800	7370
36	874	1727	1143	718	*800	8435
40	976	1930	1435	887	*800	11200

Reduce Bore

Class 300

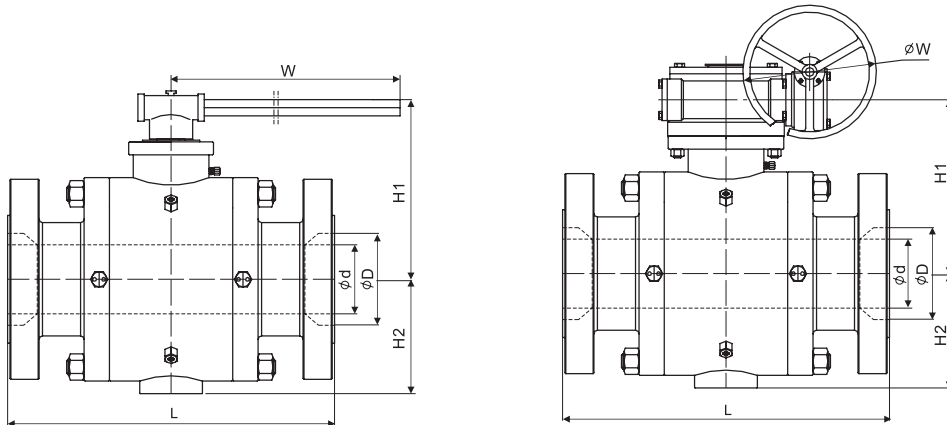
Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2*1-1/2	38	49	216	140	110	250	27
3*2	49	74	283	180	130	265	35
4*3	74	100	305	190	150	285	70
6*4	100	150	403	212	170	400	140
8*6	150	201	502	277	183	*400	248
10*8	201	252	568	308	217	*500	385
12*10	252	303	648	381	265	*600	560
14*12	303	335	762	429	307	*600	800
16*12	303	385	838	460	338	*600	950
18*14	335	436	914	581	375	*600	1500
20*16	385	487	991	674	414	*700	1830
22*18	436	538	1092	674	414	*700	2010
24*20	487	589	1143	713	450	*700	2220
28*24	589	684	1346	850	531	*760	3200
30*24	589	735	1397	850	531	*760	3200
34*28	684	830	1626	958	556	*800	4845
36*30	735	874	1727	1035	620	*800	6100
40*34	830	976	1930	1104	666	*800	8200

* Gear Operated

3PC BODY FORGED TRUNNION MOUNTED BALL VALVE



- Dimensions and Weights



Full Bore Class 600

Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2	49	292	172	130	400	38
3	74	356	205	150	450	80
4	100	432	308	170	755	150
6	150	559	274	185	*500	248
8	201	660	342	223	*600	438
10	252	787	393	270	*600	701
12	303	838	522	310	*600	925
14	334	889	551	340	*600	1230
16	385	991	637	378	*700	1535
18	436	1092	683	418	*760	2135
20	487	1194	719	451	*760	2640
22	538	1295	754	492	*800	3370
24	589	1397	823	539	*800	3960
28	684	1549	958	556	*800	6060
30	735	1651	1035	620	*800	6690
32	779	1778	1087	666	*800	7825
34	830	1930	1104	666	*800	8460
36	874	2083	1143	718	*800	10650
40	976	2337	1435	887	*800	14700

Reduce Bore Class 600

Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2*1-1/2	38	49	292	164	110	300	40
3*2	49	74	356	172	130	400	54
4*3	74	100	432	205	150	500	99
6*4	100	150	559	308	170	755	212
8*6	150	201	660	274	185	*500	304
10*8	201	252	787	342	223	*600	510
12*10	252	303	838	393	270	*600	902
14*12	303	335	889	522	310	*600	1090
16*12	303	385	991	551	340	*600	1310
18*14	335	436	1092	637	378	*700	1640
20*16	385	487	1194	683	418	*760	2270
22*18	436	538	1295	683	418	*760	2430
24*20	487	589	1397	719	451	*760	3440
28*24	589	684	1549	823	539	*800	4250
30*24	589	735	1651	823	539	*800	4730
34*28	684	830	1930	958	556	*800	7200
36*30	735	874	2083	1035	620	*800	8600
40*34	830	976	2337	1104	666	*800	10020

Full Bore Class 900

Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2	49	368	193	136	450	52
3	74	381	302	158	755	87
4	100	457	332	180	*400	160
6	150	610	320	187	*600	385
8	201	737	365	226	*600	560
10	252	838	495	280	*600	820
12	303	965	600	329	*700	1125
14	322	1029	625	390	*760	1610
16	373	1130	675	407	*760	2010
18	423	1219	715	526	*760	2810
20	471	1321	750	600	*760	3460
22	522	1422	780	640	*800	4410
24	570	1549	800	690	*800	5497
28	665	1753	987	573	*800	10202
30	712	1880	1066	638	*800	11442
32	760	2032	1120	686	*800	12102
34	808	2159	1137	688	*800	17462
36	855	2286	1177	739	*800	20154

Reduce Bore Class 900

Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2*1-1/2	38	49	368	175	110	350	45
3*2	48	74	381	193	136	450	56
4*3	74	100	457	302	158	755	94
6*4	100	150	610	332	180	*400	226
8*6	150	201	737	320	187	*600	480
10*8	201	252	838	365	226	*600	650
12*10	252	303	965	495	280	*600	868
14*12	303	322	1029	600	329	*700	1310
16*12	303	373	1130	625	390	*760	1830
18*14	322	423	1219	675	407	*760	2205
20*16	373	471	1321	715	526	*760	3140
22*18	423	522	1422	715	526	*760	328/8
24*20	471	570	1549	750	600	*760	3810
28*24	570	665	1753	800	690	*800	7580
30*24	570	712	1880	945	547	*800	7981
34*28	665	808	2159	987	573	*800	11202
36*30	712	855	2286	1066	638	*800	15653

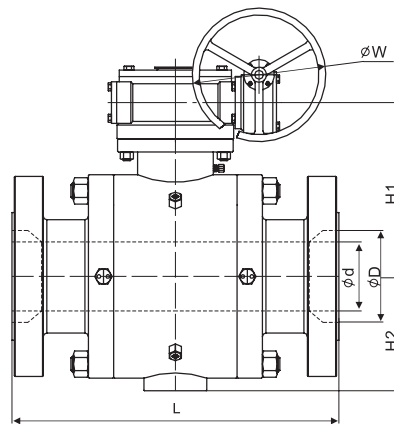
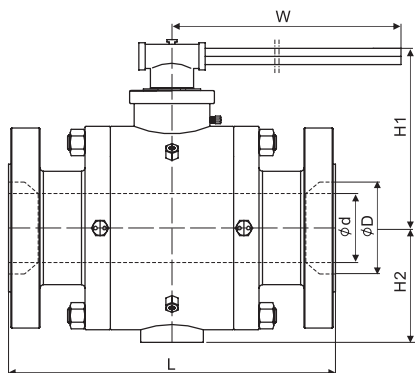
* Gear Operated

3PC BODY FORGED TRUNNION MOUNTED BALL VALVE

▪ Metallum Ball Valve

▪ Series TF

- Dimensions and Weights



Full Bore

Class 1500

Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2	49	368	193	150	450	58
3	74	470	270	168	1135	105
4	100	546	275	176	*500	194
6	144	705	325	203	*600	530
8	192	832	501	248	*700	752
10	239	991	536	297	*700	1195
12	287	1130	614	357	*760	1970
14	315	1257	662	383	*760	2250
16	360	1384	700	434	*760	2760
18	406	1537	750	506	*760	3646
20	454	1664	864	586	*800	4497
22	500	1816	925	631	*800	5731
24	546	2045	1065	675	*800	7151

Reduce Bore

Class 1500

Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2*1-1/2	38	49	368	183	110	350	56
3*2	49	74	470	193	150	450	82
4*3	74	100	546	270	168	1135	150
6*4	100	144	705	275	176	*500	295
8*6	144	192	832	325	203	*600	690
10*8	192	239	991	501	248	*700	930
12*10	239	287	1130	536	297	*700	1340
14*12	287	315	1257	614	357	*760	2070
16*12	287	360	1384	662	383	*760	2470
18*14	315	406	1537	700	434	*760	2950
20*16	360	454	1664	750	506	*760	3350
22*18	406	500	1816	750	506	*800	3600
24*20	454	546	2045	864	586	*800	5850

Full Bore

Class 2500

Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2	42	451	230	121	815	90
3	62	578	284	146	*500	200
4	87	673	303	164	*500	385
6	131	914	394	220	*600	778
8	179	1022	488	312	*760	1352
10	223	1270	600	425	*760	2137
12	265	1422	700	500	*800	3267

Reduce Bore

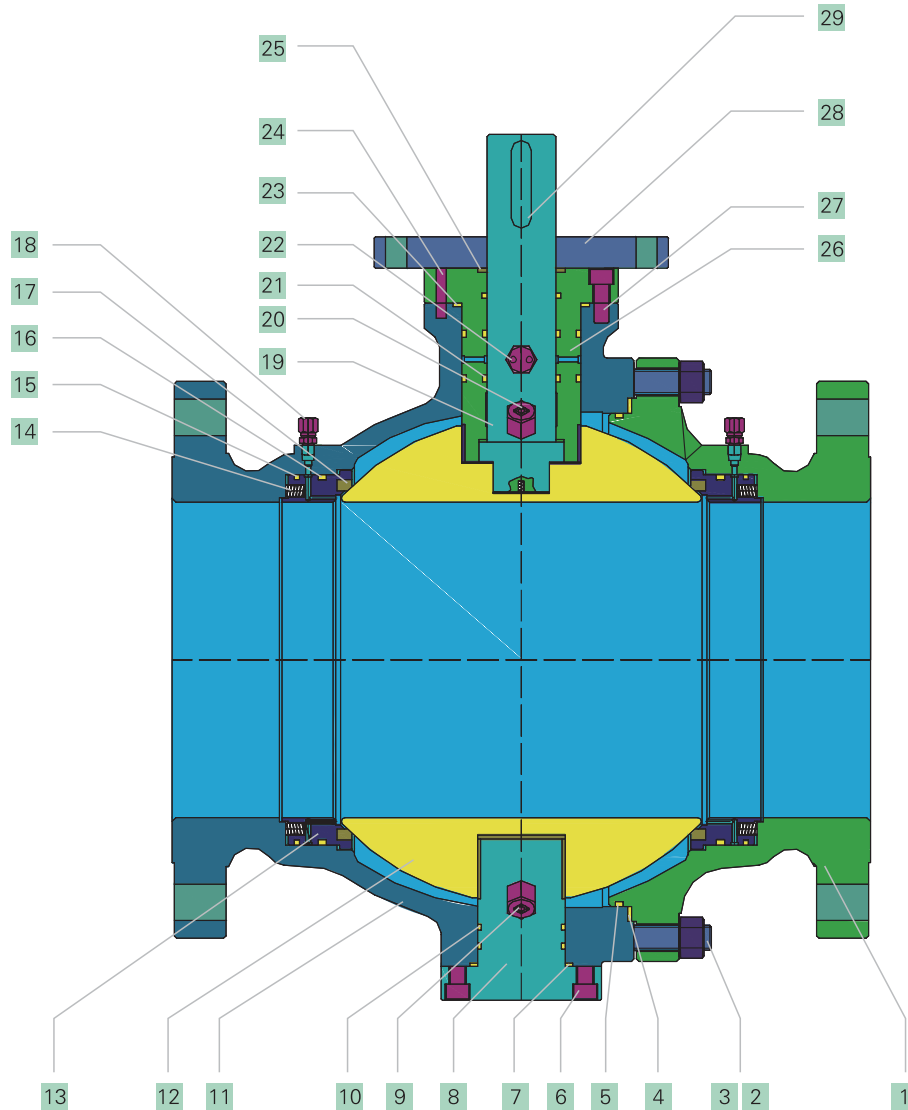
Class 2500

Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2*1-1/2	38	42	454	170	100	500	80
3*2	42	62	584	230	121	815	160
4*3	62	87	683	284	146	*500	320
6*4	87	131	927	303	164	*500	640
8*6	131	179	1038	360	365	*600	1170
10*8	179	223	1292	420	410	*760	1919
12*10	223	265	1455	509	470	*760	2972

* Gear Operated

2PC BODY CAST TRUNNION MOUNTED BALL VALVE

Series TC



- Features

Size: 2"-24"
Class: 150-600
Two Pieces Cast Steel Body
Trunnion Mounted Ball, Full & Reduced Bore
Anti-Static Device
Blow-out Proof Stem
Fire Safe Design
Emergency Sealant Injector(6" & Larger)

- Specifications

Design	ASME B16.34/API6D
Face to Face	ASME B16.10/API6D
End to End	ASME B16.10/API6D
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API6D
Fire Safe Test	API607/API6FA
Special	NACE MR-01-75

2PC BODY CAST TRUNNION MOUNTED BALL VALVE

Metallum Ball Valve

Series TC

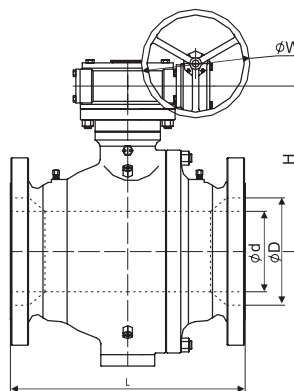
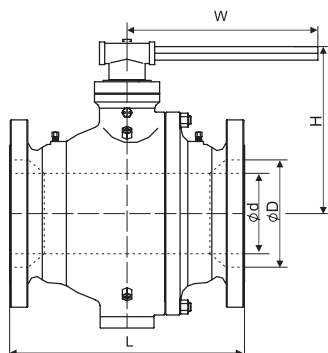
- Material Specifications

No.	Part	WCB/ENP	WCB/316	CF8M/316	LCC/316 NACE
1	Bonnet	ASTMA216-WCB	ASTMA216-WCB	ASTMA351-CF8M	ASTMA352-LCC
2	Body Stud	ASTMA193-B7	ASTMA193-B7	ASTMA193-B8	ASTMA320-L7M
3	Body Nut	ASTMA194-2H	ASTMA194-2H	ASTMA194-8	ASTM 194-7M
4	Body Gasket	304SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
5	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
6	Screw	Carbon Steel	Carbon Steel	Stainless Steel	Stainless Steel
7	Gasket	304SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
8	Trunnion Support	ASTMA105/ENP	ASTMA105/ENP	ASTMA182-F316	ASTMA350-LF2
9	Drain	Carbon Steel	Carbon Steel	Stainless Steel	Stainless Steel
10	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
11	Body	ASTMA216-WCB	ASTMA216-WCB	ASTMA351-CF8M	ASTMA352-LCC
12	Ball	ASTMA105/ENP	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
13	Seat Ring	ASTMA105/ENP	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
14	Seat Spring	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
15	Seat Firesafe Packing	Flexible Graphite	Flexible Graphite	Flexible Graphite	Flexible Graphite
16	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
17	Seat Insert	PTFE/Nylon	PTFE/Nylon	PTFE/Nylon	PTFE/Nylon
18	Seat Injection	Carbon Steel	Carbon Steel	Stainless Steel	Stainless Steel
19	Stem	ASTMA182 F6a	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
20	Vent Valve	Carbon Steel	Carbon Steel	Stainless Steel	Stainless Steel
21	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
22	Stem Injection	Carbon Steel	Carbon Steel	Stainless Steel	Stainless Steel
23	Gland Gasket	304SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
24	Gland Pin	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
25	Stem Firesafe Packing	Flexible Graphite	Flexible Graphite	Flexible Graphite	Flexible Graphite
26	Gland Flange	ASTMA105	ASTMA105	ASTMA182-F316	ASTMA350-LF2
27	Screw	Carbon Steel	Carbon Steel	Stainless Steel	Stainless Steel
28	Top Flange	ASTMA105	ASTMA105	ASTMA182-F316	ASTMA350-LF2
29	Key	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel

2PC BODY CAST TRUNNION MOUNTED BALL VALVE



- Dimensions and Weights



Full Bore Class 150

Size in	D mm	L mm	H mm	W mm	Weight kg
2	49	178	124	265	12
3	74	203	152	285	22
4	100	229	175	285	35
6	150	394	329	*300	74
8	201	457	398	*300	205
10	252	533	495	*300	322
12	303	610	580	*500	460
14	334	686	625	*600	576
16	385	762	670	*600	864
18	436	864	698	*600	1280
20	487	914	840	*600	1600
24	589	1067	1050	*800	3540

Reduce Bore Class 150

Size in	d mm	D mm	L mm	H mm	W mm	Weight kg
3*2	49	74	203	124	265	17
4*3	74	100	229	152	285	28
6*4	100	150	394	175	285	59
8*6	150	201	457	329	*300	164
10*8	201	252	533	398	*300	258
12*10	252	303	610	495	*300	368
14*12	303	335	686	580	*500	493
16*12	303	385	762	625	*600	691
18*14	335	436	864	670	*600	1024
20*16	385	487	914	698	*600	1440
24*20	487	589	1067	840	*600	1800

* Gear Operated

Full Bore Class 300

Size in	D mm	L mm	H mm	W mm	Weight kg
2	49	216	124	265	15
3	74	283	152	400	30
4	100	305	175	750	55
6	150	403	329	*300	118
8	201	502	398	*300	255
10	252	568	495	*400	370
12	303	648	580	*500	533
14	334	762	625	*600	640
16	385	838	670	*600	1030
18	436	914	698	*600	1280
20	487	991	840	*600	2100
24	589	1143	1050	*800	4200

Reduce Bore Class 300

Size in	d mm	D mm	L mm	H mm	W mm	Weight kg
3*2	49	74	283	124	265	20
4*3	74	100	305	152	400	44
6*4	100	150	403	175	750	102
8*6	150	201	502	329	*300	164
10*8	201	252	568	398	*300	296
12*10	252	303	648	495	*400	465
14*12	303	335	762	580	*500	578
16*12	303	385	838	625	*600	830
18*14	335	436	914	670	*600	1080
20*16	385	487	991	698	*600	1798
24*20	487	589	1143	840	*600	2600

* Gear Operated

Full Bore Class 600

Size in	D mm	L mm	H mm	W mm	Weight kg
2	49	292	108	400	35
3	74	356	197	750	55
4	100	432	235	1000	102
6	150	559	300	*300	232
8	201	660	371	*300	390
10	252	787	415	*500	710
12	303	838	512	*600	960
14	334	889	550	*600	1200
16	385	991	615	*600	1527
18	436	1092	698	*600	2097
20	487	1194	810	*600	2640
24	589	1397	1010	*800	4740

Reduce Bore Class 600

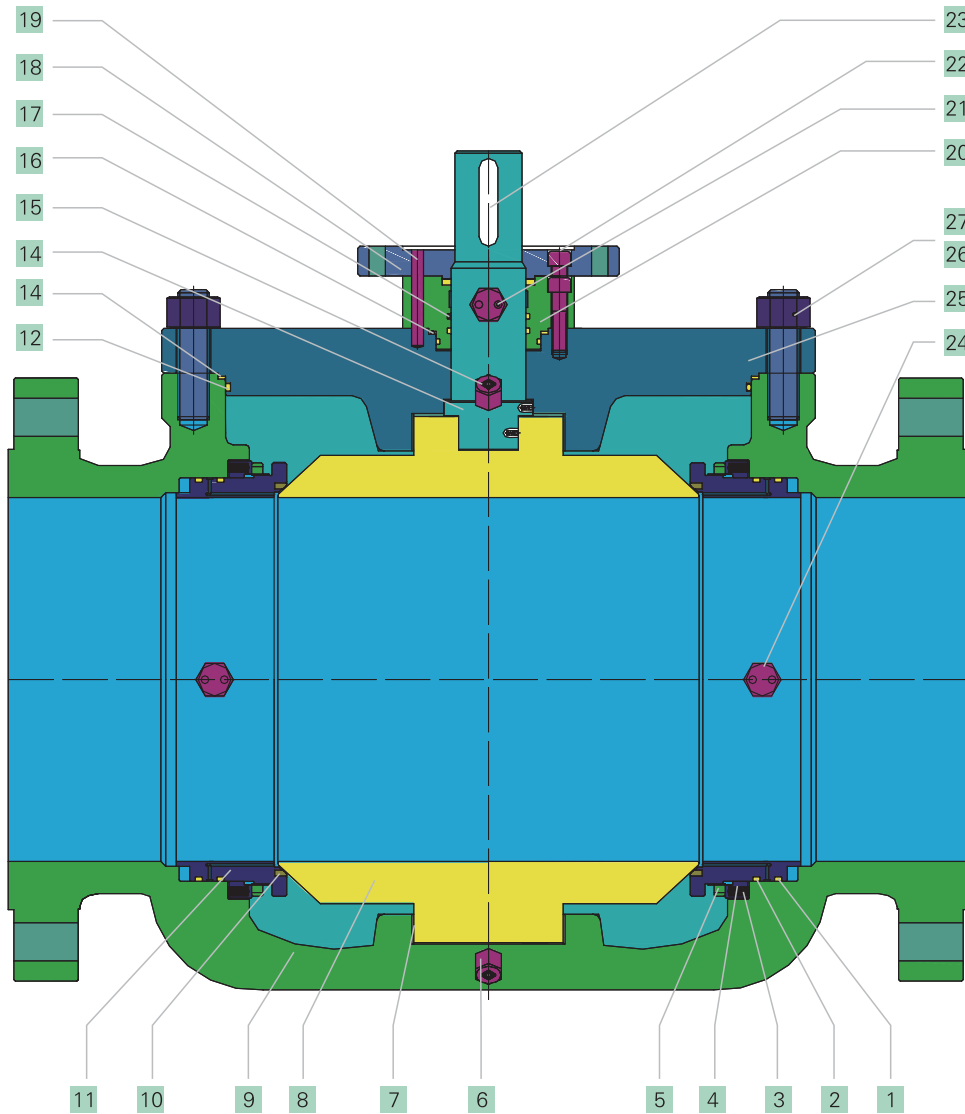
Size in	d mm	D mm	L mm	H mm	W mm	Weight kg
3*2	49	74	356	108	400	39
4*3	74	100	432	197	750	72
6*4	100	150	559	295	1000	162
8*6	150	201	660	300	*300	290
10*8	201	252	787	371	*300	547
12*10	252	303	838	415	*500	810
14*12	303	335	889	512	*600	1140
16*12	303	385	991	550	*600	1308
18*14	335	436	1092	615	*600	1682
20*16	385	487	1194	698	*600	2377
24*20	487	589	1397	810	*600	3100

* Gear Operated

TOP ENTRY CAST TRUNNION MOUNTED BALL VALVE

▪ Metallum Ball Valve

▪ Series TT



- Features

Size: 2"-24"
Class: 150-2500
Top Entry Forged Steel Body
Trunnion Mounted Ball, Full & Reduced Bore
Anti-Static Device
Blow-out Proof Stem
Fire Safe Design
Emergency Sealant Injector (6" & Larger)

- Specifications

Design	ASME B16.34/API6D
Face to Face	ASME B16.10/API6D
End to End	ASME B16.10/API6D
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API6D
Fire Safe Test	API607/API6FA
Special	NACE MR-01-75

- Material Specifications

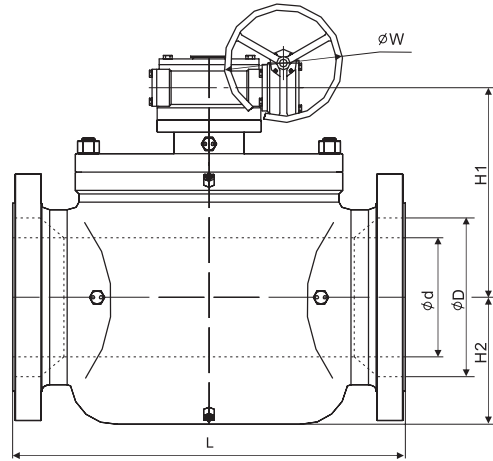
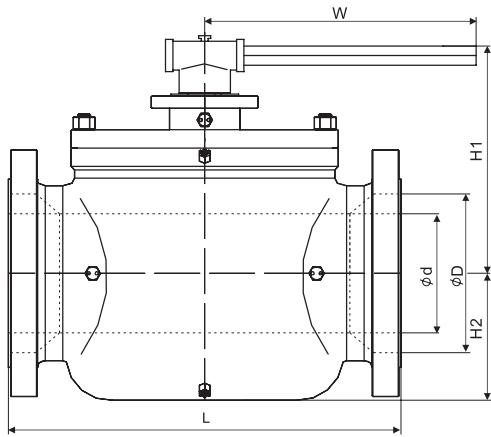
No.	Part	WCB/ENP	WCB/316	CF8M/316	LCC/316 NACE
1	Seat Firesafe Packing	Flexible Graphite	Flexible Graphite	Flexible Graphite	Flexible Graphite
2	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
3	Seat Spring	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
4	Retainer Ring	ASTMA276-420	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
5	Locking Nut	ASTMA276-420	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
6	Drain	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
7	Bearing	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2	316 + PTFE + MoS2
8	Ball	ASTMA105/ENP	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
9	Body	ASTMA216-WCB	ASTMA216-WCB	ASTMA351-CF8M	ASTMA352-LCC
10	Seat Insert	PTFE/Nylon	PTFE/Nylon	PTFE/Nylon	PTFE/Nylon
11	Seat Ring	ASTMA105/ENP	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
12	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
13	Body Gasket	304SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
14	Stem	ASTMA105/ENP	ASTMA182-F316	ASTMA182-F316	ASTMA182-F316
15	Vent Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
16	Gland Gasket	304SS + Graphite	316SS + Graphite	316SS + Graphite	316SS + Graphite
17	O-Ring	NBR/Viton	NBR/Viton	NBR/Viton	NBR/Viton
18	Top Flange	ASTMA105	ASTMA105	ASTMA182-F316	ASTMA350-LF2
19	Gland Pin	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
20	Gland Flange	ASTMA105	ASTMA105	ASTMA182-F316	ASTMA350-LF2
21	Stem Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
22	Screw	Carbon Steel	Carbon Steel	Stainless Steel	ASTMA320-L7M
23	Key	Carbon Steel	Carbon Steel	Stainless Steel	Carbon Steel
24	Seat Injection	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
25	Bonnet	ASTMA216-WCB	ASTMA216-WCB	ASTMA351-CF8M	ASTMA352-LCC
26	Body Stud	ASTMA193-B7	ASTMA193-B7	ASTMA193-B8	ASTMA320-L7M
27	Body Nut	ASTMA194-2H	ASTMA194-2H	ASTMA194-8	ASTMA194-7M

TOP ENTRY CAST TRUNNION MOUNTED BALL VALVE

▪ Metallum Ball Valve

▪ Series TT

- Dimensions and Weights



Full Bore

Class 150

Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2	49	292	170	76	285	38
3	74	356	210	95	285	43
4	100	432	250	115	400	65
6	150	559	265	140	*400	115
8	201	660	355	172	*400	220
10	252	787	385	203	*600	890
12	303	838	400	242	*600	1230
14	334	889	450	267	*600	1530
16	385	991	510	299	*600	2040
18	436	1092	565	318	*600	3060
20	487	1194	620	349	*600	4050
24	589	1397	680	407	*700	6750

Reduce Bore

Class 150

Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2*1-1/2	38	49	292	165	76	265	32
3*2	49	74	356	170	95	285	42
4*3	74	100	432	210	115	285	50
6*4	100	150	559	250	140	400	75
8*6	150	201	660	265	172	400	130
10*8	201	252	787	355	203	400	1450
12*10	252	303	838	385	242	600	1070
14*12	303	335	889	400	267	600	1560
16*12	303	385	991	450	299	600	1700
18*14	335	436	1092	510	318	600	2000
20*16	385	487	1194	565	349	600	2450
24*20	487	589	1397	620	407	600	4590

* Gear Operated

Full Bore

Class 300

Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2	49	292	170	83	285	41
3	74	356	210	105	285	48
4	100	432	250	127	400	75
6	150	559	265	159	*400	122
8	201	660	355	191	*500	260
10	252	787	385	222	*600	945
12	303	838	400	261	*600	1305
14	334	889	450	292	*600	1620
16	385	991	510	324	*600	2160
18	436	1092	565	356	*700	3240
20	487	1194	620	388	*700	4050
24	589	1397	680	457	*760	6500

Reduce Bore

Class 300

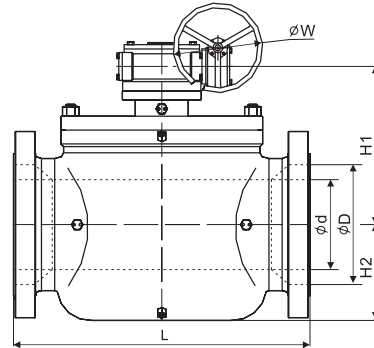
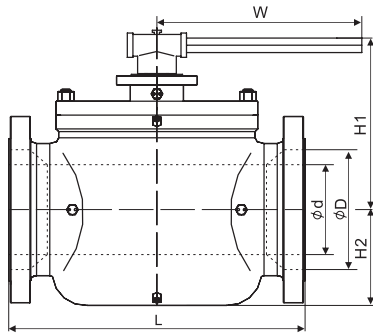
Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2*1-1/2	38	49	292	165	83	265	33
3*2	49	74	356	170	105	285	43
4*3	74	100	432	210	127	285	55
6*4	100	150	559	250	159	400	78
8*6	150	201	660	265	191	*400	135
10*8	201	252	787	355	222	*400	235
12*10	252	303	838	385	261	*600	1135
14*12	303	335	889	400	292	*600	1560
16*12	303	385	991	450	324	*600	1650
18*14	335	436	1092	510	356	*600	2020
20*16	385	487	1194	565	388	*700	2590
24*20	487	589	1397	620	457	*700	4860

* Gear Operated

TOP ENTRY CAST TRUNNION MOUNTED BALL VALVE



- Dimensions and Weights



Full Bore Class 600

Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2	49	292	180	83	285	48
3	74	356	220	105	760	60
4	100	432	260	1375	1140	92
6	150	559	275	178	*500	187
8	201	660	370	210	*600	400
10	252	787	398	254	*600	1050
12	303	838	410	280	*700	1450

Reduce Bore Class 600

Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2*1-1/2	38	49	292	174	83	285	44
3*2	49	74	356	180	105	285	74
4*3	74	100	432	220	137	760	65
6*4	100	150	559	260	178	1140	98
8*6	150	201	660	275	210	*500	205
10*8	201	252	787	370	254	*600	430
12*10	252	303	838	398	280	*600	1250

* Gear Operated

Full Bore Class 900

Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2	49	368	190	108	760	85
3	74	381	230	121	1140	120
4	100	457	270	146	*400	170
6	150	610	320	191	*500	380
8	201	737	375	235	*600	650
10	252	838	440	273	*700	1250
12	303	965	498	305	*700	1830

Reduce Bore Class 900

Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2*1-1/2	38	49	368	182	108	760	54
3*2	49	74	381	190	121	760	95
4*3	74	100	457	230	146	1140	140
6*4	100	150	610	270	191	*400	200
8*6	150	201	737	320	235	*500	420
10*8	201	252	838	375	273	*600	720
12*10	252	303	965	440	305	*700	1500

* Gear Operated

Full Bore Class 1500

Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2	49	368	195	108	760	98
3	74	470	233	134	*400	145
4	100	546	276	156	*500	243
6	144	705	324	197	*600	925
8	192	832	397	242	*700	1625
10	239	991	462	292	*700	1940
12	287	1130	493	337	*760	2820

Reduce Bore Class 1500

Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2*1-1/2	38	49	368	189	108	760	85
3*2	49	74	470	195	134	760	110
4*3	74	100	546	233	156	*400	170
6*4	100	144	705	276	197	*500	255
8*6	144	192	832	324	242	*600	1110
10*8	192	239	991	397	292	*700	1950
12*10	239	287	1130	462	337	*700	2330

* Gear Operated

Full Bore Class 2500

Size in	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2	42	451	250	121	800	120
3	62	578	300	146	*500	180
4	87	673	350	164	*500	420
6	131	914	650	220	*600	1225
8	179	1022	780	312	*760	2060
10	223	1270	1035	425	*800	4060
12	265	1422	1125	629	*800	9020

Reduce Bore Class 2500

Size in	d mm	D mm	L mm	H1 mm	H2 mm	W mm	Weight kg
2*1-1/2	38	42	454	170	100	600	90
3*2	42	62	584	250	121	800	140
4*3	62	87	683	300	146	*500	220
6*4	87	131	927	350	164	*500	550
8*6	131	179	1038	620	365	*600	1450
10*8	179	223	1292	700	410	*760	2470
12*10	223	265	1455	1035	470	*800	4870

* Gear Operated

MATERIALS

Material	CHEMICAL COMPOSITIONS(%) max										MECHANICAL PROPERTIES				
	C	Mn	P	S	Si	Ni	Cr	Mo	Other	Tensile, min MPa(ksi)	Yield, min MPa(ksi)	Elongation min (%)	Reduction of Area min(%)	Hardness Brinell	
WCB	0.30	1.00	0.04	0.045	0.60	0.50	0.50	0.20	Cu 0.30 V 0.03	485~655 (70~95)	250 (36)	22	35		
WC1	0.25	0.50~ 0.80	0.04	0.045	0.60	0.50	0.35	0.45~ 0.65	Cu 0.50 W 0.10	450~620 (65~90)	240 (35)	24	35		
WC6	0.05~ 0.20	0.50~ 0.80	0.04	0.045	0.60	0.50	1.00~ 1.50	0.45~ 0.65	Cu 0.50 W 0.10	485~655 (70~95)	275 (40)	20	35		
WC9	0.05~ 0.18	0.40~ 0.70	0.04	0.045	0.60	0.50	2.00~ 2.75	0.90~ 1.20	Cu 0.50 W 0.10	485~655 (70~95)	275 (40)	20	35		
C5	0.20	0.40~ 0.70	0.04	0.045	0.75	0.50	4.00~ 6.50	0.45~ 0.65	Cu 0.50 W 0.10	620~795 (90~115)	415 (60)	18	35		
C12	0.20	0.35~ 0.65	0.04	0.045	1.00	0.50	8.00~ 10.00	0.90~ 1.20	Cu 0.50 W 0.10	620~795 (90~115)	415 (60)	18	35		
CA15	0.15	1.00	0.04	0.040	1.50	1.00	11.50~ 14.00	0.50		620~795 (90~115)	450 (65)	18	30		
LCB	0.30	1.00	0.04	0.045	0.60	0.50	0.50	0.20	Cu 0.30 V 0.03	450~650 (65~90)	240 (35)	24	35	J (lbf·ft) 18 (13)	
LCC	0.25	1.20	0.04	0.045	0.60	0.50	0.50	0.20	Cu 0.30 V 0.03	485~655 (70~95)	275 (40)	22	35	J (lbf·ft) 20 (15)	
LC2	0.25	0.50~ 0.80	0.04	0.045	0.60	2.0~ 3.0				485~655 (70~95)	275 (40)	24	35	J (lbf·ft) 20 (15)	
LC3	0.15	0.50~ 0.80	0.04	0.045	0.60	3.0~ 4.0				485~655 (70~95)	275 (40)	24	35	J (lbf·ft) 20 (15)	
CF8	0.08	1.50	0.040	0.040	2.00	8.0~ 11.0	18.0~ 21.0			485 (70)	205 (30)	35			
CF8M	0.08	1.50	0.040	0.040	1.50	9.0~ 12.0	18.0~ 21.0	2.0~ 3.0		485 (70)	205 (30)	30			
CF3	0.03	1.50	0.040	0.040	2.00	8.0~ 12.0	17.0~ 21.0	0.50		485 (70)	205 (30)	35			
CF3M	0.03	1.50	0.040	0.040	1.50	9.0~ 13.0	17.0~ 21.0	2.0~ 3.0		485 (70)	205 (30)	30			
CF8C	0.08	1.50	0.040	0.040	2.00	9.0~ 12.0	18.0~ 21.0	0.50	Nb ≥ 8xC ≤ 1	485 (70)	205 (30)	30			
CN7M	0.07	1.50	0.040	0.040	1.50	27.5~ 30.5	19.0~ 22.0	2.0~ 3.0	Cu 3.0~4.0	450 (62)	170 (25)	35			
A105	0.35	0.60~ 1.05	0.040	0.050	0.35	0.40	0.30	0.12	Cu 0.40 V 0.03 Nb 0.02	485 (70)	250 (36)	22	30	≤ 187	
F1	0.28	0.60~ 0.90	0.045	0.045	0.15~ 0.35			0.44~ 0.65		485 (70)	275 (40)	20	30	143~192	
F5	0.15	0.30~ 0.60	0.030	0.030	0.50	0.50	4.0~ 6.0	0.44~ 0.65		485 (70)	275 (40)	20	35	143~217	
F11-1	0.05~ 0.15	0.30~ 0.60	0.030	0.030	0.15~ 1.00		1.00~ 1.50	0.44~ 0.65		415 (60)	205 (30)	20	45	121~174	
F22-1	0.05~ 0.15	0.30~ 0.60	0.040	0.040	0.50		2.00~ 2.50	0.87~ 1.13		415 (60)	205 (30)	20	35	≤ 170	
LF2	0.30	0.60~ 1.35	0.035	0.040	0.15~ 0.30	0.40	0.30	0.12	Cu 0.40 V 0.02 Nb 0.02	485~655 (70~95)	250 (36)	22	30	J (lbf·ft) 20 (15)	
F6a	0.15	1.00	0.040	0.030	1.00	0.50	11.5~ 13.5			585 (85)	380 (55)	18	35	167~229	
F304	0.08	2.00	0.040	0.030	1.00	8.0~ 11.0	18.0~ 20.0			515 (75)	205 (30)	30	50		
F304L	0.03	2.00	0.040	0.030	1.00	8.0~ 13.0	18.0~ 20.0			485 (70)	170 (25)	30	50		

Material	CHEMICAL COMPOSITIONS(%) max									MECHANICAL PROPERTIES				
	C	Mn	P	S	Si	Ni	Cr	Mo	Other	Tensile, min MPa(ksi)	Yield, min MPa(ksi)	Elongation min (%)	Reduction of Area min(%)	Hardness Brinell
F316	0.08	2.0	0.04	0.03	1.0	10.0~14.0	16.0~18.0	2.00~3.00		515(75)	205(30)	30	50	
F316L	0.035	2.0	0.04	0.03	1.0	10.0~15.0	16.0~18.0	2.00~3.00		485(70)	170(25)	30	50	
F321	0.08	2.0	0.04	0.03	1.0	9.0~12.0	≥ 17		Ti ≥5xC ≤0.7	515(75)	205(30)	30	50	
F347	0.08	2.0	0.04	0.03	1.0	9.0~13.0	17.0~20.0		Nb+Ta ≥10xC ≤1.1	515(75)	205(30)	30	50	
410	0.15	1.0	0.04	0.03	1.0		11.5~13.5			480(70)	275(40)	20	45	
416	0.15	1.25	0.06	≥0.15	1.0		12.00~14.00							≤262
420	Over 0.15	1.0	0.04	0.03	1.0		12.00~14.00							≤241
D-2	3.0	0.7~1.25	0.08		1.5~3.0	18.00~22.00	1.75~2.75			400(58)	207(30)	8		139~202
B7	0.37~0.49	0.65~1.1	0.035	0.04	0.15~0.35		0.75~1.20	0.15~0.25		860(125)	720(105)	16	50	
B7M	0.37~0.49	0.65~1.1	0.035	0.04	0.15~0.35		0.75~1.20	0.15~0.25		690(100)	550(80)	18	50	≤HB235 or HRB 99
B16	0.36~0.47	0.45~0.7	0.035	0.04	0.15~0.35		0.80~1.15	0.5~0.65	V0.25~0.35	860(125)	725(105)	18	50	
B8	0.08	2.0	0.045	0.03	1.0	8.00~10.50	18.00~20.00			515(75)	205(30)	30	50	≤HB223 or HRB 96
B8M	0.08	2.0	0.045	0.03	1.0	10.00~14.00	16.00~18.00	2.00~3.00		515(75)	205(30)	30	50	≤HB223 or HRB 96
L7	0.38~0.48	0.75~1.0	0.035	0.04	0.15~0.35		0.80~1.10	0.15~0.25		860(125)	725(105)	16	50	
L7M	0.38~0.48	0.75~1.0	0.035	0.04	0.15~0.35		0.80~1.10	0.15~0.25		690(100)	550(80)	18	50	≤HB235 or HRB 99
B			0.04	0.05						415~690 (60~100)		18		HRB121~212 HRC69~95
2H	≥ 0.4	1.0	0.04	0.05	0.4									HB248~352 HRC24~38
2HM	≥ 0.4	1.0	0.04	0.05	0.4									HB159~237 HRC ≤22
4	0.4~0.5	0.7~0.9	0.035	0.04	0.15~0.35			0.20~0.30						HB248~352 HRC24~38
7	0.37~0.49	0.65~1.1	0.04	0.04	0.15~0.35		0.75~1.20	0.15~0.25						HB248~352 HRC24~38
7M	0.37~0.49	0.65~1.1	0.04	0.04	0.15~0.35		0.75~1.20	0.15~0.25						HB159~237 HRC ≤22
8	0.08	2.0	0.045	0.03	1.0	8.00~10.50	18.0~20.0							HB126~300 HRC60~105
8M	0.08	2.0	0.045	0.03	1.0	10.0~14.0	16.0~18.0	2.00~3.00						HB126~300 HRC60~105

SOFT MATERIALS DATA

- Specifications for Seat Materials

	PTFE	RPTFE	Molon(Nylon+MoS2)	PEEK
Tensile Strength(Mpa)	24.8	25.4	75~100	91
Compressive Strength(Mpa)	35	52	100~140	137
Elongation(%)	250	120	10~30	50
Hardness(SH.A)	56	60	78	82
Water Absorption(%)	<0.01	<0.01	0.7	0.12
Specific Gravity(G/cm ³)	2.2	2.2	1.2	1.35
Temperature Range(° F)	-300~400	-150~425	-40~300	-150~500
Pressure Rating(Class)	150~600	150~600	150~1500	150~2500
Service Application	Chemical & Cryogenic	Chemical & Cryogenic	High Pressure & Low Temperature	High Pressure & High Temperature
	Nylon 1010	Nylon 12	Devlon V	Delrin
Tensile Strength(Mpa)	55	60	80	68
Compressive Strength(Mpa)	70	79	140	110
Elongation(%)	150	200	5.37	220
Hardness(SH.A)	70	75	78	78
Water Absorption(%)	0.3	0.2	0.1	0.2
Specific Gravity(G/cm ³)	1.04	1.01	1.14	1.41
Temperature Range(° F)	-40~200	-58~250	-150~300	-58~230
Pressure Rating(Class)	600~1500	600~1500	150~1500	150~1500
Service Application	High Pressure & Low Temperature	High Pressure & Low Temperature	High Pressure & Low Temperature	High Pressure & Low Temperature

- Specifications for Seat Materials

	Viton A	NBR	Viton B	HNBR(HSN)	Viton AED
Temperature range(° F)	-20~400	-50~250	-20~400	-40~320	-20~480
Hardness(SH.A)	70	70	70	80	90
Specific Gravity(G/cm ³)	1.85	1.2	1.85	1.33	1.9
Service Application	Petroleum Oils, Gasoline, Transmission Fluid	Petroleum Oils, Water, Hydraulic Oils	Mineral Acid, Steam, MTBE	Petroleum Oils, H2S & Co2, Anti-Explosive Decompression	Petroleum Oils, H2S & Co2, Anti-Explosive Decompression

- Specifications for Gasket Materials

	Flexible Graphite	Spiral Wound 316+Graphite	PTFE -300~400	Spiral Wound Monel+PTFE
Temperature Range(° F)	-300~900	-300~900	0~14	-300~400
PH	0~14	0~14	Cryogenic,	0~14
Service Application	Fire-safe	Fire-safe	High Corrosive	High Corrosive

*Due to quick develop, we reserve the right to institute changes in material, design and specifications for all METALLUM designed valves without prior notice

METALLUM

- BALL VALVE -

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